## Technical Data Sheet

**Thermo Scientific Ultra-Low Temperature Upright Freezer**

**Revision-3**

Thermo Fisher Scientific, Asheville, North Carolina

### Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Thermo Scientific TSU700V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application, Rating and Electrical Data</strong></td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Storage of General (non-flammable) Laboratory Materials</td>
</tr>
<tr>
<td>Storage Volume</td>
<td>949 liters / 33.5 cu. ft., 700 Standard 2&quot; Boxes</td>
</tr>
<tr>
<td>Temperature Rating</td>
<td>-50°C to -85°C @ 32 °C (90°F) Ambient</td>
</tr>
<tr>
<td>Electrical Power</td>
<td>230V, 50 Hz, 1 Phase</td>
</tr>
<tr>
<td>Cooling Water Condition</td>
<td>N/A</td>
</tr>
<tr>
<td>Agency Listings</td>
<td>CE</td>
</tr>
<tr>
<td>Lifetime of Product</td>
<td>10 years</td>
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</tbody>
</table>

### 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
- **Defrost Method**: Manual Defrost
- **Refrigerant Charge/Flammability**: CFC/HCFC-Free Environmental 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

**Performance Data Summary (Typical Average Values)**

- Avg. Cabinet Temp. at -80°C Setpoint, High Performance (°C): -78.7
- Peak Variation From -80°C Setpoint, High Performance (°C): ±5.5 / ±2.2
- Stability, -60°C Setpoint, High Performance (°C): ±2.1
- Uniformity, -60°C Setpoint, High Performance (°C): ±5.4
- 1 Min. Door Open Recovery to -760 Avg. Cabinet Temp. (°C): 39
- Cycle Rate, -60°C Setpoint, High Performance (c/min): 15/9
- Daily Cycle, -60°C Setpoint, High Performance (%): 62
- Energy Consumption, 40°C Setpoint, High Performance (kWh/day): 21.8
- Heat Rejection, 40°C Setpoint, High Performance (BTU/hr): 30.9
- Energy Consumption, 0°C Setpoint, Energy Saving (kWh/day): 19.8
- Heat Rejection, 0°C Setpoint, Energy Saving (BTU/hr): 29.16
- Pulldown Time to -80°C Average Cabinet Temp. (Hours): 9.3
- Warmup Time, From Average Cabinet Temp. of -80°C to -60°C (min): 241

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.

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