

# Thermo Scientific TSX Series High-Performance Refrigerators and Freezers

A better environment  
inside and out



Thermo Scientific™  
TSX 1447 liter  
Refrigerator



Thermo Scientific™  
TSX 650 liter  
Freezer



Thermo Scientific™  
TSX 650 liter  
Pharmacy  
Refrigerator



Thermo Scientific™  
TSX 650 liter  
Manual Defrost  
Freezer

# Lab and clinical-grade storage that adapts to you and your environment



Temperature variation can have an impact on the viability and efficacy of vaccines, medication, reagents and other temperature-sensitive materials. These variations can shorten product shelf life, degrade enzymes and reduce vaccine effectiveness. Therefore, it is important to choose a high-performance refrigerator or freezer that has been designed for the demanding standards of the laboratory and clinical environment.

## The sustainable, compliant choice

Thermo Scientific™ TSX Series high-performance refrigerators and freezers are designed with features that support sample protection, sustainability objectives and the EU F-gas regulations. Our V-drive technology is designed to provide temperature uniformity that continually adapts to the lab or clinical environment, offering significant energy savings without compromising protection.

## Whisper quiet operation

Compared to conventional refrigerant, high-performance models<sup>†</sup>, the TSX Series offers a whisper quiet operation, so you can bring the refrigerator or freezer out of the hallway and back into your lab without disrupting your audio environment.

## Energy efficient products

While conventional refrigerant, high-performance refrigerators and freezers can run at very high kWh/day in energy usage, the TSX Series by comparison has been designed to reduce energy usage without compromising performance.

## Application-specific models

Our laboratory refrigerators feature your choice of glass or solid door with adjustable shelves. Freezers come in a choice of auto defrost –30°C or manual defrost –20°C setpoint. For blood banking applications, our plasma freezers are FDA Class I and our blood bank refrigerators are FDA Class II. Our pharmacy refrigerators feature convenient, adjustable basket drawers. And for enzyme storage, our –20°C freezers feature enzyme bins for convenient storage.



Biologics



Whole blood and plasma



Diagnostics kits and reagents



Enzymes



Industrial testing



Molecular biology



Vaccines and pharma



Clinical applications



Columns

# The drive for sample integrity and energy savings

The performance and energy savings of the new TSX Series are driven by our unique **V-drive technology**.

- While conventional, high-performance refrigerators and freezers use single speed compressors that continually cycle on and off, the TSX Series V-drive runs at variable speeds to adjust cooling performance to the conditions inside and outside of the refrigerator or freezer.
- When combined with the automated tuning control, this variable speed drive optimizes the compressors running speed to the current conditions.
- When there are frequent door openings, or samples are added to the refrigerator or freezer, the control system detects the activity and increases the drive speed to bring temperatures back to the set point quickly. This innovative technology is one of the reasons the TSX Series delivers outstanding door opening recovery (DOR) speed, and more peace of mind for busy laboratories.
- When conditions are stable, such as when the unit is running overnight or on weekends, the drive runs at a low speed, reducing energy consumption while maintaining a stable temperature for your samples.

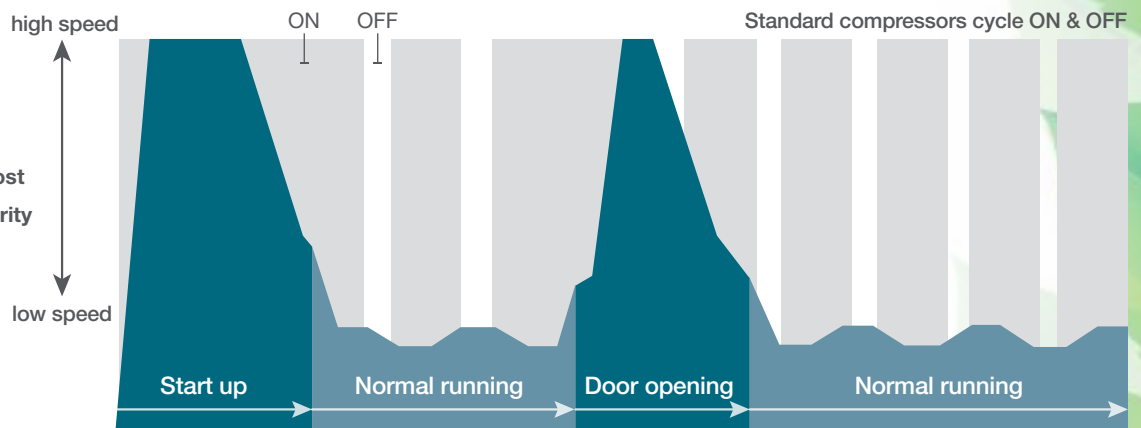
## V-drive

Low energy → **Low operating cost**

Adaptive control → **Sample security**

## Adaptive control

Adapting to your refrigerator or freezer usage patterns, the TSX V-drive increases compressor speed to quickly restore temperature after door openings.



**Variable speed compressors (V-Drive) change speed.** As shown in the above graphic, the TSX V-drive, unlike standard compressors that cycle on and off, adjusts to factors such as start-up and door openings, when a higher compressor speed is needed. During normal running time when the door is closed, the V-drive runs at a lower speed to maintain your setpoint.

