

## **Technical Data Sheet**

Forma<sup>™</sup> Ultra-Low Temperature Freezer

Upright Model Release - 83

## Thermo Fisher Scientific, Asheville, North Carolina

Making Supply Reing         Type C and I product and its and i			lel Number	
Application         Storage of General (non-Ammabel) I aboratory Materials)           Biology Value         28 Scall, CB Hool, 600 Standard 29 Soude           Temporation RMATIN         50°C (L)		FDI	E60086FV	
Bits vial         28 star. 11 (v00 Starsmall 2000 Starsmall 2000)           Temperature Nating         2007 (v01 km Theme           National State of Control         5.5 AVP           National State of Control         5.6 AVP           National State of Control         7.0 AVP           National State of Control         7.0 AVP           National State of Control         7.0 AVP           National State of	Applic	ation, Rating and Electrical Data	Typical Performance Characteristics in 20 °C Ambient	
Temporature Ramp	Application	Storage of General (non-flammable) Laboratory Materials		
Electronic Prover         230V. 60.Hz.1 Phase           Butking Suppy Raing         156 ASIAP           Butking Suppy Raing         Type C clocd produced routing the clocks.           Application Environment         156 ASIAP           Butking Suppy Raing         Type C clocd produced routing the clocks.           Application Environment         Mon-Correst (Clock P)           Application Environment         Mon-Correst (Clock P)           Marce Domestics and Construction         State (Clock P)           Interno Environment         Mon-Correst (Clock P)           State (Clock P)         State (Clock P)           Interno Environment         Mon-Correst (Clock P)           State (Clock P)         State (Clock P)           State (Clock P)         State (Clock P)           State (Clock P)         State (Clock P)           Marce Domestics (Llo D)         Tax State (ASIA)           State (Clock P)         Clock P)           Marce Domestics (Llo D)         Tax State (ASIA)           State (Clock P)         Clock P)           Marce Domestics (Llo D)         Tax State (ASIA)           State (Clock P)         Clock P)           State (Clock P)         Clock P)           Door State (Clock P)         Clock P)           State (Clopace P)	-	. ,		
Interment Rated Current         15.4 Add/sci add/sci proved groundo direcul, Type C and Directolin provedien or smill required. Ensure complement with local beach code directoling         Peak Variation from Stephent (°C)         45.8 / 3.3           Ageroy Lifting         Luc, DC.         Monocomplement         Sound (BBa)         50.5           Ageroy Lifting         Luc, DC.         Sound (BBa)         50.5           Approx Lifting         Luc, DC.         Sound (BBa)         50.5           Approx Lifting         Monocomplement         2.3 / 2.3 / 2.3         Sound (BBa)         50.5           Temmostres HA D X W1         0.1 2.2 / 2.3 / 2.3 / 2.4 / 2.3 / 2.4 / 2.5 / 2.3 / 2.5 / 2.5 / 0.5 / 0.5 / 2.5 / 2.5 / 2.5 / 0.5 / 0.5 / 2.5 / 2.5 / 2.5 / 0.5 / 0.5 / 0.5 / 2.5 / 2.5 / 0.	Temperature Rating		Energy Consumption (kW-hr/day)	11.9
Building Stupp Raing         Type C drait prevent on a shall regulate. Ensure compliance with local electric code application Environment         Sound (Bb)         9.0.5           Power Plug / Powar Cod Application Environment         Non-Cortative. Non-Harmable, Non-Epotetee Indirect Use Only, Ventified E10° C. 32° C (00° F. 100° F)         Sound (Bb)         9.0.5           Application Environment         Non-Cortative. Non-Harmable, Non-Epotetee Indirect Use Only, Ventified E10° C. 32° C (00° F. 100° F)         Average Uniformity at 48°C (°C)         8.0           Demensions and Construction         Status ND AN (°C)         5.1 2.2 x 23.3 x 3.4 n. (°SO x 719 x 874 nm)         Average Uniformity at 