

NEW! Thermo Scientific
Forma Ultra-Low Temperature Freezers

- Ultimate protection
- Optimum capacity
- Energy savings



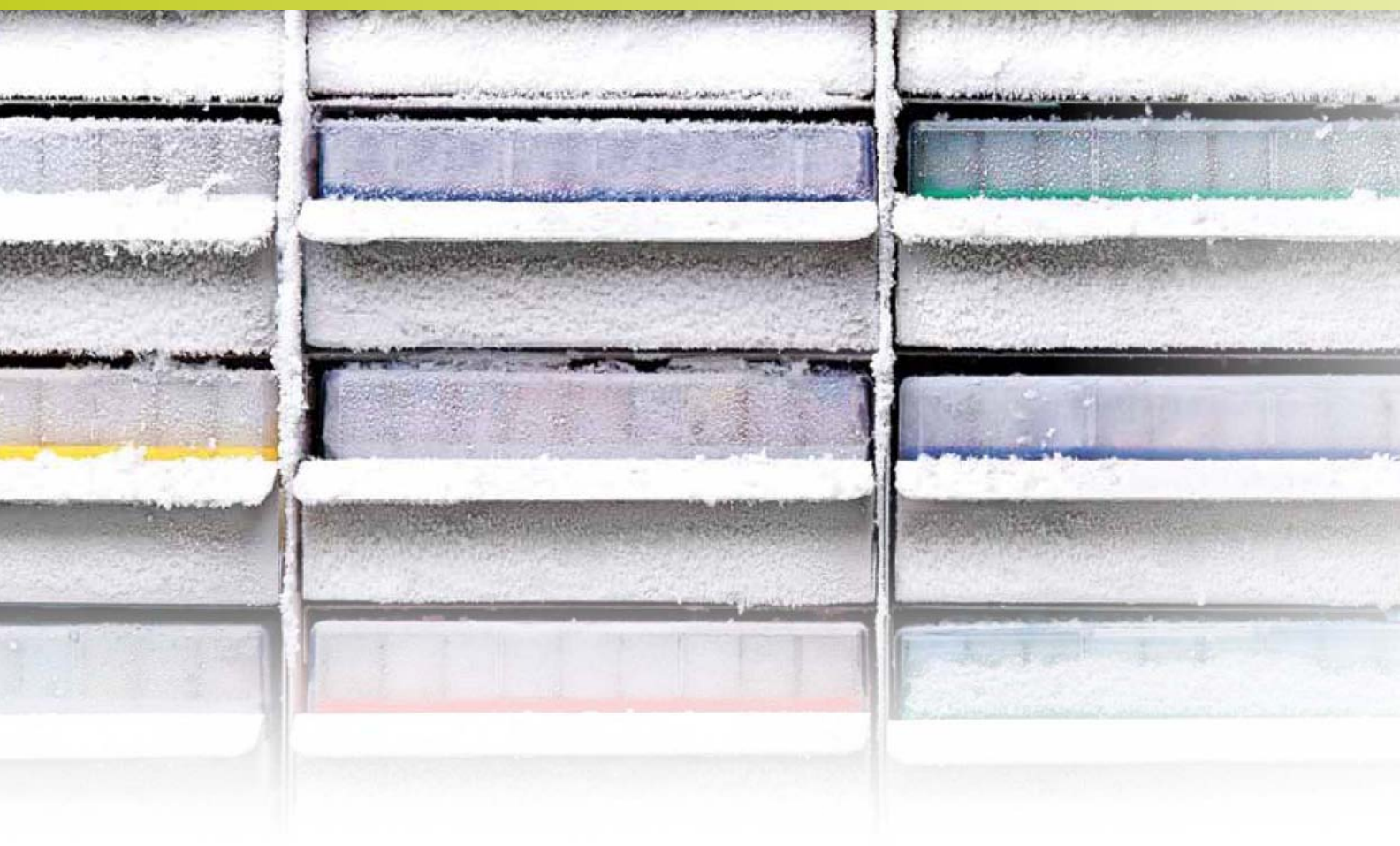


your samples
our obsession

Thermo
SCIENTIFIC

your samples
our obsession

To the rest of the world these are samples. To us they are a scientist's life's work. A lab's mission. A company's breakthrough. We are obsessed with sample integrity. Every one of our cold storage solutions is optimized for the best protection of critical samples. Our **Thermo Scientific Forma Series ultra-low temperature freezers** offer a complete range of upright and chest configurations designed for maximum sample protection.



Introducing the New Thermo Scientific Forma 88000 Series









Your samples need to stay cold. Period.

That's why our 88000 Series freezers offer outstanding door opening rates and consistent temperature uniformity. To ensure the safety of your samples, our new freezers underwent rigorous testing – the equivalent of more than 26 years of run time before making their way to the market.

Your samples are precious and so is your lab space.

With our 88000 Series freezers, it really is possible to fit more samples into less physical space. With five convenient sizes to choose from, we've got a freezer that will fit just right.

Sample protection should be easy.

Our 88000 Series freezers feature an easy-to-use, touch screen panel with an innovative health monitor that lets you see what's going on inside without opening the door. On-board data logging provides you with a downloadable record.

Protect your samples and the environment too.

From water-blown foam insulation, to an environmentally-friendly mix of refrigerants, to an energy-saving mode option, our 88000 Series freezers protect more than just your samples.



Thermo Scientific Forma upright and chest freezers

Our 900 Series -86ºC and 7000 Series -40ºC upright freezers feature an intuitive microprocessor control for uncompromised sample protection.

Our convenient range of 8600 Series -86ºC and -40ºC chest freezers offer all the features and benefits of our 900 and 7000 Series uprights.

Selector Guide ..... page 3

Forma 88000 Series ..... pages 4-15

Forma 900 and 7000 Series ..... pages 16-21

Forma 8600 Series ..... pages 22-25

what to look for
in an ultra-low temperature freezer



Use this selection guide

to determine which Thermo Scientific Forma upright freezer is the best choice for your sample storage needs.

-86°C Upright Freezer Selection

Select the Optimal Capacity and Design

		Forma 88000 Series					Forma 900 Series			
		88300	88400	88500	88600	88700	900, 909, 902	904, 910, 905	956, 957, 906	907, 908
Capacity	cu. ft.	14.9	19.4	24.1	28.8	33.5	13	17.3	23	28
	liters	421	548	682	815	949	368	490	651	793
2" Box Capacity	boxes	300	400	500	600	700	240	320	400	600
Vial Capacity	2mL vials	30,000	40,000	50,000	60,000	70,000	24,000	32,000	40,000	60,000
Footprint	sq. ft.	7.05	8.46	9.92	11.38	12.85	7.61	900	11.02	12.64
	sq. meters	0.65	0.79	0.92	1.06	1.19	0.71	0.84	1.02	1.17
Energy*	KW/day	17	19	19	20	22	17	18	19	21
Vial to Footprint	vials / ft^2	4,255	4,728	5,040	5,272	5,447	3,154	3,600	3,630	4,747
	vials / m^2	46,154	50,633	54,348	56,604	58,824	33,803	38,095	39,216	51,282
Vials to Energy	watts / 100 2mL vials (box)	2.36	1.93	1.54	1.39	1.31	2.95	2.47	2.10	1.50

*Based on internal data. Data on file. May, 2011.