# Easy-to-access controls with setpoint security

## Setpoint security

Key-operated triple position switch for main power and alarm; locks in temperature and alarm setpoints to minimize setpoint error and prevent tampering

## Graphic thermometer

Easy to view, shows normal, high or low temperature condition; steady green for normal, flashing top bar for overtemperature, flashing bulb for undertemperature

## Power failure

Illuminated when main power is interrupted

## Service mode

Illuminated when controller is in service programming mode

## Touchpad data entry

Increases or decreases setpoint values in programming modes

## Interior light switch

Enables interior lighting system (on glass door cabinets)



## Automatic defrost system

Defrost sensor manages automatic defrost cycle (except manual defrost models)

## Door ajar

Illuminated when door is left open

## Battery backup

Continuous charge provide full alarm function in case of power failure

## Low battery alarm

Illuminated when the alarm system battery backup charge is low

## Audible alarm

Sounds in the event of warm, cold or power loss conditions. Mute will silence audible alarm with 6 minute ring back interval; display remains flashing



# A sound environment for critical samples

You know that the constant noise created by compressors can compromise communications and create a less than ideal working environment. The new TSX Series is **up to 10X quieter than our previous generation of refrigerators and freezers**.\* Our V-drive technology, combined with superior insulation, limits the sound output of the TSX Series to just **52 dB**, approximately the sound generated by a conventional refrigerator.\*\*

**Decibel scale of common sounds.** Examples of noise levels in decibels

Noise source	Decibel level
Freeway traffic 15M, vacuum cleaner	70
Conversation in restaurant, office, background music	60
<b>TSX Series</b>	<b>52</b>
Library	40
Quiet rural area	30
Rustling leaves	20
Breathing	10

\* Thermo Scientific TSX2304GA compared to Thermo Scientific high-performance 2304A model (non TSX).

\*\* Data on file. October, 2016.



up to  
**10X**  
quieter

## Designed for ergonomic usage

In addition to the significant reduction in sound, the TSX Series features an ergonomically designed door handle featuring soft touch grip and the microprocessor controller is angled to help prevent neck strain.



# TSX Series High-Performance BioMedical Glass Door Refrigerators



Biologics



Diagnostics kits and reagents



Industrial testing



Molecular biology



Vaccines and medications



Clinical applications

Our high-performance glass door refrigerators combine advanced temperature control with high-quality cabinet construction and alarm systems. Positive, forced-air circulation is designed to maintain temperature uniformity to protect important medical and pharmaceutical-products as well as laboratory media, reagents and more.

- Heat-free defrost for maximum temperature uniformity
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Bright, LED interior lighting
- Self-closing door with 90° stop to assist with inventory loads
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 650 liter  
refrigerator

## TSX Series high-performance glass door lab refrigerators

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Shelves	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1205GY	3–7°C (5°C)	11.5 (326)	115V, 60Hz (NEMA 5-15)	1 glass	4	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	30.5 x 24.0 x 73.0 (77.5 x 61.9 x 185.4)	339 (154)
TSX1205GZ			208-230V, 60Hz (NEMA 6-15)							339 (154)
TSX1205GV			208-230V, 50Hz (CEE 7/7)							339 (154)
TSX2305GY	3–7°C (5°C)	23 (650)	115V, 60Hz (NEMA 5-15)	1 glass	4	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.8 x 28.0 x 78.5 (96.0 x 71.1 x 199.4)	450 (204)
TSX2305GZ			208-230V, 50/60Hz (NEMA 6-15)							429 (195)
TSX2305GV			208-230V, 50/60Hz (CEE 7/7)							429 (195)
TSX3005GY	3–7°C (5°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 glass	4	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.3 x 34.0 x 78.5 (94.7 x 86.4 x 199.4)	458 (208)
TSX3005GZ			208-230V, 60Hz (NEMA 6-15)							458 (208)
TSX3005GV			208-230V, 50Hz (CEE 7/7)							458 (208)
TSX4505GY	3–7°C (5°C)	45.8 (1297)	115V, 60Hz (NEMA 5-15)	Double Sliding Glass	8	auto	CE, cUL	26.0 x 52.5 x 58.0 (66 x 133.4 x 147.3)	36.6 x 56.5 x 78.5 (93.1 x 143.5 x 199.4)	611 (277)
TSX4505GZ			208-230V, 60Hz (NEMA 6-15)							611 (277)
TSX4505GV			208-230V, 50Hz (CEE 7/7)							611 (277)
TSX5005GY	3–7°C (5°C)	51.1 (1447)	115V, 60Hz (NEMA 5-15)	2 Glass	8	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.8 x 56.5 x 78.5 (96.0 x 143.5 x 199.4)	669 (303)
TSX5005GZ			208-230V, 60Hz (NEMA 6-15)							669 (303)
TSX5005GV			208-230V, 50Hz (CEE 7/7)							669 (303)

# TSX Series High-Performance BioMedical Solid Door Lab Refrigerators



Our high-performance solid door refrigerators combine advanced temperature control with high-quality cabinet construction and alarm systems. Positive, forced-air circulation is designed to maintain temperature uniformity to protect important medical and pharmaceutical-products as well as laboratory media, reagents and more.

