-80℃

-70°

-60°

-40°

thermo scientific

-80℃

TSX Universal

Ultra-low temperature freezers

Thermo Scientific TSX Universal Series General Purpose ULT freezers

Where innovation meets environmental sustainability

thermo scientific

Designed with your science in mind

For over 80 years, Thermo Fisher Scientific has been designing ultra-low temperature (ULT) freezers with your science in mind. Prioritizing sample security and reliability, we recognize the importance of your work, which goes beyond the realm of science and touches the lives of those who benefit from your breakthroughs.

We continue to invest in advancing our products' technological capabilities with the labs of the future in mind. Our in-house expertise is combined to help improve user experiences and enable high performance for excellent sample protection, future-proof technology with connectivity enablement, more sustainable production, and more efficient operation, supported by global services to help keep your work running.

We focus on designing from the bottom up to help advance your research.

+80 years of innovation

1940

Thermo Fisher Scientific began innovating cold storage lab equipment with the introduction of the Revco™ ULT freezer.

2015

The Thermo Scientific™ TSX™ Series ULT freezers with V-Drive cooling technology with natural refrigerants and insulation was launched.

2019

Updates to the TSX Series ULT platform included implementation of our immersive user touch screen interface, connectivity platform, and performance enhancements.
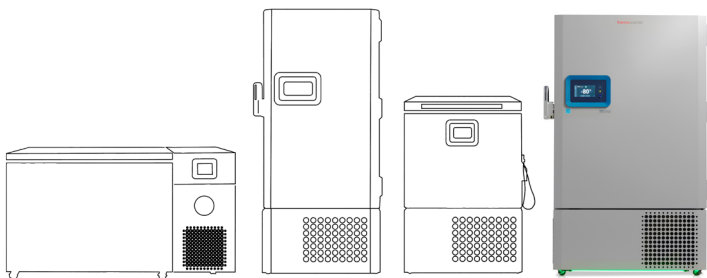
2021

TSX Series ULT freezers were enhanced with features designed to improve sample security, and we initiated participation in the My Green Lab ACT label to offer greater transparency regarding the environmental impact of our ULTs.

2024

Thermo Scientific™ TSX™ Universal Series ULT Freezers

The next generation of the TSX Series ULT platform launched, representing our most innovative and environmentally sustainable ULT freezer yet.

TSX Universal Series ULT freezers

The next generation of our most trusted ULT platform

The TSX Universal Series represents our most innovative and environmentally sustainable ULT freezer yet. Offering exceptional reliability and enhanced features, it leads the market in total reliable performance, thanks to our innovative universal V-Drive cooling technology. Engineered to empower your lab and to protect what matters most—your samples.

Experience the future of cold today.

Reliability at its core

We understand the pivotal role reliable and high-quality lab equipment plays in your research endeavors, that's why our ULT freezers are carefully engineered to meet the exacting demands of modern life science research environments.

TSX Universal Series ULTs represent our most robust design to date, incorporating insights from over 80 years of experience to enhance every aspect of the system. From sealed system and cabinet construction to software architecture and electrical components, each element of the TSX Universal ULT platform has undergone significant testing and improvements.

Long-term reliability testing: Our long-term reliability testing protocol involves rigorous and continuous testing of our ULTs in field and laboratory environments to simulate real world usage across application types.

Every unit tested and documented: 100% of TSX Universal ULT units undergo a comprehensive end-of-line testing process to help ensure they meet our rigorous quality standards. We document the results in a factory acceptance test report and a certificate of calibration, which are provided with every unit produced.

Industry-leading warranty: We confidently stand behind our products, and take pride in offering a 12-year warranty, better than any comparable product on the market.

Designed for reliability-
Compressor, electronics, cabinet, and sealed system
• High usage test
• 20 parameter test procedure
• Vibration testing

Tested for reliability-
Multi-ambient testing
• Tested at 15°C, 20°C and 32°C
• Minimum 16 open air probes
• Peak variation, stability, uniformity
• Door open recovery

Tested to help ensure quality-
100% end of line test
• Temperature pull down
• Monitoring compressor cycling
• Defrost temperatures
• Warmup time
• Bottom out temperature

20-point
Reliability test, 16+ probe location performance test, and 100% end of life test.

+5400
Combined days of continuous reliability testing in the field and laboratory environments.

