



Technical Data Sheet
Forma™ Ultra-Low Temperature Freezer
 Upright Model Release - 81
 Thermo Fisher Scientific, Asheville, North Carolina

Model Number

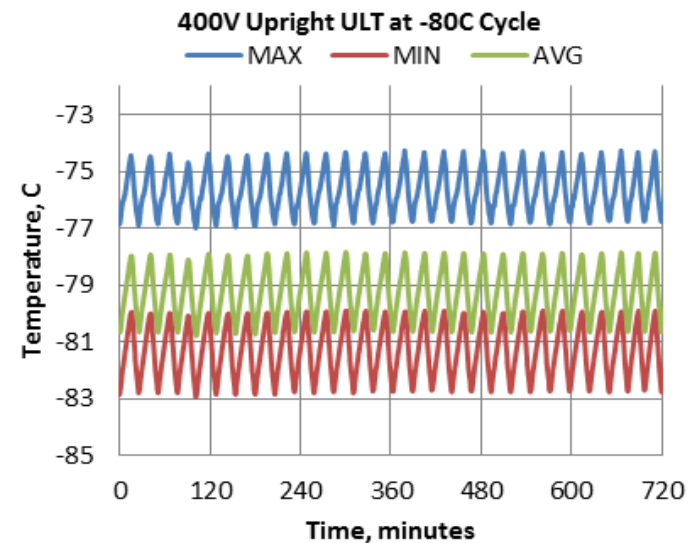
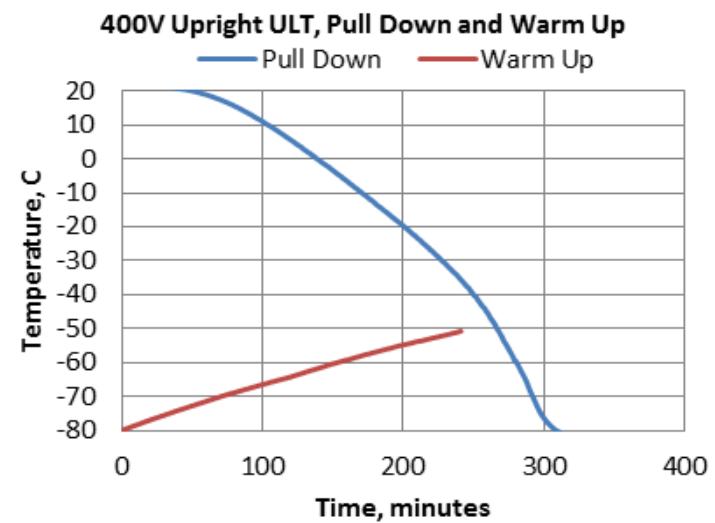
FDE40086FV

Application, Rating and Electrical Data		Typical Performance Characteristics in 20 °C Ambient	
Application	Storage of General (non-flammable) Laboratory Materials		
Storage Volume	19.4 cu. ft. (549 liters), 400 Standard 2" Boxes		
Temperature Rating	-50°C to -86°C	Energy Consumption (kW-hr/day)	12.0
Electrical Power	230V, 50 Hz, 1 Phase	Heat Rejection Rate (Btu/hr)	1702
Instrument Rated Current	5.3 AMP	Peak Variation from Setpoint (°C)	+5.7 / -2.9
Building Supply Rating	10.0A (min) dedicated grounded circuit		
Power Plug / Power Cord	Country Dependant plug / IEC Cords, 10 ft (3.05 m)		
Agency Listings	UL, cUL, CE	Sound (dBa)	51.3
Application Environment	Non-Corrosive, Non-Flammable, Non-Explosive	1-min Door Opening Recovery to -75°C (min)	17
	Indoor Use Only, Ventilated 15° C - 32° C (59° F - 90° F)	Average Uniformity at -80°C (°C)	5.6
		Average Stability at -80°C (°C)	2.9
		Pull Down Time (to -80°C) (hrs)	5.4
		Warm Up Time (-80°C to -50°C) (min)	241