- Heat-free defrost for maximum temperature uniformity
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Bright, LED interior lighting
- Self-closing door with 90° stop to assist with inventory loads
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 1447 liter  
refrigerator

## TSX Series high-performance solid door lab refrigerators

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Shelves	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1205SY	3–7°C (5°C)	11.5 (326)	115V, 60Hz (NEMA 5-15)	1 solid	4	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	31.1 x 24.0 x 73.0 (79.0 x 61.9 x 185.4)	340 (154)
TSX1205SZ			208-230V, 60Hz (NEMA 6-15)							340 (154)
TSX1205SV			208-230V, 50Hz (CEE 7/7)							340 (154)
TSX2305SY	3–7°C (5°C)	23 (650)	115V, 60Hz (NEMA 5-15)	1 solid	4	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.9 x 28.0 x 78.5 (96.2 x 71.1 x 199.4)	426 (193)
TSX2305SZ			208-230V, 50/60Hz (NEMA 6-15)							405 (184)
TSX2305SV			208-230V, 50/60Hz (CEE 7/7)							405 (184)
TSX3005SY	3–7°C (5°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 solid	4	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.9 x 34.0 x 78.5 (96.2 x 86.4 x 199.4)	459 (208)
TSX3005SZ			208-230V, 60Hz (NEMA 6-15)							459 (208)
TSX3005SV			208-230V, 50Hz (CEE 7/7)							459 (208)
TSX5005SY	3–7°C (5°C)	51.1 (1447)	115V, 60Hz (NEMA 5-15)	2 solid	8	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.9 x 56.5 x 78.5 (96.2 x 143.5 x 199.4)	621 (282)
TSX5005SZ			208-230V, 60Hz (NEMA 6-15)							621 (282)
TSX5005SV			208-230V, 50Hz (CEE 7/7)							621 (282)

# TSX Series High Performance Chromatography Refrigerators



Vaccines and medications



Clinical applications



Diagnostics kits and reagents



Columns



Our TSX high-performance chromatography refrigerators are designed for a variety of applications requiring close temperature control, full access to chromatography instrumentation, and easy set-up of instrumentation and apparatus within the chamber. The TSX Chromatography series features industry-leading safety features to ensure maximum protection.

- Heat-free defrost for maximum temperature uniformity
- Two 2" (5 cm) side wall access ports with insulated hinged covers
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Bright, LED interior lighting
- Self-closing door with 90° stop to assist with inventory loads
- Safety switch protected internal electrical outlet on all models (Duplex outlet on Y and Z models, single outlet on V models)
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 827 liter  
chromatography refrigerator

## TSX Series high-performance chromatography refrigerators

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Shelves	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX2305CY	3–7°C (5°C)	23 (650)	115V, 60Hz (NEMA 5-15)	1 glass	0 Full 2 Half	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.8 x 28.0 x 78.5 (96.0 x 71.1 x 199.4)	439 (199)
TSX2305CZ			208-230V, 50/60Hz (NEMA 6-15)							418 (190)
TSX2305CV			208-230V, 50/60Hz (CEE 7/7)							418 (190)
TSX3005CY	3–7°C (5°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 glass	0 Full 2 Half	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.3 x 34.0 x 78.5 (94.7 x 86.4 x 199.4)	442 (201)
TSX3005CZ			208-230V, 60Hz (NEMA 6-15)							442 (201)
TSX3005CV			208-230V, 50Hz (CEE 7/7)							442 (201)
TSX4505CY	3–7°C (5°C)	45.8 (1297)	115V, 60Hz (NEMA 5-15)	Double Sliding Glass	4 Full 2 Half	auto	CE, cUL	26.0 x 52.5 x 58.0 (66.0 x 133.4 x 147.3)	36.6 x 56.5 x 78.5 (93.1 x 143.5 x 199.4)	600 (272)
TSX4505CZ			208-230V, 60Hz (NEMA 6-15)							600 (272)
TSX4505CV			208-230V, 50Hz (CEE 7/7)							600 (272)
TSX5005CY	3–7°C (5°C)	51.1 (1447)	115V, 60Hz (NEMA 5-15)	2 glass	4 Full 2 Half	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.8 x 56.5 x 78.5 (96.0 x 143.5 x 199.4)	658 (298)
TSX5005CZ			208-230V, 60Hz (NEMA 6-15)							658 (298)
TSX5005CV			208-230V, 50Hz (CEE 7/7)							658 (298)



# TSX Series High-Performance Blood Bank Refrigerators



Whole blood  
and plasma



Our high-performance blood bank refrigerators are designed to meet strict requirements established by the AABB for the storage of whole blood and blood components.