48°C (°C)         8.0           Bit or Dimensions (*1 A D XY)         5.1 2.4 x 23.3 x 4.3 n. (°SO x 719 x 874 nm)         Average Uniformity at 48°C (°C)         8.0           Bit or Dimensions (*1 A D XY)         5.3 2.4 x 4.5 n. (% 1.100 x 719 x 874 nm)         Average Uniformity at 48°C (°C)         8.0           Bit or Dimensions (*1 A D XY)         S.3 Status B (*1 B A D R X)         110 Status D A M R X (*100 x 719 x 874 nm)         Normal Mark (*100 x 719 k 717 R)           Bit or Dimensions (*1 A D XY)         Status B M R A M R X (*10 k 9)         Status B M R M R A M R X (*10 k 9)         Normal Mark (*100 x 719 k 717 R)         Normal Mark (*100 x 719 k 717 R)         Normal Mark (*100 x 719 k 717 R)           Bit or Dipate Capacity         Cabarel Hop Performancodes Selica Selica Sel Cabarel Sel Cabarel Se Conde         <	Electrical Power	230V, 50 Hz, 1 Phase	Heat Rejection Rate (Btu/hr)	1694
Builing Supply Reining         Type C citrul protocition or similar required.         90.5           Power Rug / Power Codi         Country Dependiant plug / EEC Codis. 01 (0,56 m)         90.5           Agency Litting         U.L. U.F. (F. Codis. 01 (0,56 m)         21           Agency Litting         Non-Corrotave, Non-Flammable. Non-Exploring         21           Application Environment         Non-Corrotave, Non-Flammable. Non-Exploring         21           Informations and Construction         31.2         23.3         24.4         11.0         21           Shipping Dimensions         63.2.2.23.3         32.4         11.0         20.0         <	Instrument Rated Current	6.5 AMP	Peak Variation from Setpoint (°C)	+5.8 / -3.3
Agenitation Environment         UL. 0.L. C. E         Sourd (Eds.)         Sourd (St.)         Sourd (	Building Supply Rating	Type C circuit protection or similar required,		
Application       Non-Correction: Non-Explosive Indexr Use Only, Ventilated 19°C - 32°C (GPF P 09°F)         Indexr Use Only, Ventilated 19°C - 32°C (GPF P 09°F)       0         Non-Correction:       Non-Correction:         Non-Corection:       Non-Correction:	5			
Application Environment       Indoor Use Cinty, Ventilisted 15° C - 32° C (59° F - 90° F)       0.0       0	Agency Listings			
Dimensions and Construction       3.1         Dimensions (H x D x V)       51.2 x 23 x 34.1n (130 x 719 x 674 mm)         Sterior Dimensions (H x D x V)       51.2 x 23 x 34.1n (130 x 719 x 674 mm)         Sterior Dimensions (H x D x V)       51.2 x 23 x 34.1n (130 x 719 x 674 mm)         Sheping Yweight X Weight       52.0 ks, 61.2 x 23 x 34.1n (130 x 719 x 674 mm)         Sheping Yweight X Weight       52.0 ks, 62.2 x 34.2 x 10.1 (130 x 719 x 674 mm)         Bisping Yweight X Weight       52.0 ks, 62.2 x 34.2 x 10.1 (130 x 719 x 674 mm)         Bisping Yweight X Weight       52.0 ks, 62.2 x 34.2 x 10.1 (130 x 719 x 674 mm)         Bisping Yweight X Weight       52.0 ks, 62.2 x 10.1 (130 x 100 ks, 62.0 ks, 62.2 x 10.1 ks)         Shelves       Agustable Shewing and Cables Weight Bisping Yweight X 11.1 (130 ks x 120 km m)         Shelves       Agustable Shewing and Min Corola         Shelves       Agustable Shewing and Min Corola         L12 or CO20 Backup System       Top         Power Switch       HC Instruction Configuration         Controller Type       Fieldy Adjustable         Compressor Min       Fieldy Adjustable         Refigeration System       Fieldy Adjustable         Compressor Min       Industruction Resource         Beijont Stearch       Sinder Corola         Beijont Stearola       Sinder Corola	Application Environment	•		21
