Thermo Scientific Forma®
-86°C Ultra-Low Temperature
Chest and Upright Freezers

**Proven reliablity and performance
for your peace of mind**

Thermo
SCIENTIFIC

Reliable Chests & Uprights

Tested Ultra-Low Temperature Freezers You Can Trust

Researchers worldwide depend on Forma -86°C ULT Freezers everyday for drug preservation; vaccine, critical enzyme, hormone, and tissue preservation; antibiotics manufacturing; pre-lyophilization; thermal shock testing; and dimensional conditioning of parts. Thermo Electron Corporation's broad -86°C ULT freezer line includes the premium 8600 Series and deluxe 900 Series, so you can choose the freezer features, style, and capacity that meet your specific requirements.

Everyday reliability for peace of mind.

Our -86°C ULT freezers are designed for everyday reliability and minimal maintenance so you can focus on your work, not on the freezer's functioning.

Proven performance for worry-free workdays.

Rugged cabinet construction and quieter operation, a carefully designed refrigeration system and controlled airflow, and a voltage compensator and back-up system result in freezers that provide peak performance day-after-day.

Easy to use...by design!

Our chest and upright freezer design enhances usability. The centralized information center on 8600 and 900 Series uprights is eye-level for at-a-glance monitoring. Powerful, intuitive Enviro-Scan® controls (8600 Series) are common to other Forma named products. Interior is easy to clean and air filter is easy to access and change. Ergonomically-designed handles ease door openings. An array of accessories (e.g., digital dataloggers, chart recorders, sample probes, inventory management systems, CO_2 and LN_2 back-ups) allow you to take full advantage of each freezer's maximum capacity and tailor the unit to your needs.

Range of capacities, including a 28.0 cu. ft. upright that holds 60,000* 2.0ml vials!

THREE SERIES

MULTIPLE STYLES & SIZES

- Single & double door uprights, & chests
- Uprights: 13.0, 17.3, 23.0, & 28.0 cu. ft. (368.1, 489.9, 651.3, & 792.8 liters) Chests: 3.0, 12.7, 17.0 & 20.0 cu. ft. (84.9, 359.6, 481.4 & 566.3 liters)

*Based on a 28.0 cu. ft. (792.8 liters) -86°C ULT freezer, 2.0ml vial size, No. 820010 polycarbonate boxes, and No. 920090 sliding drawer racks. Refer to our *Thermo Scienitific Forma -40°C and -86°C Freezer Accessories* brochure for details about boxes, racks, and other accessories.

Everyday Reliability for Peace of Mind

Experience the peace of mind of safe sample storage, an improved refrigeration system and temperature control, and the ultimate convenience of a ULT freezer designed with your work habits in mind.

Our Forma -86°C ULT freezers are designed to perform reliably day after day, letting you focus on your work, not on freezer operation or maintenance.

Proven Performance for Worry-Free Workdays

Our chests and uprights are constructed and stress tested to operate efficiently at a temperature range of -50°C to -86°C.

Rugged Cabinet Construction for Everyday Use

- Heavy gauge, cold-rolled steel cabinets have a powder coat paint finish for a uniform exterior surface that resists chipping and rust.

- Maximum product protection is provided by approximately 5.0" (127mm) of foamed-in-place polyurethane insulation in the cabinet that

    – reduces the amount of power consumed

    – allows the cabinet to reach and maintain the temperature setpoint

    – prevents condensation from forming on the cabinet exterior

- Four interior compartment doors in uprights and polystyrene sub-lid(s) in chests reduce cold air loss, improving temperature recovery after door closings. Five door option is available for uprights.

- Triple-point silicone gasket and latch/handle on uprights and flexible gasket on chests ensure a snug seal that

    – helps assure product protection

    – minimizes ambient temperature and humidity migration to the interior, reducing maintenance because less frost builds up on the inner doors and chest sub-lid(s)

    – provides an energy efficient thermal barrier to keep cold air in and room temperature air out, contributing to safe product storage and reducing wear and tear on the compressors because they don't have to operate as often

Quieter Operation for a Comfortable Working Environment

You spend many hours surrounded by lab equipment. We want those hours to be as comfortable and productive as possible.

Uprights include acoustical mufflers designed into the base and sound absorbing foam that work together to reduce noise level, ensuring quiet operation for more comfortable working conditions. The mufflers are tuned specifically for the audible sound frequencies generated.