- Factory pre-set to 4°C to meet blood storage guidelines
- Heat-free defrost for maximum temperature uniformity
- Convenient, stainless steel, fully extendable and adjustable drawers
- Standard, built-in chart recorder
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Bright, LED interior lighting
- Self-closing door with 90° stop to assist with inventory loads
- FDA listed Class II Medical Device, 510K exempt
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 650 liter  
blood bank refrigerator

## TSX Series high-performance blood bank refrigerators

Model no.	Temp. range (setpoint)	Capacity cu. ft. / liters (blood bags*)	Electrical (plug)	Doors	Drawers	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1204BY			115V, 60Hz (NEMA 5-15)							404 (183)
TSX1204BZ	3–7°C (4°C)	11.5 / 326 (192)	208-230V, 60Hz (NEMA 6-15)	1 glass	6	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	30.5 x 24.0 x 73.0 (77.5 x 61.9 x 185.4)	404 (183)
TSX1204BV			208-230V, 50Hz (CEE 7/7)							404 (183)
TSX2304BY			115V, 60Hz (NEMA 5-15)							550 (249)
TSX2304BZ	3–7°C (4°C)	23 / 650 (385)	208-230V, 60Hz (NEMA 6-15)	1 glass	7	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.8 x 28.0 x 78.5 (96.0 x 71.1 x 199.4)	529 (240)
TSX2304BV			208-230V, 50/60Hz (CEE)							529 (240)
TSX3004BY			115V, 60Hz (NEMA 5-15)							554 (251)
TSX3004BZ	3–7°C (4°C)	29.2 / 827 (426)	208-230V, 60Hz (NEMA 6-15)	1 glass	6	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.3 x 34.0 x 78.5 (94.7 x 86.4 x 199.4)	554 (251)
TSX3004BV			208-230V, 50Hz (CEE 7/7)							554 (251)
TSX5004BY			115V, 60Hz (NEMA 5-15)							865 (392)
TSX5004BZ	3–7°C (4°C)	51.1 / 1447 (770)	208-230V, 60Hz (NEMA 6-15)	2 glass	14	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.8 x 56.5 x 78.5 (96.0 x 143.5 x 199.4)	865 (392)
TSX5004BV			208-230V, 50Hz (CEE 7/7)							865 (392)

\*450 mL whole blood bags

# TSX Series High-Performance Pharmacy Refrigerators



Our high-performance pharmacy refrigerators feature adjustable basket drawers and glass doors for the easy identification and access of vaccines, pharmaceuticals, chemotherapeutics and other material requiring 2 to 8°C storage.

- Heat-free defrost for maximum temperature uniformity
- Convenient, fully extendable and adjustable basket drawers
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Bright, LED interior lighting
- Self-closing door with 90° stop to assist with inventory loads
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 650 liter  
pharmacy refrigerator

## TSX Series high-performance pharmacy refrigerators

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Basket Drawers	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1205PY	3–7°C (5°C)	11.5 (326)	115V, 60Hz (NEMA 5-15)	1 glass	5	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	30.5 x 24.0 x 73.0 (77.5 x 61.9 x 185.4)	388 (176)
TSX1205PZ			208-230V, 60Hz (NEMA 6-15)							388 (176)
TSX1205PV			208-230V, 50Hz (CEE 7/7)							388 (176)
TSX2305PY	3–7°C (5°C)	23 (650)	115V, 60Hz (NEMA 5-15)	1 glass	6	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.8 x 28.0 x 78.5 (96.0 x 71.1 x 199.4)	531 (241)
TSX2305PZ			208-230V, 50/60Hz (NEMA 6-15)							510 (231)
TSX2305PV			208-230V, 50Hz (CEE 7/7)							510 (231)
TSX3005PY	3–7°C (5°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 glass	6	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.3 x 34.0 x 78.5 (94.7 x 86.4 x 199.4)	541 (245)
TSX3005PZ			208-230V, 60Hz (NEMA 6-15)							541 (245)
TSX3005PV			208-230V, 50Hz (CEE 7/7)							541 (245)
TSX5005PY	3–7°C (5°C)	51.1 (1447)	115V, 60Hz (NEMA 5-15)	2 glass	12	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.8 x 56.5 x 78.5 (96.0 x 143.5 x 199.4)	830 (376)
TSX5005PZ			208-230V, 60Hz (NEMA 6-15)							830 (376)
TSX5005PV			208-230V, 50Hz (CEE 7/7)							830 (376)

# TSX Series High-Performance Auto Defrost –30°C Freezers



Biologics



Diagnostics kits and reagents



Industrial testing



Molecular biology



Our high-performance laboratory freezers are designed for applications requiring storage of reagents, pharmaceuticals, biological and other commonly used laboratory materials such as primers, siRNA molecules and fetal bovine serum (FBS).

- Forced-air circulation for temperature uniformity and fast temperature recovery
- Non-invasive defrost with time and temperature guided cycle
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Self-closing door with 90° stop to assist with inventory loads
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 1447 liter  
freezer



Thermo Scientific™  
TSX 326 liter  
freezer

## TSX Series high-performance auto defrost –30°C freezers

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Shelves	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1230FY			115V, 60Hz (NEMA 5-15)							335 (152)
TSX1230FZ	-35° to -15°C (-30°C)	11.5 (326)	208-230V, 60Hz (NEMA 6-15)	1 solid	4	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	31.1 x 24.0 x 73.0 (79.0 x 61.9 x 185.4)	335 (152)
TSX1230FV										335 (152)
TSX2330FY			115V, 60Hz (NEMA 5-15)							423 (192)
TSX2330FZ	-35° to -15°C (-30°C)	23.3 (659)	208-230V, 60Hz (NEMA 6-15)	1 solid	4	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.9 x 28.0 x 78.5 (96.2 x 71.1 x 199.4)	402 (182)
TSX2330FV										402 (182)
TSX3030FY			115V, 60Hz (NEMA 5-15)							439 (199)
TSX3030FZ	-35° to -15°C (-30°C)	29.2 (827)	208-230V, 60Hz (NEMA 6-15)	1 solid	4	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.9 x 34.0 x 78.5 (96.2 x 86.4 x 199.4)	439 (199)
TSX3030FV										439 (199)
TSX5030FY			115V, 60Hz (NEMA 5-15)							621 (282)
TSX5030FZ	-35° to -15°C (-30°C)	51.1 (1447)	208-230V, 60Hz (NEMA 6-15)	2 solid	8	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.3 x 133.4 x 147.3)	37.9 x 56.5 x 78.5 (96.2 x 143.5 x 199.4)	621 (282)
TSX5030FV										621 (282)

