

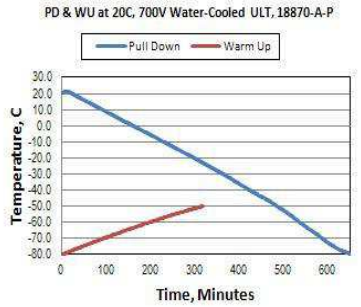
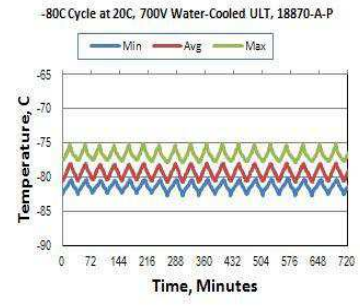
## Technical Data Sheet

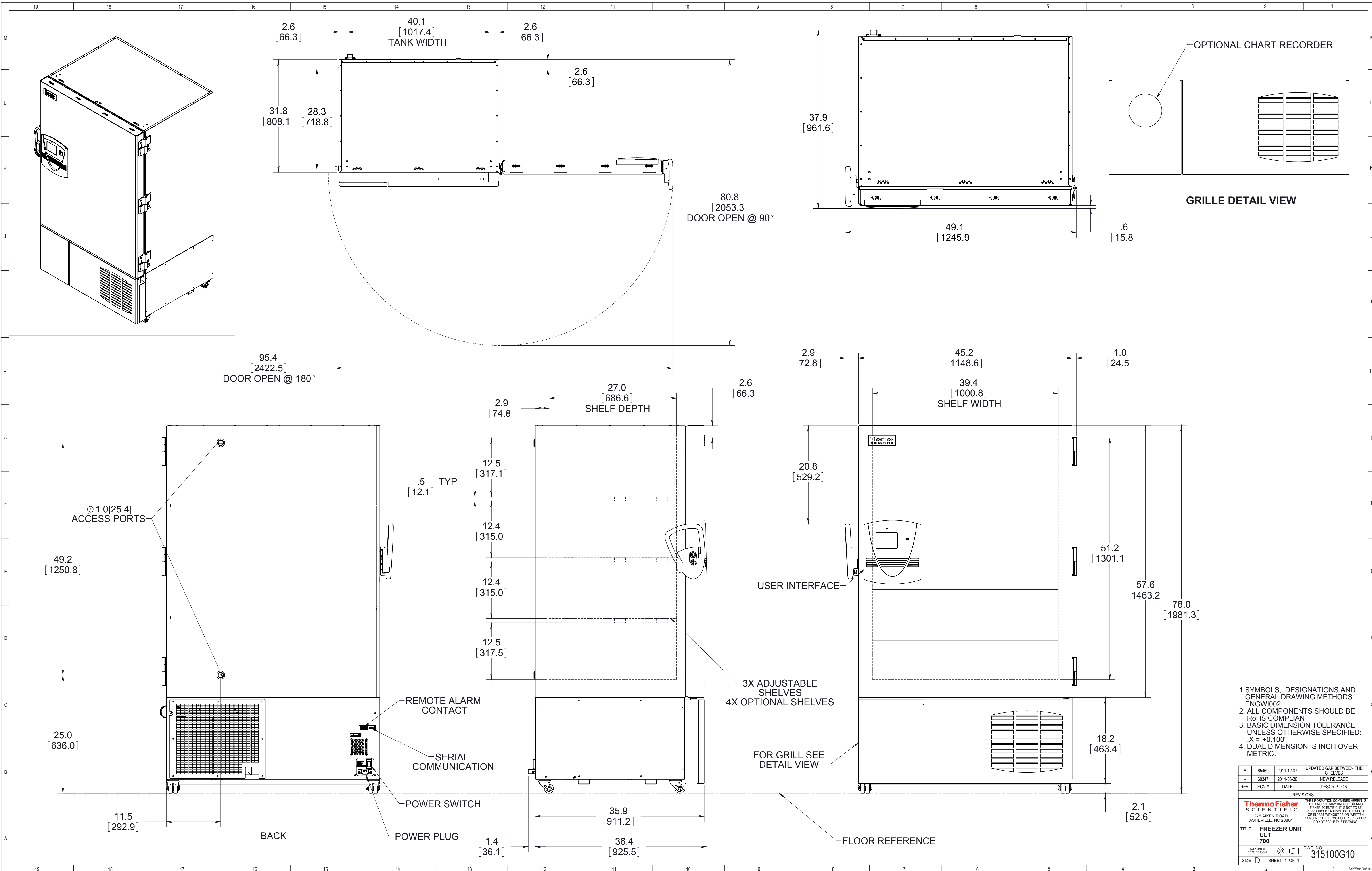
### Thermo Scientific Ultra-Low Temperature Upright Freezer