Automatic Voltage Compensator for Longer Compressor Life

Automatic voltage compensator detects the line frequency (50 or 60 Hz) and monitors the incoming voltage. Based on that data, the automatic voltage compensator dynamically adjusts compressor voltage.

- Monitoring/controlling the voltage

    – ensures that a more consistent electrical current flows to the freezer, reducing wear and tear on the compressor(s)

    – increases compressor life by maintaining reliability over a wide voltage range

    – prevents incorrect voltage from being applied to the freezer's fan(s) and compressors (e.g., ensures use of the correct electrical outlet)

DOUBLE DOOR DESIGN

It's a unique design! Store frequently used specimens and samples in the top chamber, while long-term storage items remain undisturbed in the bottom.

Because cold air "falls," this design (8600 and 900 Series) stabilizes the bottom chamber's temperature, providing product protection during repeated upper door openings and making freezer sharing more feasible.

U.S. Patents 5,600,966 and 5,737,939

Carefully Designed Refrigeration System for Peak Performance

Our combination of engineering expertise; the latest energy efficient, non-CFC refrigerants; and a leading worldwide manufacturer's compressors achieve peak freezer performance and maximum reliability over a wide ambient temperature range.
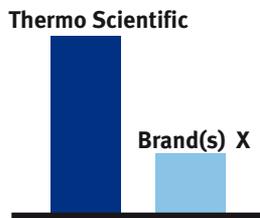
The fully tested refrigeration system improves temperature control for more consistent temperature cycling and increases reserve BTUH capacity, resulting in a more stable temperature for safer product storage.

- Refrigerant expansion tank (U.S. Patent 6,539,735) in the 17.3, 23.0, and 28.0 cu. ft. (489.9, 651.3, and 792.8 liters) uprights increases reserve BTU capacity, ensuring faster temperature recovery after door closings (see the charts below).

- Hermetic compressors designed to our quality requirements provide improved product protection, better temperature recovery times, and increased heat removal per kilowatt of energy used.

Controlled Airflow for Increased Cooling

Ambient air enters the front of the grille and passes through the filter, condenser, and compressor housing and then exits the rear of the unit. An air filter and condenser fans protect and enhance the longevity of the compressors, saving downtime and minimizing maintenance costs.

Overall, the front-to-back air circulation system results in cooler compressor temperatures, increased performance and reliability, and longer compressor life.

Thermo Scientific

Brand(s) X

Our upright freezers have three times the reserve BTUH capacity of other brands.

Back-Up Systems and Data Monitoring Devices for Added Peace of Mind

All freezers include a battery back-up system that provides power to the monitoring/alarm system in the event of a power failure. The system is designed to always have the battery back-up at a full charge without special programming.

While on back-up, freezer cabinet temperature and alarm conditions are monitored. The heavy-duty battery requires no maintenance.

- Optional CO_2 and LN_2 safety back-up systems are available to provide additional product protection in the event of a power or mechanical failure.

- Optional built-in chart recorder or digital datalogger can be installed at eye level on 8600, 900 Series freezers and on the base of 700 Series freezers for continuous monitoring.

Dataloggers and optional evaluation software, which calculates Mean Kinetic Temperature (MKT), are designed to meet U.S. FDA guidelines cGLP 21 CFR Part 58, Software Validation 21 CFR Part 820, and Electronic Records 21 CFR Part 11. Full compliance requires user training. Contact our Services Department (888-213-1790) for an implementation quotation.

- Freezers include remote alarm contacts for connection to an in-house security system, optional remote alarm system, or Sensaphone® Telephone Dialing System.
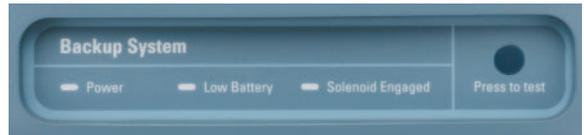
RESERVE BTUH CAPACITY

To illustrate the meaning of reserve BTUH capacity, the Reserve Capacity Comparison graph shows the temperature rise and recovery time when eight two-liter bottles of room temperature water were added to the freezer.

