

## Technical Data Sheet Thermo Scientific Ultra-Low Temperature Upright Freezer

Revision-3

Thermo Fisher Scientific, Asheville, North Carolina

Specifications Application Rating and Electrical Data Application Application Storage of General (non-Hammable) Laboratory Materials Storage Volume 58 Electrical Power 1909 For 1909 F		Model Number	
Application Storage of General (non-flammable) Laboratory Materials Storage Volume 548 liters / 19 4 cut. 11, 400 Standard 2" Boxes Temperature Rating Electrical Power 2,00° to 45° C. © 32° C(90°F) Ambient Electrical Power 3,0° FLA Building Supply Rating Power Plup/Power Cord Length Agency Listings Agency Listings Agency Listings Application Envoronment Indoor Use Only; Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation, 15C - 32C (59F - 90F) NEM 6 - 15P, 10 Feet or 3.0 Meters U.L. clul. Listense of Product Listense of Product Listense of Product Refrigeration System Refrigeration System Refrigeration System Refrigeration System Refrigeration System Industrial-Rated Two Stage Cascade System Compressor / Number Condenser Type-Number Expansion Device Expansion Device Capillary Tube On Both Cascade Stages Expansion Device Controller Level Power Switch Power Switch Controller Level Power Switch Controller Level Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Yes Seption's Search Marmod Refrigerant Mustures Non-Flammable in both stages Compressor Sate Guard High Temperature Warning/Current and Temperature Protection/Logic Protection Control Sensor  Responsible Stage Stage Stage High Temperature Warning/Current and Temperature Protection/Logic Protection Single RTD (1000 ohm Platinum RTD) Resident From Marmod Alarms Auto Voltage Saleguard High Temperature Warning/Current and Temperature Protection/Logic Protection Power Switch Pow			
Storage Volume   5-48 liters / 19.4 cu. tt., 400 Standard 2" Boxes	Specifications	Application, Rating and Electrical Data	
Temperature Rating	Application		
Electrical Power Instrument Rated Current Building Supply Rating Power PlayPower Cord Largh Appraction Environment Appraction Environment Cooling Water Condition Lifetime of Product Lifetime of Product Lifetime of Product Lifetime of Product Refrigeration System Industrial-Rated Two Stage Cascade System Compressor Number 1 HP Hermetic Compressor for Low Temperature Application / 2 Condenser TypeNumber Expansion Device Expansion Device Expansion Device Controller Level Controller Level Controller Level Controller Level Controller Type Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Compressor Safe Guard Controller Tipe Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Resignation Control Sensor Septiment Seurity Controller Tipe Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Figs 22/Remote Alarm Terminals Auto-Voltage Streguard Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Figs 22/Remote Alarm Terminals Ref4854-20mA output Adjustable Water Auto-Voltage Streguard Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival Refrigeration Refrigeration Refrigeration Refrigeration Refrigeration Refrigeration Refrigeration Refrigeration Refrigeration Refrige	Storage Volume		
Instrument Rated Current   20.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads   Power Plug/Power Cord Length   Agency Listings   Agenc	Temperature Rating	-50°C to -85°C @ 32 °C(90°F) Ambient	
Building Supply Rating Power Platy Power Cord Length Agency Listings Application Environment Cooling Water Condition Listens of Product Refrigeration System Autority Platy Refrigeration System Refrigeration System Autority Platy Refrigeration System Autority Platy Refrigeration System Autority Platy Refrigeration System Industrial-Rated Two Stage Cascade System Autority Tube On Both Cascade Stages Expansion Device Condenser Type Number Enhanced Finined-Tube and Forced-Air Cooled / 1 Expansion Device Code System Autority Tube On Both Cascade Stages Evaporator Type Cold Wall With Enhanced Healt Transfer Treatment Aunual Defrost Refrigerant Mixtures / Non-Flammable in both stages Controller Level Power Switch Controller Level Power Switch Controller Type Microprocessor Control with Touch Soriem Injuration and Features Eye Level Power Switch Controller Type Microprocessor Control with Touch Soriem Injuration And Features Setpoint Security High Temperature Warning/Current and Temperature Protection/Logic Protection Space Refrigerant Autority System Data Retreival Fully Adjustable Auto-Voltage Safeguard Auto-Voltage Safeguard High Temperature Warning/Current and Temperature Protection/Logic Protection Space Refrigerant Autority	Electrical Power		