Revision-3

Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number
	Thermo Scientific TSU700V WC
	Application, Rating and Electrical Data
Application	Storage of General (non-flammable) Laboratory Materials
Storage Volume	949 liters / 33.5 cu. ft., 700 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	Inlet Temp: (12C - 25C) / (54F - 77F); Min Flow Rate: 3.8 LPM / 1 GPM; Max Pressure: 6.2 bar / 90 psia
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	Brazed Plate Heat Exchanger With Water 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 Environmentally 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 Retrieval
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 1.02 m (51.2 x 28.3 x 40.0 in.)
Exterior Dimensions (H x D x W)	1.98 x 0.96 x 1.25 m (78.0 x 37.6 x 49.2 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: 128 kg (285 lbs.)
All-Direction Casters	Standard with Locks
Ship Weight	Approximately 432 kg (951 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																																		
 <p style="font-size: small;">PD &amp; WU at 20C, 700V Water-Cooled ULT, 18870-A-P</p>	 <p style="font-size: small;">-80C Cycle at 20C, 700V Water-Cooled ULT, 18870-A-P</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <td>Test Unit Number:</td> <td style="text-align: right;">18870-A-P</td> </tr> <tr> <td>Avg Cabinet Temp at -80 C Cycle (C):</td> <td style="text-align: right;">-79.3</td> </tr> <tr> <td>PV from Setpoint, High Performance (C):</td> <td style="text-align: right;">+ 4.9 / - 2.8</td> </tr> <tr> <td>PV from Setpoint, Energy Saving (C):</td> <td style="text-align: right;">+ 9.2 / - 0.3</td> </tr> <tr> <td>Uniformity at -80C, High Performance (C):</td> <td style="text-align: right;">4.7</td> </tr> <tr> <td>Stability at -80C, High Performance (C):</td> <td style="text-align: right;">3.0</td> </tr> <tr> <td>1-min Door Open Recovery to -75C (min):</td> <td style="text-align: right;">36</td> </tr> <tr> <td>Duty Cycle at -80C, High Performance (%):</td> <td style="text-align: right;">57.6%</td> </tr> <tr> <td>Cycle (on/off) rate at -80C, High Performance (min):</td> <td style="text-align: right;">23 / 17</td> </tr> <tr> <td>Energy Consumption, High Performance (kWh/day):</td> <td style="text-align: right;">17.9</td> </tr> <tr> <td>Heat rejection at -80C, High Performance (Btu/hr):</td> <td style="text-align: right;">890</td> </tr> <tr> <td>Energy Consumption, Energy Saving (kWh/day):</td> <td style="text-align: right;">16.2</td> </tr> <tr> <td>Heat rejection at -80C, Energy Saving (Btu/hr):</td> <td style="text-align: right;">809</td> </tr> <tr> <td>Pulldown Time to -80C (hrs):</td> <td style="text-align: right;">11.0</td> </tr> <tr> <td>Warmup Time (-80 to -50 C) (minutes):</td> <td style="text-align: right;">318</td> </tr> <tr> <td>Water Supply Inlet Temp (C)</td> <td style="text-align: right;">18</td> </tr> </table>	Test Unit Number:	18870-A-P	Avg Cabinet Temp at -80 C Cycle (C):	-79.3	PV from Setpoint, High Performance (C):	+ 4.9 / - 2.8	PV from Setpoint, Energy Saving (C):	+ 9.2 / - 0.3	Uniformity at -80C, High Performance (C):	4.7	Stability at -80C, High Performance (C):	3.0	1-min Door Open Recovery to -75C (min):	36	Duty Cycle at -80C, High Performance (%):	57.6%	Cycle (on/off) rate at -80C, High Performance (min):	23 / 17	Energy Consumption, High Performance (kWh/day):	17.9	Heat rejection at -80C, High Performance (Btu/hr):	890	Energy Consumption, Energy Saving (kWh/day):	16.2	Heat rejection at -80C, Energy Saving (Btu/hr):	809	Pulldown Time to -80C (hrs):	11.0	Warmup Time (-80 to -50 C) (minutes):	318	Water Supply Inlet Temp (C)	18
Test Unit Number:	18870-A-P																																	
Avg Cabinet Temp at -80 C Cycle (C):	-79.3																																	
PV from Setpoint, High Performance (C):	+ 4.9 / - 2.8																																	
PV from Setpoint, Energy Saving (C):	+ 9.2 / - 0.3																																	
Uniformity at -80C, High Performance (C):	4.7																																	
Stability at -80C, High Performance (C):	3.0																																	
1-min Door Open Recovery to -75C (min):	36																																	
Duty Cycle at -80C, High Performance (%):	57.6%																																	
Cycle (on/off) rate at -80C, High Performance (min):	23 / 17																																	
Energy Consumption, High Performance (kWh/day):	17.9																																	
Heat rejection at -80C, High Performance (Btu/hr):	890																																	
Energy Consumption, Energy Saving (kWh/day):	16.2																																	
Heat rejection at -80C, Energy Saving (Btu/hr):	809																																	
Pulldown Time to -80C (hrs):	11.0																																	
Warmup Time (-80 to -50 C) (minutes):	318																																	
Water Supply Inlet Temp (C)	18																																	
<p>1) Performance is nominal and individual units may vary.</p> <p>2) Freezer performance will differ due to product amount, product size and operating conditions.</p> <p>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.</p>																																		



1. SYMBOLS, DESIGNATIONS AND GENERAL DRAWING METHODS ENG01002
2. ALL COMPONENTS SHOULD BE RoHS COMPLIANT
3. BASIC DIMENSION TOLERANCE UNLESS OTHERWISE SPECIFIED: .X = +0.100"
4. DUAL DIMENSION IS INCH OVER METRIC.

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 700**

SIZE: **D** SHEET 1 OF 1

DWG. NO.: **315100G10**