Dimensions and Construction	
Interior Dimensions (H x D x W)	51.2 x 28.3 x 23.1 in. (1300 x 719 x 587 mm)
Exterior Dimensions (H x D x W)	78 x 38.5 x 28.3 in. (1981 x 978 x 719 mm)
Shipping Dimensions	83.12 x 42.75 x 36.23 in. (2111 x 1086 x 920 mm)
Shipping Weight / Net Weight	687 lbs. (312 kg) / 595 lbs. (270 kg)
Insulation	Vacuum Insulation Panels with High-Density Water-Blown Polyurethane Foam
Door Seal	Silicone-Based Gasket Seal with Electrical Door Perimeter Heater
Shelves	3 Stainless Steel Adjustable Shelves in 1" (25mm) Increments
Shelf Capacity	Max. Capacity per Shelf: 165 lbs. (73.4 kg)
Interior / Exterior Material	Painted Steel (Stainless Steel Option) / Painted Steel
All-Direction Casters	Standard with Locks
Other Options	LN2 or CO2 Back Up System, Chart Recorder

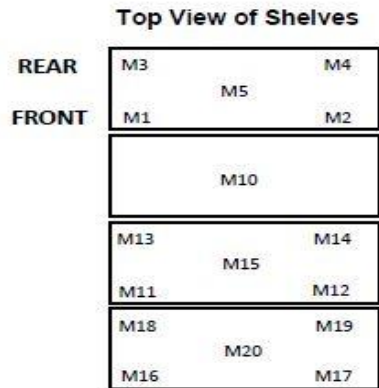
Electrical System Configuration	
Controller Level	Top
Power Switch	(Rear) Main Circuit Breaker
Controller Type	HIC Interface: 7-segment Display with Capacitive Touch Screen Buttons
Setpoint Security	Yes
Compressor Safe Guard	High Temp Cutout Switch, Current, Logic protection
Control Sensor	Single RTD (1000 ohm Platinum RTD)
Connectivity / Remote Outputs	RS485/4-20mA output/Dry Contacts
Thermo Fisher Cloud	InstrumentConnect™ Remote Monitoring (compatible)
Adjustable Warm/Cold Alarms	Fully Adjustable

Refrigeration Configuration	
Refrigeration System	Two Stage Cascade System
Compressor/Number	Industrial Rated, Hermetically Sealed / 2
Compressor Capacity*	559 W
Condenser Type	Enhanced Micro-Channel and Forced-Air Cooled
Expansion Device	Capillary Tube
Evaporator Type	Enhanced Cold Wall Design
Defrost Method	Manual Defrost
Refrigerant (1st/2nd Stage)	R290 / R170+R290 Mix
Environmental Effects	GWP: 3 (R290) / 6 (R170) ODP: 0 (R290); 0 (R170)
Flammable	Yes