Our upright freezers recover temperature quicker and have three times the reserve BTUH capacity of other brands.
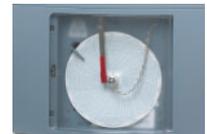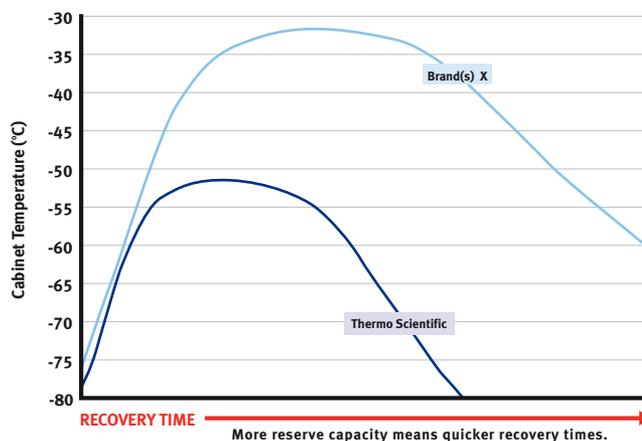
RESERVE CAPACITY COMPARISON

Cabinet Temperature (°C)

Brand(s) X

Thermo Scientific

RECOVERY TIME

More reserve capacity means quicker recovery times.

Easy to Use...by Design!

Sleek design of the uprights and updated appearance of the chests focus on functionality and ease of use to ensure convenience and time savings.

Easy-to-Clean Interior Designed for a Full Product Load

- Easy to clean interior. 8600 and 900 Series freezers feature a stainless steel interior. 700 Series freezers feature a powder coated galvannealed interior.

- Sturdy, solid stainless steel shelving to support a full product load. 8600 and 900 Series uprights include three fully adjustable shelves. 700 Series uprights include three fixed position shelves.

  We offer a wide range of inventory control systems so you can take full advantage of available freezer space. Ask for details, or visit our web site.

- Air filter's convenient location allows quick visual inspection of the filter's condition. Hinged grille swings out for convenient access to the filter, which can be removed easily for cleaning or replacement.

Easy-to-Grasp Handle for One-Handed Operation

Ergonomically-designed handle on chests and uprights ensures that minimal effort is required during freezer openings and closings.

- You can hold samples in one hand while opening or closing the freezer with the other.

- Cam-actuated latch/handle on uprights is mounted to the door rather than to the cabinet, serving as a comfortable handle when the door is open.

- Heated vacuum relief port on uprights equalizes the pressure quickly, allowing easy re-entry after a door closing.

- Key lock prevents unwanted access to your valuable samples.

- For added security, an audible/visual alarm occurs if the door or lid is not closed properly.

Easy-to-Reach Controls and Easy-to-Monitor Displays

All freezers feature a centralized information center. Eye level location on 8600 and 900 Series freezers makes it easy to view freezer parameters and conditions from across the lab. (700 Series controls are in the base.)

- Convenient position of an optional recorder or datalogger on 8600 and 900 Series freezers ensures easy monitoring and paper changes.

- Storage pocket on 8600 Series uprights tilts forward, serving as a handy, centralized location for daily logs, IQ/OQ procedures, inventory control records, or the freezer's operating and maintenance manual.

Thermo Scientific Premium 8600 Series Uprights and Chests for Ultimate Convenience and Performance

8600 Series upright and chest freezers are designed for pharmaceutical, biotech, and blood bank applications, and any other industry that requires validation.

- RS-232 and 4-20 milliamp analog outputs are standard. RS-232 allows connection to a computer, recorder, or independent monitoring device. Output configurations other than the RS-232, 4-20 milliamp default are available (i.e., RS-485 or RS-232, and 0-1V, 4-20 milliamp, or 0-5V).

- Optional sample probe in the top chamber of 8600 Series uprights measures sample temperature or top chamber temperature, assuring you of the sample temperature or uniformity between the top and bottom of the freezer.

Enviro-Scan for Easy Setup, Programming, and Monitoring

The centralized information center, which includes the Enviro-Scan Microprocessor Control/Monitoring System (shown below) and an optional chart recorder or datalogger, ensures that all controls and displays are easy to reach and read.

- Highly visible display, intuitive controls, and simplified programming make it easy to set up, program, check, and monitor parameters and conditions.

- Personal access code ensures setpoint security.

- Numerous audible/visual alarms (e.g., power failure, high/low temp, door ajar, condenser hot, probe failure, etc.) offer peace-of mind monitoring.