NEMA 6-15P, 10 Feet or 3.0 Meters   Li, Cull	Instrument Rated Current	9.0 FLA	
Agneroy Listings Application Environment Lindoor Use Only; Non-Corrosive, Non-Fiammable, Non-Explosive, Good Air Ventilation, 15C - 32C (59F - 90F)  NA Litetime of Product Litetime of Product Litetime of Product Refrigeration System Refrigeration System Compressor / Number Compressor / Number Compressor / Number Condenser TypenNumber Expansion Device Expansion Device Expansion Device Codenser TypenNumber Codenser TypenNumber Expansion Device Codenser TypenNumber Codenser TypenNumber Codenser TypenNumber Expansion Device Evaporator Type Codenser Typen Codenser Typen Manual Defrost Refrigerant Mixtures / Non-Flammable in both stages Controller Level Refrigerant Mixtures / Non-Flammable in both stages Controller Level Power Switch Controller Experiment Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Compressor Sate Guard Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Compressor Sate Guard Control Sensor Res232/Remote Alarm Terminals Adjustable Warm/Code Alarms Auto-Voltage Safeguard Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Res263-Remote Alarm Terminals Auto-Voltage Safeguard Dimensions and Construction Interior Dimensions (H x D x W) Insulation Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance Seal Casket with Electrical Door Perimeter Heater Silicone-Based High Performance Cell Season High Performance (C) Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance Cell Casket with Electrical Door Perimeter Heater Silicone-Based High Performance (C) Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance (C) Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance (C) Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance (C) Interior Dimensions (H x D x W) Insulation Refrigeration (C) Int	Building Supply Rating	20.0A dedicated grounded circuit. Protected by circuit breaker rated for inductive loads	
Application Environment	Power Plug/Power Cord Length	NEMA 6-15P, 10 Feet or 3.0 Meters	
Coining Water Condition  Lifetime of Product  Refrigeration Configuration  Refrigeration System  Compressor / Number  Condenser Type/Number  Condenser Type/Number  Expansion Device  Expansion Device  Expansion Device  Expansion Charge Flammability  Defrost Method  Refrigeration Charge Flammability  CFC/HCFC-Free Environmentally Sale Refrigerant Mixtures / Non-Flammable in both stages  Controller Level  Power Switch  Controller Level  Power Switch  Controller Level  Power Switch  Controller Type  Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival  Setpoint Security  Compressor Sale Guard  High Temperature Warning/Current and Temperature Protection/Logic Protection  Controller Marm/Cool Alarms  Adjustable Warm/Cool Alarms  Auto-Voltage Safeguard  Interior Dimensions (H x D x W)  Insulation  Perimeter Heater  Shelves / Capacity  3 or 4 Stainless Steel Shelves Alarm Alarmace (T)  Al-Direction Casters  Ship Weight  Cother Options  LN2 or CO2 Back Up System, HID Controller Access, SMS Text, Charle Representation (1)  Alarmace Characteristics in Normal (1)  Alarmace Characteristics (1)  Alarmace Characteristics in Normal (1)  Alarmace Characteristics (1)  Alarmace Characteristics in Normal	Agency Listings	UL, cUL	