# TSX Series High-Performance Manual Defrost –20°C Freezers



Biologics



Diagnostics kits  
and reagents



Enzymes



Industrial testing



Molecular  
biology



Our manual defrost, high-performance freezers are designed for applications in which even slight intermittent coil warming during auto defrost cannot be tolerated.

- Cold wall convection cooling with temperature uniformity
- Enzyme freezers feature enzyme bins
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Four 2" casters for easy mobility; the front two are lockable
- Self-closing door with 90° stop to assist with inventory loads
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 659 liter  
freezer

## TSX Series high-performance manual defrost –20°C freezers

Model no.	Temp. range (setpoint)	Capacity cu. ft. (liters)	Electrical (plug)	Doors	Shelves (bins)	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX2320FY	-25°C to -15°C (-20°C)	23.3 (659)	115V, 60Hz (NEMA 5-15)	1 solid	4 (0)	Manual	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	38.9 x 28.0 x 78.5 (99.0 x 71.1 x 199.4)	459 (208)
TSX2320FZ			208-230V, 50/60Hz (NEMA 6-15)							438 (199)
TSX2320FV			208-230V, 50/60Hz (CEE 7/7)							438 (199)
TSX3020FY	-25°C to -15°C (-20°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 solid	4 (0)	Manual	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	38.9 x 34.0 x 78.5 (99.0 x 86.4 x 199.4)	483 (219)
TSX3020FZ			208-230V, 60Hz (NEMA 6-15)							483 (219)
TSX3020FV			208-230V, 50/60Hz (CEE 7/7)							483 (219)

## TSX Series high-performance manual defrost –20°C enzyme freezers

TSX2320EY	-25°C to -15°C (-20°C)	23.3 (659)	115V, 60Hz (NEMA 5-15)	1 solid	9 (45)	Manual	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	38.9 x 28.0 x 78.5 (99.0 x 71.1 x 199.4)	514 (233)
TSX2320EZ			208-230V, 50/60Hz (NEMA 6-15)							493 (224)
TSX2320EV			208-230V, 50/60Hz (CEE 7/7)							493 (224)
TSX3020EY	-25°C to -15°C (-20°C)	29.2 (827)	115V, 60Hz (NEMA 5-15)	1 solid	9 (54)	Manual	CE, cULL	28.5 x 30.0 x 58 (72.3 x 76.2 x 147.3)	38.9 x 34.0 x 78.5 (99.0 x 86.4 x 199.4)	552 (251)
TSX3020EZ			208-230V, 60Hz (NEMA 6-15)							552 (251)
TSX3020EV			208-230V, 50/60Hz (CEE 7/7)							552 (251)



# TSX Series High-Performance –30°C Plasma Freezers



Whole blood  
and plasma



Our pre-set, high-performance –30°C plasma freezers with automatic defrost are designed to meet strict requirements established by the AABB for the storage of plasma.

- Forced-air circulation for temperature uniformity and fast temperature recovery
- Convenient, stainless steel, fully extendable and adjustable drawers
- GMP Clean Room Class A / ISO 6 (ISO EN 14644-1) compatible with appropriate pre-install preparation
- Standard, built-in chart recorder
- Four 2" casters for easy mobility; the front two are lockable
- Self-closing door with 90° stop to assist with inventory loads
- FDA listed Class I Medical Device, 510K exempt
- See pages 14–21 for options and accessories