Temperature – Displays actual and sample probe (optional) temperatures

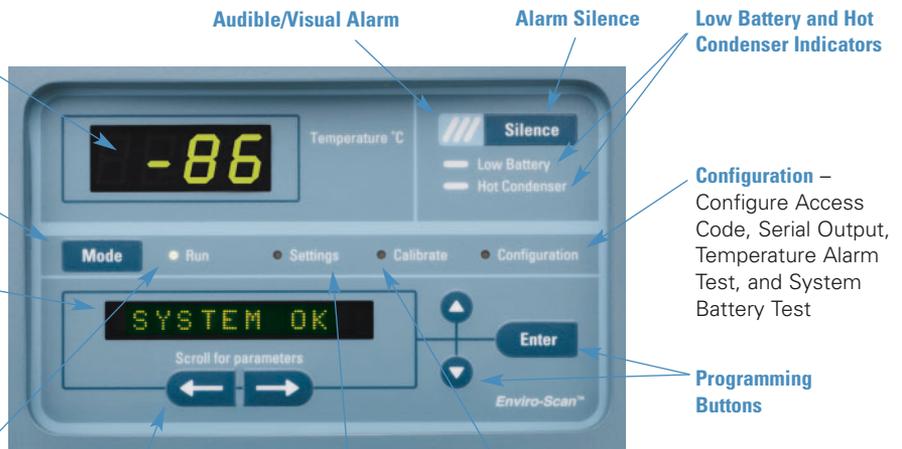**Mode** – Select Run, Settings, Calibrate, or Configuration mode

Message Center – 12-character alpha-numeric LED displays setpoints, "SYSTEM OK" during normal operation, and other messages

Run – "SYSTEM OK" appears in the message center during normal operation; message changes to describe alarm conditions

Scroll for Program Parameters

Audible/Visual Alarm

Alarm Silence

Low Battery and Hot Condenser Indicators

Configuration – Configure Access Code, Serial Output, Temperature Alarm Test, and System Battery Test

Programming Buttons

Settings – Set Cabinet Temp Setpoint, Overtemp Alarm, Undertemp Alarm, and Back-Up System Temp Setpoint (optional)

Calibrate – Calibrate Control Probe Temp and Sample Probe Temp (optional)

8600 Series

- Single door uprights: 13.0, 17.3, 23.0, & 28.0 cu. ft. (368.1, 489.9, 651.3, & 792.8 liters)

- Double door uprights: 13.0, 17.3, & 23.0 cu. ft. (368.1, 489.9, & 651.3 liters)

- Chests: 12.7 & 20.0 cu. ft. (359.6 & 566.3 liters); refer to the 700 Series section for 3.0 & 17.0 cu. ft. (84.9 & 481.4 liters) chests