Choose Advanced Technologies

		Forma 88000 Series					Forma 900 Series			
		88300	88400	88500	88600	88700	900, 909, 902	904, 910, 905	956, 957, 906	907, 908
Performance	Display	Touch Screen LCD					Push Button LED			
	On-Board Datalogging	Standard					Not Available			
	Setpoint Security	Standard					Not Available			
	Operating Modes	Two Mode – High Performance or Energy Efficiency					One Mode – Standard Operation			
Security	Key Lock	Standard					Standard with unique key option			
	Pad Lock Compatible	Standard					Not Available			
	Key Card Access	Optional					Not Available			
	Setpoint Security	Standard					Not Available			
Data Management	Monitoring Outputs	RS-485, 4-20mA, Dry Contacts – Standard					Dry Contacts – Standard; Optional PT100 Probe			
	Data Outputs	Log File through USB					Not Available			

Other ultra-low temperature freezers

Double-Door -86°C Upright Freezers

Choose our 900 Series double-door freezers when frequently used samples need to be accessed alongside long-term samples. Our double-door models contain all the features and benefits found in the 900 Series single door freezers.

-10 to -40°C Upright and Chest Freezers

Choose our 7000 Series upright freezers or 8600 Series -40°C chest freezers for applications requiring storage between -10 and -40°C. Select from 13 cu. ft., 17 cu. ft., 23 cu. ft. (368, 490, 651L) uprights or 3 cu. ft., 12 cu. ft., 17 cu. ft. and 20 cu. ft. (85, 360, 481, 566L) chest freezers. Models are available with optional chart recorders and backup systems.

-86°C Chest Freezers

Do you require a -86°C chest freezer configuration? Select from our 3 cu. ft., 12 cu. ft., 17 cu. ft. and 20 cu. ft. (85, 360, 481, 566L) 8600 Series cabinets to meet a wide variety of storage needs. Models are available with optional chart recorders and back-up systems.

ultimate protection
optimum capacity

Thermo Scientific Forma 88000 Series

There are ultra-low temperature freezers and then there are our new Forma 88000 Series freezers. Built specifically to protect the most critical of samples, our Forma 88000 Series achieve superior thermal performance, safety and security through state-of-the-art engineering.



Performance

Our 88000 Series freezers feature an outstanding BTU (British thermal unit) reserve. This leads to fast door-opening recovery times so that sample integrity isn't compromised.[1]



Safety and Security

The highlight of our 88000 Series freezers is an innovative, touch-screen user interface. Here you can control all freezer settings and user authority levels as well as monitor the freezer's health 24/7 and access a detailed event log. Need a record? Simply download a report of the current event log to a portable drive via a built-in USB port.



Energy-Savings

Save up to 15% in energy usage with our energy-savings mode* or choose our high-performance mode for applications requiring ultra-tight temperature uniformity.

1. Based on internal performance data. Data on file. May, 2011.
*Compared to high-performance mode.





Sample Storage Capacity

Laboratories come in all shapes and sizes, often creating a dilemma for the amounts of samples requiring protection. Our 88000 Series freezers meet that challenge with five sizes, featuring outstanding capacity per footprint specifications.[1]

designed for ultimate sample protection

Maximize temperature uniformity, space and minimize energy use

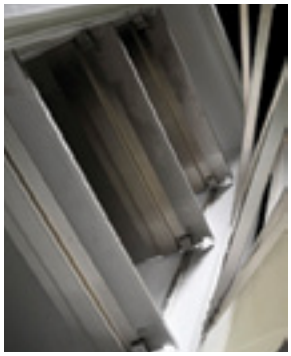
- **High-tech construction** combines vacuum panel insulation with environmentally-friendly, water-blown foam insulation for maximum sample-to-vial footprint storage.
- **Environmentally-friendly, CFC/HCFC free refrigerants.**
- **Remote alarm contacts and 4-20 milliamp** output compatible with external alarm and monitoring systems.
- **Two rear access, 1-inch (2.5cm) ports** allow for the use of external probes or instrumentation.
- **Power management system** protects against a wide range of voltage variation and is easily accessible through the touch-screen display.
- **New refrigeration system with high-efficiency compressors** for outstanding performance and reliability. Brazed plate heat exchanger for more efficient heat transfer. Induction brazed joints to reduce leak potential and improve reliability.
- **Pressure Equalization Port (PEP)** allows for quick re-entries after door openings.





NEW Optional hands-free locking option

Proximity card access control for enhanced security. On-board computer records who opened the door, when it occurred and for how long.



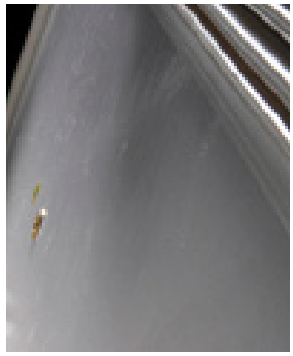
NEW reinforced shelves

Store up to 278 lbs. of cargo (depending on freezer model) on each of our reinforced, stainless steel shelving.



NEW inner doors

Four polystyrene insulated inner doors help maintain cabinet temperature during openings and feature embedded rare earth magnets, eliminating exposed latches or magnets.



NEW outer door gaskets

4x7 heated gasket provides four touchpoints of security and seven zones of protection, maximizing cabinet temperature and eliminating frost build-up.



Information at your fingertips

New touch-screen user interface provides access to vital freezer information including event log, settings and user profiles.

Optional LN_2 and CO_2 back-up systems

Provide three control points of additional protection to ensure maximum sample protection

On-board data storage

Store up to 15 years worth of temperature and event data on our on-board computer.

Easily exchange data

Use the new USB port to download freezer temperature and event log data or freezer settings from one freezer to another.

Single-hand operation

Easy-to-use, padlock-compatible, ergonomic door handle with integrated key lock.

Optional chart recorder

Seven day, 6" (15.2cm) chart recorder for validation and regulatory requirements.

Easy-to-remove, washable filter

Provides protection from dust on the condenser, increasing refrigeration performance and decreasing risk to samples.

Simplified installation

With our new easy-roll 2" (5.1cm) locking casters.

more samples
less freezer footprint

Our Forma 88000 Series freezers maximize sample storage capacity while minimizing the freezer's physical space inside your lab. Space concerns are common in laboratories throughout the world and that's why we offer five models to accommodate your storage as well as your footprint requirements.

Store 20% more samples in 19% less space with our new Forma 88300.

Store 30,000 2mL vials in our new 88000 compared with 24,000 in the previous generation freezers.



New 88300
14.9 cu. ft. (421L)
Holds 30,000 vials
Previous Forma
13 cu. ft. (368L)
Held 24,000 vials



Save 20% in space with our new Forma 88400.

Store 40,000 2mL vials in our new 88400 in less footprint compared to previous generation freezers.



New 88400
19.4 cu. ft. (548L)
Holds 40,000 vials
Previous Forma
23 cu. ft. (651L)
Held 40,000 vials



Each box represents twenty 2" cryoboxes

Store up to 118,300 vials in a single freezer

Working together with the 88000 Series' innovative cabinet design, our vacuum insulation panel technology increases the internal storage capacity of 2-inch vials over the previous generation Forma freezers. And, by using Thermo Scientific CryoBank tubes, you gain up to 76% more storage capacity for high-density storage.*

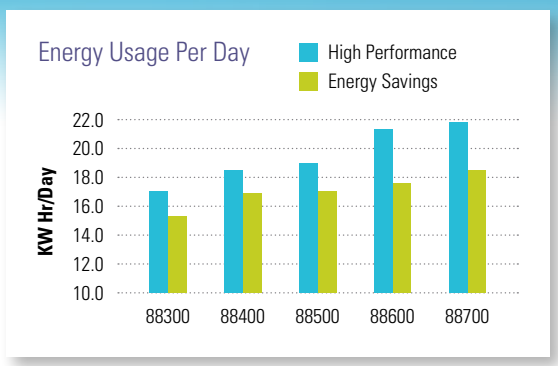
Freezer Model	Area Footprint (Nominal)	2-inch Boxes	3-inch Boxes	2mL Tubes	CryoBank™ 1mL Tubes
88300	7.05 sq. ft. (0.65 m^2)	300	225	30,000	50,700
88400	8.46 sq. ft. (0.79 m^2)	400	300	40,000	67,600
88500	9.92 sq. ft. (0.92 m^2)	500	375	50,000	84,500
88600	11.38 sq. ft. (1.06 m^2)	600	450	60,000	101,400
88700	12.85 sq. ft. (1.19 m^2)	700	525	70,000	118,300