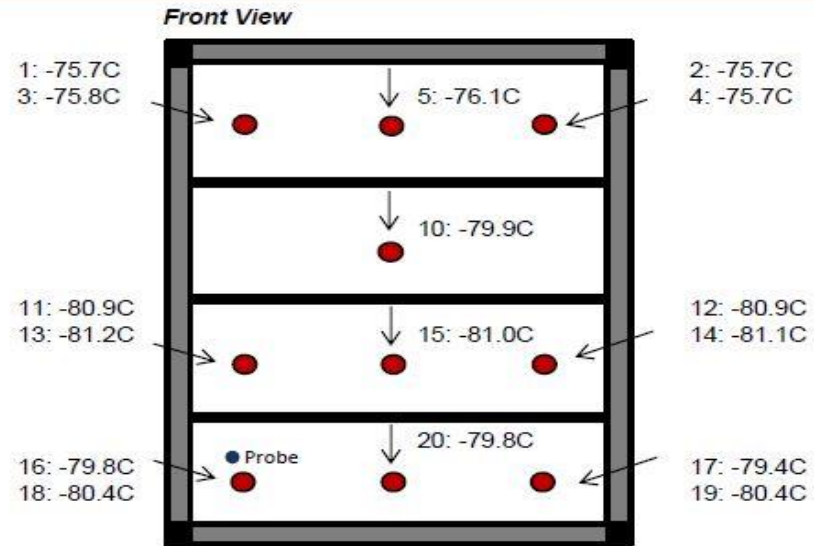


- 1) Performance is nominal and individual units may vary.
- 2) Freezer performance will differ due to product amount, product size and operating conditions.
- 3) Continuous product enhancements may, without notice, result in amendments or omissions to this specification. Thermo Scientific cannot accept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

* Manufacturer measured compressor capacity taken at standard -35°C/45°C (Evap/Cond) condition.