Thermo Scientific 8600 Series Freezer Specifications

Specifications	Single Door Uprights	Double Door Uprights	Chests
Temperature Range	-50°C to -86°C	-50°C to -86°C	
Capacities & Models - order by model number			
Uprights:			
13.0 Cu. Ft. (368.1 liters)	8603 (8602)	8692 (8691)	–
17.3 Cu. Ft. (489.9 liters)	8604 (8605)	8693 (8694)	–
23.0 Cu. Ft. (651.3 liters)	8656 (8606)	8690 (8695)	–
28.0 Cu. Ft. (792.8 liters)	(8607)	–	–
Chests:			
12.7 Cu. Ft. (359.6 liters)	–	–	8615 (8612)
20.0 Cu. Ft. (566.3 liters)	–	–	8621 (8620)
Exterior Dimensions (H x W x D)			
Single & Double Door Uprights:			
13.0 Cu. Ft. (368.1 liters)	77.8" x 33.3" x 31.0" (1976 x 846 x 787mm)	–	
17.3 Cu. Ft. (489.9 liters)	77.8" x 33.3" x 37.0" (1976 x 846 x 940mm)	–	
23.0 Cu. Ft. (651.3 liters)	77.8" x 40.8" x 37.0" (1976 x 1036 x 940mm)	–	
28.0 Cu. Ft. (792.8 liters)	77.8" x 46.8" x 37.0" (1976 x 1189 x 940mm)	–	
Chests:			
12.7 Cu. Ft. (359.6 liters)	–	–	40.5" x 72.0" x 28.8" (1029 x 1829 x 732mm)
20.0 Cu. Ft. (566.3 liters)	–	–	40.5" x 96.0" x 28.8" (1029 x 2438 x 732mm)
Interior Dimensions (H x W x D)			
Single & Double Door Uprights:			
13.0 Cu. Ft. (368.1 liters)	51.5" x 23.0" x 19.3" (1308 x 584 x 490mm)	–	
17.3 Cu. Ft. (489.9 liters)	51.5" x 23.0" x 25.3" (1308 x 584 x 643mm)	–	
23.0 Cu. Ft. (651.3 liters)	51.5" x 30.6" x 25.3" (1308 x 777 x 643mm)	–	
28.0 Cu. Ft. (792.8 liters)	51.5" x 36.6" x 27.0" (1308 x 930 x 686mm)	–	
Chests:			
12.7 Cu. Ft. (359.6 liters)	–	–	28.0" x 42.5" x 18.5" (711 x 1080 x 470mm)
20.0 Cu. Ft. (566.3 liters)	–	–	28.0" x 66.5" x 18.5" (711 x 1689 x 470mm)
Clearance Requirements*	Add 3.4" (86mm) to W for latch/hinge and 7.0" (178m) to D for control panel bezel/wall spacer		Add 7.9" (201mm) for wall spacer/handle
Refrigeration HP	Two 1 HP (2545 BTUH each)		Two 1 HP (2545 BTUH each)
Insulation			
Type	Non-CFC, foamed-in-place polyurethane		Non-CFC, foamed-in-place polyurethane
Quantity	Approx. 5.0" (127mm) cabinet, 4.5" (114mm) door		Approx. 5.0" (127mm) cabinet, 2.0" (51mm) lid; sub-lids: 1.0" (25mm) polystyrene
Estimated Kilowatts / 24 Hours**			
	8602/8691: 16, 8605/8694: 17, 8604/8693: 21, 8656/8690: 22 8606/8695/8607 @ 208V: 18, 8602/8692/8607 @ 230V: 19		8612: 12, 8618 @ 208V: 18, 8619: 14 8615/8620: 15, 8621 @ 230V: 19
Electrical, Breaker Requirements, & Plug			
	8603/8604/8656 and 8692/8693/8690: 120V, 60 Hz, 16.0 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-20P Plug		8615/8618/8621: 120V, 60 Hz, 16.0 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-20P Plug
	8602/8605/8606/8607 and 8691/8694/8695: 230V, 50/60 Hz, 12.0 FLA (Operating range 208-240V); 15 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 6-15P Plug		8612/8619/8620: 230V, 50/60 Hz, 12.0 FLA (Operating range 208-240V); 15 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 6-15P Plug
Warranty**	Lifetime cabinet warranty, which includes the cabinet, evaporator, and door(s)/lid. Two year parts and labor warranty with three additional years on the compressors, parts only.		

Weight	Net	Shipping (Motor)	
Single & Double Door Uprights:			
13.0 Cu. Ft. (368.1 liters)	605 lbs. (274.4 kg)	712 lbs. (323.0 kg)	
17.3 Cu. Ft. (489.9 liters)	690 lbs. (313.0 kg)	795 lbs. (360.6 kg)	
23.0 Cu. Ft. (651.3 liters)	755 lbs. (342.5 kg)	900 lbs. (408.2 kg)	
28.0 Cu. Ft. (792.8 liters)	821 lbs. (372.4 kg)	980 lbs. (444.5 kg)	
Chests:			
12.7 Cu. Ft. (359.6 liters)	545 lbs. (247,2 kg)	716 lbs. (324.8 kg)	
20.0 Cu. Ft. (566.3 liters)	650 lbs. (294.8 kg)	833 lbs. (377.8 kg)	

All units, including those with the water-cooled condenser option, are UL Listed to United States and Canadian requirements and bear the CE Mark.

*Upright freezers pass through a 34.0" (864mm) wide doorway with door open, front panel past 180 degrees, and rolling the freezer from side-to-side.

**At -80°C, 23°C (73.4°F) ambient, 50 percent product load

***Extended warranties and preventive maintenance agreements are available. Customers within the U.S. can call 888-213-1790 for details about warranties. Those outside the U.S. should contact their local distributor.

Thermo Scientific Deluxe 900 Series Uprights for Daily Dependability

900 Series upright freezers are designed for universities, research facilities, and industrial institutions where easily adjusted shelves, easy-to-access controls, and convenient at-a-glance monitoring are preferred.

Eye Level Information Center for At-a-Glance Monitoring

The centralized information center, which includes a microprocessor control/monitoring system and an optional chart recorder or datalogger, ensures that all controls and displays are easy to reach and read.

