

# Thermo Scientific™ TSX Series Ultra-Low Freezers

Now available in four sizes



Designed to meet the highest protection and sustainability standards for ultra-low storage

- NEW! **Four capacities:** 400, 500, 600 and 700 2-inch (5cm) box
- NEW! **Re-designed, user interface** with capacitive touch
- Best peak variation of energy-efficient ultra-low freezers:** less than 5°C
- Fastest door opening recovery on the market:** 17 minutes
- 0.85°C steady-state temperature** variation over time
- Best overall temperature uniformity:** < 5.2°C with door openings, < 4.0°C with no door openings
- Longest warm-up time** from -80°C to -50°C at 5.05 hours
- Low energy usage:** less than 8 kWh/day depending on size



## Designed to keep samples safe

- Low peak variation protects samples throughout the entire freezer cabinet<sup>1</sup>
- V-Drive technology with adaptive control is designed to detect high and low usage patterns, adjust compressor speeds, and reduce energy without compromising protection
- Records temperature and events for the lifetime of the freezer

## Designed to limit environmental impact and protect your budget

- Reduce energy usage up to 70% by replacing an older ultra-low freezer with a new TSX<sup>2</sup>
- Uses less than 8 kWh/day, depending on size
- Produces less environmental heat emissions and lowers HVAC costs
- Natural refrigerants compliant with EU F-Gas regulation: R170 and R290
- Environmentally-friendly, water-blown foam insulation
- Manufactured in an award-winning,<sup>3</sup> zero-waste to landfill facility

## User-friendly design and lab footprint

- All new freezer and user interface design
- Available in four sizes
- Quiet enough to reside directly in the laboratory. At just 45.5 dBA, the sound is comparable to a home refrigerator
- Advanced security features

All data based on internal data unless otherwise noted. Data on file.

<sup>1</sup> Typical freezer data based on internal testing with freezer setpoint at -80°C and ambient temperature at 20°C. Performance data varies across freezer size and electrical specifications.

<sup>2</sup> For energy savings up to 70% at -80°C set point, reference info was: 8.7 kWh/day TSX600 compared >5 year large ULT 31.9 kWh/day energy calculator. At -70°C set point, reference info was: 7.9 kWh/day TSX600 compared >5 year large ULT 31.9 kWh/day energy calculator.

<sup>3</sup> *Industry Week* Best Plant Award, 2013. <http://www.industryweek.com/quality/2013-iw-best-plants-winner-thermo-fisher-scientific-growing-quality-culture-lab>

## User friendly touch-screen interface and cabinet

- NEW! Easy-to-use** set-up wizard, event log, temperature mapping and data downloads
- NEW! Capacitive touch** – even when using latex gloves
- Eliminate the need for a separate chart recorder** with datalogging and temperature mapping features, all exportable via a built-in USB port
- Advanced security features:** alarm settings, password-protected controller, padlock-compatible doors and optional access card entry
- Ergonomic design:** comfortable door handle, eye-level touch-screen and shelf-level placement that doesn't require floor-level loading of racks
- Four capacities** (400, 500, 600 and 700 2-inch/5cm box) to accommodate a variety of storage needs and lab footprint specifications



## Specifications & Ordering Information

Thermo Scientific TSX Series Upright Freezers (-50°C to -86°C)								
Model Number	Capacity		Electrical	Amps / Breaker (Plug)	Max. Shelf Weight kg	Interior Dimensions H x W x D cm	Exterior Dimensions H x W* x D cm	Shipping Weight kg
	liters	5cm (2") cryobox						
TSX40086V	549	400	230V / 50Hz	4.0/10 (European)	75	130.1 x 58.8 x 71.9	198.1 x 71.9 x 95.5	302
TSX40086D			208-230V / 60Hz	4.0/10 (NEMA 6-15)				290
TSX50086V	682	500	230V / 50Hz	5.2/10 (European)	93	130.1 x 73.0 x 71.9	198.1 x 86.4 x 95.5**	327
TSX50086D			208-230V / 60Hz	5.1/10 (NEMA 6-15)				316
TSX60086V	816	600	230V / 50Hz	4.0/10 (European)	111	130.1 x 87.3 x 71.9	198.1 x 100.6 x 95.5**	358
TSX60086D			208-230V / 60Hz	4.0/10 (NEMA 6-15)				347
TSX70086V	949	700	230V / 50Hz	6.1/10 (European)	129	130.1 x 101.6 x 71.9	198.1 x 114.8 x 95.5**	406
TSX70086D			208-230V / 60Hz	5.8/10 (NEMA 6-15)				394