Cabinet Average: -79.2 C
Probe Average: -80.0 C
Peak Variation: +5.7 C / -2.9 C

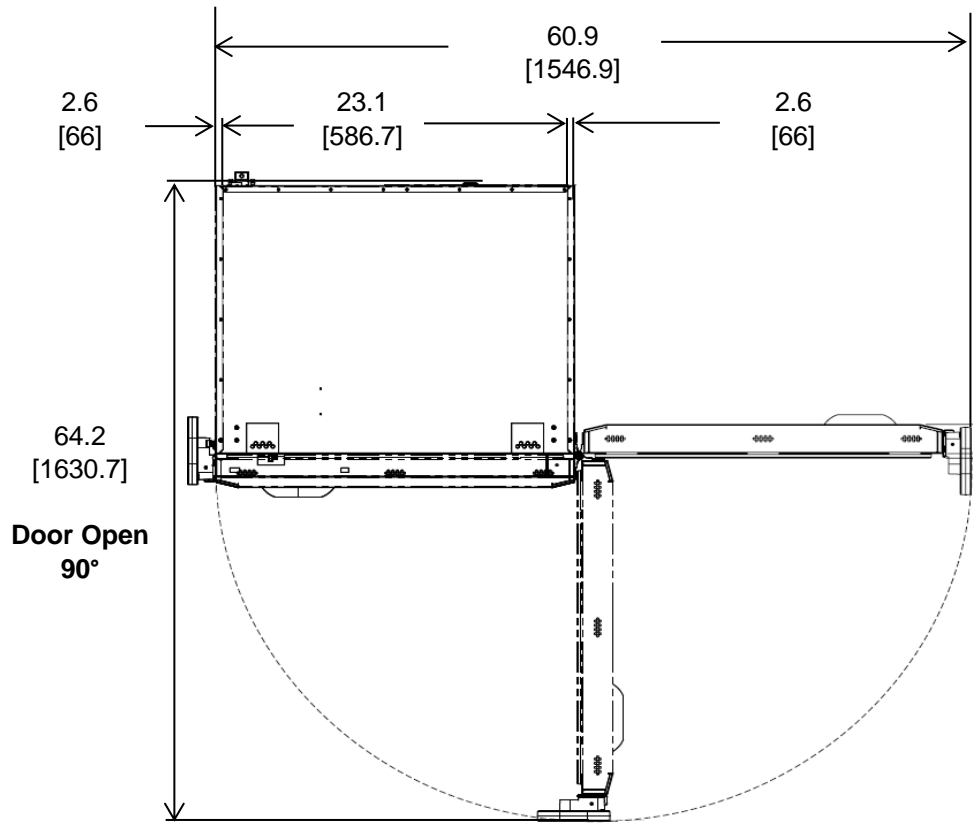


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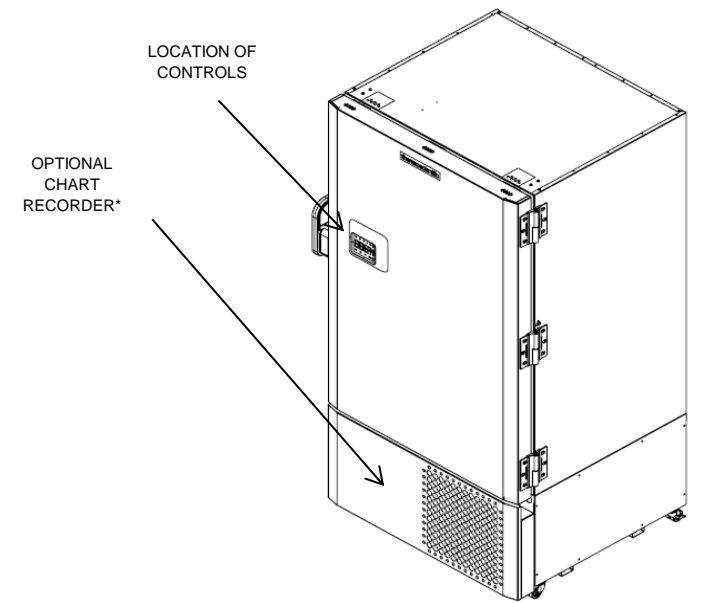
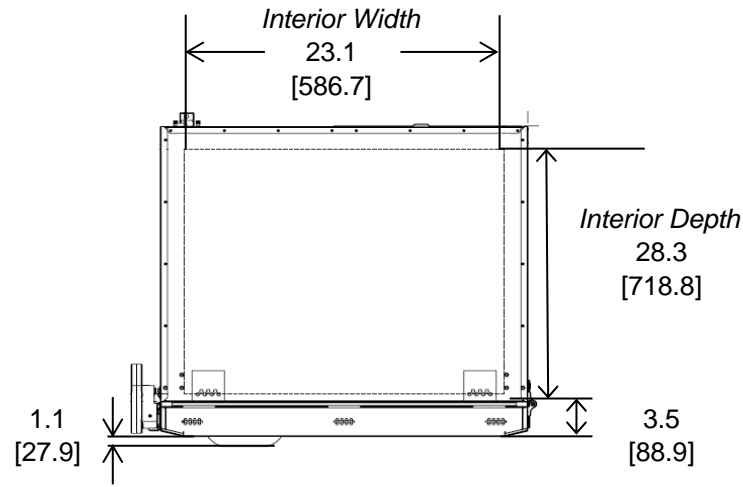
	M1	M2	M3	M4	M5	M10	M11	M12	M13
Avg	-75.7	-75.7	-75.8	-75.7	-76.1	-79.9	-80.9	-80.9	-81.2
Max	-74.3	-74.3	-74.5	-74.5	-74.7	-78.2	-79.8	-79.7	-79.9
Min	-77.1	-77.1	-77.2	-77	-77.7	-81.6	-82.4	-82.3	-82.9

	M14	M15	M16	M17	M18	M19	M20
Avg	-81.1	-81	-79.8	-79.4	-80.4	-80.4	-79.8
Max	-79.8	-79.8	-78.6	-78.1	-79	-78.6	-78.7
Min	-82.9	-82.4	-81.4	-81.1	-82.3	-82.4	-81.5

