



Technical Data Sheet

Thermal Scientific Enzyme Freezer

Revision-0

Thermo Fisher Scientific, Asheville, North Carolina

Specifications	Model Number																									
	2320V&W Manual Defrost Enzyme Freezer																									
	Application, Rating and Electrical Data																									
Application	Storage of Enzyme 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	(9) 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>18829-CB-BA</td> </tr> <tr> <td>Avg Cabinet Temp at -20 C Cycle (C):</td> <td>-19.6</td> </tr> <tr> <td>PV from Setpoint (C)*:</td> <td>+ 2.2 / - 1.4</td> </tr> <tr> <td>Average Uniformity (C):</td> <td>1.9</td> </tr> <tr> <td>Average Stability (C):</td> <td>1.5</td> </tr> <tr> <td>1-min Door Open Recovery to-20C (min)</td> <td>37</td> </tr> <tr> <td>Duty Cycle at -20C Setpoint (%):</td> <td>66.8%</td> </tr> <tr> <td>Cycle (on/off) rate at -20C (min):</td> <td>11 / 5</td> </tr> <tr> <td>Avg. energy consumption (kW-hr/day):</td> <td>11.9</td> </tr> <tr> <td>Avg. heat rejection rate (Btu/hr):</td> <td>1695</td> </tr> <tr> <td>Overall Pulldown Time (to -20C) (min):</td> <td>88</td> </tr> <tr> <td>Warmup Time (-20 to 0 C) (min):</td> <td>156</td> </tr> </table> <p>* PV = Peak Variation</p>	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
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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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