*Based on internal data. Data on file. May, 2001.

your choice of refrigeration

For customers who require the strictest tolerances, our high-performance mode provides the tightest temperature uniformity. For most applications, our energy-savings mode offers excellent temperature control, plus up to 15% savings on energy usage.*





High-Performance[1]

- Outstanding temperature uniformity and peak variation from setpoint
- Designed with GMP applications in mind

Energy-Savings[1]

- Excellent temperature uniformity
- Up to 15% energy savings over high-performance mode

By controlling the temperature and time of the cycles, the energy-savings mode can save up to 15% while still offering tightly-controlled cabinet temperature and excellent door-opening recovery. The high-performance mode maintains the strictest cabinet temperature control.

*Comparison of energy-savings and high-performance mode.
1. Based on internal data. Data on file. May, 2011.

sample protection
at your fingertips

You can check your freezer's "health" at any time by simply touching the heart icon on the main screen. Here, you will see the freezer's temperature, alarms and freezer system status.



Health monitoring system

- **If the heart is blue**, your freezer is in good health, protecting your samples.
- **If the heart changes to yellow**, something needs to be addressed. The yellow heart provides indications of system status, battery alerts, preventative maintenance reminders, ambient alerts and unacknowledged alarms.
- **A red heart indicates there is a problem.** Should this occur, you will be notified with visual and audible alarms. Conditions causing a red heart include warm and cold alarms, door open alarms and power failure.



Who is using this freezer?

Our freezers have multiple security levels to fit your lab requirements.

- **No access control required?** Use our fully accessible mode and the freezer will operate like any other.
- **Do you need to restrict who can change setpoints?** Use our secure mode where you can designate different types of users.

General users can operate all aspects of the freezer but do not have access to change settings. Administrators can change freezer and alarm setpoints, as well as add or delete users.



What happened, when, where?

Because each of your samples are precious, we've developed an intuitive event log as part of the 88000 Series' touch-screen interface. And, you can easily export your event log data via the built-in USB port to Microsoft™ Excel®. Simply insert your drive into the USB outlet and touch the download icon.



Don't open the door: here's what's going on inside...

If at any time you want to know what's going on inside the freezer, you don't need to open the door (despite our excellent recovery times). The following are just a finger stroke away:

- **Alarm status:** Including active alarms and past events.
- **Door opening status:** How many door openings and length of time the door was open.
- **Temperature status:** What is the actual temperature? When was the freezer at its warmest and coldest? Need more detail? Simply press the thermometer icon to get the temperature status at 8 points in the freezer or refrigeration system.
- **Environmental conditions:** See a summary of the ambient temperature and the incoming electrical voltage.
- **Back-up system status:** CO_2 or LN_2 is actively injecting into the freezer. "Green" means good; "Red" signifies to fill the back-up now.





Do you have multiple freezers on-site?

No problem! You can load the data from one freezer to the next via the USB drive. This simple action takes the freezer setpoint and user database from one freezer to another.

Thermo Scientific Forma 88000 Series specifications and ordering information


88300


88400


88500


88600


88700

Thermo Scientific Forma 88000 Series Upright Freezers (Temperature Range: -50°C to -86°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps/Breaker (Plug)	Max. Shelf Weight lbs. (kg)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
88300A	14.9 (421)	300	115V / 60 Hz	16/20 (NEMA 5-20)	125 (56.8)	51.23 x 17.78 x 28.29 (130.11 x 45.16 x 71.86)	78.0 x 27.0 x 37.6 (198.1 x 68.6 x 95.5)	667 (303)
88300D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
88300V			230V / 50 Hz	12/15 (European)				
88400A	19.4 (548)	400	115V / 60 Hz	16/20 (NEMA 5-20)	165 (73.4)	51.23 x 23.13 x 28.29 (130.11 x 58.74 x 71.86)	78.0 x 32.4 x 37.6 (198.1 x 82.2 x 95.5)	730 (332)
88400D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
88400V			230V / 50 Hz	12/16 (European)				
88500A	24.1 (682)	500	115V / 60 Hz	16/20 (NEMA 5-20)	205 (91.7)	51.23 x 28.75 x 28.29 (130.11 x 73.03 x 71.86)	78.0 x 38.0 x 37.6* (198.1 x 96.5 x 95.5)	782 (355)
88500D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
88500V			230V / 50 Hz	12/16 (European)				
88600A	28.8 (815)	600	115V / 60 Hz	16/20 (NEMA 5-20)	245 (110.1)	51.23 x 34.38 x 28.29 (130.11 x 87.31 x 71.86)	78.0 x 43.6 x 37.6* (198.1 x 110.8 x 95.5)	854 (388)
88600D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
88600V			230V / 50 Hz	12/16 (European)				
88700D	33.5 (949)	700	208-230V / 60 Hz	16/20 (NEMA 6-15)	285 (128.4)	51.23 x 40.0 x 28.29 (130.11 x 101.60 x 71.86)	78.0 x 49.2 x 37.6* (198.1 x 125.1 x 95.5)	951 (432)
88700V			230V / 50 Hz	12/15 (European)				

*Door opening clearance is 34.5" (86cm) for 88500, 88600 and 88700.

Freezer Performance

Model No.	Energy Consumption (kW-hour/day)*		Peak Variation from -80°C Setpoint (°C)**	Door Opening Recovery (minutes)	Warm-up Time (-50°C to -80°C (minutes)***
	Energy Savings Mode	High Performance Mode			
88300	15.3	17	+5.5/-6.4	13	213
88400	16.9	18.5	+5.6/-5.3	20	225
88500	17	19	+3.8/-5.6	28	237
88600	17	21.3	+2.9/-4.9	33	240
88700	18.5	21.8	+2.2/-5.5	39	241

*Energy Calculation: Average data based on internal testing with freezer setpoint at -80°C and ambient temperature at 25°C
**Peak Variation From Setpoint: Average data based on internal testing with freezer setpoint at -80°C and ambient temperature at 25°C
***Warm up time: Average data based on internal testing with freezer setpoint at -80°C and ambient temperature at 25°C

Options (Field-installed must be installed by a qualified professional)

Description		For 88300	For 88400	For 88500	For 88600	For 88700
LN_2 Backup System Maintains temperature down to -80°C with liquid nitrogen; models for UxF300 are stand alone	Factory Installed	N/A	LN4567	LN4567	LN4567	LN4567
	Field Installed	FLN300A* FLN300D* FLN300V* FLN300W*	FLN4567	FLN4567	FLN4567	FLN4567
CO_2 Backup System Maintains temperature down to -67°C with CO_2; models for UxF300 are stand alone	Factory Installed	N/A	CO4567	CO4567	CO4567	CO4567
	Field Installed	FCO300A* FCO300D* FCO300V* FCO300W*	FCO4567	FCO4567	FCO4567	FCO4567
Chart Recorder 6" (150mm), seven day inkless recorder, to -150°C	Factory Installed	N/A	CR4567	CR4567	CR4567	CR4567
	Field Installed	6283-6A* 6283-6D* 6283-6V* 6283-6W*	FCR400FTH	FCR567FTH	FCR567FTH	FCR567FTH
Access Key Option Card access control; Includes five key cards	Factory Installed	RAC34567	RAC34567	RAC34567	RAC34567	RAC34567
	Field Installed	FRAC34567	FRAC34567	FRAC34567	FRAC34567	FRAC34567

*A = 115V/60 Hz (NEMA 5-20 plug), D = 208-230V/60 Hz (NEMA 6-15 pllug), V = 230V/50 Hz (EU plug), W = 230V/50 Hz (British plug)



Liquid Handling

Thermo Scientific Finnpipette Manual and Automated Liquid Handling

We offer a broad range of handheld and automated pipetting systems with a reputation for combining simplicity, comfort and functionality with ergonomic design.