Refrigeration System Compressor / Number Condinator Type/Number Condessor / Number Expansion Device Expansion Device Expansion Device Capillary Tube On Both Cascade Stages Expansion Device Capillary Tube On Both Cascade Stages Controller Level Defrost Method Refrigerant Charge Flanmability CFC/HCFC-Free Environmentally Safe Refrigerant Mixtures / Non-Flammable in both stages Controller Level Power Switch Controller Level Power Switch Controller Electrical System Configuration and Features Expansion Device Controller Level Power Switch Controller Electrical System Configuration and Features Controller Electrical System Configuration and Features  Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Selpoint Security Fest Seasons RS232/Remole Alarm Terminals Adjustable Warm/Cold Alarms Auto-Voltage Safeguard Auto-Voltage Safeguard Auto-Voltage Safeguard  Interior Dimensions (H x D x W) Insulation Permeter Heater Shelves / Capacity Auto-Voltage Safeguard  Dimensions and Construction  Insulation Permeter Heater Shelves / Capacity Air Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe Safe Safe Water Flown Polyurethane Foam Shelves / Capacity Air Safe Safe	Application Environment	Indoor Use Only; Non-Corrosive, Non-Flammable, Non-Explosive, Good Air Ventilation, 15C - 32C (59F - 90F)	
Refrigeration System	Cooling Water Condition	N/A	
Refrigeration System  Compressor / Number  Condenses / Number  1 HP Hermetic Compressor for Low Temperature Application / 2  Expansion Device  Expansion Device  Expansion Device  Capillary Tube On Both Cascade Stages  Evaporator Type  Cold Wall With Enhanced Heat Transfer Treatment  Manual Defrost  Refrigerant Matures / Non-Flammability  CFC/HCFC-Free Environmentally Safe Refrigerant Matures / Non-Flammable in both stages  Controller Level  Controller Level  Power Switch  Controller Type  Microprocessor Control with Touch Screen Input and Display, Includes USB System Data Retreival  Yes  Setpoint Security  Compressor Safe Quard  High Temperature Warning/Current and Temperature Protection/Logic Protection  Control Sensor  Res282/Remote Alarm Terminals  Adjustable Warm/Cold Alarms  Auto-Voltage Safeguard  Interior Dimensions (H x D x W)  Insulation  Perimeter Heater  Shelves / Capacity  Al-Direction Casters  Ship Weight  LN2 or CO2 Back Up System, HID Controlled Access, SMS Text, Chart Recorder, 4 or 5 Inner Doors  Typical Performance Seal Gasket with Electrical Door Perimeter Heater  Shelves / Capacity  3 or 4 Stainless Steel Shelves Adjustable in 11 Increments. Max. Cap. per Shelf: 73.4 kg (165 lbs.)  Shelves / Capacity  Approximately 328 kg (730 lbs.)  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  Perimeter Heater  Shelves / Capacity  3 or 4 Stainless Steel Shelves Adjustable in 11 Increments. Max. Cap. per Shelf: 73.4 kg (165 lbs.)  Shelves / Capacity  Approximately 332 kg (730 lbs.)  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  Perimeter Heater  Shelves / Capacity Approximately 332 kg (730 lbs.)  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 (T	Lifetime of Product		
Condenser   TypenNumber		Refrigeration Configuration	
Enhanced Finned Tube and Forced-Air Cooled / 1	Refrigeration System	Industrial-Rated Two Stage Cascade System	
Enhanced Finned Tube and Forced-Air Cooled / 1	Compressor / Number	1 HP Hermetic Compressor for Low Temperature Application / 2	
Expansion Device  Evaporator Type Cold Wall With Enhanced Heat Transfer Treatment Defrost Method Refrigerant Charge-Flammability CFC/HCFC-Free Environmentally Safe Refrigerant Mixtures / Non-Flammable in both stages Controller Level Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Setpoint Security Setpoint Security Compressor Safe Guard Comrol Sensor Res282/Remote Alarm Terminals Adjustable Warm-Cold Alarms Adjustable Warm-Cold Alarms Auto-Voltage Safeguard Dimensions (H x D x W) Insulation Interior Dimensions (H x D x W) Insulation Perimeter Heater Silicone-Based High Performance Seal Gasket with Electrical Door Perimeter Heater Shelves / Capacity All-Direction Casters Ship Weight Other Options LN2 or CO2 Back Up System, High Performance (C): 100	Condenser Type/Number		