Thermo Scientific™  
TSX 659 liter  
plasma freezer

## TSX Series high-performance –30°C plasma freezer

Model no.	Temp. range (setpoint)	Capacity cu. ft. / liters (plasma boxes*)	Electrical (plug)	Doors	Drawers	Defrost	Certification	Interior dimensions D x W x H in. (cm)	Exterior dimensions D x W x H in. (cm)	Shipping weight lbs. (kg)
TSX1230LY			115V, 60Hz (NEMA 5-15)							412 (187)
TSX1230LZ	–35°C to –15°C (–30°C)	11.5 / 326 (273)	208-230V, 60Hz (NEMA 6-15)	1 solid	7	auto	CE, cUL	21.8 x 20.0 x 52.4 (55.4 x 50.8 x 133.1)	31.1 x 24.0 x 73.0 (79.0 x 61.9 x 185.4)	412 (187)
TSX1230LV			208-230V, 50Hz (CEE 7/7)							412 (187)
TSX2330LY			115V, 60Hz (NEMA 5-15)							526 (239)
TSX2330LZ	–35°C to –15°C (–30°C)	23.3 / 659 (532)	208-230V, 50/60Hz (NEMA 6-15)	1 solid	7	auto	CE, cUL	28.5 x 24.0 x 58.0 (72.3 x 61.0 x 147.3)	37.9 x 28.0 x 78.5 (96.2 x 71.1 x 199.4)	505 (229)
TSX2330LV			208-230V, 50Hz (CEE 7/7)							505 (229)
TSX3030LY			115V, 60Hz (NEMA 5-15)							556 (252)
TSX3030LZ	–35°C to –15°C (–30°C)	29.2 / 827 (665)	208-230V, 60Hz (NEMA 6-15)	1 solid	7	auto	CE, cUL	28.5 x 30.0 x 58.0 (72.3 x 76.2 x 147.3)	37.9 x 34.0 x 78.5 (96.2 x 86.4 x 199.4)	556 (252)
TSX3030LV			208-230V, 50Hz (CEE 7/7)							556 (252)
TSX5030LY			115V, 60Hz (NEMA 5-15)							817 (371)
TSX5030LZ	–35°C to –15°C (–30°C)	51.1 / 1447 (1064)	208-230V, 60Hz (NEMA 6-15)	2 solid	14	auto	CE, cUL	28.5 x 52.5 x 58.0 (72.4 x 133.4 x 147.3)	37.9 x 56.5 x 78.5 (96.2 x 143.5 x 199.4)	817 (371)
TSX5030LV			208-230V, 50Hz (CEE 7/7)							817 (371)

\*250 mL plasma boxes

# Options and Accessories

Productive use of our TSX Series refrigerators and freezers can be enhanced with options and accessories specifically designed to improve utility and convenience. Many options are factory-installed and must be specified with your refrigerator and freezer order. Customer-installed options may require the services of a factory authorized technician. The ordering chart on pages 16-19 will inform you which options are factory- or customer-installed.

## **Before ordering...**

Serial number tags on all of our TSX Series refrigerators and freezers provide model numbers and voltage information needed for accurate selection of options ordered for field installation. You can also refer to the refrigerator and freezer ordering charts in this brochure for model numbers and voltage information. It is recommended that options be ordered when your refrigerator or freezer is ordered. Factory-installed options eliminate down-time during product installation.

## **Adjustable alarm delay modules**

The adjustable alarm delay is designed to eliminate nuisance alarms due to intermittent or transitory conditions such as lightning or brief power outages. The adjustable delay requires an alarm condition to exist continuously for a pre-determined time (adjustable) before a signal is released to a central alarm/monitoring system or telephone dialer.

- Adjustable delay from 0.5 to 32 minutes
- Red alarm indicator light remains flashing after transient condition is corrected; requires manual reset
- Signals chronic alarm conditions that may indicate impending component failure; allows time for inspection or corrective maintenance
- Inserts variable time interval between detection of alarm condition and transmission of signal
- Includes accurate digital timing circuit adjustable from 0.5, 1, 2, 4, 8, 18 or 32 minutes
- Operates independent of the line power; built-in battery uses customer supplied 9V battery

## **Remote alarm modules**

Free-standing remote alarm modules tie-in to the standard remote alarm terminals on the refrigerators and freezers.

### **4–20 milliamp (MA) transmitters**

4–20 milliamp transmitters offer a point-to-point circuit to transmit signals from refrigerator and freezer sensors to a controller, sending an analog signal from 4 to 20 milliamps.

### **Temperature chart recorders**

Standard on blood bank refrigerators and plasma freezers but optional on other models. Chart recorders are 6" (15.2 cm), seven-day and use pressure-sensitive chart paper. One box of 50 charts is included with order.

### **Door swing options**

All single door TSX refrigerators and freezers are right-hand swing but factory-installed, left hand swing doors are available. Door swing direction cannot be changed on double door TSX refrigerators and freezers.

### **Surge suppressors**

Designed to prevent issues related to voltage surges.

### **Seismic restraint kits**

Provides additional stability for regions prone to earthquakes.

### **e-lock adapter kits**

E-locks provide access control with audit-trail capabilities, as well as temperature monitoring. These kits require no electricity and are available in both factory- and customer-installed options for CompX™, Pyxis®, Omnicell® and McKesson™ locks.

### **Specialty electrical plugs**

For countries where NEMA 5-15, 6-15 and Continental EU plugs are not standard, specialty plug options are available. See page 19 for these country-specific plugs.

# Options (Refrigerators)

## Options for High-Performance Refrigerators Ordering Guide

For use with refrigerator size →	11.5 cu. ft. (325 L)	23 cu. ft. (650 L)	29.2 cu. ft. (826 L)	45.8 cu. ft. (1297 L)	51.1 cu. ft. (1447 L)
Door options (factory-installed)	Model No.	Model No.	Model No.	Model No.	Model No.
Left hand swing, solid door	6995	6997	6999		
Left hand swing, glass door	6996	6998	7000		
Right hand swing, glass door	7066	7012	7013		
Left and right hand swinging doors, solid					7019
Left and right hand swinging doors, glass					7014
6" 7-day inkless chart recorders, -40°C to +25°C					
Free-standing, customer-installed, 115V, 60Hz models	6383-7A				
Free-standing, customer-installed, 208-230V, 60Hz models	6383-7D				
Free-standing, customer-installed, 230V, 50Hz models (EU)	6383-7V				
Free-standing, customer-installed, 230V, 50Hz models (UK)	6383-7W				
Factory-installed (all voltages)	6183-7				
Replacement chart paper, box of 50	6184				
Surge suppressor (customer-installed)					
115V, 60Hz models	6402-1				
208-230V, 60Hz models	6402-2				
230V, 50Hz models	6402-3				
Remote alarm modules (customer-installed)					
115V, 60Hz models	5612-1A				
208-230V, 60Hz models	5612-2D				
230V, 50Hz models	5612-3V				
Alarm delay modules					
Battery operated	6903				
Digital temperature monitors					
Single input channel, temperature range -100° to +25°C, set point resolution of 1°C, high temperature alarm only, numeric LCD display, red visual alarm, 8 ft. Teflon® lead wire, Velcro® mounting strap, 5"L x 2"D x 4.5"W (mm,130 x 50 x 110), 120v, 60hz, with a 15amp dual prong plug (fits NEMA 5-15R)	6898				



