

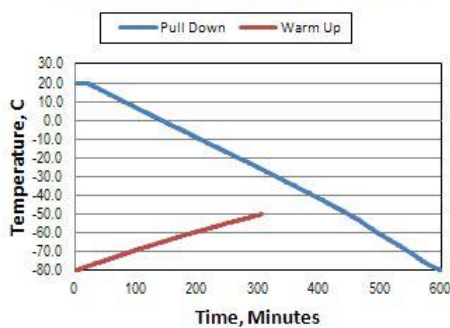


Technical Data Sheet
Forma Ultra-Low Temperature Upright Freezer
 MODEL RELEASE - 65
 Thermo Fisher Scientific, Asheville, North Carolina

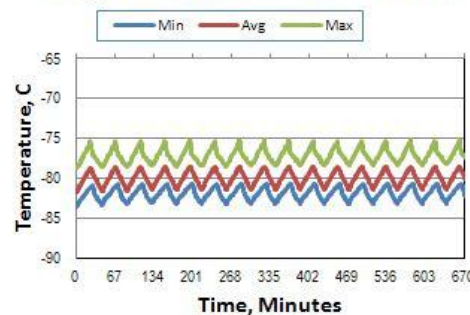
| Specifications | Model Number |
|---|--|
| | Thermo Scientific Forma 88600V WC |
| Application, Rating and Electrical Data | |
| Application | Storage of General (non-flammable) Laboratory Materials |
| Storage Volume | 815 liters / 28.8 cu. ft., 600 Standard 2" Boxes |
| Temperature Rating | -50°C to -86°C |
| Electrical Power | 230V, 50 Hz, 1 Phase |
| Instrument Rated Current | 9.5 AMP |
| Building Supply Rating** | 15.0A 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 | 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) |
| Cooling Water Condition | Inlet Temp: (12C - 25C) / (54F - 77F); Min Flow Rate: 3.8 LPM / 1 GPM; Max Pressure: 6.2 bar / 90 psia |
| Refrigeration Configuration | |
| Refrigeration System | Industrial-Rated Two Stage Cascade System |
| Compressor / Number | Hermetic Compressor for Low Temperature Application / 2 |
| Compressor Capacity* | 980 W |
| Condenser Type/Number | Brazed Plate Heat Exchanger With Water Cooled / 1 |
| Expansion Device | Capillary Tube |
| Evaporator Type | Cold Wall With Enhanced Heat Transfer Treatment |
| Defrost Method | Manual Defrost |
| Refrigerant Charge/Flammability | R404A in 1st Stage / R508B+R290 Mix in 2nd Stage / Non-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 Pressure Cutout Switch/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: 110 kg (245 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, 4 or 5 Inner Doors |

Typical Performance Characteristics in 20 ° C Ambient

PD & WU at 20C, 600V Water-Cooled ULT, 18870-A-O



-80C Cycle at 20C, 600V Water-Cooled ULT, 18870-A-O



| | |
|--|---------------|
| Test Unit Number: | 18870-A-O |
| Avg Cabinet Temp at -80 C Cycle (C): | -80.0 |
| PV from Setpoint, High Performance (C): | + 4.8 / - 3.6 |
| PV from Setpoint, Energy Saving (C): | + 8.0 / - 1.4 |
| Uniformity at -80C, High Performance (C): | 4.8 |
| Stability at -80C, High Performance (C): | 3.5 |
| 1-min Door Open Recovery to -75C (min) | 27 |
| Duty Cycle at -80C, High Performance (%): | 53.7% |
| Cycle (on/off) rate at -80C, High Performance (min): | 23 / 20 |
| Energy Consumption, High Performance (kWh/day): | 16.8 |
| Heat rejection at -80C, High Performance (Btu/hr): | 836 |
| Energy Consumption, Energy Saving (kWh/day): | 15.4 |
| Heat rejection at -80C, Energy Saving (Btu/hr): | 769 |
| Pulldown Time to -80C (hrs): | 9.2 |
| Warmup Time (-80 to -50 C) (minutes): | 306 |
| Water Supply Inlet Temp (C) | 18 |