Alarms (alarm/maintenance indicators) – Monitor freezer conditions (i.e., power failure, high or low temperature, probe failure, door open, low battery, hot condenser, and wrong power)
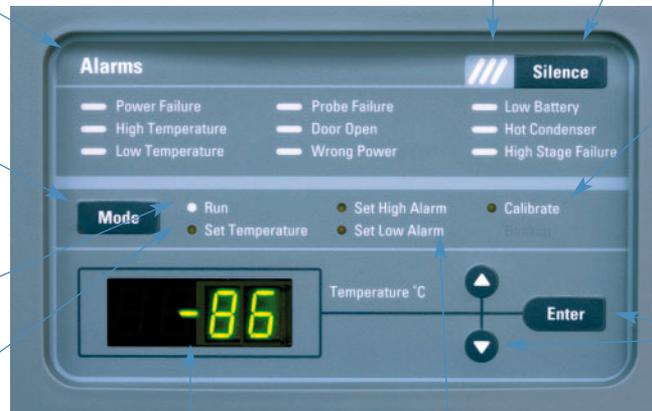
Audible/Visual Alarm

Alarm Silence

Mode – Select Run, Set Temp, Set High Alarm, Set Low Alarm, Calibrate, or optional Back-Up mode

Calibrate – Set control probe parameters

Run – Used during typical freezer operation

Set Temperature – Used to assign the setpoint

Temperature Display

Set High Alarm and Set Low Alarm – Used to define overtemp and undertemp setpoints

Programming Buttons

900 SERIES

- Single door uprights: 13.0, 17.3, 23.0, & 28.0 cu. ft. (368.1, 489.9, 651.3, & 792.8 liters)

- Double door uprights: 13.0, 17.3, & 23.0 cu. ft. (368.1, 489.9, & 651.3 liters)

Thermo Scientific 900 Series Freezer Specifications

Specifications	Single Door Uprights	Double Door Uprights
Temperature Range	-50°C to -86°C	-50°C to -86°C
Capacities & Models - order by model number		
13.0 Cu. Ft. (368.1 liters)	903 (902)	992 (991)
17.3 Cu. Ft. (489.9 liters)	904 (905)	993 (994)
23.0 Cu. Ft. (651.3 liters)	956 (906)	990 (995)
28.0 Cu. Ft. (792.8 liters)	(907)	–
Exterior Dimensions (H x W x D)		
13.0 Cu. Ft. (368.1 liters)	77.8" x 33.3" x 31.0" (1976 x 846 x 787mm)	77.8" x 33.3" x 31.0" (1976 x 846 x 787mm)
17.3 Cu. Ft. (489.9 liters)	77.8" x 33.3" x 37.0" (1976 x 846 x 940mm)	77.8" x 33.3" x 37.0" (1976 x 846 x 940mm
23.0 Cu. Ft. (651.3 liters)	77.8" x 40.8" x 37.0" (1976 x 1036 x 940mm)	77.8" x 40.8" x 37.0" (1976 x 1036 x 940mm)
28.0 Cu. Ft. (792.8 liters)	77.8" x 46.8" x 37.0" (1976 x 1189 x 940mm)	77.8" x 46.8" x 37.0" (1976 x 1189 x 940mm)
Interior Dimensions (H x W x D)		
13.0 Cu. Ft. (368.1 liters)	51.5" x 23.0" x 19.3" (1308 x 584 x 490mm)	51.5" x 23.0" x 19.3" (1308 x 584 x 490mm)
17.3 Cu. Ft. (489.9 liters)	51.5" x 23.0" x 25.3" (1308 x 584 x 643mm)	51.5" x 23.0" x 25.3" (1308 x 584 x 643mm)
23.0 Cu. Ft. (651.3 liters)	51.5" x 30.6" x 25.3" (1308 x 777 x 643mm)	51.5" x 30.6" x 25.3" (1308 x 777 x 643mm)
28.0 Cu. Ft. (792.8 liters)	51.5" x 36.6" x 27.0" (1308 x 930 x 686mm)	51.5" x 36.6" x 27.0" (1308 x 930 x 686mm)
Clearance Requirements*	Add 3.4" (86mm) to W for latch/hinge and 7.0" (178m) to D for control panel bezel/wall spacer	
Refrigeration HP	Two 1 HP (2545 BTUH each)	Two 1 HP (2545 BTUH each)
Insulation		
Type	Non-CFC, foamed-in-place polyurethane	Non-CFC, foamed-in-place polyurethane
Quantity	Approx. 5.0" (127mm) cabinet, 4.5" (114mm) door	Approx. 5.0" (127mm) cabinet, 4.5" (114mm) door
Estimated Kilowatts / 24 Hours**		
	903/992 & 907@230V: 19, 902/991: 16, 904/993: 21, 905/994: 17, 906/995 & 907 @ 208V: 18, 956/990: 22	
Electrical, Breaker Requirements, & Plug		
	903/904/956 and 992/993/990: 120V, 60 Hz, 16.0 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-20P Plug	
	902/905/906/907 and 991/994/995: 230V, 50/60 Hz. 12.0 FLA (Operating range 208-240V); 15 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 6-15P Plug	
Warranty**	Lifetime cabinet warranty, which includes the cabinet, evaporator, and door(s). Two year parts and labor warranty with two additional years on the compressors, parts only.	
Weight	**Net**	**Shipping (Motor)**
13.0 Cu. Ft. (368.1 liters)	605 lbs. (274.4 kg)	712 lbs. (323.0 kg)
17.3 Cu. Ft. (489.9 liters)	690 lbs. (313.0 kg)	795 lbs. (360.6 kg)
23.0 Cu. Ft. (651.3 liters)	755 lbs. (342.5 kg)	900 lbs. (408.2 kg)
28.0 Cu. Ft. (792.8 liters)	821 lbs. (372.4 kg)	980 lbs. (444.5 kg)