12 years
Compressor parts and 5-year parts and labour warranty*.

*Restrictions and exclusions apply. Warranty is void if the unit is not maintained as set forth in the Operation Manual.

Built to perform, designed to protect

Our TSX Universal Series platform is more than just freezers; it represents our commitment to exceeding customer expectations. Backed by extensive research and development, the next-generation TSX ULTs set a new standard in total performance, surpassing comparable products on the market.

Scan the QR code
to learn more

Enhancements to our V-Drive cooling technology: By updating our variable speed compressors, enhancing intelligent algorithms, and optimizing hardware with our Universal V-Drive cooling technology, users can experience better performance compared to the previous generation TSX Series ULT platform—demonstrated in Table A.

Technology that adapts to your activity: Our innovative Universal V-Drive technology adapts to user activity, helping ensure consistent peak performance and precise temperature control. Whether in high-use academic labs or long-term storage facilities, the TSX Universal ULT freezer reliably protects what matters most—your samples.

Benefit from up to...

38%
Tighter temperature control

33%
Less energy consumption

41%
Quicker pull-down time

52%
Faster door open recovery time

Data based on TSX600 capacity units.

Table A: TSX Universal ULTs have universally better performance when compared to the previous generation TSX Series ULT platform.

Model	TSX70086FA Universal	TSX70086A Standard	TSX60086FA Universal	TSX60086A Standard	TSX50086FA Universal	TSX50086A Standard	TSX40086FA Universal	TSX40086A Standard
Peak variation (-80°C setpoint)	3.5	5.8	3.4	5.5	3.3	6.9	4	6.8
Average uniformity (°C)	3.3	3.9	3.2	3.4	3.1	4	3.7	4.5
Average stability (°C)	0.2	1.5	0.2	1.9	0.2	2.6	0.2	2.1
1-minute open door (20°C ambient running @ -75°C minutes*)	19	29	15	31	15	24	11	21
Pull down (20° C to -80° C) minutes (hours)	307 (5)	576 (10)	287 (5)	486 (8)	250 (4)	438 (7)	299 (4)	390 (7)
Power consumption kW-Hr/Day/ /ft^3 (m^3)	0.24 (8.13)	0.36 (12.1)	0.27 (7.75)	0.4 (11.5)	0.31 (7.54)	0.45 (10.8)	0.36 (7.03)	0.49 (9.5)
dBA	43.6	48.6	43.6	49.4	43.6	50	43.6	49.8

1) Data is representative of performance and not published product specifications. Technical data sheet test results should not be referenced in developing any regulatory parameters for specific customer usage.

2) Freezer performance will vary based on customer product volume, storage format, operating conditions, test methodology and performing recommended maintenance.

*1-minute open door test conducted on empty cabinet. Exterior door and all inner doors simultaneously opened during test.

Greener by design™

We use innovation to help create a healthier world by reducing the environmental impact of our products and packaging. This includes considering sustainability from design to end of use. By applying environmental principles at every stage of design, we can identify and lessen the impact of our products early on. This approach supports our goal of achieving net-zero emissions by 2050 and helps our customers meet their sustainability targets.

Greener by design: We are committed to rethinking how we design, manufacture, and package our products. Our goal is to transition from linear processes to a circular economy, where we minimize waste and keep materials in use, whether as finished products, components, or raw materials. This initiative is part of our Greener by design program, which focuses on five key impact areas, as illustrated in Figure 1.

ENERGY STAR®–certified: Built with an unwavering commitment to sustainability, TSX Universal ULTs are ENERGY STAR® certified, with our largest size using 43% less energy than the allowed amount.

Transparency in sustainability: We believe it should be easy to make informed purchasing decisions when looking for more sustainable products. By participating in the ACT™ label program, run by the non-profit organization My Green Lab, we can provide easy-to-use information about our ULTs' environmental impact.

33%
Improvement in energy efficiency over previous generation TSX Series ULTs.

20%
Reduction in environmental footprint* over previous generation TSX Series ULTs.

100%
All TSX Universal ULT sizes beat today's ENERGY STAR® criteria by wide margins and positioned to meet tightening requirements in the future.

100%
All TSX Universal Series ULT sizes are My Green Lab ACT labeled.

Scan the QR code to download the green fact sheet.