	For use with refrigerator size →	11.5 cu. ft. (325 L)	23 cu. ft. (650 L)	29.2 cu. ft. (826 L)	45.8 cu. ft. (1297 L)	51.1 cu. ft. (1447 L)
Deluxe electronic remote alarm		Model No.	Model No.	Model No.	Model No.	Model No.
Requires a dedicated, analog phone line				6224TA		
4-20 milliamp transmitters						
Self-powered, factory-installed				7204		
Non-powered, factory-installed				6907-1		
Non-powered, customer-installed				6907-2		
e-Lock adapter kits (does not include locks; single door models only)						
CompX adapter, factory-installed			CXELAF			
CompX adapter, customer-installed			CXELAC			
Pyxis glass door adapter, factory-installed			PXELAGF			
Pyxis glass door adapter, customer-installed			PXELAGC			
Pyxis solid door adapter, factory-installed			PXELASF			
Pyxis solid door adapter, customer-installed			PXELASC			
Omnicell glass door adapter, factory-installed			OMELAGF			
Omnicell glass door adapter, customer-installed			OMELAGC			
Omnicell solid door adapter, factory-installed			OMELASF			
Omnicell solid door adapter, customer-installed			OMELASC			
McKesson glass door adapter, factory-installed			MKELAGF			
McKesson glass door adapter, customer-installed			MKELAGC			
McKesson solid door adapter, factory-installed			MKELASF			
McKesson solid door adapter, customer-installed			MKELASC			
Stainless steel interior (factory-installed)						
Stainless steel interior finish		6199-3D	6115	6709	6711	6116

# Options (Freezers)

## Options for High-Performance Freezers Ordering Guide

	For use with refrigerator size →	11.5 cu. ft. (326 L)	23.3 cu. ft. (659 L)	29.2 cu. ft. (826 L)	51.1 cu. ft. (1447 L)
Door options (factory-installed)		Model No.	Model No.	Model No.	Model No.
Left hand swing, solid door		6995	6997	6999	
6" 7-day inkless chart recorders, -40°C to +25°C					
Factory-installed (all voltages)			6183-7		
Free-standing, customer-installed, 115V, 60Hz models			6383-7A		
Free-standing, customer-installed, 208-230V, 60Hz models			6383-7D		
Free-standing, customer-installed, 230V, 50Hz models (EU)			6383-7V		
Free-standing, customer-installed, 230V, 50Hz models (UK)			6383-7W		
Replacement chart paper, box of 50			6184		
Surge suppressor (customer-installed)					
115V, 60Hz models			6402-1		
208-230V, 60Hz models			6402-2		
230V, 50Hz models			6402-3		
Remote alarm modules (customer-installed)					
115V, 60Hz models			5612-1A		
208-230V, 60Hz models			5612-2D		
230V, 50Hz models			5612-3V		
Alarm delay modules					
Battery operated			6903		
Digital temperature monitors					
Single input channel, temperature range -100° to +25°C, set point resolution of 1°C, high temperature alarm only, numeric LCD display, red visual alarm, 8 ft. Teflon® lead wire, Velcro® mounting strap, 5"L x 2"D x 4.5"W (mm, 130 x 50 x 110), 120v, 60hz, with a 15amp dual prong plug (fits NEMA 5-15R)			6898		
Deluxe electronic remote alarm					
Requires a dedicated, analog phone line			6224TA		
4-20 milliamp transmitters					
Self-powered, factory-installed			7205TA		
Non-powered, factory-installed			4706		
e-Lock adapter kits (does not include locks; single door models only)					
CompX adapter, factory-installed			CXELAF		
CompX adapter, customer-installed			CXELAC		
Pyxis solid door adapter, factory-installed			PXELASF		
Pyxis solid door adapter, customer-installed			PXELASC		
Omniceil solid door adapter, factory-installed			OMELASF		
Omniceil solid door adapter, customer-installed			OMELASC		
McKesson solid door adapter, factory-installed			MKELASF		
McKesson solid door adapter, customer-installed			MKELASC		
Stainless steel interior (factory-installed)					
Stainless steel interior finish (Not available on -20°C models)		6199-3D	6115	6709	6116