Evaporator Type  Defrost Method  Refrigerant Charge/Flammability  CFC/HCFC-Free Environmentally Safe Refrigerant Mixtures / Non-Flammable in both stages  Controller Level Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Yes Compressor Safe Guard Control Service High Temperature Warning/Current and Temperature Protection/Logic Protection  Control Sensor RS232/Remote Alarm Terminals Adjustable Warm/Cold Alarms Auto-Voltage Safeguard  Dimensions (H x D x W) 1.39 x 0.72 x 0.59 m (51.2 x 28.3 x 22.4 in.)  Interior Dimensions (H x D x W) 1.39 x 0.95 x 0.58 m (51.2 x 28.3 x 22.4 in.)  Exterior Dimensions (H x D x W) 1.39 x 0.95 x 0.82 m (78.0 x 37.6 x 32.4 in.)  Fully Majustable Perimeter Heater Silicone-Based High Performance Seal Gasket with Electrical Door Perimeter Heater Silicone-Based High Performance Seal Gasket with Electrical Door Perimeter Heater Shelves / Capacity 3 or 4 Stainless Steel Shelves Adjustable In 1" Incremental Max. Cap. per Shelf: 73.4 kg (165 lbs.)  All-Direction Casters Ship Weight 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)  Performance Characteristics in Normal Ambient Condition  226 Ambient (1378-84-40)  Performance Data Summary (Typical Average Values)  Performance Characteristics in Normal Ambient Condition  237 Ag. Cabinet Temp. at-800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 45.3 / 5.7 Pask Variation From -800 Septonit. High Performance (C): 4		Capillary Tube On Both Cascade Stages	
Defrost Method  Refrigerant Charge/Flammability  CFC/HCFC-Free Enviromentally Safe Refrigerant Mixtures / Non-Flammable in both stages  Controller Level  Eye Level  Power Switch  Controller Type  Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival  Setpoint Security  Compressor Safe Guard  Control Sensor  Res282/Remote Alarm Terminals  Res282/Remote Alarm Terminals  Adjustable Warm/Cold Alarms  Auto-Voltage Safeguard  Dimensions and Construction  Interior Dimensions (H x D x W)  Insulation  Perimeter Heater  Silicone-Based High Performance Seal Gasek twill Electrical Door Perimeter Heater  Shelves / Capacity  All-Direction Casters  Single RTP (1000 ohm Platinum RTD)  Res282/Remote Alarm Terminals  Res485/4-20mA output  Auto-Voltage Safeguard  Dimensions and Construction  Interior Dimensions (H x D x W)  1.30 x 0.72 x 0.59 m (51.2 x 28.3 x 23.1 in.)  Exterior Dimensions (H x D x W)  Insulation  High R-value Vacuum Insulation Panels and High Density Water-Blown Polyurethane Foam  Perimeter Heater  Shelves / Capacity  3 or 4 Stainless Steel Shelves Adjustable In 1" Increments. Max. Cap. per Sheff: 73.4 kg (165 lbs.)  All-Direction Casters  Shp Weight  Approximately 328 kg (730 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  Perimeter (Fig. 1) 45 (25 (25 (25 (25 (25 (25 (25 (25 (25 (2			
Refrigerant Charge/Fiammability  Controller/Lectrical System Configuration and Features  Eye Level  Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Yes Setpoint Security Compressor Safe Guard Control Sensor Control Sensor RS232/Remote Alarm Terminals Adjustable Warm/Cold Alarms Auto-Voltage Safeguard Dimensions (H x D x W) Interior Dimensions (H x D x W) Insulation Perimeter Heater Shelves / Capacity Shelves / Capacity All-Direction Casters Ship Weight 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  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  Agg. Cabinet Temp. (Init). 2923 Days Option 200 250 350 350 400 0 550 100 150 200 250 300 350 400 Policy Register Feature Resident Energy Serving (GIUhr). 2374 Heat Rejection. 200 Captont, High Performance (S): 5 Fenergy Compine, High Performance (S): 5 Fenergy Compine, High Performance (C): 45.1 Cycle, 400 Septoint, High Performance (C): 45.1 Cycle, 400 Septoi	. ,,		
Controller Level Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Setpoint Security Yes Compressor Safe Guard High Temperature Warning/Current and Temperature Protection/Logic Protection Control Sensor RS232/Remote Alarm Terminals Adjustable Warm/Cold Alarms Fully Adjustable Auto-Voltage Safeguard Buck/Boost System Dimensions and Construction Interior Dimensions (H x D x W) Insulation Interior Dimensions (H x D x W) 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 Approximately 332 kg (730 lbs.) Ship Weight 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 Confirmini) 235 Ambient(187684-40) Performance Data Summary (Typical Average Values) Performance City 4.5 d. 7.5 d. 7.5 d. 29c. Sabinet Temp. (20): 4.5 d. 7.5 d. 7.5 d. 29c. Sabinet Temp. (20): 4.5 d. 7.5 d. 7.5 d. 29c. Sabinet Temp. (20): 4.5 d. 7.5 d. 7.5 d. 29c. Sabinet Temp. (20): 4.5 d. 7.5			