*Based on a reduction in overall ACT label score

Figure 1: TSX Universal Series ULT freezers – Greener by design approach

Less hazardous

We use refrigerants with low Global Warming Potential, and units contain water-blown insulation with 0 Global Warming Potential and Ozone Depleting Potential.

Less waste

Our ULT freezers contain recycled stainless steel and aluminum content.

More energy efficient

All ULTs are ENERGY STAR® certified, providing substantial energy savings.

Responsibly packaged

We use foam plank with 60% recycled content and corrugated cardboard with 43% recycled content.

Extended life

Our ULTs have a 12-year warranty, longer than other comparable products on market.

Enhanced experience

Expanding on the already versatile TSX Series' feature suite, the TSX Universal ULT platform is designed for laboratories looking to enhance their capabilities and redefine user experience. With its improved user interface, reduced rapid re-entry times, expanded set points, improved noise output, connectivity integration solutions, and introduction of universal voltages, this platform is designed to help take your laboratory to the next level.

Universal voltage: Operates on 100-230V, 50/60Hz, streamlining procurement and qualification strategies from early R&D to global distribution.

Setpoint expansion: Expanded setpoint range of up to -40°C, a first for the TSX Series ULT platform.

Simplified updates: Our onboard software streamlines startup and integration, making it easier to access and install the latest updates for continuous access to new features.

Faster re-entry: Improved pressure equalization port (PEP) enables re-entry in just 30 seconds, 57% faster than previous TSX ULTs, helping ensure uninterrupted freezer access.

Whisper-quiet: Operating at under 44 decibels, the TSX Universal ULT can be placed anywhere, singly or in multiples, without causing sound pollution.

Certificate and documents: TSX Universal ULTs come shipped with documentation* for GMP or qualification environments, helping facilitate import, incoming inspection, and qualification needs.

TSX Universal ULTs offer a variety of options that can be customized to your application needs:

Versatile & durable storage	Compliance & security	Ergonomics & convenience
• 4 sizes	• UL 61010, CE, ISO 13485	• Customizable display
• 2 inner doors / (5 door option)	• Particulate considerations for Cleanroom ISO 5.5[†]	• Eye level, high contrast large text display
• Adjustable shelves	• Factory acceptance reports	• Automatic pressure relief
• High density footprint	• Calibration certificates	• Frost management system
• Stainless steel shelves	• Event & temperature logs	• Multiple access ports
• Extra large capacity	• Settings security	• Easy roll casters
• 7 zone gasket design	• Back-up battery	• Easy to clean surfaces
• Vacuum insulation panels	Optional:	• Full 7" capacitive touch screen
• Cold rolled steel cabinet	• IQ/OQ documents	
• Onboard diagnostics	• Electronic locks	
Optional:	• LN_2 & CO_2 back-up systems	
• 100s of rack options	• Status lights	
• Stainless steel interiors		

*Shipped documents include: Certificate of conformance, CE declaration of conformance, certification of calibration, QC test log sheets, and QC temperature graphs.

†Test according to ISO 14644-14 and designated as ISO Class 5.5; operational; 0.1 µm, 0.2 µm, 0.3 µm, 0.5 µm, 1.0 µm.

Enhanced experience - user interface
that enhances lab efficiency and promotes sample security

The TSX Universal Series ULT freezers feature a sophisticated user interface engineered to optimize your laboratory operations. This user-friendly system offers various functionalities that help bolster sample security, streamline workflows, and provide precise control over your ultra-low temperature storage requirements.

Set it up the right way, right away

- **Quick and intuitive setup:** The user-friendly interface simplifies initial setup and adjustments
- **Customizable settings:** Easily configure setpoints, user profiles, warning limits, and snooze times that best serve your work
- **Fleet management made easy:** Transfer settings across multiple units for streamlined and consistent operation
- **Look out for the heart:** The interface helps users quickly assess the freezer's health and make adjustments easily. Just follow the Heart icon for real-time status

Real-time & detailed data to make the right decisions

- **Real-time & historical insights:** Access easy-to-read event data in graphical form or detailed logs
- **Onboard telemetry:** Enables labs to improve operations through data sharing on preventive maintenance, door access management, back-up system management, embedded unit diagnostic tools and more
- **Data-driven decisions:** Leverage system data to help optimize sample management and freezer performance

