



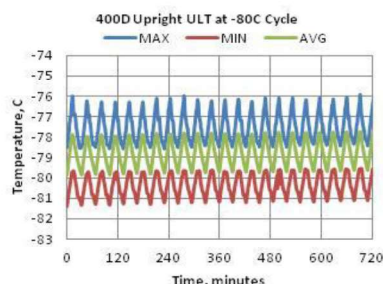
Technical Data Sheet

THERMO SCIENTIFIC Ultra-Low Temperature Upright Freezer

MODEL RELEASE - 70

Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	Thermo Scientific TSX400D
	Application, Rating and Electrical Data
Application	Storage of General (non-flammable) Laboratory Materials
Storage Volume	548 liters / 19.4 cu. ft., 400 Standard 2" Boxes
Temperature Rating	-50°C to -86°C
Electrical Power	208-230V, 50/60, 1 Phase
Instrument Rated Current	4.0 AMP
Building Supply Rating	10.0A or 15.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads
Power Plug/Power Cord Length	NEMA 6-15P plug / IEC Cord, 3.048 Meters (10 Feet)
Agency Listings	UL, cUL, CE
Indoor/Outdoor Usage	Indoor Use Only
Application Environment	Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation, 15° C - 32° C (59° F - 90° F)
	Refrigeration Configuration
Refrigeration System	Industrial-Rated Two Stage Cascade System
Compressor / Number	Hermetic Compressor for Ultra Low Back Pressure Application / 2
Compressor Capacity*	525W (max). VCC
Condenser Type/Number	Enhanced Micro-Channel and Forced-Air Cooled
Expansion Device	Capillary Tube
Evaporator Type	Cold Wall With Enhanced Heat Transfer Treatment
Defrost Method	Manual Defrost
Refrigerant Charge/Flammability	R290 in 1st Stage / R170+R290 Mix in 2nd Stage / Flammable
	Controller/Electrical System Configuration and Features
Controller Level	Top
Power Switch	On-Off with Circuit Breaker
Controller Type	Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retrieval
Setpoint Security	Yes
Compressor Safe Guard	High Temp Cutout Switch/Current protection/Logic protection
Control Sensor	Single RTD (1000 ohm Platinum RTD)
Remote Alarm Terminals	RS485/4-20mA output
Adjustable Warm/Cold Alarms	Fully Adjustable
Auto-Voltage Safeguard	Buck/Boost System
	Dimensions and Construction
Interior Dimensions (H x D x W)	1300 H x 686 D x 589 W mm (51.2 H x 27 D x 23.2 W in.)
Exterior Dimensions (H x D x W)	1981 H x 960 D x 818 W mm (78 H x 37.8 D x 32.2 W in.)
Shipping Dimensions	2111 H x 1086 D x 920 W mm (83.12 H x 42.75 D x 36.23 W in.)
Insulation	High R-value Vacuum Insulation Panels and High Density Water-Blown Polyurethane Foam
Door Seal	Silicone-Based High Performance Seal Gasket with Electrical Door Perimeter Heater
Shelves / Capacity	3 Stainless Steel Shelves Adjustable In 25mm (1in) Increments. Max. Cap. per Shelf: 73.4 kg (165 lbs.)
All-Direction Casters	Standard with Locks
Shipping Weight	Approximately 332 kg / 730 lbs.
Other Options	LN2 or CO2 Back Up System, HID Controlled Access, SMS Text, Chart Recorder
	Typical Performance Characteristics in 20 ° C Ambient



Test Unit Series Number or MSO Number:	19394-PP-T1
Average Cabinet Temp at -80C Cycle (C):	-78.8
Peak Variation from Setpoint, High Performance (C):	+4 / -1.4
Peak Variation from Setpoint, Standard Mode (C):	+6 / +1.1
Avg Uniformity at -80C, High Performance:	2.9
Avg Stability at -80C, High Performance:	2.3
1-min Door Opening Recovery to -75C (min):	17
Duty Cycle at -80C, High Performance (%):	66
Cycle (on/off) rate at -80C, High Performance (min):	21 / 11
Energy Consumption, High Performance (kw-hr/day):	9.4
Heat Rejection Rate, High Performance (btu/hr):	1332
Energy Consumption, Standard Mode (kw-hr/day):	7.9
Heat Rejection Rate, Standard Mode (btu/hr):	1122
Pull Down Time (to -80C)(hrs):	6.5
Warm Up Time (-80C to -50C)(min):	267
Sound (dBA):	47.5

- 1) Performance is nominal and individual units may vary.
- 2) Freezer performance will differ due to product amount, product size and operating conditions.
- 3) Continuous product enhancements may, without notice, result in amendments or omissions to this specification. Thermo Scientific cannot accept responsibility for damage, injury, loss or expenses resulting from misapplication of the information herein.

* Manufacturer measured compressor capacity taken at standard -35°C/40°C (Evap/Cond) condition.

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