For more information and to order, visit **www.thermoscientific.com/finnpipette**

Accessories

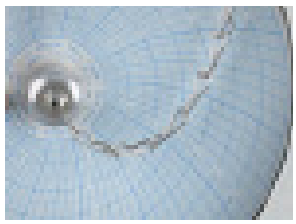
Description	For 88300	For 88400	For 88500	For 88600	For 88700
Shelf Kit Includes one shelf and clips	SK300	SK400	SK500	SK600	SK700
Access Key Pack (U.S.) Includes five cards; supports ISO15693 Protocol	ACU34567	ACU34567	ACU34567	ACU34567	ACU34567
Access Key Pack (EU) Includes five cards; supports ISO14443 Protocol	ACE34567	ACE34567	ACE34567	ACE34567	ACE34567
Chart Paper – Inkless (pack of 50)	N/A	6185	6185	6185	6185
Replacement Air Filter	AF34567	AF34567	AF34567	AF34567	AF34567
Replacement Back-Up Battery	400159	400159	400159	400159	400159
Cryo Gloves® Medium	4425	4425	4425	4425	4425
Cryo Gloves Large	4426	4426	4426	4426	4426
Alarm Delay Module eliminates noisy alarms due to intermittent or transitory conditions. Adjustable delay requires alarm condition to exist for user defined period before signal is released to monitoring system.	6903	6903	6903	6903	6903

Plug Configurations (Choose our standard or speciality plugs to configure your freezer to meet local requirements)

Type	Model No.	Plug Description	Reference
Standard	US125V20A	NEMA 5-20	
	US230V15A	NEMA 6-15	
	EU230V16A	Continental EU	
Specialty	IT230V16A	Italy	
	UK230V13A	Great Britain	
	IN230V16A	India	
	IS230V16A	Israel	
	AU230V16A	Australia	
	CH230V16A	China	
	DK230V16A	Denmark	
	AR230V16A	Argentina	
	SW230V16A	Switzerland	
	BR230V16A	Brazil	



Cryo Gloves



Inkless Chart Paper



Access Key Option



Shelf Kit

Thermo Scientific Forma 88000 Series Racking specifications and ordering information

2" Box Racks

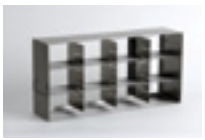




Model No. Description	Dimensions H x W x D in. (cm)	Storage	88300	88400	88500	88600	88700
920090 Sliding drawer rack for 2" boxes	11.9 x 5.5 x 26.3 (30.2 x 14 x 66.8)	Boxes Per Rack	25	25	25	25	25
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Boxes Per Freezer	300	400	500	600	700
1950520 Adjustable side access rack for 2" boxes	10.9 x 5.4 x 26.5 (27.7 x 13.7 x 67.3)	Boxes Per Rack	25	25	25	25	25
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Boxes Per Freezer	300	400	500	600	700

3" Box Racks

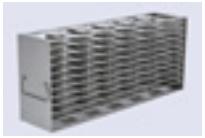




Model No. Description	Dimensions H x W x D in. (cm)	Storage	88300	88400	88500	88600	88700
920091 Sliding drawer rack for 3" boxes	11.9 x 5.5 x 26.3 (30.2 x 14 x 66.8)	Boxes Per Rack	15	15	15	15	15
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Boxes Per Freezer	225	300	375	450	525
1950521 Adjustable side access rack for 3" boxes	10.9 x 5.4 x 26.5 (27.7 x 13.7 x 67.3)	Boxes Per Rack	15	15	15	15	15
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Boxes Per Freezer	180	240	320	360	420

Microplate Racks







Model No. Description	Dimensions H x W x D in. (cm)	Storage	88300	88400	88500	88600	88700
1950642 Sliding Drawer Microplate Rack for Standard or Deepwell Plates	11.9 x 5.5 x 26.3 (30.2 x 14 x 66.8)	Plates Per Rack	35	35	35	35	35
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Plates Per Freezer	420	560	700	840	980
1950523 Side Access Microplate Rack for Standard Plates	11.9 x 5.5 x 25.7 (30.2 x 14 x 65.3)	Plates Per Rack	105	105	105	105	105
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Plates Per Freezer	1505	1540	1925	2310	2695
1950592 Side Access Std / Deepwell Mircoplate Rack with locking rod	11.9 x 5.5 x 25.7 (30.2 x 14 x 65.3)	Plates Per Rack	147	147	147	147	147
		Racks Per Shelf	3	4	5	6	7
		Racks Per Freezer	12	16	20	24	28
		Plates Per Freezer	1764	2352	2940	3528	4116

Racking Shelf Kits

(Includes Sliding Drawer Racks and 2" Boxes With 100 Count Cell Dividers)

		88300	88400	88500	88600	88700
Order Number		RSK300SD4	RSK400SD4	RSK500SD4	RSK600SD4	RSK700SD4
Shelf Kit 2" box inventory	Racks Included	3	4	5	6	7
Includes sliding drawer rack and 2" boxes with 100 cell dividers	2" Boxes Included	75	100	125	150	175

Boxes and Dividers



Fiberboard Boxes
Water repellent cardboard box
2" high box (50mm) 5.3" x 5.3" (13.5 x 13.5cm)

Part Number	Quantitiy	Dividers
5954	12.0	None
820002	1.0	81
820109	1.0	100



Fiberboard Boxes
Water repellent cardboard box
3" high box (80mm) 5.3" x 5.3" (13.5 x 13.5cm)

Part Number	Quantitiy	Dividers
5954	12.0	None
820003	1.0	81

Fiberboard Grid Dividers

Part Number	Quantitiy	Dimensions	Holds
5958	12	10 x 10, 0.49" cell	100 – 12mm vials
820100	1		
6212	12	9 x 9, 0.54" cell	81 – 13mm vials
820081	1		
5960	12	8 x 8, 0.61" cell	64 –14mm vials
820064	1		
5959	12	7 x 7, 0.7" cell	49 – 16mm vials
820049	1		
820025	1	5 x 5, 0.98" cell	25 vials
820016	1	4 x 4, 1.22" cell	16 vials

Smart. Scalable. Simple.

Thermo Scientific Smart-Vue*

Trust Smart-Vue,™ a complete and simplified wireless monitoring solution to monitor critical samples stored inside your ultra-low temperature freezer. Smart-Vue monitor features audit trail traceability to assist with conformance to 21 CFR part 11 and other regulatory requirements while safeguarding critical samples.

Intelligent plug and play simplicity

- Intuitive dashboard
- Flexible operation
- Precise monitoring
- Data traceability and security
- Numerous configuration capabilities
- Central monitoring system



For more information, contact your sales representative.
Smart-Vue is not available in all Radio Frequency (RF) regions.