Controller Level Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Setpoint Security Compressor Safe Guard Control Sensor Control Sensor Single RTD (1000 ohm Platinum RTD) RS232/Remote Alarm Terminals Adjustable Warm/Cold Alarms Auto-Voltage Safeguard Dimensions (H x D x W) Buck/Boost System Dimensions (H x D x W) Insulation Insulation Insulation 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: 73.4 kg (165 lbs.) All-Direction Casters Ship Weight Differ Order 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)  Performance Co2 Setpoint, High Performance (C): 4.5 d. 5.7 peak Variation From 90C Setpoint, High Performance (C): 4.6 lunding From 1 Min. Door Open Recovey to 75C Aug. Cabinet Temp. (Riph Performance (C): 4.6 lunding From 90C Setpoint, High Performance (C): 4.6 lunding From 90C Setpoint, H	,		
Power Switch Controller Type Microprocessor Control with Touch Screen Input and Display. Includes USB System Data Retreival Yes Compressor Safe Guard Control Sensor Control Sensor Single RTD (1000 ohm Platinum RTD) RS23/2/Pembet Alarm Terminals Adjustable Warm/Cold Alarms Auto-Voltage Safeguard Dimensions (H x D x W) Steptor Dimensions (H x D x W) Insulation Interior Dimensions (H x D x W) 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 All-Direction Casters Ship Weight 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  Para Aug. Cabinet Temp. at -80C Setpoint, High Performance (C):	Controller Level		
Controller Type   Setpoint Security   Yes   Yes	Power Switch	On-C	
Setpoint Security			
Compressor Safe Guard   High Temperature Warning/Current and Temperature Protection/Logic Protection	Setpoint Security		
RS232/Remote Alarm Terminals		High Temperature Warning/Current and Temperature Protection/Logic Protection	
RS232/Remote Alarm Terminals			
Adjustable Warm/Cold Alarms	RS232/Remote Alarm Terminals		
Buck/Boost System    Dimensions and Construction	Adjustable Warm/Cold Alarms		
Interior Dimensions (H x D x W)			
Exterior Dimensions (H x D x W)  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: 73.4 kg (165 lbs.)  All-Direction Casters  Standard with Locks  Ship Weight  Approximately 332 kg (730 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)  Performance Data Summary (Typical Average Values)  Avg. Cabinet Temp. at-80C Setpoint, High Performance (C): +6.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.31-5.7  Peak Variation From -80C Setpoint, High Performance (F): 5.8  Influence of the Access of the Access of the Access of the Performance (F): 5.8  Peak Variation From -80C Setpoint, High Performance (F): 5.8  Peak Variation From -80C Setpoint, High Performance (F): 5.8  Peak Variation From -80C Setpoint, High Performance (F): 5.8  Peak Variation From -80C Setpoint, High Performance (F): 5.8  Peak Variation From -80C Setpoint, High Performan		Dimensions and Construction	
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: 73.4 kg (165 lbs.)  All-Direction Casters  Ship Weight  Approximately 332 kg (730 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  25CAmbient(18768-H-G)  Performance Data Summary (Typical Average Values)  Avg. Cabinet Temp. at -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak	Interior Dimensions (H x D x W)	1.30 x 0.72 x 0.59 m (51.2 x 28.3 x 23.1 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: 73.4 kg (165 lbs.)  All-Direction Casters  Ship Weight  Approximately 332 kg (730 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  25CAmbient(18768-H-G)  Performance Data Summary (Typical Average Values)  Avg. Cabinet Temp. at -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7  Peak	Exterior Dimensions (H x D x W)	1.98 x 0.96 x 0.82 m (78.0 x 37.6 x 32.4 in.)	