Pull Down Time (p-80°C) (m)     6.7       Warm Up Time (40°C bc-50°C) (m)     5.3       Shipping Weight Net Va. XV)     512.8:23.3 x3.4 (n. (1300 x719.6374 mm))     532       Shipping Weight Net Va. XV)     521.8:23.3 x3.4 (n. (1310 x719.6374 mm))     532       Shipping Weight Netwight     831.8:24.27.5 x4.74 dn. (2111 x1006 x1220 mm))     535       Shipping Weight Netwight     831.8:24.25 x4.72.6 (1700 hrs.)     282       Door Seal     Silcone-Based High Performance Seal     600°U Upright ULT, Pull Down and Warm Up       Short Capacity     Silcone-Based High Performance Seal     600°U Upright ULT, Pull Down and Warm Up       Short Capacity     Cabinet Load rot to Exceed 1140b (517.1 kg)       Cabinet Capacity     Vic Capacity Tock Seal (2010 rin header       Other Options     U12 or CO2 Backing System, Chart Recorder, Vic Capacity Tock Seal (100 dn) m Hainum RTD) with US base Retinaval       Statistics T-search Marcina     Top       Other Options     Wid France Count Display Mice       Wid Warm Cook Aurors     Full Aquatable       Statistics T-search Marcina     Top Retinave Count Display Mice       Wid Warm Cook Aurors     Singer RTI (100 dnm Hairum RTD) Corrected Warm Cook Aurors       Statistics Search     Singer RTI (100 dnm Hairum RTD) Corrected Warm Cook Aurors       Statistics Search     Singer RTI (100 dnm Hairum RTD) Corrected Marms     Full Aquatable       Mideri		Indoor Use Only, Ventilated 15° C - 32° C (59° F - 90° F)	Average Uniformity at -80°C (°C)	6.0
IMAGE DETERMENT IN X UNU     Demonsions and Construction     Description       Inter Orlmensions (H X D X W)     78 x 83 5 x 43 8 in (1981 x 793 x 1113 mm)     State of the state of			Average Stability at -80°C(°C)	3.1
<ul> <li>Bero Dimension (H x D x W)</li> <li>51.22 x82 3 x34 fm (130 x 7/9 x 874 mm)</li> <li>Streight Tist D x W)</li> <li>71 x 8 35 x 43 m (130 t x 978 x 130 mm)</li> <li>Streight Tist Weight</li> <li>82 11 x 42 7 x 47 A fm (211 1 x 108 x 120 mm)</li> <li>Streight Tist Weight</li> <li>Nacuum Insulation Paels with High-Denoisy WaterBown</li> <li>Post Sala</li> <li>Sticone-Based High-Performance Sala Gasket with Electrical</li> <li>Sticone-Based High Performance Sala Gasket with Electrical</li> <li>Sticone-Based High Performance Sala Gasket with Electrical</li> <li>Sticone-Based Tubbe Perimeter Heads</li> <li>Startica Starting Cashet Load not to Exceed 1 H40b (517.1 Hg)</li> <li>Interior / Externo Hard</li> <li>Adjustable Shelves in 1° (25mm) Increments</li> <li>Maximum Capacity er Streff. 24 She (110 kg)</li> <li>Cablent Load not to Exceed 1 H40b (517.1 Hg)</li> <li>Interior / Externo Hard</li> <li>Ab Direction Casters</li> <li>Startica Starting Shart Coch Screen Input and Display with Charactitive Touch Screen Base</li> <li>Steptont Sacurity</li> <li>Yes</li> <li>Compteacer Xafa Guard</li> <li>High Temp Culture Mindmentorinet Hermited (100 dann Pattam RTD)</li> <li>Cornetavity / Remote Outputs</li> <li>Refrigeration System</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fu</li></ul>			Pull Down Time (to -80°C) (hrs)	6.7
<ul> <li>Bero Dimension (H x D x W)</li> <li>51.22 x82 3 x34 fm (130 x 7/9 x 874 mm)</li> <li>Streight Tist D x W)</li> <li>71 x 8 35 x 43 m (130 t x 978 x 130 mm)</li> <li>Streight Tist Weight</li> <li>82 11 x 42 7 x 47 A fm (211 1 x 108 x 120 mm)</li> <li>Streight Tist Weight</li> <li>Nacuum Insulation Paels with High-Denoisy WaterBown</li> <li>Post Sala</li> <li>Sticone-Based High-Performance Sala Gasket with Electrical</li> <li>Sticone-Based High Performance Sala Gasket with Electrical</li> <li>Sticone-Based High Performance Sala Gasket with Electrical</li> <li>Sticone-Based Tubbe Perimeter Heads</li> <li>Startica Starting Cashet Load not to Exceed 1 H40b (517.1 Hg)</li> <li>Interior / Externo Hard</li> <li>Adjustable Shelves in 1° (25mm) Increments</li> <li>Maximum Capacity er Streff. 24 She (110 kg)</li> <li>Cablent Load not to Exceed 1 H40b (517.1 Hg)</li> <li>Interior / Externo Hard</li> <li>Ab Direction Casters</li> <li>Startica Starting Shart Coch Screen Input and Display with Charactitive Touch Screen Base</li> <li>Steptont Sacurity</li> <li>Yes</li> <li>Compteacer Xafa Guard</li> <li>High Temp Culture Mindmentorinet Hermited (100 dann Pattam RTD)</li> <li>Cornetavity / Remote Outputs</li> <li>Refrigeration System</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Adjustable</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fully Remote Outputs</li> <li>Fu</li></ul>	Di	mensions and Construction	Warm Up Time (-80°C to -50°C) (min)	352