*Smart-Vue wireless monitoring kits are designed for first time users monitoring critical temperature parameters in ultra-low temperature freezers. Smart-Vue modules and sensors are available for temperature, RH, CO_2 concentration, differential pressure, 4-20mA output, ambient conditions and alarm/relay dry contacts. Solutions vary by RF regions worldwide and are compatible with multiple types of laboratory equipment. Please ask your sales representative to evaluate a Smart-Vue wireless monitoring solution that best meets your specific needs.

daily dependability

Thermo Scientific Forma 900 and Forma 7000 Series

Our Forma 900 and Forma 7000 Series upright freezers are designed for daily sample protection and dependability. Choose our 900 Series for applications requiring -50ºC to -86ºC or our 7000 Series when your storage requirements call for -10ºC to -40ºC.



Energy-efficient, double door option:
Available within our 900 Series is a unique double door option. Store frequently used samples in the top chamber while long-term storage remain undisturbed in the bottom.

Rugged construction for everyday use

- Heavy gauge, cold-rolled steel cabinets with a powder coat paint finish for a uniform exterior that resists chipping and rust.
- 5" (12.7cm) foamed-in-place, polyurethane insulation.
- State-of-the-art, refrigeration system improves temperature control, increases reserve capacity, for more stable temperature sample.
- Two 1" (2.5cm) access ports enable use of inexpedient probes.
- Stainless steel interior (900 Series) or glaveneel interior (7000 Series) with sturdy stainless steel shelving.
- Vacuum relief port permits easy access after door openings.
- Easy-to-remove washable filter provides protection from dust on the condenser, increasing refrigeration performance.
- Single-hand operation with an easy-to-use, padlock-compatible, ergonomic door handle with integrated key lock.
- Simplified installation with our new easy-roll 2" (5cm) locking casters.

Secure inner doors

- Four inner doors reduce cold air loss and improve temperature recovery after door openings.

Centralized information center

- Microprocessor control and monitoring system ensure that all controls and displays are easy to reach and read.
- Power management system with low voltage surge protection and buck/boost.
- Optional choice of CO_2 or LN_2 safety back-up systems for additional sample protection in the event of a power or mechanical failure.

Forma 900 Series -86°C freezer



Forma 900 Series -86°C freezers Available in four sizes: 13, 17, 23 and 28 cu ft (368, 490, 651, 793L) to accommodate your specific lab space and capacity requirements.

Centralized information system ensures that all controls and displays are easy to reach and read.*

*Pictured with optional chart recorder)make small footnote type)

Forma 7000 Series -40°C freezer



Forma 7000 Series -40°C freezers Available in three sizes 13, 17 and 23 cu ft (368, 490, 651L) to accommodate your specific lab space requirements. Features knee level, easy-to-use microprocessor control panel.

Thermo Scientific Forma 900 and Forma 7000 Series specifications and ordering information

Thermo Scientific Forma 900 Series Upright Freezers (Temperature Range: -50°C to -86°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps/Breaker (Plug)	Max. Shelf Weight lbs. (kg)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
903	13.0 (368)	240	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 19.3 (130.8 x 58.4 x 49.0)	77.9 x 33.3 x 32.9 (197.9 x 84.6 x 83.6)	696 (316)
909			208-230V / 60 Hz	12/16 (NEMA 6-15)				
902			230V / 50 Hz	12/16 (European)				
904	17.3 (490)	320	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 25.3 (130.8 x 58.4 x 64.3)	77.9 x 33.3 x 38.9 (197.9 x 84.6 x 98.9)	763 (346)
910			208-230V / 60 Hz	12/16 (NEMA 6-15)				
905			230V / 50 Hz	12/16 (European)				
956	23.0 (651)	400	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 30.6 x 25.3 (130.8 x 77.7 x 64.3)	77.9 x 40.8 x 38.9 (197.9 x 103.6 x 98.9)	900 (408)
957			208-230V / 60 Hz	12/16 (NEMA 6-15)				
906			230V / 50 Hz	12/16 (European)				
908	28.0 (793)	600	208-230V / 60 Hz	16/20 (NEMA 6-15)	125 (57)	51.5 x 36.6 x 27.0 (130.8 x 93.0 x 68.6)	77.9 x 46.8 x 38.9 (197.9 x 118.9 x 98.9)	1070 (485)
907			230V / 50 Hz	12/16 (European)				

Thermo Scientific Forma 900 Series Double-Door Upright Freezers (Temperature Range: -50°C to -86°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps/Breaker (Plug)	Max. Shelf Weight lbs. (kg)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
992	13.0 (368)	216	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 19.3 (130.8 x 58.4 x 49.0)	77.9 x 33.3 x 32.9 (197.9 x 84.6 x 83.6)	696 (316)
986			208-230V / 60 Hz	12/16 (NEMA 6-15)				
991			230V / 50 Hz	12/16 (European)				
993	17.3 (490)	288	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 25.3 (130.8 x 58.4 x 64.3)	77.9 x 33.3 x 38.9 (197.9 x 84.6 x 98.9)	763 (346)
988			208-230V / 60 Hz	12/16 (NEMA 6-15)				
994			230V / 50 Hz	12/16 (European)				
990	23.0 (651)	360	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 30.6 x 25.3 (130.8 x 77.7 x 64.3)	77.9 x 40.8 x 38.9 (197.9 x 103.6 x 98.9)	900 (408)
989			208-230V / 60 Hz	12/16 (NEMA 6-15)				
995			230V / 50 Hz	12/16 (European)				

Thermo Scientific Forma 7000 Series Upright Freezers (Temperature Range: -10°C to -40°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps/Breaker (Plug)	Max. Shelf Weight lbs. (kg)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
7240A	13.0 (368)	240	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 19.3 (130.8 x 58.4 x 49.0)	77.9 x 33.3 x 32.9 (197.9 x 84.6 x 83.6)	696 (316)
7240D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
7240V			230V / 50 Hz	12/16 (European)				
7320A	17.3 (490)	320	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 23.0 x 25.3 (130.8 x 58.4 x 64.3)	77.9 x 33.3 x 38.9 (197.9 x 84.6 x 98.9)	763 (346)
7320D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
7320V			230V / 50 Hz	12/16 (European)				
7400A	23.0 (651)	400	115V / 60 Hz	16/20 (NEMA 5-20)	125 (57)	51.5 x 30.6 x 25.3 (130.8 x 77.7 x 64.3)	77.9 x 40.8 x 38.9 (197.9 x 103.6 x 98.9)	900 (408)
7400D			208-230V / 60 Hz	12/15 (NEMA 6-15)				
7400V			230V / 50 Hz	12/16 (European)				

Options (Field-installed must be installed by a qualified professional)

Description		Model No.
LN_2 Backup System Maintains temperature down to -80°C with liquid nitrogen	Factory Installed	1950447
	Field Installed	1950448
CO_2 Backup System Maintains temperature down to -70°C with CO_2	Factory Installed	1950445
	Field Installed	1950446
Ink Chart Recorder 6" (150mm), seven day inkless recorder, to -150°C. Includes one red felt tip pen and box of chart paper (qty. 50)	Factory Installed	201241
	Field Installed	201240
Inkless Chart Recorder 6" (150mm), seven day inkless recorder, to -150°C. Includes box of chart paper (qty. 50)	Factory Installed	201249
	Field Installed	201248
Unique Key Lock	Factory Installed	195915
PT100 Sensor – Optional PT100 sensor for connection to building automation systems	Factory Installed	290199

Accessories

Description	Model No.
Replacement Air Filter – Pack of five filters	195890
Ink Chart Paper (pack of 50)	17020
Inkless Chart Paper (pack of 50)	18000
Replacement Back-Up Battery	400159
Red Felt Tip Chart Pen	245231
Blue Felt Tip Chart Pen	245232
Cryo Gloves Medium	4425
Cryo Gloves Large	4426
LN_2 Transfer Hose Flexible 6' metal hose. 0.5" diameter, 45° flare with swivel ends	4000401
Wall Clamp CO_2 cylinder holder for securing tank to the wall in accordance with OSHA guidelines	950316
High-Pressure Liquid CO_2 Hose Kink-resistant, stainless steel lined, double-braided shealth. 316 stainless steel NPTF fitting. Max. working pressure 25,000 psig. 6' long	991505

Water-Cooled Condenser Option

Model No.	For Use With
195964	13 cu. ft./368L
195965	17.3, 23, 28 cu. ft./490, 651, 793L)

The water-cooled condenser option is available on our -86°C freezers.