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: 73.4 kg (165 lbs.)  All-Direction Casters Ship Weight Approximately 332 kg (730 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  25CAmbient(18768-H-G) Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.8 lbillity80C Setpoint, High Performance (C): -5.8 lbillity80C Setpoint, High	\ /	High R-value Vacuum Insulation Panels and High Density Water-Blown Polyurethane Foam	
Shelves / Capacity   3 or 4 Stainless Steel Shelves Adjustable In 1" Increments. Max. Cap. per Shelf: 73.4 kg (165 lbs.)			
All-Direction Casters   Standard with Locks			
Ship Weight			
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  25CAmbient(18768-H-G) —PD —WU  Avg —Max —Min  Avg. Cabinet Temp. at -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, Energy Saving (C): +5.0 / -4.1 Stability80C Setpoint, High Performance (C): -5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate80C Setpoint, High Performance (C): 5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate80C Setpoint, High Performance (RWh/day): 18.5 Energy Consumption, -80C Setpoint, High Performance (BTU/hr): 2630 Energy Consumption, -80C Setpoint, High Performance (BTU/hr): 2374 Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374 Pulldown Time to -80C Average Cabinet Temp. (fours) Peak Variation From -80C Setpoint, High Performance (RWh/day): 18.5 Energy Consumption, -80C Setpoint, High Performance (BTU/hr): 2374 Pulldown Time to -80C Average Cabinet Temp. (hours) Peak Variation From -80C Setpoint, High Performance (C): -81.0 Peak Variation From -80C Setpoint, High Performance (C): -5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate80C Setpoint, High Performance (RWh/day): 18.5 Energy Consumption, -80C Setpoint, High Performance (BTU/hr): 2374 Peak Variation From -80C Setpoint, High Performance (BTU/hr): 2374 Peak Variation From -80C Setpoint, High Performance (C): -5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (hours) Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): -5.3 / -5.7 Peak Variation From -80C Setpoint, High Per			
Typical Performance Characteristics in Normal Ambient Condition   25CAmbient(18768-H-G)			
Avg. Cabinet Temp. at -80C Setpoint, High Performance (C): -81.0 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.8 Stability -80C Setpoint, High Performance (C): 5.8 I Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate, -80C Setpoint, High Performance (min): 20 Cycle Rate, -80C Setpoint, High Performance (%): 57 Energy Consumption, -80C Setpoint, High Performance (Wh/day): 18.5 Heat Rejection, -80C Setpoint, Energy Saving (RTU/hr): 2374 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C	·		
Avg. Cabinet Temp. at -80C Setpoint, High Performance (C): -81.0 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.8 Stability -80C Setpoint, High Performance (C): 5.8 I Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate, -80C Setpoint, High Performance (min): 20 Cycle Rate, -80C Setpoint, High Performance (%): 57 Energy Consumption, -80C Setpoint, High Performance (Wh/day): 18.5 Heat Rejection, -80C Setpoint, Energy Saving (RTU/hr): 2374 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, High Performance (C	25C Ambient (18768-H-G)	25C Ambient (18768-H-G)	Performance Data Summary (Typical Average Values)
