



**Technical Data Sheet**  
**THERMO SCIENTIFIC Ultra-Low Temperature Upright Freezer**  
 MODEL RELEASE - 70  
 Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	Thermo Scientific TSX600V - TSX600D
Application, Rating and Electrical Data	
Application	Storage of General (non-flammable) Laboratory Materials
Storage Volume	815 liters / 28.8 cu. ft., 600 Standard 2" Boxes
Temperature Rating	-50°C to -86°C
Electrical Power	230V, 50/60 Hz, 1 Phase
Instrument Rated Current	4.0 AMP
Building Supply Rating**	10.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads
Power Plug/Power Cord Length**	Country Dependant plug / IEC Cords, 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 874 W mm (51.2 H x 27 D x 34.4 W in.)
Exterior Dimensions (H x D x W)	1981 H x 960 D x 1102 W mm (78 H x 37.8 D x 43.4 W in.)
Shipping Dimensions	2111 H x 1086 D x 1206 W mm (83.12 H x 42.75 D x 47.48 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: 56.8 kg (125 lbs.)
All-Direction Casters	Standard with Locks
Shipping Weight	Approximately 388 kg / 854 lbs.
Other Options	LN2 or CO2 Back Up System, HID Controlled Access, SMS Text, Chart Recorder

**Typical Performance Characteristics in 20 ° C Ambient**

**600V Upright ULT, Pull Down and Warm Up**

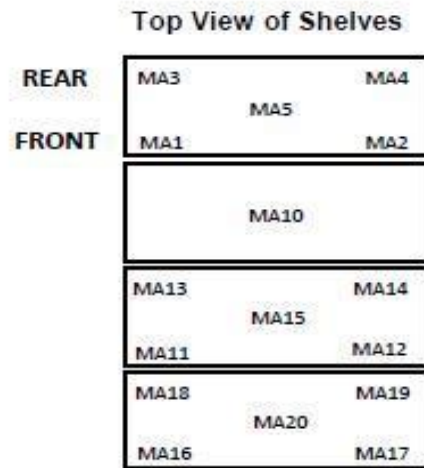
**600V Upright ULT at -80C Cycle**

Test Unit Series Number or MSO Number: 18899-PP-T1

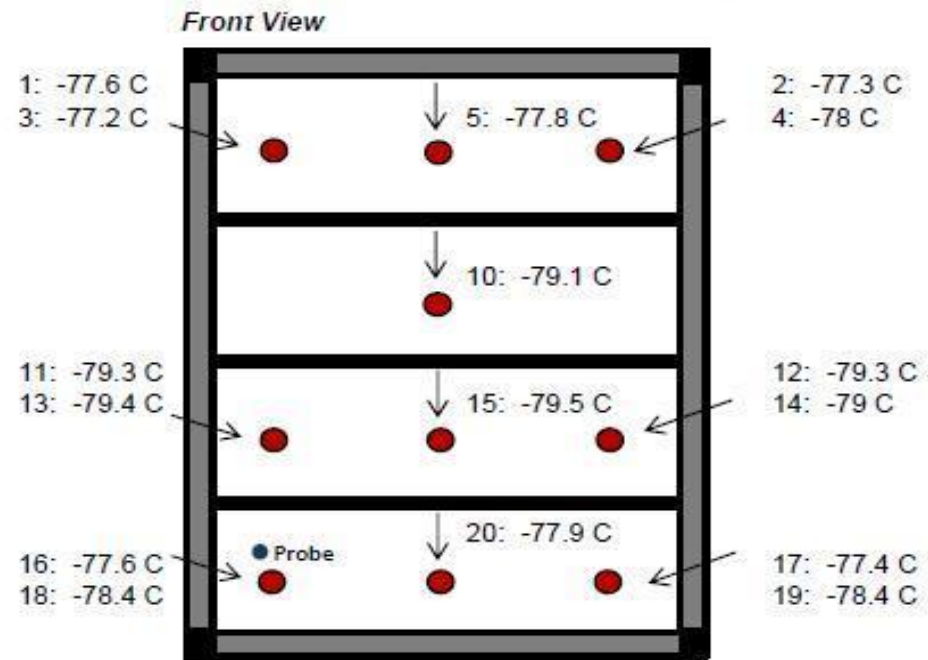
Average Cabinet Temp at -80C Cycle (C):	-78.5
Peak Variation from Setpoint, High Performance (C):	+4.4 / -0.4
Peak Variation from Setpoint, Standard Mode (C):	+6.9 / +1.8
Avg Uniformity at -80C, High Performance:	2.5
Avg Stability at -80C, High Performance:	2.2
1-min Door Opening Recovery to -75C (min):	24
Duty Cycle at -80C, High Performance (%):	72
Cycle (on/off) rate at -80C, High Performance (min):	27 / 10
Energy Consumption, High Performance (kw-hr/day):	10.2
Heat Rejection Rate, High Performance (btu/hr):	1446
Energy Consumption, Standard Mode (kw-hr/day):	8.7
Heat Rejection Rate, Standard Mode (btu/hr):	1233
Pull Down Time (to -80C) (hrs):	9.5
Warm Up Time (-80C to -50C) (min):	303
Sound (dBA):	45.5

