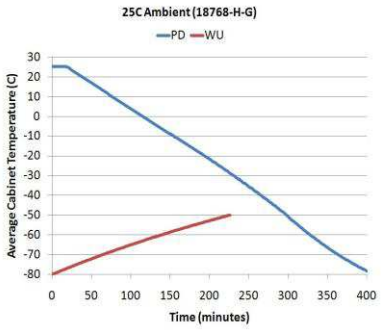
Technical Data Sheet

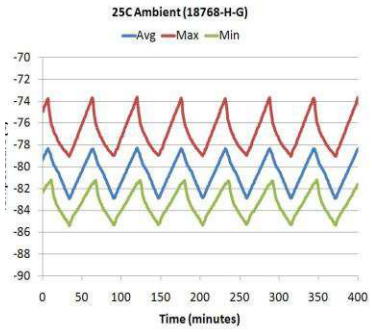
Thermo Scientific Ultra-Low Temperature Upright Freezer

Revision-3

Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	Thermo Scientific TSU400V
	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 -85°C @ 32 °C(90°F) Ambient
Electrical Power	230V, 50 Hz, 1 Phase
Instrument Rated Current	9.5 FLA
Building Supply Rating	20.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads
Power Plug/Power Cord Length	CEE 7/7, 10 Feet or 3.0 Meters
Agency Listings	CE
Application Environment	Indoor Use Only; Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation, 15C - 32C (59F - 90F)
Cooling Water Condition	N/A
Lifetime of Product	10 years
	Refrigeration Configuration
Refrigeration System	Industrial-Rated Two Stage Cascade System
Compressor / Number	1 HP Hermetic Compressor for Low Temperature Application / 2
Condenser Type/Number	Enhanced Finned-Tube and Forced-Air Cooled / 1
Expansion Device	Capillary Tube On Both Cascade Stages
Evaporator Type	Cold Wall With Enhanced Heat Transfer Treatment
Defrost Method	Manual Defrost
Refrigerant Charge/Flammability	CFC/HCFC-Free Enviromentally Safe Refrigerant Mixtures / Non-Flammable in both stages
	Controller/Electrical System Configuration and Features
Controller Level	Eye Level
Power Switch	On-Off with Circuit Breaker
Controller Type	Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival
Setpoint Security	Yes
Compressor Safe Guard	High Temperature Warning/Current and Temperature Protection/Logic Protection
Control Sensor	Single RTD (1000 ohm Platinum RTD)
RS232/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)	1.30 x 0.72 x 0.59 m (51.2 x 28.3 x 23.1 in.)
Exterior Dimensions (H x D x W)	1.98 x 0.96 x 0.82 m (78.0 x 37.6 x 32.4 in.)
Insulation	High R-value Vacuum Insulation Panels and High Density Water-Blown Polyurethane Foam
Perimeter Heater	Silicone-Based High Performance Seal Gasket with Electrical Door Perimeter Heater
Shelves / Capacity	3 or 4 Stainless Steel Shelves Adjustable In 1" Increments. Max. Cap. per Shelf: 73.4 kg (165 lbs.)
All-Direction Casters	Standard with Locks
Ship Weight	Approximately 332 kg (730 lbs.)
Other Options	LN2 or CO2 Back Up System, HID Controlled Access, SMS Text, Chart Recorder, 4 or 5 Inner Doors
	Typical Performance Characteristics in Normal Ambient Condition