Your work environment stays cooler because 50% less heat is emitted to your surroundings (i.e. less BTU rejection). A water regulating valve automatically controls the water flow needed to maintain the compressor discharge pressure. Cooler compressor temperatures enhance compressor stability and reliability.

Like our standard freezers, those with the water-cooled condenser options are also UL listed to Canadian and United States requirements and bear the CE mark.

The following specifications apply to tower and city water sources:*

Water Pressure and Temperature
Maximum Pressure: 150 psig
Maximum Temperature: 29.4°C

Connections
Inlet: 0.5" compression
Outlet: 0.5" compression

Water Flow Rate Required (per minute)
Tower Water: 3.0 gal. (11.4L)
City Water: 1.0 gal. (3.8L)

Drain Required?
Tower Water: No (return line)
City Water: Yes

Installation requires a qualified technician and should include proper adjustment of the regulating valve which controls the discharge pressure.

*Actual requirements may vary due to specific water pressure conditions.

Monitoring and Remote Alarms

Description	Voltage	Model No.
Remote Alarm with Audible Signal Extend the freezers on-board alarms systems to remote locations in the facility.	120V / 60 Hz	400011
Remote Alarm with Audible and Visual Signal Extend the freezers on-board alarms systems to remote locations in the facility. Come with audible alarm silence swtich and alarm ringback feature	120V / 60 Hz	400040
	230V / 50 Hz	400041
Sensaphone® Telephone Dialing System Monitors up to four channels; Dials up to four numbers (not CE). Dedicated phone line is required	120V / 60 Hz	400047
	220V / 50Hz	400182
Sensaphone Telephone Dialing System Monitors up to eight channels; Dials up to eight numbers (not CE). Dedicated phone line is required	120V / 60 Hz	400134
	220V / 50Hz	400183
Temperature / Power Monitor External Digital and audible / visual alarms monitor temperature and power supply of the freezer. Includes temperature probe	120V / 60 Hz	400048
	220V / 50Hz	400049



Remote Alarm with Audible Signal



Remote Alarm with Audible / Visual Signal



Sensaphone® Telephone Dialing System



Temperature / Power Monitor

Alternate Cord and Plug Options

Model No.	Plug Description
430266	115V/20A Twist Lock Plug (NEMA L5-20P)
430267	230V/15A Twist Lock Plug (NEMA L6-15P)

Racks (single door freezers; bottom half of double door freezers)

2" Box Racks	Model No. Description	Dimensions H x W x D in. (cm)	Storage	13 cu. ft. (368L)	17.3 cu. ft. (490L)	23 cu. ft. (651L)	28 cu. ft. (793L)
	**920094** Sliding drawer rack	11.9 x 5.5 x 16.6 (30.2 x 14 x 44.2)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	15 4 16/240			
	**920096** Sliding drawer rack	11.9 x 5.5 x 22 (30.2 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		20 4 16/320	20 5 20/400	
	**920090** Sliding drawer rack	11.9 x 5.5 x 26.3 (30 x 14 x 66.5)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer				25 6 24/600
	**920015** Adjustable side access rack	10.9 x 5.5 x 16.5 (27.7 x 14 x 41.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	15 4 16/240			
	**920018** Adjustable side access rack	10.9 x 5.5 x 22 (27.7 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		20 4 16/320	20 5 20/400	
	**920022** Side access rack	10.9 x 5.5 x 24.6 (27.7 x 14 x 62.5)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		22 4 16/352	22 5 20/440	
3" Box Racks							
	**920095** Sliding drawer rack	11.9 x 5.5 x 16.6 (30.2 x 14 x 44.2)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	9 4 16/144			
	**920097** Sliding drawer rack	11.9 x 5.5 x 22 (30 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		12 4 16/192	12 5 20/240	
	**920091** Sliding drawer rack	11.9 x 5.5 x 26.3 (30 x 14 x 66.5)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer				15 6 24/360
	**920009** Adjustable side access rack	10.9 x 5.5 x 16.5 (27.7 x 14 x 41.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	9 4 16/144			
	**920017** Adjustable side access rack	10.9 x 5.5 x 22 (27.7 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		12 4 16/192	12 5 20/240	
Microplate Racks							
	**1950640** Sliding drawer rack	11.9 x 5.5 x 16.6 (30.2 x 14 x 44.2)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer	20 4 16/320			
	**1950641** Sliding drawer rack	11.9 x 5.5 x 22 (30.2 x 14 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		30 4 16/480	30 5 20/600	
	**1950642** Sliding drawer rack	11.9 x 5.5 x 26.3 (30.2 x 14 x 66.8)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer				35 6 24/840
	**1950651** Side access rack	11.9 x 5.3 x 14.7 (30.2 x 13.5 x 37.3)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer	56 4 16/896			
	**1950652** Side access rack	11.9 x 5.3 x 22 (30.2 x 13.5 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		4 16/1344	5 20/1680	
	**820036** Side access rack with locking rod	12 x 5.5 x 22 (30.5 x 14 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		4 16/0	5 20/0	
Specialty Racks							
	**830012** Multi-drawer rack	11.5 x 11 x 11 (29.2 x 28 x 28)	Racks Per Shelf/Freezer	1/4	2/8	4/16	
	**830030** 8 compartment container	5.3 x 7 x 18 (13.5 x 17.8 x 45.7)	Racks Per Shelf/Freezer	6/24			
	**830032** 10 compartment container	5.3 x 7 x 22.6 (13.5 x 18 x 57.4)	Plates Per Rack		6/8	24/32	

Racks (upper half of double door freezers)