All units, including those with the water-cooled condenser option, are UL Listed to United States and Canadian requirements and bear the CE Mark.

*Upright freezers pass through a 34.0" (864mm) wide doorway with door open, front panel past 180 degrees, and rolling the freezer from side-to-side.

**At -80°C, 23°C (73.4°F) ambient, 50 percent product load

***Extended warranties and preventive maintenance agreements are available. Customers within the U.S. can call 888-213-1790 for details about warranties. Those outside the U.S. should contact their local distributor.

Thermo Scientific Basic 700 Series Chests for Fundamental Function

The 700 Series chest freezers are designed for clinical and academic institutions that require no-frills functionality.

Temperature Controller and Monitor/Alarm System for Continuous Monitoring

The information center mounted in the freezer base features simplified programmable controls, a temperature display, and an optional chart recorder or datalogger for continuous monitoring.

Alarms (alarm/maintenance indicators) – Monitor freezer conditions (i.e., power failure, high or low temperature, probe failure, door open, low battery, hot condenser, and wrong power)
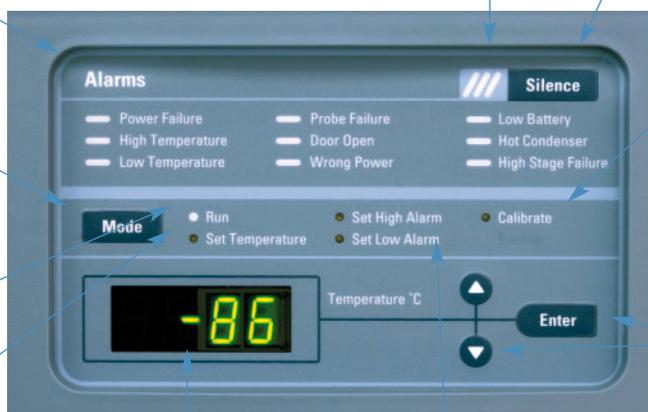
Audible/Visual Alarm

Alarm Silence

Mode – Select Run, Set Temp, Set High Alarm, Set Low Alarm, Calibrate, or optional Back-Up mode

Calibrate – Set control probe parameters

Run – Used during typical freezer operation

Programming Buttons

Set Temperature – Used to assign the setpoint

Temperature Display

Set High Alarm and Set Low Alarm – Used to define overtemp and undertemp setpoints

700 SERIES

• Single door uprights: 13.0, 17.3, & 23.0 cu. ft. (368.1, 489.9, & 651.3 liters)

• Chests: 3.0, 12.7, 17.0, & 20.0 cu. ft. (84.9, 359.6, 481.4, & 566.3 liters)