# Accessories

## Accessories for High-Performance Refrigerators and Freezers Ordering Guide

For use with refrigerator size →	11.5 cu. ft. (326 L)	23.3 cu. ft. (659 L)	29.2 cu ft (826 L)	45.8 cu. ft. (1297 L)	51.1 cu. ft. (1447 L)
Shelves	Model No.	Model No.	Model No.	Model No.	Model No.
Epoxy-coated, full size shelf	7125	6696	6695	6696	
Epoxy-coated, half size shelf		6698	6697	6698	
Stainless steel, full size shelf	6696-3	6696-1			
Drawer dividers for roll-out , stainless steel drawers					
4-place divider, order one divider per drawer	7027 (4)	6206 (4)	6963 (5)		6206 (4)
3" casters (note: all models ship standard with 2")					
Set of four, 3" (76mm) casters		6041-1			
Additional wire basket drawers					
Single drawer, for pharmacy refrigerators	WB12	WB23/50	WB30		WB23/50
Enzyme bins					
Sold as each, labels not included		6736			
Seismic restraint kits					
Basic	TFR210				
For OSHPD	TF-LRF12	TF-LRF23	TF-LRF30	TF-LRF50	TF-LRF50

## Specialty Plugs for Refrigerators and Freezers

Specialty plugs (factory-installed) for all Models		Model No.
Specialty Plug	Argentina	430381H01
Specialty Plug	Australia (10 Amp)	326741H01
Specialty Plug	Australia (15 Amp)	430268H01
Specialty Plug	Brazil	430383H01
Specialty Plug	China	316705H01
Specialty Plug	Denmark	430380H01
Specialty Plug	Great Britain	316704H01
Specialty Plug	India	430271H01
Specialty Plug	Israel	430273H01
Specialty Plug	Italy	430272H01
Specialty Plug	Switzerland	430382H01
Specialty Plug	Twist Lock Plug NEMA L5-20P	327197H02
Specialty Plug	Twist lock plug NEMA L6-15P	327197H01

# Services

Our TSX Series high-performance refrigerators and freezers are designed to meet UL and CE criteria for safety and performance. All connections must comply with local electrical codes.

- Selection charts for each standard model list voltage, rated amperage, recommended circuit breaker size, and NEMA (National Electrical Manufacturers' Association, USA) electrical plug information
- Most refrigerators and freezers are supplied with line cord plugs, which require corresponding receptacles
- Site preparation requires availability of the proper receptacle; a dedicated circuit is required
- Special voltage selections may be available at extra cost and must be specified when ordering
- For questions regarding site preparation, installation and electrical connection, contact your sales representative

## Certificate of Calibration

Control, alarm and temperature recording systems are systematically calibrated at the factory for accurate performance. An optional Certificate of Calibration to an NIST (National Institute of Standards and Technology, formerly National Bureau of Standards) traceable instrument includes a model number and serial number certificate (single point calibration). Multiple point calibration is also available. Calibration certificates must be requested when ordering; for details contact your sales representative.

## Validation Testing Program

Validation testing services in advance of shipment may accelerate in-house Installation Qualification (IQ) and Operation Qualification (OQ) programs. Validation services include documentation and performance reports, compressor and subsystem component specifications, microprocessor flow diagrams, software specifications and more. For more details, contact your sales representative.

Model no.	Services description
7455TA	Temperature mapping of 24 hours at setpoint to include: <ul style="list-style-type: none"><li>• Mapping data graphed at each location</li><li>• Thermocouple placement diagram</li><li>• Test equipment list</li><li>• Average uniformity and stability at specified cycle</li><li>• Minimum, average and maximum temperatures at each thermocouple location</li><li>• Uniformity and stability at each location</li></ul>
7456TA	Temperature mapping of 24 hours (traceable instruments and raw data) at setpoint to include: <ul style="list-style-type: none"><li>• Mapping data graphed at each location</li><li>• Thermocouple placement diagram</li><li>• Test equipment list- utilizing Kaye Validator® thermal validation equipment</li><li>• Calibration certificates of test equipment</li><li>• Thermocouple calibration reports</li><li>• Average uniformity and stability at specified cycle</li><li>• Minimum, average and maximum temperatures at each thermocouple location</li><li>• Uniformity and stability at each location</li></ul>
6916-2	Certificate of calibration



# Other Accessories



## Wireless Monitoring

Thermo Scientific Smart-View™ wireless monitoring solution offers 24/7 continuous, real-time wireless monitoring of critical parameters, early warning alerts, and remote data logging. Likewise, Thermo Scientific Smart-Tracker™ requires only a smart phone to access stored temperature readings. No other equipment or installation is necessary.



## Clinical Containers

Made with the highest quality resins, Thermo Scientific Nalgene™ bottles are engineered to work together with a proprietary valve seal and a strong, semi-buttress thread design. Our Nalgene bottles offer a leakproof\* guarantee because we manufacture and test both components together as part of our routine quality program.



## Gibco Media

Gibco™ media, sera, supplements, cells and cell culture reagents are designed to deliver reproducibility and performance for results you can count on. Regardless of whether you are performing cell culture in a research lab or production facility, need a special or defined formulation, or are growing cell lines, primary cells, or stem cells, Gibco products offer a reliable solution.

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\* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact [technicalsupport@thermofisher.com](mailto:technicalsupport@thermofisher.com) if you need additional information about our products.



Also available, Thermo Scientific™ TSX Series high-performance undercounter refrigerators

The only undercounter lab-grade refrigerator with redundant cooling

- Low energy usage
- Low noise
- High storage capacity

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