2" Box Racks	Model No. Description	Dimensions H x W x D in. (cm)	Storage	13 cu. ft. (368L)	17.3 cu. ft. (490L)	23 cu. ft. (651L)	28 cu. ft. (793L)
	**398332** Sliding drawer rack	9.4 x 5.5. x 16.6 (23.9 x 14 x 42.2)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	12 4 16/192			
	**398331** Sliding drawer rack	9.4 x 5.5. x 22 (23.9 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		16 4 16/256	16 5 20/320	
	**398329** Sliding drawer rack	9.4 x 5.5. x 26.3 (23.9 x 14 x 66.8)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer				20 6 24/480
	**398324** Adjustable side access rack	9.4 x 5.5. x 16.5 (23.9 x 14 x 41.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	12 4 16/192			
	**398326** Adjustable side access rack	9.4 x 5.5. x 22 (23.9 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		16 4 16/256	16 5 20/320	
3" Box Racks							
	**920099** Sliding drawer rack	9.5 x 5.5 x 16.5 (24 x 14 x 41.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	9 4 16/144			
	**398330** Sliding drawer rack	9.5 x 5.5 x 22 (24 x 14 x 55.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		12 4 16/192	12 5 20/240	
	**398328** Sliding drawer rack	9.5 x 5.5 x 26.3 (24 x 14 x 66.8)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer				15 6 24/360
	**398325** Adjustable side access rack	9.4 x 5.4 x 16.1 (23.9 x 13.7 x 40.9)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer	9 4 16/144			
	**398327** Adjustable side access rack	9.4 x 5.4 x 22.1 (23.9 x 13.7 x 56.1)	Boxes Per Rack Racks Per Shelf Racks/Boxes Per Freezer		12 4 16/192	12 5 20/240	
Microplate Racks							
	**1950637** Sliding drawer rack	9.5 x 5.5 x 16.6 (24 x 14 x 42.2)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer	16 4 16/256			
	**1950638** Sliding drawer rack	9.5 x 5.5 x 22 (24 x 14 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		24 4 16/384	24 5 20/480	
	**1950639** Sliding drawer rack	9.5 x 5.5 x 26.3 (24 x 14 x 66.8)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer				28 6 24/672
	**398334** Side access rack	9.4 x 5.3 x 14.7 (23.9 x 13.5 x 37.3)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer	44 4 16/704			
	**398333** Side access rack	9.4 x 5.3 x 22 (23.9 x 13.5 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		66 4 16/1056	66 5 20/1320	
	**398335** Side access rack for deepwell microplates	9.4 x 5.3 x 22 (23.9 x 13.5 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		30 4 16/480	30 5 20/600	
	**398321** Side access rack with locking rod	9.4 x 5.5 x 18.4 (23.9 x 14 x 46.7)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		4 16/0	5 20/0	
	**398323** Side access rack with locking rod	9.4 x 5.5 x 22 (23.9 x 14 x 55.9)	Plates Per Rack Racks Per Shelf Racks/Plates Per Freezer		4 16/0	5 20/0	

versatile and reliable

Thermo Scientific Forma 8600 Series

Our Forma 8600 Series chest freezers feature all the sample protection features of our 900 and 7000 Series upright freezers. Choose a -86ºC or -40ºC cabinet in four convenient sizes as well as a full range of racking solutions.

Rugged construction for everyday use

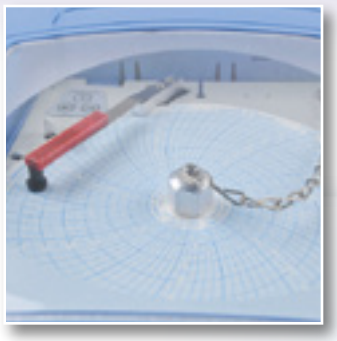
- Heavy gauge, cold-rolled steel cabinets with a powder coat paint finish for a uniform exterior that resists chipping and rust.
- 5" (12.7cm) foamed-in-place, polyurethane insulation reduces power consumption, maintains temperature setpoint and combined with triple-point door gasket, provides longer holding time in the event of a power failure.
- State-of-the-art, refrigeration system improves temperature control and increases reserve capacity, resulting in a more stable temperature sample.
- 1" (2.5cm) access ports allow for the use of independent probes or instrumentation.
- Stainless steel interior



Easy-to-remove washable filter

Provides protection from dust on the condenser, increasing refrigeration performance and decrease risk to samples.







Microprocessor control

Easy-to-read centralized information center features microprocessor control and monitoring system with a 12-character, alphanumeric LED display showing setpoints and other messages. Knee level on the 3 cu. ft. (85L) models.

Optional chart recorder

Optional built-in chart recorder can be installed at waist level; knee level on our 3 cu. ft. (85L) models.

RS-232 and 4-20 milliamp analog outputs

For independent monitoring



Polystyrene interior sub-lids

Reduce cold air loss and improve temperature recovery after door openings.

Single-hand operation

Easy-to-use, ergonomic door handle.

Simplified installation

With our new easy-roll 2" (5.1cm) locking casters.

Thermo Scientific Forma 8600 Series specifications and ordering information

Thermo Scientific Forma 8600 Series Chest Freezers (Temperature Range: -50°C to -86°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps / Breaker (Plug)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
803CA	3.0 (84.9)	63	120V / 60 Hz	10.5/20 (NEMA 5-20)	16.5 x 18.5 x 18.5 (41.9 x 47.0 x 47.0)	43.8 x 28.5 x 29.9 (111.3 x 72.4 x 75.9)	432 (196)
803CV			230V / 50 Hz	5.4/15 (European)			
813CA	12.7 (359.6)	252	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 42.5 x 18.5 (71.1 x 108.0 x 47.0)	40.5 x 72.0 x 33.4 (102.9 x 182.9 x 84.8)	716 (325)
813CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
813CV			230V / 50 Hz	12/15 (European)			
817CA	17.0 (481.4)	348	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 58.8 x 18.5 (71.1 x 149.4 x 47.0)	40.5 x 87.6 x 33.8 (102.9 x 222.5 x 85.9)	821 (372)
817CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
817CV			230V / 50 Hz	12/15 (European)			
820CA	20.0 (566.3)	396	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 66.5 x 18.5 (71.1 x 168.9 x 47.0)	40.5 x 96.0 x 33.4 (102.9 x 243.8 x84.8)	833 (378)
820CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
820CV			230V / 50 Hz	12/15 (European)			

Thermo Scientific Forma 8600 Series Chest Freezers (Temperature Range: -10°C to -40°C)

Model No.	Capacity cu. ft. (liters)	Cryobox Capacity 2 in.	Electrical	Amps / Breaker (Plug)	Interior Dimensions H x W x D in. (cm)	Exterior Dimensions H x W x D in. (cm)	Shipping Weight lbs. (kg)
703CA	3.0 (84.9)	63	120V / 60 Hz	10.5/20 (NEMA 5-20)	16.5 x 18.5 x 18.5 (41.9 x 47.0 x 47.0)	43.8 x 28.5 x 29.9 (111.3 x 72.4 x 75.9)	395 (179)
703CV			230V / 50 Hz	5.4/15 (European)			
713CA	12.7 (359.6)	252	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 42.5 x 18.5 (71.1 x 108.0 x 47.0)	40.5 x 72.0 x 33.4 (102.9 x 182.9 x 84.8)	659 (299)
713CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
713CV			230V / 50 Hz	12/15 (European)			
717CA	17.0 (481.4)	348	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 58.8 x 18.5 (71.1 x 149.4 x 47.0)	40.5 x 87.6 x 33.8 (102.9 x 222.5 x 85.9)	764 (347)
717CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
717CV			230V / 50 Hz	12/15 (European)			
720CA	20.0 (566.3)	396	115V / 60 Hz	16/20 (NEMA 5-20)	28.0 x 66.5 x 18.5 (71.1 x 168.9 x 47.0)	40.5 x 96.0 x 33.4 (102.9 x 243.8 x84.8)	776 (352)
720CD			208-230V / 60 Hz	12/15 (NEMA 6-15)			
720CV			230V / 50 Hz	12/15 (European)			

Options (Field-installed must be installed by a qualified professional)

Description		ULT390 ULT350	ULT1390 ULT1350	ULT1790 ULT1750	ULT2090 ULT2050
LN_2 Backup System Maintains temperature down to -80°C with liquid nitrogen.	Factory Installed	1950447			
	Field Installed	1950448			
CO_2 Backup System Maintains temperature down to -70°C with CO2	Factory Installed	1950445			
	Field Installed	1950446			
Chart Recorder 6" (150mm), seven day ink recorder, to -150°C includes 50 chart papers	Factory Installed	201241			
	Field Installed	201240			
Data Outputs (Factory Installed Only)	RS-232 (0-1V)	398213			
	RS-485 (0-1V)	398214			
	RS-485 (0-5V)	398215			
Water-Cooled Condenser Option (See page 19 for details)	Factory Installed	N/A	195967		

Accessories

Description	ULT390 ULT350	ULT1390 ULT1350	ULT1790 ULT1750	ULT2090 ULT2050
Replacement Air Filter (pack of five)	195947	195948		
Ink Chart Paper (pack of 50)	17020			
Inkless Chart Paper (pack of 50)	18000			
Replacement Back-Up Battery	400159			
Red Felt Tip Chart Pen	245231			
Blue Felt Tip Chart Pen	245232			
LN_2 Transfer Hose Flexible 6' metal hose. 0.5" diameter, 45° flare with swivel ends	4000401			
Wall Clamp CO_2 cylinder holder for securing tank to the wall in accordance with OSHA guidelines	950316			
High-Pressure Liquid CO_2 Hose Kink-resistant, stainless steel lined, double-braided shealth. 316 stainless steel NPTF fitting. Max. working pressure 25,000 psig. 6' long	991505			
Cryo Gloves Medium	4425			
Cryo Gloves Large	4426			



For Cryoboxes and Dividers please refer to page 15.