Prioritizing sample security & comprehensive audit trails

- Robust security: Protect samples with secure access profiles and role-based authorities
- Comprehensive audit trail: Track actions, access, and events with full traceability
- Long-term data retention: Up to 15 years of data helps ensure continuity from setup to end of life
- Peace of mind: Safeguard sample integrity and accountability throughout the freezer's lifespan

Enhanced experience - connectivity enabled

Designed with labs of the future in mind, the TSX Universal ULT freezers come with 5V and Power over Ethernet supplies, enabling users to introduce connectivity solutions to help monitor, share, and analyze data, all of which help streamline processes and improve research outcomes.

Enhance sample security and streamline asset management with InstrumentConnect

Thermo Fisher™ InstrumentConnect provides a secure, centralized platform for advanced asset management and 24/7 remote monitoring to help ensure the integrity of products and samples vital to the work you do.

InstrumentConnect features:

- Real-time instrument health status
- Customizable report downloads
- Mobile and web applications
- Notifications: in-app alerts, email and push messaging
- Measurement data: temperature, system data, settings
- Bulk download and expert capability across multiple units
- Alarms: system, environmental, connectivity
- Event notifications: warnings, user-based events, door open
- Detailed event descriptions
- Up to 6-month notification card of active alarms/events
- Full (lifetime) historical data storage and report retrieval
- Summary health report generation (on-demand and planned)

Thermo Scientific connectivity hardware* connects your TSX Universal Series ULT freezer.

Monitor your ULT through the Thermo Scientific InstrumentConnect mobile platform or directly from your PC.

*Access to InstrumentConnect requires additional hardware sold separately.

To learn more about InstrumentConnect and available connectivity hardware, visit: **thermofisher.com/connectedsolutions**

Ordering information

Thermo Scientific TSX Universal Series ULT freezers (-86°C to -40°C) - ordering information

Model No.	Capacity cu. ft. (liters)	Rack capacity (2 inch boxes)	Electrical	Plug	Shelves	Door style	Interior dimensions W x D x H in (cm)	Exterior dimensions* W x D x H in (cm)
TSX40086FA	19.3 (547)	16 (400)	100-230V 50/60 Hz	Country-specific (see table for options)	4 shelves (3 Adjustable)	Outer (1) Inner (2)	23.1 x 28.3 x 51.2 in. (58.8 x 71.9 x 130.1)	28.3 x 37.4 x 78 in. (71.9 x 95.5 x 198.1)
TSX50086FA	24.1 (682)	20 (500)					28.8 x 28.3 x 51.2 in. 73.0 x 71.9 x 130.1)	34.0 x 37.4 x 78 in. (86.4 x 95.5 x 198.1)
TSX60086FA	28.8 (815)	24 (600)					34.4 x 28.3 x 51.2 in. (87.3 x 71.9 x 130.1)	39.6 x 37.4 x 78 in. (100.6 x 95.5 x 198.1)
TSX70086FA	33.6 (950)	28 (700)					40.1 x 28.3 x 51.2 in. (101.9 x 71.9 x 130.1)	45.2 x 37.4 x 78 in. (114.8 x 95.5 x 198.1)

*Allowance for handle and hinge, add 4.2 in (10.7 cm) to cabinet width.

Options and accessories (field installation must be completed by a qualified professional)

Options	Factory installation	Field installation
LN$_2$ backup system Maintains temperature down to -76°C with liquid nitrogen	LNTSXU	FLNTSXU
CO$_2$ backup system Maintains temperature down to -65°C with CO$_2$	COTSXU	FCOTSXU
Access key option card Access control. Includes five key cards. Supports ISO15693 and ISO14443 protocols.	ELTSXU	FELTSXU
Stainless steel freezer interior	SS34567	
Free standing chart 115v 60hz 230v 60hz 230v 50hz		6383-6A 6383-6D 6383-6V

Size dependent options	Installation	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
Revco five inner door configuration	Factory	5D400	5D500	5D600	5D700
Shelf kit: Includes one shelf and shelf support clips	Field	SK400TSX	SK500TSX	SK600TSX	SK700TSX