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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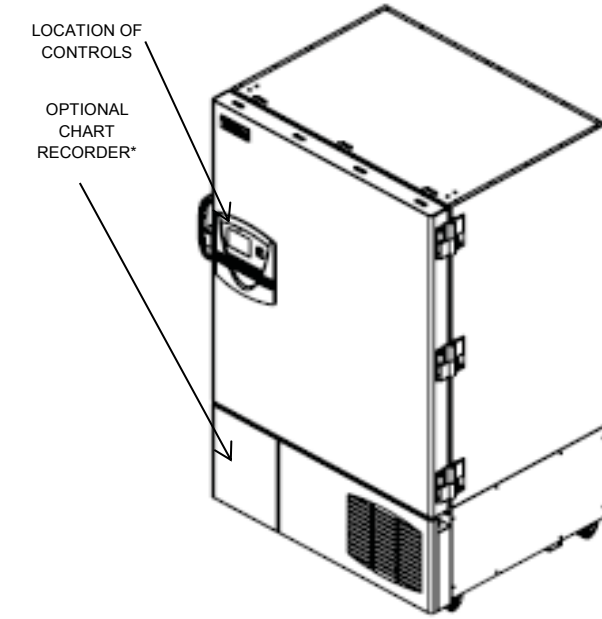
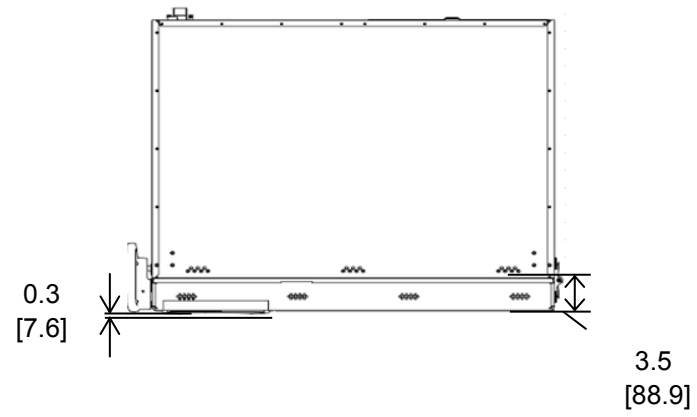
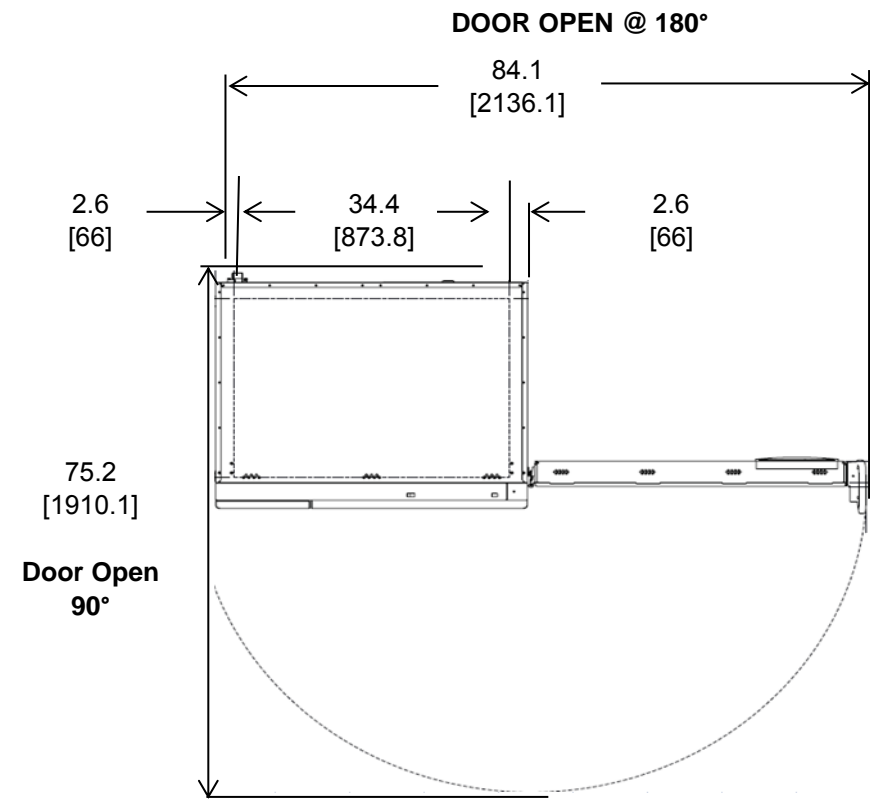
Cabinet Average: -78.5 C  
Probe Average: -78.5 C  
Peak Variation: +4.4 C / -0.4 C