Monitoring and Remote Alarms

Description	Voltage	Model No.
Remote Alarm with Audible Signal Extend the freezer's on-board alarms systems to remote locations in the facility.	120V / 60 Hz	400011
Remote Alarm with Audible and Visual Signal Extend the freezer's on-board alarms systems to remote locations in the facility. Comes with audible alarm silence swtich and alarm ringback feature	120V / 60 Hz	400040
	230V / 50 Hz	400041
Sensaphone Telephone Dialing System Monitors up to four channels; Dials up to four numbers (not CE). Dedicated phone line is required	120V / 60 Hz	400047
	220V / 50Hz	400182
Sensaphone Telephone Dialing System Monitors up to eight channels; Dials up to eight numbers (not CE). Dedicated phone line is required	120V / 60 Hz	400134
	220V / 50Hz	400183
Temperature / Power Monitor External digital and audible/visual alarms monitor temperature and power supply of the freezer. Includes temperature probe	120V / 60 Hz	400048
	220V / 50Hz	400049

Thermo Scientific Forma 8600 Series Chest Freezer Racks

Model No. Description	Dimensions W x H x D in. (cm)	Freezer Vol. cu. ft. (liters)	Boxes Per Rack	Racks / Freezer	Boxes / Freezer
398184 2" Box Rack	5.5 x 16 x 5.5 (14 x 40.6 x 14)	3 (85)	7.0	9.0	63
398186 2" Box Rack	5.5 x 26.5 x 5.5 (14 x 67.3 x 14)	12.7 (360)	12.0	21.0	252
		17.0 (481)	12.0	29.0	348
		20.0 (566)	12.0	33.0	396
398185 3" Box Rack	5.5 x 16 x 5.5 (14 x 40.6 x 14)	3 (85)	5.0	9.0	45
398187 3" Box Rack	5.5 x 26.5 x 5.5 (14 x 67.3 x 14)	12.7 (360)	8.0	21.0	168
		17.0 (481)	8.0	29.0	232
		20.0 (566)	8.0	33.0	264
398188 27 Position Microplate Rack	5.3 x 25.8 x 3.5 (13.5 x 65.5 x 8.9)	12.7 (360)	27.0	33.0	891
		17.0 (481)	27.0	48.0	1,296
		20.0 (566)	27.0	51.0	NA
114048 Wire Basket with Rollers	11.8 x 12.3 x 16.5 (30 x 31.2 x 42)	(360)	NA	5.0	NA
		(566)	NA	9.0	NA
189001 Wire Basket Rail Set	NA	12.7 (360)	NA	NA	NA
189000 Wire Basket Rail Set	NA	20.0 (566)	NA	NA	NA



398184



398186



398185



398187

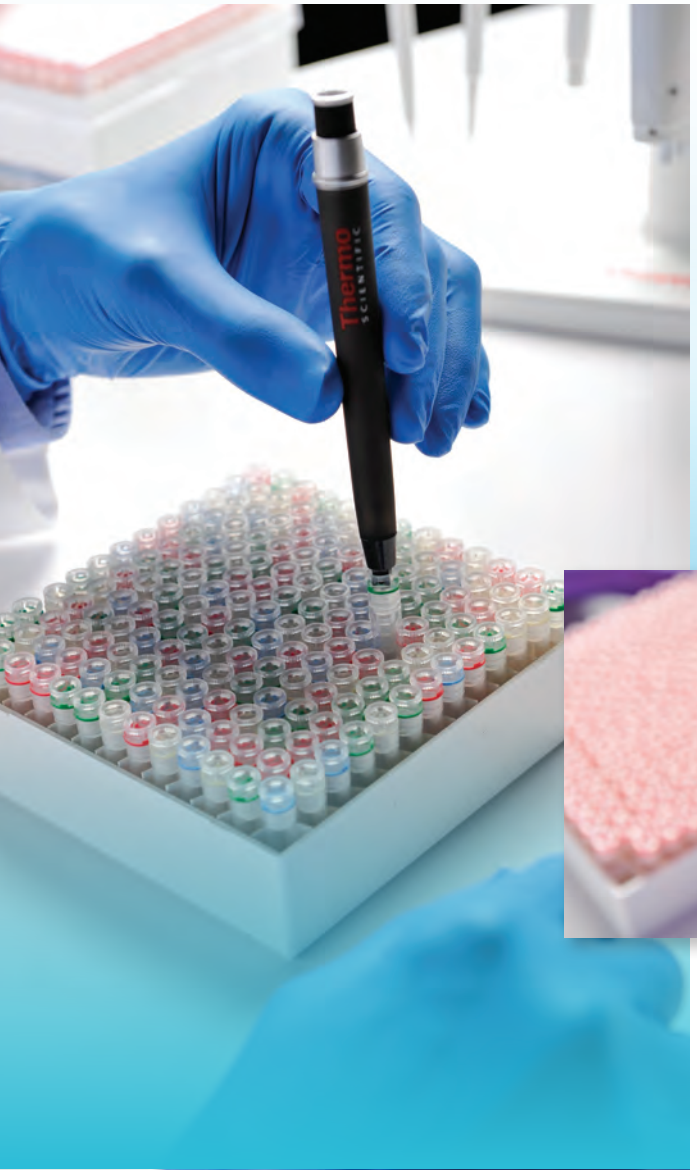


398188



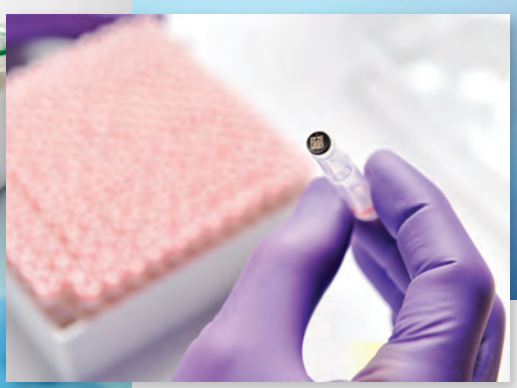
114048

Thermo Scientific Nunc Cryobank Vials



Thermo Scientific Nunc Cryobank vials are a natural companion to our ultra-low temperature freezers. Both have been designed to maximize sample protection as well as sample space. The vials' 2D barcode is easily read by instruments, offering safe sample identification and reading of entire racks in one process.

In addition, our Cryobank™ systems provide the highest density cryovial available: you can actually store up to 118,300 vials inside our 33.5 cu. ft. (948.7L) freezer. Plus Thermo Scientific Nunc tubes conveniently click into their storage compartments with ease and can be handled without the risk of an accidental drop – yet one more reason why your samples deserve the outstanding quality and protection of Nunc storage products. For more information, visit www.thermoscientific.com/densestorage.





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