\* Allowance for handle and hinge, add 10.7 cm to cabinet width

\*\* Doorway width clearance is 87.6 cm for TSX50086, TSX60086, and TSX70086

## Performance Data

Model Number	Energy Consumption (kW-hr/day)* Standard Mode	Peak Variation from -80°C setpoint (°C)**	Door Opening Recovery (minutes)	Warm Up Time (-80°C to -50°C) (minutes)***	Noise Level (dBA)
TSX40086	7.9	+6.0 / +1.1	17	267	47.5
TSX50086	8.3	+7.2 / +0.8	27	281	49.0
TSX60086	8.7	+6.9 / +1.8	24	303	45.5
TSX70086	9.6	+5.8 / +1.4	34	307	48.0

\* Energy Calculation: Typical freezer data based on internal testing with freezer setpoint at -80°C and ambient temperature at 20°C

\*\* Peak Variation From Setpoint: Typical freezer data based on internal testing with freezer setpoint at -80°C and ambient temperature at 20°C

\*\*\* Warm Up Time: Typical freezer data based on internal testing with freezer setpoint at -80°C and ambient temperature at 20°C



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**Options and Accessories** (Field Installed must be installed by a qualified professional)

Options	Installation	TSX40086	TSX50086	TSX60086	TSX70086
<b>LN2 Backup System</b> Maintains temperature down to -80°C with liquid nitrogen.	Factory Installed	LN4567	LN4567	LN4567	LN4567
	Field Installed	FLN4567LE	FLN4567LE	FLN4567LE	FLN4567LE
<b>CO2 Backup System</b> Maintains temperature down to -67°C with CO2.	Factory Installed	CO4567	CO4567	CO4567	CO4567
	Field Installed	FCO4567LE	FCO4567LE	FCO4567LE	FCO4567LE
<b>Chart Recorder (Inkless)</b> 6" (15.2 cm), seven day inkless recorder, -115° to +50°C, +5°C resolution	Factory Installed	CR4567	CR4567	CR4567	CR4567
	Field Installed	FCR400TSXLE	FCR500TSXLE	FCR600TSXLE	FCR700TSXLE
<b>Chart Recorder (Ink)</b> 6" (15.2 cm), seven day inkless recorder, -115° to +50°C, +5°C resolution	Factory Installed	CRP4567	CRP4567	CRP4567	CRP4567
	Field Installed	FCRP400TSXLE	FCRP500TSXLE	FCRP600TSXLE	FCRP700TSXLE
<b>Access Key Option Card</b> Access control. Includes five key cards. Supports ISO15693 and ISO14443 protocols.	Factory Installed	RAC34567	RAC34567	RAC34567	RAC34567
	Field Installed	FAC34567LE	FAC34567LE	FAC34567LE	FAC34567LE
<b>Stainless Steel Freezer Interior</b>	Factory Installed	SS34567	SS34567	SS34567	SS34567
<b>Twist Lock Plug</b> NEMA L6-15P for 208-230V / 60Hz	Factory Installed	US230V15ATL	US230V15ATL	US230V15ATL	US230V15ATL
	Field Installed	TL230V15A	TL230V15A	TL230V15A	TL230V15A
<b>Twist Lock Plug</b> NEMA L6-20P for 208-230V / 60Hz	Factory Installed	US230V20ATL	US230V20ATL	US230V20ATL	US230V20ATL
	Field Installed	TL230V20A	TL230V20A	TL230V20A	TL230V20A
<b>Shelf Kit:</b> Includes one shelf and shelf support clips	Factory Installed	TSX5SHELFOPTION	TSX5SHELFOPTION	TSX5SHELFOPTION	TSX5SHELFOPTION
	Field Installed	SK400TSX	SK500TSX	SK600TSX	SK700TSX
Accessories		TSX40086	TSX50086	TSX60086	TSX70086
<b>Access Key Pack:</b> Includes five key cards.		ACE34567	ACE34567	ACE34567	ACE34567
<b>Chart Paper Ink</b> (Pack of 50)		17020	17020	17020	17020
<b>Chart Paper Inkless</b> (Pack of 50)		6185	6185	6185	6185
<b>Replacement Air Filter</b>		AF34567LE	AF34567LE	AF34567LE	AF34567
<b>Replacement Back-Up Battery</b>		400159	400159	400159	400159
<b>Alarm Delay Module:</b> Eliminates nuisance 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
<b>Cryo Gloves Medium</b>		4425	4425	4425	4425
<b>Cryo Gloves Large</b>		4426	4426	4426	4426
<b>Seismic Restraint Kit</b>		TF-ULT400	TF-ULT500	TF-ULT600	TF-ULT700

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Thermo Scientific™ TSX Series Ultra-Low Freezers