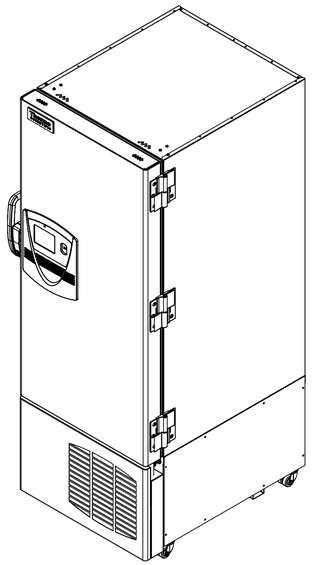


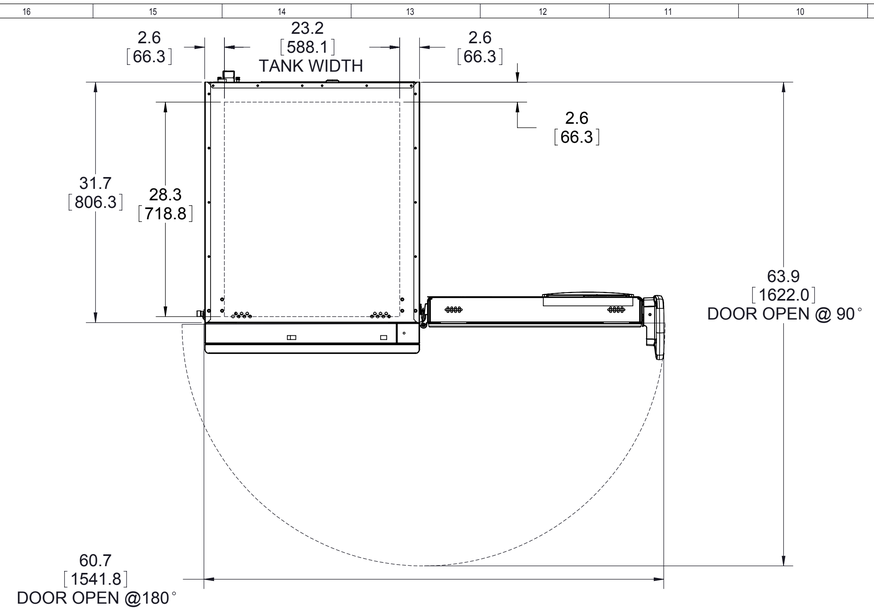


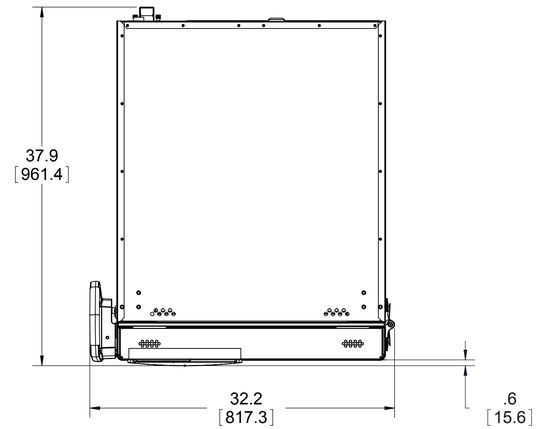
Performance Data Summary (Typical Average Values)

Avg. Cabinet Temp. at -80C Setpoint, High Performance (C):	-81.0
Peak Variation From -80C Setpoint, High Performance (C):	+5.3 / -5.7
Peak Variation From -80C Setpoint, Energy Saving (C):	+9.0 / -4.1
Stability, -80C Setpoint, High Performance (C):	4.6
Uniformity, -80C Setpoint, High Performance (C):	5.8
1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min):	20
Cycle Rate, -80C Setpoint, High Performance (on/off, min/min):	29/23
Duty Cycle, -80C Setpoint, High Performance (%):	57
Energy Consumption, -80C Setpoint, High Performance (kWh/day):	18.5
Heat Rejection, -80C Setpoint, High Performance (BTU/hr):	2630
Energy Consumption, -80C Setpoint, Energy Saving (kWh/day):	16.7
Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr):	2374
Pulldown Time to -80C Average Cabinet Temp. (hours)	7.3
Warmup Time, From Average Cabinet Temp. of -80C to -50C (min):	229

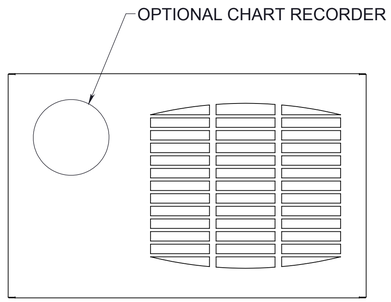
1) Performance is nominal and individual units may vary.
2) Freezer performance will differ due to product amount, product size and operating conditions.
3) Continuous product enhancements may, without notice, result in amendments or ommisions to this specification. Thermo Scientific cannot accept responsibility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