Thermo Scientific 700 Series Freezer Specifications

Specifications	Single door uprights		Chests	
	Model-Nr.		Model-Nr.	
Temperature Range	-50 °C to -86 °C		-50 °C to -86 °C	
Capacities	703(702)	13.0 Cu. Ft. (368.1 liters)	708 (709)	3.0 Cu. Ft. (84.9 liters)
	704(705)	17.3 Cu. Ft (489.9 liters)	715 (712)	12.7 Cu. Ft. (359.6 liters)
	756(706)	23.0 Cu. Ft. (651.3 liters)	719	17.0 Cu. Ft. (481.4 liters)
			721 (720)	20.0 Cu. Ft. (566.3 liters)
Exterior Dimensions (H x W x D)	703 (702)	77.8" x 33.3" x 31.0" (1976 x 846 x 787 mm)	708 (709)	43.8" x 28.5 x 28.8" (1113 x 724 x 732 mm)
	704 (705)	77.8" x 33.3" x 37.0" (1976 x 846 x 940 mm)	715 (712)	40.5" x 72.0" x 28.8" (1029 x 1829 x 732 mm)
	756 (706)	77.8" x 40.8 x 37.0" (1976 x 1036 x 940 mm)	719	40.5" x 87.6" x 28.8" (1029 x 2225 x 732mm)
			721(720)	40.5" x 96.0" x 28.8" (1029 x 2438 x 732 mm)
Interior Dimensions (H x W x D)	703(702)	51.5" x 23.3" x 19.3" (1308 x 584 x 490 mm)	708(709)	16.5" x 18.5 x 18.5" (419 x 470 x 470 mm)
	704(705)	51.5" x 23.3" x 25.3" (1308 x 584 x 643 mm)	715(712)	28.0" x 42.5" x 18.5" (711 x 1080 x 470 mm)
	756(706)	51.5" x 30.6" x 25.3" (1308 x 777 x 643 mm)	719	28.0" x 58.8" x 18.5" (711 x 1494 x 470 mm)
			721(720)	28.0" x 66.5" x 18.5" (711 x 1689 x 470 mm)
Clearance Requirements *	Add 3.4" (86mm) to W for latch/hinge and 5.5" (140mm) to D for control panel bezel/wall spacer		Add 7.9" (201mm) for wall spacer/handle	
Refrigeration HP	Two 1 HP (2545 BTUH each)		708 (709)	Two 1 HP (2545 BTUH each)
			Other models	Two 1/3 HP (848 BTUH each)
Insulation				
Type	Non-CFC, foamed-in-place polyurethane		Non-CFC, foamed-in-place polyurethane	
Quantity	5.0" (127mm) cabinet, 2.0" (51mm) lid		5.0" (127mm) cabinet, 2.0" (51mm) lid; sub-lids: 1.0" (25mm) polystyrene	
Estimated Kilowatts / 24 Hours**	703 (702)	19(16)	708 (709)	6 (5)
	704 (705)	21(17)	715 (712)	15 (12)
	756 (706)	22(18)	719	14
			721 (720)	219 (15)
Electrical, Breaker Requirements, & Plug	703, 704, 756	115V, 60 Hz, 10.5 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-15P Plug	708	115V, 60 Hz, 10.5 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-15P Plug
	702, 705, 706	230V, 50/60 Hz, 12.0 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA-6-15P Plug	715, 721	120V, 60 Hz, 16.0 FLA (Operating range 108-130V); 20 Amp, Dedicated Circuit, Time Delay Breaker; NEMA 5-20P Plug
			709	230V, 50 Hz, 5.4 FLA (Operating range 208-240V); 15 Amp, Dedicated Circuit, Time Delay Breaker CEE 7/7 Plug
			712, 719, 720	230V, 50/60 Hz, 12.0 FLA (Operating range 208-240V); 15 Amp, Dedicated Circuit, Time Delay Breaker NEMA 6-15P Plug
Warranty***	One year parts and labor warranty with two additional years on the compressors, parts only			
Net Weight	703 (702)	605 lbs. (274.4 kg)	708 (709)	330 lbs. (149.7 kg)
	704 (705)	690 lbs. (313.0 kg)	715 (712)	545 lbs. (247.2 kg)
	756 (706)	755 lbs. (342.5 kg)	719	613 lbs. (278.1 kg)
			721 (720)	650 lbs. (294.8 kg)
Shipping (Motor) Weight	703 (702)	712 lbs. (323.0 kg)	708 (709)	432 lbs. (196.0 kg)
	704 (705)	795 lbs. (360.6 kg)	715 (712)	716 lbs. (324.8 kg)
	756 (706)	900 lbs. (408.2 kg)	719	821 lbs. (372.4 kg)
			721 (720)	833 lbs. (377.8 kg)

All units, including those with the water-cooled condenser option, are UL Listed to United States and Canadian requirements and bear the CE Mark.

**At -80°C, 23°C (73.4°F) ambient, 50 percent product load

***Extended warranties and preventive maintenance agreements are available. Customers within the U.S. can call 888-213-1790 for details about warranties. Those outside the U.S. should contact their local distributor.

Want to Take Full Advantage of Your -86ºC ULT freezer?

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