**Racks for Boxes and Microplates**

Racks for 2" (5.08 cm) Boxes							
Model No.	Description	Dimensions H x W x D cm	Storage	TSX40086	TSX50086	TSX60086	TSX70086
920090	Sliding Drawer Rack	30.2 x 14 x 68.3	Boxes Per Rack	25	25	25	25
			Racks Per Shelf	4	5	6	7
			Racks Per Freezer	16	20	24	28
			Boxes Per Freezer	400	500	600	700
1950520	Adjustable Side Access Rack	29.5 x 13.7 x 67.9	Boxes Per Rack	25	25	25	25
			Racks Per Shelf	4	5	6	7
			Racks Per Freezer	16	20	24	28
			Boxes Per Freezer	400	500	600	700

Racks for 3" (7.62 cm) Boxes							
Model No.	Description	Dimensions H x W x D cm	Storage	TSX40086	TSX50086	TSX60086	TSX70086
920091	Sliding Drawer Rack	30.2 x 14 x 68.3	Boxes Per Rack	15	15	15	15
			Racks Per Shelf	4	5	6	7
			Racks Per Freezer	16	20	24	28
			Boxes Per Freezer	240	300	360	420

Racking Shelf Kits					
Description	Storage	TSX40086	TSX50086	TSX60086	TSX70086
Sliding Drawer Racks and 2" Boxes with 100 Count Cell Dividers (fits one shelf)	Model No.	RSK400SD4	RSK500SD4	RSK600SD4	RSK700SD4
	Racks Included	4	5	6	7
	Boxes Included	100	125	150	175

Racks for Microplates							
Model No.	Description	Dimensions H x W x D cm	Storage	TSX40086	TSX50086	TSX60086	TSX70086
1950592	Side Access Rack with Locking Rod for Standard or Deepwell	30.2 x 14 x 65.3	Plates Per Rack	147	147	147	147
			Racks Per Shelf	4	5	6	7
			Racks Per Freezer	16	20	24	28
			Plates Per Freezer	2352	2940	3528	4116

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## Thermo Scientific™ TSX Series Ultra-Low Freezers

### Boxes

Model No.	Description	# of Divisions	Quantity	Color
5026-0909	Thermo Scientific™ Nalgene™ polycarbonate 2" (5.08 cm) box for 1.2-2.0 mL vials	81	24	white
5954	2" (5.08 cm) fiberboard box	0	12	white
820002	2" (5.08 cm) fiberboard box	81	1	white
820109	2" (5.08 cm) fiberboard box	100	1	white
5956	3" (7.62 cm) fiberboard box	0	12	white
820003	3" (7.62 cm) fiberboard box	81	1	white
1950878	2" (5.08 cm) fiberboard box	0	12	multiple
1950879	2" (5.08 cm) fiberboard box	0	12	pink
1950880	2" (5.08 cm) fiberboard box	0	12	red
1950881	2" (5.08 cm) fiberboard box	0	12	yellow
1950882	2" (5.08 cm) fiberboard box	0	12	green
1950883	2" (5.08 cm) fiberboard box	0	12	blue
1950884	2" (5.08 cm) fiberboard box	0	12	black

### Fiberboard Dividers

Model No.	Description	Quantity/Case
5958	Grid dividers for 100 12mm vials	12
6212	Grid dividers for 81 13mm vials	12
5960	Grid dividers for 64 14mm vials	12
5959	Grid dividers for 49 16mm vials	12

### Vials and Tubes

Model No.	Description	Quantity/Case
377267	Thermo Scientific™ Nunc™ 1.8mL screw-top round-bottom vials with internal threading	1,800

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Thermo Scientific™ TSX Series Ultra-Low Freezers

Sliding Drawer Racks for Matrix and Cryobank Tubes

		Freezer Model	TSX40086	TSX50086	TSX60086	TSX70086
<b>200 µL Capacity Tubes</b>						
3747, 3748, 4988	Thermo Scientific™ Matrix™ 200 µL 2D Internally-threaded Universal Tubes Box Dimension: 8.5 x 12.8 x 2.75 cm	<b>Rack Model No</b>	<b>1950787</b>	<b>1950787</b>	<b>1950787</b>	<b>1950787</b>
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
		Tubes per Box	96	96	96	96
		Boxes Per Rack	56	56	56	56
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	86,016	107,520	129,024	150,528
<b>500 µL Capacity Tubes</b>						
3734, 3735, 4898	Thermo Scientific Matrix 500 µL 2D Open Top Tubes Box Dimension: 8.5 x 12.8 x 2.6 cm	<b>Rack Model No</b>	<b>1950787</b>	<b>1950787</b>	<b>1950787</b>	<b>1950787</b>
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3736, 3737, 4899	Thermo Scientific™ Matrix™ 200 µL 2D with Duraseals Installed Internally-threaded Universal Tubes Box Dimension: 8.5 x 12.8 x 2.75 cm	Tubes per Box	96	96	96	96
		Boxes Per Rack	56	56	56	56
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	86,016	107,520	129,024	150,528
374086, 374087 (including color options)	Thermo Scientific Nunc™ Cryobank™ 500 µl Internally Threaded Tubes Box Dimension: 8.5 x 12.8 x 3.5 cm	<b>Rack Model No</b>	<b>1950791</b>	<b>1950791</b>	<b>1950791</b>	<b>1950791</b>
		Freezer Rack Dimensions W x H x D	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm	14 x 30.3 x 68.5 cm
3743, 3744, 3745 (including color options)	Thermo Scientific Matrix 500 µL 2D Internally Threaded ScrewTop Tubes Box Dimension: 8.5 x 12.8 x 4.4 cm	Tubes per Box	96	96	96	96
		Boxes Per Rack	42	42	42	42
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	64,512	80,640	96,768	112,896