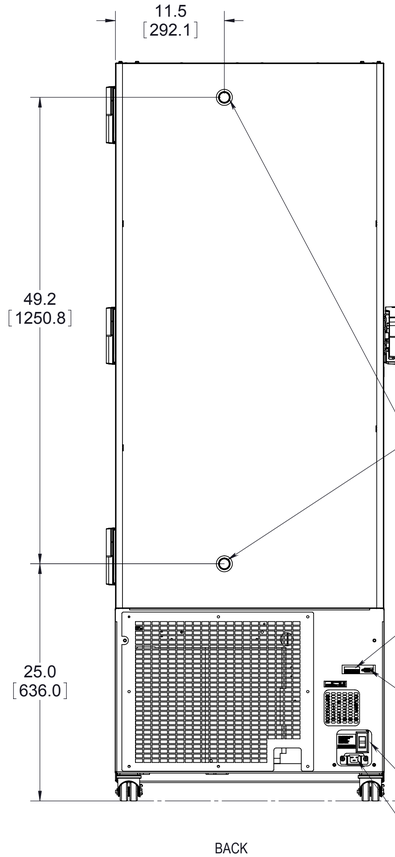


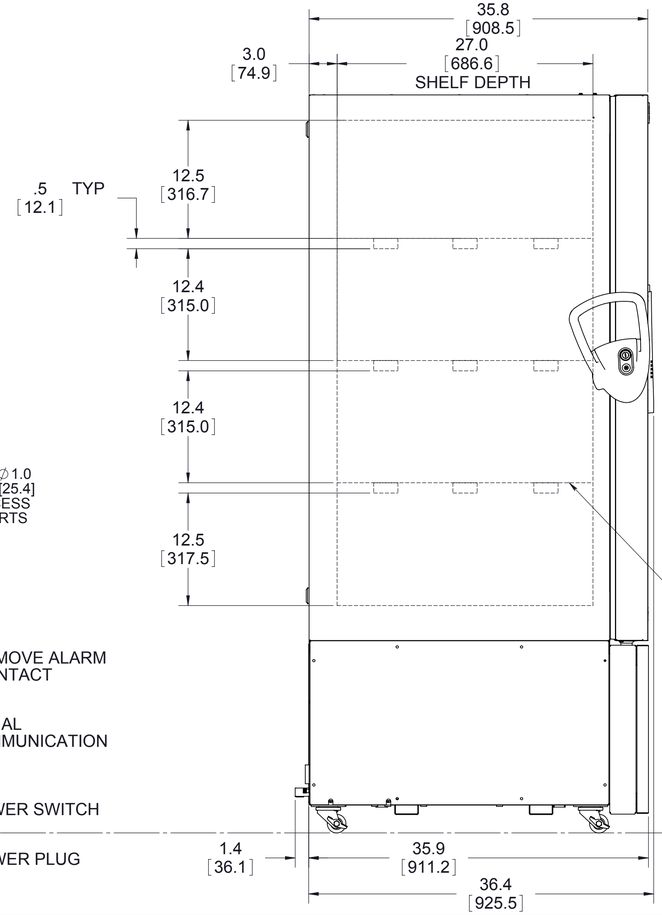


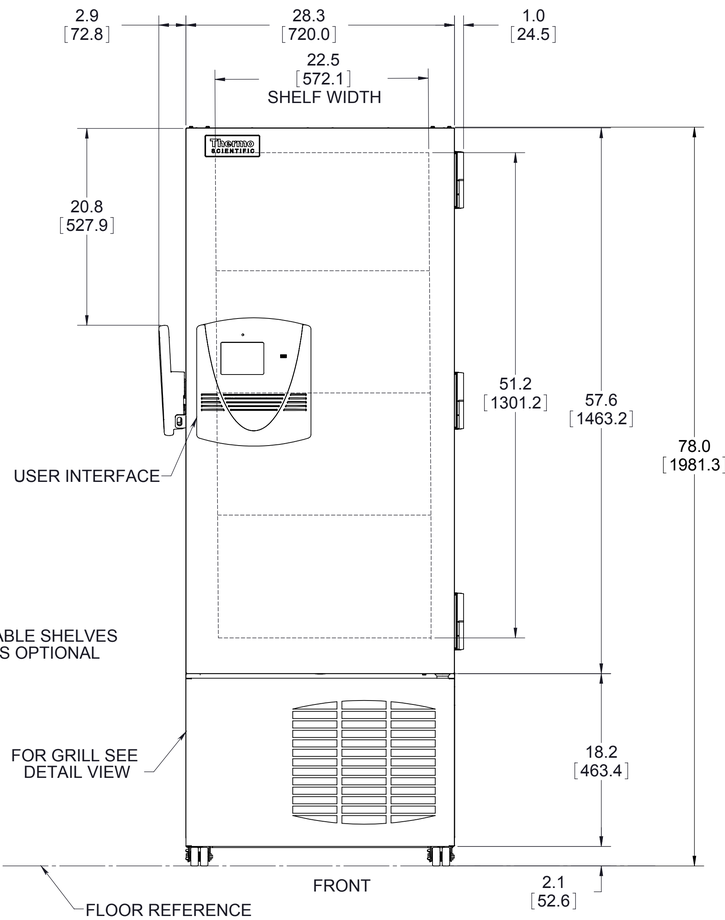


GRILL DETAIL VIEW









1. SYMBOLS, DESIGNATIONS AND GENERAL DRAWING METHODS ENGW1002.
2. DUAL DIMENSION IS INCH OVER METRIC.
3. BASIC DIMENSION TOLERANCE UNLESS OTHERWISE SPECIFIED:
   .X = +.100"
4. ALL COMPONENTS SHOULD BE RoHS COMPLIANT

REV.	ECN #	DATE	DESCRIPTION
A	65469	2011-12-07	UPDATED GAP BETWEEN THE SHELVES
-	60347	2011-06-30	NEW RELEASE

REVISIONS

ThermoFisher SCIENTIFIC
275 AIKEN ROAD
ASHEVILLE, NC 28804

TITLE **FREEZER UNIT**
ULT
400

3rd ANGLE PROJECTION

DWG. NO. 315100G07

SIZE D | SHEET 1 OF 1

SolidWorks 2007-10-25