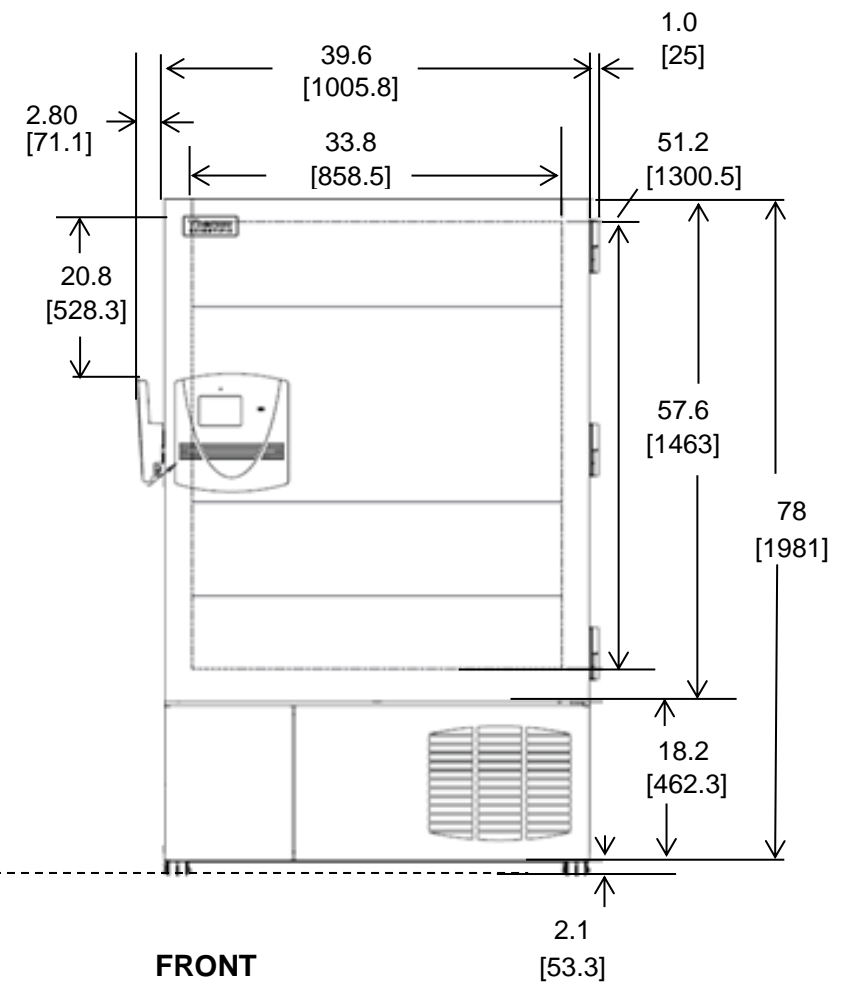
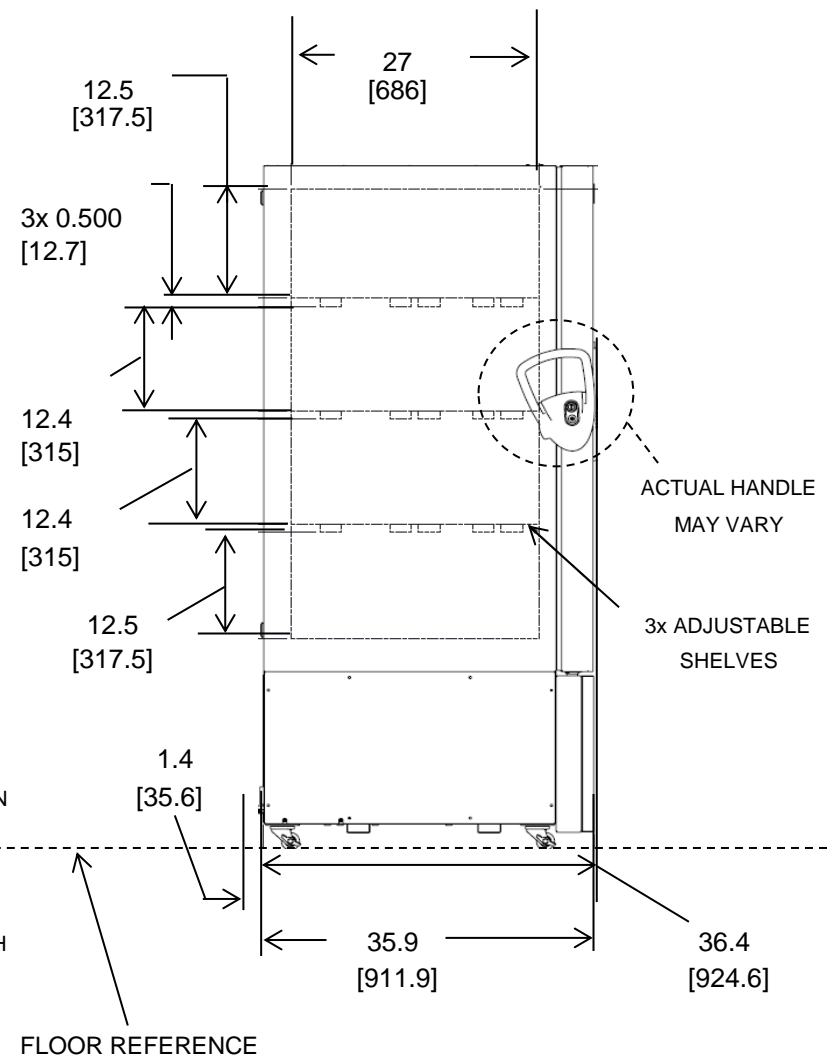
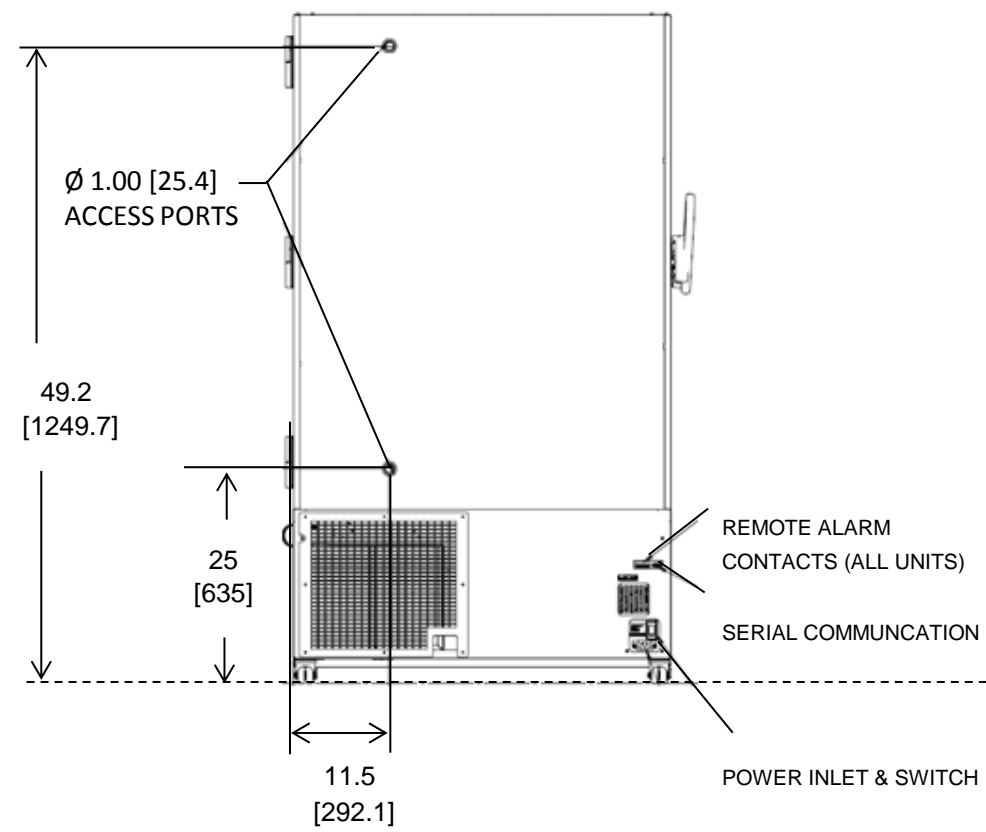
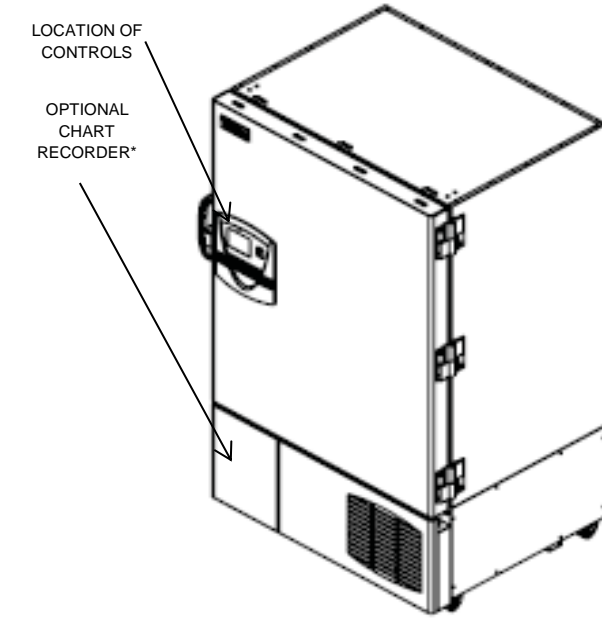
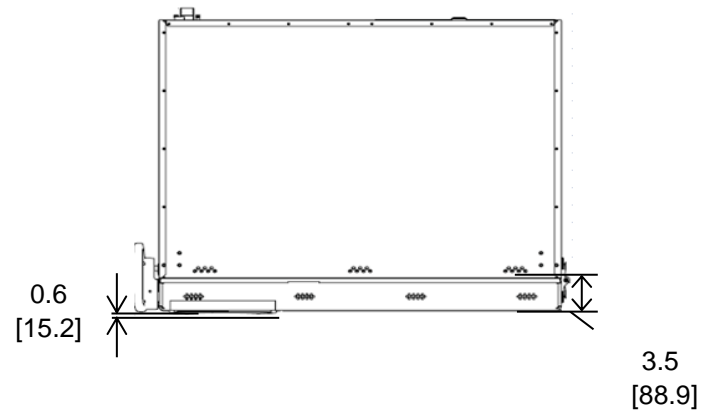
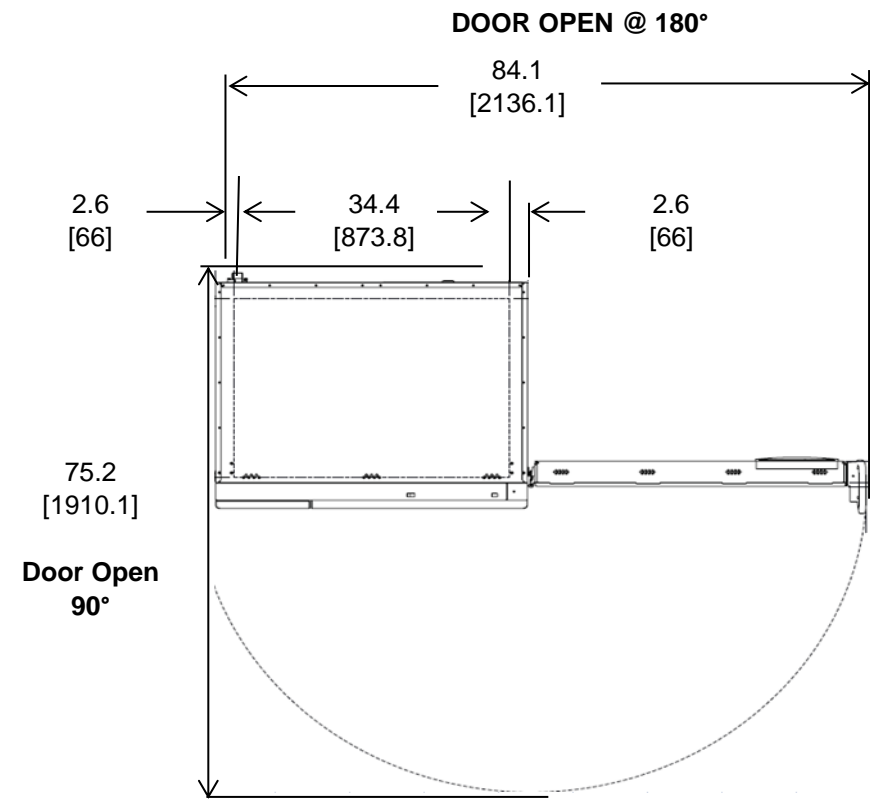
- 1) Performance is nominal and individual units may vary.
- 2) Freezer performance will differ due to product amount, product size and operating conditions.
- 3) Continuous product enhancements may, without notice, result in amendments or omissions to this specification. Thermo Scientific cannot accept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

* Manufacturer measured compressor capacity taken at standard -23°C/49°C (Evap/Cond) condition.

** For Australian/New Zealand Units: Due to different wiring regulations in Australia and New Zealand, a 10A dedicated ground circuit, protected by a circuit breaker rated for inductive loads is required for this unit. The power cord is AS/NZS 3112: 10A (2.5m length). Contact your local sales representative for more information.

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to change. Not all products are available in all countries. Please consult your local sales representative for details.



BACK

FRONT

NOTE: DUAL DIMENSION IS INCH OVER METRIC

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

Thermo
SCIENTIFIC

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