derior Dimensions       78 ± 89 ± x43 hr. (1981 ± 978 ± 1113 hr.m.j.)         Shipping Dimensions       8121 ± 24 ± 75 ± x4 ± 75 ± x4105 mm.)         Shipping Weight / Net Weight       820 bit. (32 ± kg) 75 ± 40 ± 75 ± 1005 mm.)         Shipping Weight / Net Weight       Sitione-Based High Performance Scall Gasket with Electrical Cabinel Perimetrix Head the High-Density Weister-Bloom Perimetrix High Performance Scall Gasket with Electrical Cabinel Perimetrix Head to Exceed 1140 (151 1 kg)         Shelves       Adjuabab Perimetrix Head the High-Density Weister-Bloom Perimetrix High Performance Scall Gasket with Electrical Cabinel Leart into Exceed 1140 (151 1 kg)         Shelves       Adjuabab Perimetrix Head to Exceed 1140 (151 1 kg)         Controler Level       Top         Util Conder Level       Top         UN2 or CO2 Backup System Contificaration       Stationes Steel Option) / Painted Steel         Al-Direction Casters       NMa crimit Breaker         Michael Michael Meth-Coab Screen flags Mith Capacitive Touch Screen flags       -50         Controler Level       Top         Controler Level       Top         Controler Level       Top         The Michael Method Mith Crimit Breaker       Hild Interface: 7-segment Display with Capacitive Touch Screen flags         Sebont Security       Ves         Compressor State Guade       Hilf Proficutual State (State State All All Michael All Michael All Michael (State State All Mil			· · ····· ( · · · · · · · · · · · · · ·	· · -
Shepping Dimensiona       83.12.4275 x 47.48 in. (2111 x 108 x 1208 mm.)         Shepping Weight / Me Weight       20.06 x (22 kg) / 20 fb ks. (22 kg) / 20 fb ks. (22 kg)         Insulation       Vacuum Insulation Panels with High-Density Water-Blown Door Seal         Door Seal       Silcone-Based High Performance Seal Gasket with Electrical Cabinet Perimeter / Editor         Shelves       Adjustable Shelves in / (25 mm) Increments         Maximum Capacity       Cabinet Perimeter / Editor         Interior / Esterior Mederal       Painted Steel Gashacty per shell: A50 km. (101 kg)         Al-Direction Casters       Standard with Locks         Other Options       UX or CCD Readup Spraine, Chart Recorder, VIC Capacity For Touch Screen Inpl and Display with USB Data Retreval         Electrical System Configuration Controller Level       Top         Power Switch       (Herry Main Circuit Breaker VIC Capacity For Bask 25 kg) contacts         Thermor Fisher Could       InstrumentConned Weintiong (compatible) Wein Section Sate Guand         Compressor Safe Guand       High Temp Cutout Switch, Current Logic protection Control Sensor         Stephent Section Control Sensor       Fully Adjustable         Refigeration Soytem       Fully Adjustable         Multistial Rated, Hermicially Sealed / 2 Compressor Safe Guand       High Temp Cutout Switch, Current, Logic protection Controls Sensor         Refingeration System       Fully Adjus	· · · · · · · · · · · · · · · · · · ·			