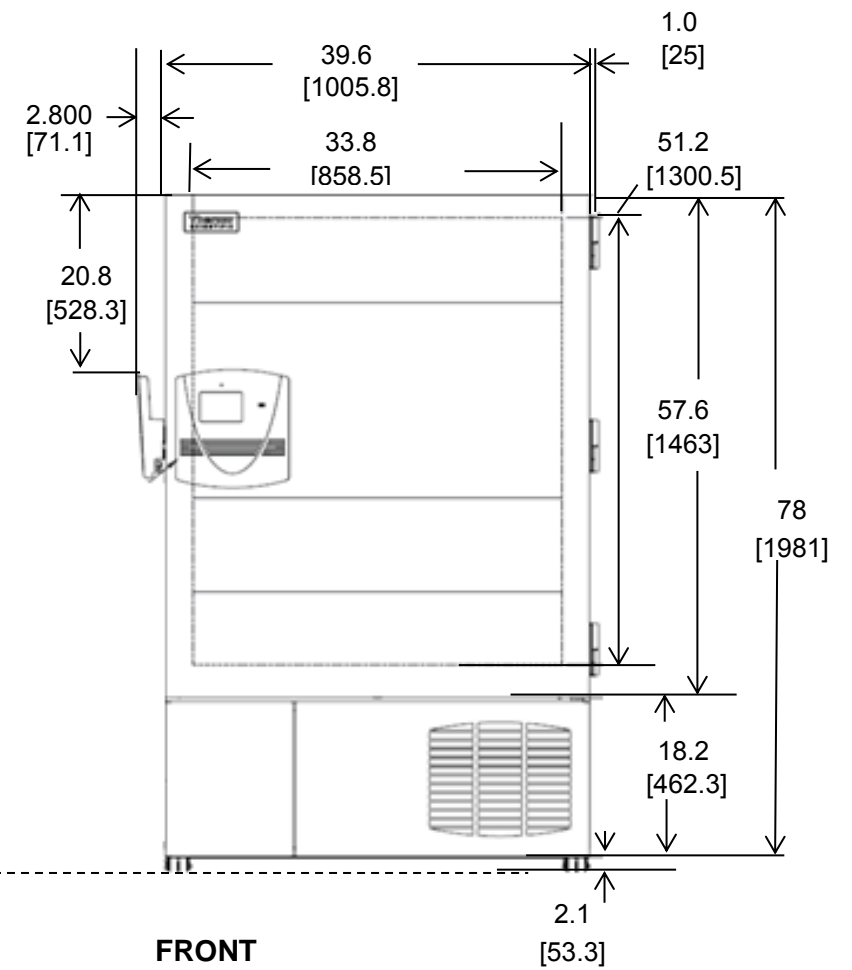
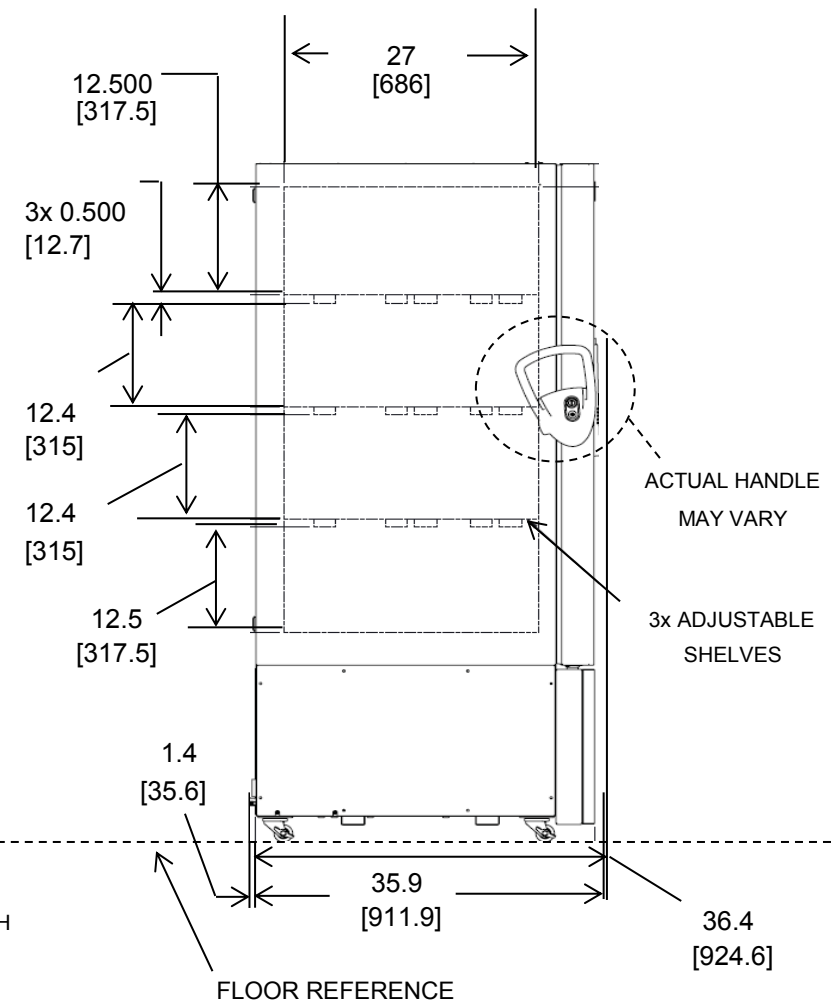
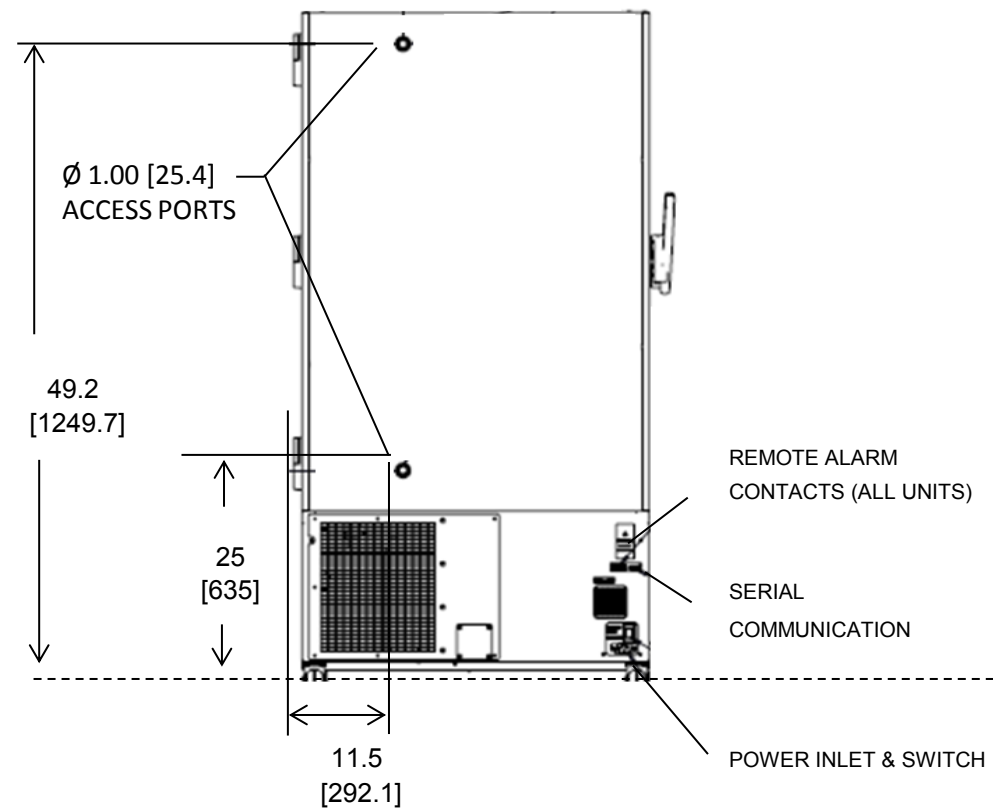
18899-PP-T1

°C	MA1	MA2	MA3	MA4	MA5	MA10	MA11	MA12	MA13
Avg	-77.6	-77.3	-77.2	-78.0	-77.8	-79.1	-79.3	-79.3	-79.4
Max	-76.0	-75.7	-75.6	-76.3	-76.3	-78.1	-78.6	-78.6	-78.6
Min	-78.8	-78.4	-78.2	-79.2	-78.9	-80.1	-80.2	-80.2	-80.3

	MA14	MA15	MA16	MA17	MA18	MA19	MA20
Avg	-79.0	-79.5	-77.6	-77.4	-78.4	-78.4	-77.9
Max	-78.2	-78.7	-76.6	-76.3	-77.1	-77.3	-77.1
Min	-80.0	-80.4	-78.6	-78.7	-79.5	-79.5	-78.8



\*Chart recorder/Back up systems are stand alone on 300 models.



**BACK**

**NOTE: DUAL DIMENSION IS INCH OVER METRIC**

DO NOT USE FOR ENGINEERING PURPOSES. SUBJECT TO CHANGE WITHOUT NOTICE.

**Thermo**  
SCIENTIFIC

**29 cuft Upright Freezer**  
2 Inner Doors  
Single Outer Door  
Top Mount Controls