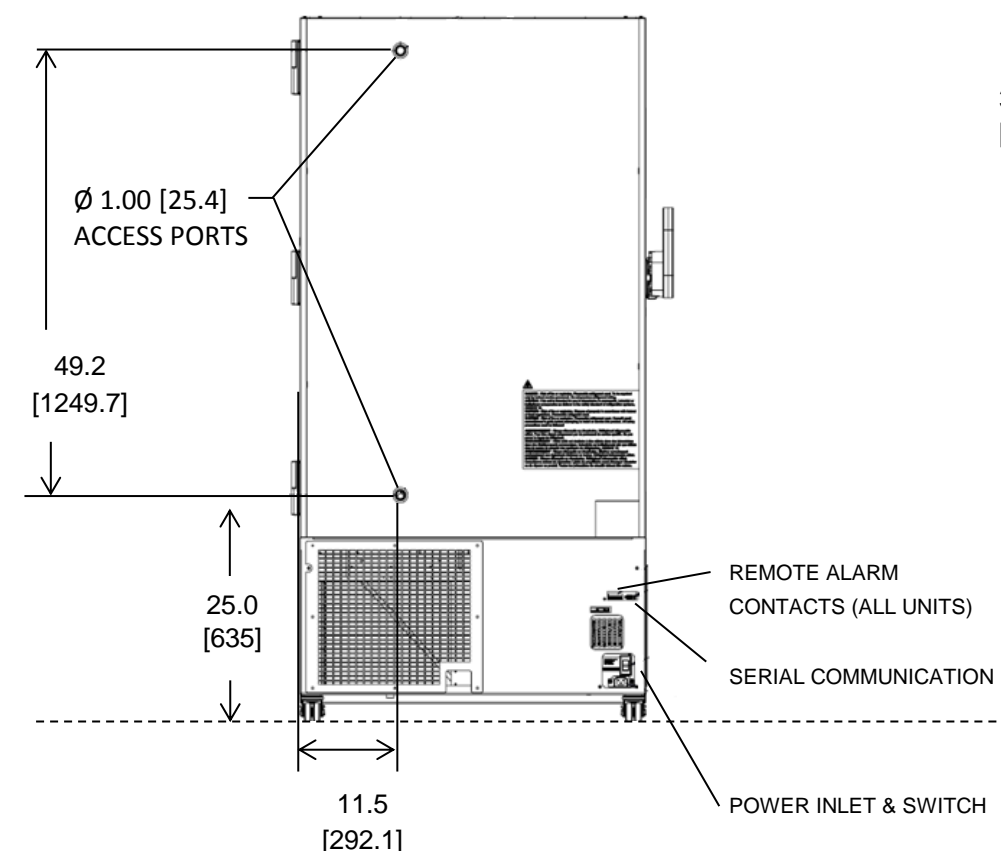
DOOR OPEN @ 180°



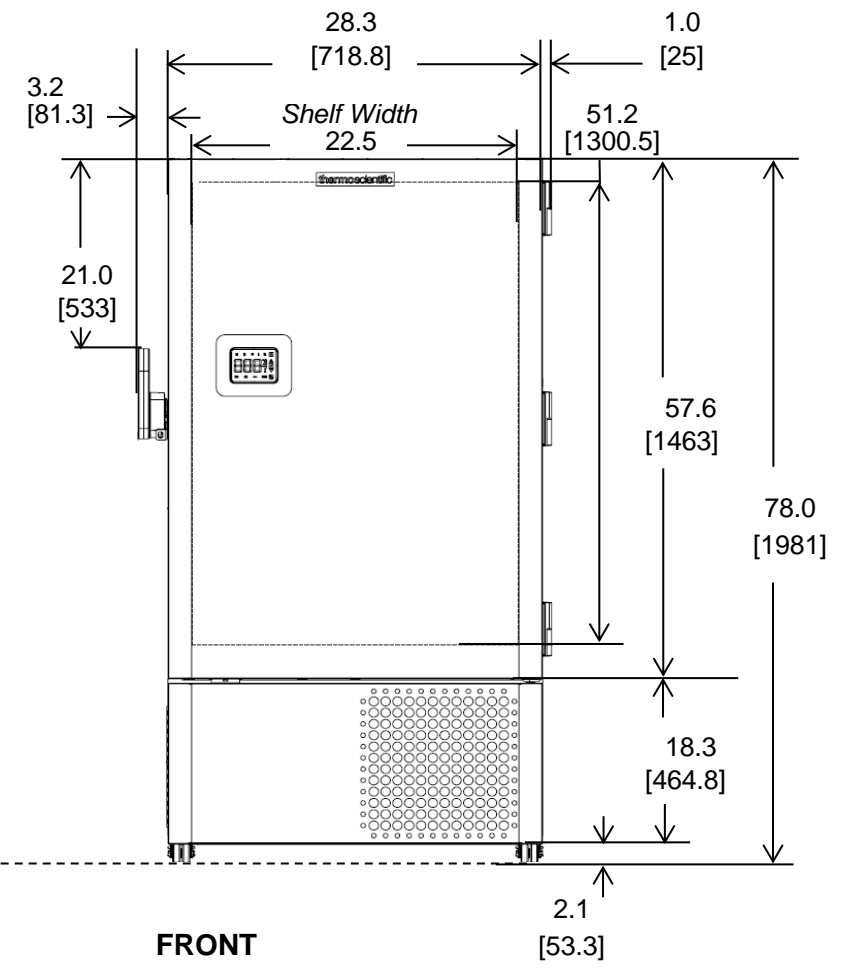
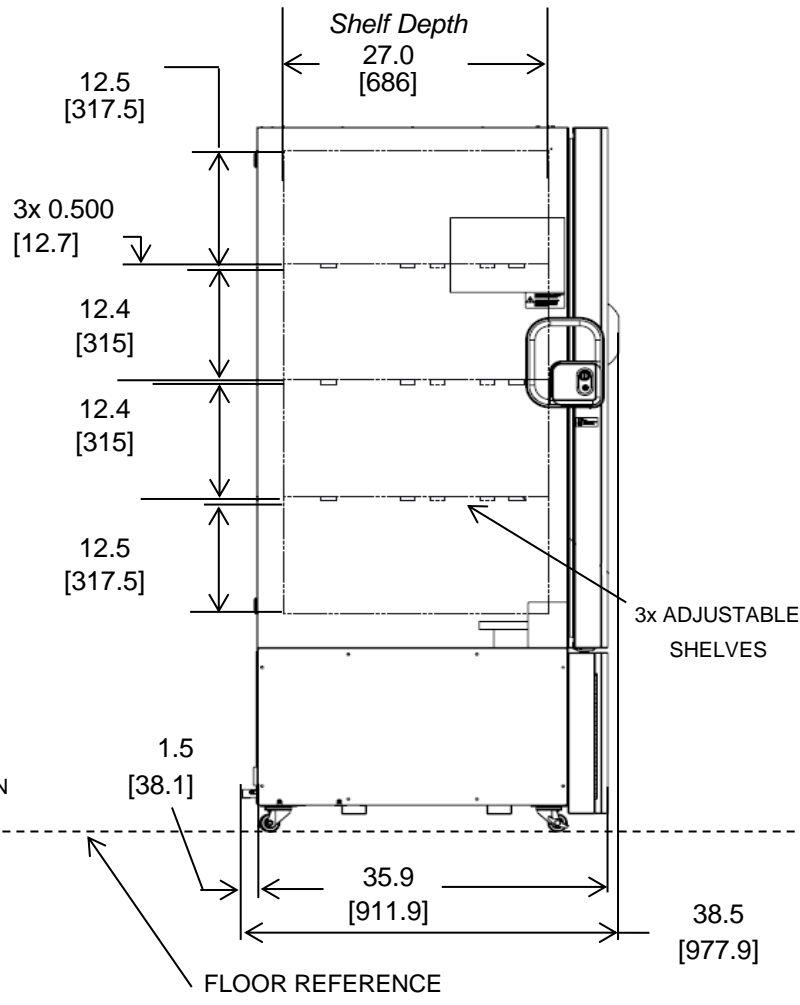
Door Open 90°



*Chart recorders are stand alone on 300/400 models
*Backup systems are stand alone on 300 models.



BACK



FRONT

NOTE: DUAL DIMENSION IS INCH OVER METRIC

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



19.4 cuft Upright Freezer
4 Inner Doors
Single Outer Door
Top Mount Controls