Shipping Weight / Net Weight     320 hs. (372 hg) / 709 hs. (322 kg)       Insulation     Vacuum Insulation Pools with Hgh-Parisity Water-Blown Polyurethane Foam       Door Seal     Sitione-Based High, Performance Seal Gastet with Electrical Cabrel I and to fis Xead 1140 http://www.internets       Shelves     Adjustable Shelms Sheel       Maximum Capacity per Shelf: 245 bs. (110 kg)       Shelves     Cabrel Load to fis Xead 1140 http://www.internets       All-Direction Casters     Stainless Steel All-Direction Casters       Other Options     LN2 or CO2 Backup System. Chart Recorder, VIC Capacity Coz Backup System. Chart Recorder, VIC Capacity Touts Data Reterioral       Electrical System Configuration Controller Level     (Rear) Man Crout Breaker       Controller Level     (Rear) Man Crout Breaker       Controller Controller Type     High Temp Catoot Switch, Current, Logip protection Single RT0 (1000 ohn plautum RTD)       Zanectivity / Remote Outputs     Refrigeration Configuration Tomor Baser Cload       Refrigeration Configuration Compressor: Capacity     Yes       Refrigeration System     Towardow All Design       Compressor: Cload Alarms     Full Adustable Shift All Design       Refrigeration System     Towardow All Design       Compressor: Cload Alarms     Full Adustable Shift All Design       Refrigeration Configuration Compressor: Cload Struck, Curred, Logic protection Compressor: Cload Alarms     Full Adustable       Evaporation Device <t< td=""><td></td><td></td><td></td><td></td></t<>				
Insulation       Vacuum Relation Panels with High-Density Water-Bloom Polyprethane Food         Door Seal       Silicone-Based High Performance Seal Gasket with Electrical Cabrier Perimeter Heating         Shalf Capacity       A stanialeas Skeal Adjustable Shelves in 1* (25mm) Increments         Shalf Capacity       Maximum Capacity per Shell 25k tos (110 kg) Cabrier / Estation State (100 kg) Cabrier / Estation State (100 kg) Cabrier / Estation Material         Interior / Estation Material       Name Capacity         Interior / Estation Material       Name State (100 kg) Cabrier Vitic Capacity Familed State) (100 kg) With USB Data Retrieval         Electrical System Configuration Controller Level       Top Power Switch         Electrical System Configuration Controller Level       Top Yes         Compressor State Guard       High Temp Cutout Switch, Current, Logic protection Controller Level         Thermo Fisher Chud       Instrumeticonvective Resounde Monitoring (compatible) Adjustable WarmCick Alarms         Refrigeration Configuration Compressor Chapacity'       Fully Adjustable         Refrigeration Configuration Compressor Chapacity''       Fully Adjustable         Refrigeration Configuration Compressor Chapacity''       Fully Adjustable         Refrigeration Configuration Compressor Type       Enhanced Tube and Fin with Forced-Alr Cooling Capatism' Type         Evaporator Type       Enhanced Tube and Fin with Forced-Alr Cooling Capatism' Type         Evaporat				
InduationPolyureflamane FoamDoor SealSilicone-Based (Fight Performanes Saal Gastet With Electrical Cabinet Perimeter HeaterShelvesAdjustable Shelves in f1 (20mm) incrementsMaxmum Capacity per Shelf. 245 bs. (110 kg)Shelf CapacityCabinet Jeening Holds (117 kg)Interior / Extenior MaterialPainted Steel (Stanless Sitel Option) / Painted SteelAil-Direction CastersShandard with LooksAil-Direction CastersNuc CO2 Backup System, Charl Recorder, VIC Capacity Fouch Screen Input and Display with USB Data RetrievalController LevelTopController LevelTopController TypeHC Interface: 7-Regress Math Capacitive Touch Screen ButionsStepont SecurityYesCompressor Stel GuardHigh Temp Cubut Switch, Current, Logic protection Sungle RTD (1000 ohr Batharum RTD)Compressor Stel GuardFully AdjustableMummCold AlamisFully AdjustableMusable WarmCold AlamisFully AdjustableCompressor ChurcherIndustrial Rated, Hermelcally Seadol /2 Compressor CapacityCompressor CapacityYor WCondreser TypeEnhanced Tobe and Fin with Forced-Air Cooling Expansion DeviceCompressor CapacityYor WCondreser TypeEnhanced Cold Wal DesignDeforst MethodMaxual DeforstRefigerantin (1X) Stapp 0 (K170) OP (1X20), O(K170)Directive Stape Cascade SystemCompressor ChurcherMolastial Rated, Hermelcally Seadol /2 Op (1X20), O(K170)Compressor TypeEnhanced Tobe and Fin with Forced-Air Cooling<	hipping Weight / Net Weight			