Peak Variation From -80C Setpoint, High Performance (C): +5.3 / -5.7 Peak Variation From -80C Setpoint, Energy Saving (C): +9.0 / -4.1 Stability, -80C Setpoint, High Performance (C): +5.8 / -5.7 Peak Variation From -80C Setpoint, Energy Saving (C): +9.0 / -4.1 Stability, -80C Setpoint, High Performance (C): 5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20 Cycle Rate, -80C Setpoint, High Performance (or/off, min/min): 29/23 Duty Cycle, -80C Setpoint, High Performance (RWh/day): 18.5 Peak Variation From -80C Setpoint, High Performance (C): 5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min/m): 29/23 Duty Cycle, -80C Setpoint, High Performance (RWh/day): 18.5 Penergy Consumption, -80C Setpoint, High Performance (RWh/day): 18.5 Peak Variation From -80C Setpoint, High Performance (C): +9.0 / -4.1  Stability, -80C Setpoint, High Performance (C): 5.8 1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min/m): 29/23 Duty Cycle, -80C Setpoint, High Performance (RWh/day): 18.5 Penergy Consumption, -80C Setpoint, High Performance (RWh/day): 18.5 Penergy Consumption, -80C Setpoint, High Performance (BTU/hr): 2374 Peak Variation From -80C Setpoint, High Performance (C): +9.0 / -4.1  Peak Variation From -80C Setpoint, High Performance (C): 5.8  Peak Variation From -80C Setpoint, High Performance (C): 5.8  Peak Variation From -80C Setpoint, High Performance (C): 5.8  Penergy Consumption, -80C Setpoint, High Performance (RWh/day): 18.5  Penergy Co	—PD —WU		· cromance Data cummary (Typical Accused values)
Peak Variation From -80C Setpoint, Energy Saving (C): +9.0 / 4.1  Stability, -80C Setpoint, High Performance (C): 4.6  Uniformity, -80C Setpoint, High Performance (C): 5.8  1 Min. Door Open Recovery to -75C Avg. Cabinet Temp. (min): 20  Cycle Rate, -80C Setpoint, High Performance (on/off, min/min): 29/23  Duty Cycle, -80C Setpoint, High Performance (sw): 57  Energy Consumption, -80C Setpoint, High Performance (BTU/hr): 2630  Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374  Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 2.39			
80 Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374 0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 239	9 20 2 10		
Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374  0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp (hours) 7.3  Warrun Time From Average Cabinet Temp of 80C to -50C (min): 239	o o		Stability, -80C Setpoint, High Performance (C): 4.6
80 Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374 0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 239	ă ·10	78 000000000000000000000000000000000000	
80 Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374 0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 239	ē -30		
Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374  0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp (hours) 7.3  Warrun Time From Average Cabinet Temp of 80C to -50C (min): 239	g -40		
80 Heat Rejection, -80C Setpoint, Energy Saving (BTU/hr): 2374 0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3  Warmun Time From Average Cabinet Temp. (hours) 239	g -60	V V V V V V	
0 50 100 150 200 250 300 350 400 0 50 100 150 200 250 300 350 400 Pulldown Time to -80C Average Cabinet Temp. (hours) 7.3	₹ -70		Energy Consumption, -80C Setpoint, Energy Saving (kWh/day): 16.7
Warmup Time From Average Cabinet Temp. of -80C to -50C (min): 229			
		The latter of the same and the	

- 1) Performance is nominal and individual units may vary.
- 2) Freezer performance will differ due to product amount, product size and operating conditions.
- Continuous product enhancements may, without notice, result in amendments or ommisions 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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