Power cords**	Factory installation	Field installation
Argentina 230V/16A	AR230V16A	AR230V16ACS
Australia 230V/16A	AU230V16A	AU230V16ACS
Brazil 230V/16A	BR230V16A	BR230V16ACS
China 230V/16A	CH230V16A	CH230V16ACS
Continental EU 230V/16A	EU230V16A	EU230V16ACS
Denmark 230V/16A	DK230V16A	DK230V16ACS
India 230V/16A	IN230V16A	IN230V16ACS
Israel 230V/16A	IS230V16A	IS230V16ACS
Italy 230V/16A	IT230V16A	IT230V16ACS
Switzerland 230V/16A	SW230V16A	SW230V16ACS
United Kingdom 230V/13A	UK230V13A	UK230V13ACS
US Plug (default); NEMA 5-15	US125V15A	US125V15ACS
US Plug; NEMA 5-20	US125V20A	US125V20ACS
US Plug; NEMA 6-15	US230V15A	US230V15ACS
US Twist Lock 115V/60Hz	US125V20ATL	TL125V20A
US Twist Lock 208-230V/60Hz	US230V15ATL	TL230V15A

**TSX Universal ULT freezers come with a single power cord selected by default for the destination country. Additional power cords can be purchased separately.

Accessories (optional)	Cat. No.			
Access key pack (U.S.): Includes five key cards. Supports ISO15693 protocol	ACU34567			
Replacement back-up battery	400159			
Cryo gloves medium	4425			
Cryo gloves large	4426			
Size dependent options	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
Accessory for light bars	TSXLBSM	TSXLBSM	TSXLBLG	TSXLBLG
Seismic restraint kit	TF-ULT400	TF-ULT500	TF-ULT600	TF-ULT700
Replacement air filter	AF34567LE	AF34567LE	AF34567LE	AF34567LE

Racks for boxes and microplates

Racks for 2" (5.08 cm) boxes				Model No.			
Cat. No.	Description	Dimensions W x D x H in. (cm)	Storage	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
920090	Sliding drawer rack	5.5 x 26.9 x 11.9 (14 x 68.3 x 30.2)	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	5.4 x 26.75 x 11.6 (13.7 x 67.9 x 29.5)	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.			
Cat. No.	Description	Dimensions W x D x H in. (cm)	Storage	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
920091	Sliding drawer rack	5.5 x 26.9 x 11.9 (14 x 68.3 x 30.2)	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		Model No.			
Description	Storage	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
Sliding drawer racks and 2" boxes with 100 count cell dividers (fits one shelf)	Cat. No.	RSK400SD4	RSK500SD4	RSK600SD4	RSK700SD4
	Racks included	4	5	6	7
	Boxes included	100	125	150	175

Racks for microplates				Model No.			
Cat. No.	Description	Dimensions H x W x D in. (cm)	Storage	TSX40086FA	TSX50086FA	TSX60086FA	TSX70086FA
1950592	Side access rack with locking rod for standard or deepwell	5.5 x 25.7 x 11.9 (14 x 65.3 x 30.2)	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

Scan the QR code to check out the accessories catalog

Service and support

When you invest in Thermo Scientific™ ULT freezers, you not only benefit from top-quality product performance, but you can also enjoy peace of mind and maximum uptime with exceptional service provided by Unity™ Lab Services solutions.

Your specific needs and expectations for a ULT freezer deserve a tailored approach to services. Our comprehensive service portfolio was designed to provide you with an outstanding fit.

Start-up services

Start-up is the first and most important step after your equipment is assembled at its final location. Our very own certified field services network can help provide peace of mind as you get started with your new equipment.

Service plans

Our service plans are designed to help improve your productivity, increase uptime, maintain peak performance, and reduce your total cost of ownership. All service plan customers enjoy proactive, annual preventive maintenance visits, unlimited, enhanced technical and digital remote support, and priority on-site response commitments.

Compliance services

Our comprehensive and cost-effective suite of qualification, temperature mapping, and calibration services can increase your lab's performance and save you time by documenting system functionality and help mitigate the risk of regulatory noncompliance.

To learn more, scan the QR code to download the ULT freezers service and support flyer, where you will find appropriate service-related ordering information.

Alternatively, visit the Unity Lab Services page: **thermofisher.com/unitylabservices**

-80°C

-70°

-60°

-40°

Learn more at **thermofisher.com/tsxuniversal**

thermo scientific