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Thermo Scientific™ TSX Series Ultra-Low Freezers

Sliding Drawer Racks for Matrix and Cryobank Tubes

		Freezer Model	TSX40086	TSX50086	TSX60086	TSX70086
<b>750 µL Capacity Tubes</b>						
3731, 3732, 4896	Thermo Scientific Matrix 750 µL 2D Open Top Tubes Box Dimension: 8.5 x 12.8 x 3.9 cm	<b>Rack Model No</b>	<b>1950791</b>	<b>1950791</b>	<b>1950791</b>	<b>1950791</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
3729, 4896	Thermo Scientific Matrix 750 µL 2D Tubes with Duraseals Installed Box Dimension: 8,5 x 12,8 x 3,9 cm	Tubes per Box	96	96	96	96
		Boxes Per Rack	42	42	42	42
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	64,512	80,640	96,768	112,896
<b>1.0 mL Capacity Tubes</b>						
374088, 374089 (including color options)	Thermo Scientific Nunc Cryobank 1.0 mL Internally Threaded Tubes Box Dimension: 8,5 x 12,8 x 4,9 cm	<b>Rack Model No</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
		Tubes per Box	96	96	96	96
		Boxes Per Rack	35	35	35	35
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	53,760	67,200	80,640	94,080
3740, 3741, 3742 (including color options)	Thermo Scientific Matrix 1.0mL 2D Internally Threaded ScrewTop Tubes Box Dimension: 8,5 x 12,8 x 5,8 cm	<b>Rack Model No</b>	<b>1950799</b>	<b>1950799</b>	<b>1950799</b>	<b>1950799</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
		Tubes per Box	96	96	96	96
		Boxes Per Rack	28	28	28	28
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	43,008	53,760	64,512	75,264

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Thermo Scientific™ TSX Series Ultra-Low Freezers

Sliding Drawer Racks for Matrix and Cryobank Tubes

		Freezer Model	TSX40086	TSX50086	TSX60086	TSX70086
<b>1.4 mL Capacity Tubes</b>						
3791, 3792, 4890	Thermo Scientific Matrix 1.4ml 2D Open Top Tubes Box Dimension: 8.5 x 12.8 x 4.9 cm	<b>Rack Model No</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
3801, 4890	Thermo Scientific Matrix 1,4mL 2D Tubes with Duraseals Installed Box Dimension: 8,5 x 12,8 x 4,9 cm	Tubes per Box	96	96	96	96
		Boxes Per Rack	35	35	35	35
3711, 3112, 4890	Thermo Scientific Matrix 1.4ml Human Readable Open Top Tubes Installed Box Dimension: 8,5 x 12,8 x 4,9 cm	Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	53,760	67,200	80,640	94,080
<b>1.8 to 2.0 mL Capacity Tubes</b>						
374500, 374501	Thermo Scientific Nunc 1.8 mL Externally-threaded Universal Tubes Box Dimension: 8,5 x 12,8 x 5,5 cm	<b>Rack Model No</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>	<b>1950642</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
374221, 374223	Thermo Scientific Nunc Cryobank 2,0 ml Internally Threaded Tubes Box Dimension: 8,5 x 12,8 x 5,5 cm	Tubes per Box	48	48	48	48
		Boxes Per Rack	35	35	35	35
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	26,880	33,600	40,320	47,040
<b>5.0 mL Capacity Tubes</b>						
374220, 374222	Thermo Scientific Nunc Cryobank 5,0 ml Internally Threaded Tubes Box Dimension: 8,5 x 12,8 x 9,6 cm	<b>Rack Model No</b>	<b>1950819</b>	<b>1950819</b>	<b>1950819</b>	<b>1950819</b>
		Freezer Rack Dimensions W x H x D	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm	14 x 30,3 x 68,5 cm
		Tubes per Box	48	48	48	48
		Boxes Per Rack	21	21	21	21
		Racks Per Shelf	4	5	6	7
		Racks Per Freezer	16	20	24	28
		Tubes Per Freezer	16,128	20,160	24,192	28,224

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