



Technical Data Sheet

Thermal Scientific Laboratory Freezer

Revision-0

Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number																											
	2320V&W Manual Defrost Laboratory Freezer																											
	Application, Rating and Electrical Data																											
Application	Storage of Laboratory Materials																											
Storage Volume	659 Liters / 23.3 Cubic Feet																											
Temperature Rating	-20°C @ 32°C (90°F) Ambient																											
Electrical Power	220/50/1 For "V" Models, 240/50/1 For "W" Models																											
Instrument Rated Current	5.6 FLA																											
Building Supply Rating	Breaker 15 Amps/230v±10 Volt while operating																											
Power Plug/Power Cord Length	6-15 P/ 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)																											
	Refrigeration Configuration																											
Refrigeration System	Vapor Compression System																											
Compressor / Number	1 hp Reciprocating Compressor / 1																											
Condenser Type/Number	Enhanced Finned-Tube and Forced-Air Cooled / 1																											
Expansion Device	Capillary Tube																											
Evaporator Type	Cold Wall With Enhanced Heat Transfer Treatment																											
Defrost Method	Manual Defrost																											
Refrigerant Charge/Flammability	Non-Flammable, CFC/HCFC-Free Environmentally Safe Refrigerant Mixtures																											
	Controller/Electrical System Configuration and Features																											
Controller Level	Eye Level																											
Power Switch	Keyed Off-On - Alarm																											
Controller Type	Microprocessor-Based IntrLogic™ Control																											
Setpoint Security / Programmable	Standard / Standard																											
Compressor Safe Guard	High Pressure Cutout Switch/High Temp Cutout Switch/Current protection																											
Control Sensor	Stainless Steel Shielded RTD in Air																											
Remote Alarm Terminals	Standard																											
Door Open, Probe Failure Alarms	Standard																											
Adjustable Warm/Cold Alarms	Standard																											
Power Failure Alarm	Standard																											
Standard Electronic chart Recorder	Optional																											
	Dimensions and Construction																											
Interior Dimensions (H x D x W)	147.3x 73.7 x 61.0 cm (58.0 x 29.0 x 24.0 in)																											
Exterior Dimensions (H x D x W)	201.2 x 94.5 x 71.1 cm (79.2 x 37.2 x 28.0 in)																											
Insulation	5.08 cm (2 in.) High Density HFC-blown Polyurethane Foam (R=42)																											
Door Perimeter heater	Electric																											
Shelves / Capacity	(4) Adjustable Wire Shelves. Max. Cap. per Shelf: 45 kg (100 lbs.)																											
All-Direction Casters	Standard with Two Locking and Two Regular																											
Ship Weight	Approximately 193 kg (425 lbs.)																											
1" Dia access port	Yes																											
	Typical Performance Characteristics																											
<p>23 ft³ -20 Freezer, Pull Down and Warm Up at 25 C</p>	<p>23 ft³ -20 Freezer, -20C Cycle at 25 C Ambient</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Test Unit Series or MSO Number:</td> <td style="text-align: right;">18829-CB-BA</td> </tr> <tr> <td>Avg Cabinet Temp at -20 C Cycle (C):</td> <td style="text-align: right;">-19.6</td> </tr> <tr> <td>PV from Setpoint (C)*:</td> <td style="text-align: right;">+ 2.2 / - 1.4</td> </tr> <tr> <td>Average Uniformity (C):</td> <td style="text-align: right;">1.9</td> </tr> <tr> <td>Average Stability (C):</td> <td style="text-align: right;">1.5</td> </tr> <tr> <td>1-min Door Open Recovery to-20C (min)</td> <td style="text-align: right;">37</td> </tr> <tr> <td>Duty Cycle at -20C Setpoint (%):</td> <td style="text-align: right;">66.8%</td> </tr> <tr> <td>Cycle (on/off) rate at -20C (min):</td> <td style="text-align: right;">11 / 5</td> </tr> <tr> <td>Avg. energy consumption (kW-hr/day):</td> <td style="text-align: right;">11.9</td> </tr> <tr> <td>Avg. heat rejection rate (Btu/hr):</td> <td style="text-align: right;">1695</td> </tr> <tr> <td>Overall Pulldown Time (to -20C) (min):</td> <td style="text-align: right;">88</td> </tr> <tr> <td>Warmup Time (-20 to 0 C) (min):</td> <td style="text-align: right;">156</td> </tr> <tr> <td colspan="2">* PV = Peak Variation</td> </tr> </table>	Test Unit Series or MSO Number:	18829-CB-BA	Avg Cabinet Temp at -20 C Cycle (C):	-19.6	PV from Setpoint (C)*:	+ 2.2 / - 1.4	Average Uniformity (C):	1.9	Average Stability (C):	1.5	1-min Door Open Recovery to-20C (min)	37	Duty Cycle at -20C Setpoint (%):	66.8%	Cycle (on/off) rate at -20C (min):	11 / 5	Avg. energy consumption (kW-hr/day):	11.9	Avg. heat rejection rate (Btu/hr):	1695	Overall Pulldown Time (to -20C) (min):	88	Warmup Time (-20 to 0 C) (min):	156	* PV = Peak Variation	
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<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>																												

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