Door SealSilcone-Based High Performance Seal Gasket WH Electrical Cabinet Parimeter HeaterShelves3 Stainless Steel Adjustable Stelves in 1 (25mm) IncrementsShelvesAdjustable Stelves in 1 (25mm) IncrementsShelf CapacityMaximum Capacity per Shelf: 245 bs. (110 kg) Cabinet Load not to Exoced 1140b (517 1 kg)Interior / Externor MaterialPainted Steel (Stainless Steel Chaines St	Insulation		600V Unright ULT Pull Down and Warm Un	
Shelves     3 Stainless Steel Adjustable Shelves in (* (Stam) Increments Maximum Capacity per Sheff: 245 lbs. (101 kg) Cabinet Load not to Exceed 140b (517.1 kg) Interfor / Externor Material       All-Direction Casters     Standard with Locks       All-Direction Casters     Standard with Locks       Other Options     LN2 or CCD Backup System VIC Capacitive Touch Screen Input and Display with USB Data Retrieval       Electrical System Configuration Controller Level     Top Power Switch       Controller Stee Guard     High Tomp Cutou Switch, Current, Logic protection Commerseor Safe Guard       Compressor Safe Guard     Fully Adjustable       Fully Adjustable     Fully Adjustable       Compressor Capacity     Two Stage Cascade System Compressor Capacity       Controller Type     Enhanced Tube and Film with Forced-Ar Cooling Capacity Tube       Compressor Capacity     Two Stage Cascade System Compressor Capacity       Retrigeration System     Two Stage Cascade System Compressor Capacity       Retrigeration System     Two Stage Cascade	Door Seal		Pull Down Warm Up	
Sheft CapacityCabinet Load not to Exceed 1140b (\$17.1 kg)Interior / Exterior MaterialPainted Steel (Stainless Steel Option) / Painted SteelAl-Direction CastersStandard with LocksOther OptionsLN2 or CO2 Backup System, Chart Recorder, vith USB Data RetrievalController LevelTopElectrical System Configuration	Shelves			
Intervir / Exterior Material       Painted Steel (Stainless Steel Option) / Painted Steel         All-Direction Casters       Standard with Locks         Other Options       LN2 or CC2 Backup System, Chart Recorder, VIC Capacitive Touch Screen Input and Display with USB Data Retrieval         Electrical System Configuration       Top         Controller Level       Top         Power Switch       (Rear) Main Circuit Breaker         MIC Interface: 7-segment Display with Capacitive Touch Screen Buttons       Buttons         Setpoint Security       Yes         Controller Type       HIC Interface: 7-segment Display with Capacitive Touch Screen Buttons         Setpoint Security       Yes         Compressor Safe Guad       High Temp Cutout Switch, Current, Logic protection Control Single RTD (1000 onne Platinum RTD)         Connectivity / Remote Outputs       Rs485/4-20mA output/Dry Contacts         Thermo Fisher Cloud       InstrumentContent W Remote Monitoring (compatible)         Adjustable       Two Stage Cascade System         Compressor Capacity'       Tay XW         Compressor Capacity' <td>Shalf Canaaity</td> <td></td> <td></td> <td></td>	Shalf Canaaity			
Electrical System ConfigurationController LevelTopPower Switch(Rear) Main Circuit BreakerController TypeHIC Interface: 7-segment Display with Capacitive Touch Screen ButtonsSetpoint SecurityYesCompressor Safe GuardHigh Temp Cutout Switch, Current, Logic protection Control SensorConnectivity / Remote OutputsRS485/4-20mA output/Dry ContactsThermo Fisher CloudInstrumentConnect™ Remote Monitoring (compatible) AdjustableAdjustable Warm/Cold AlarmsFully AdjustableCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberCapillary TubeEvaporator TypeEnhanced Tube and Fin with Forced-Air Cooling Expansion DeviceEvaporator TypeEnhanced Cold Wall DesignDefrostManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsOUP: 0 (R290), 0 (R170) OUP. 0 (R290), 0 (R170)OutputCirclesol, 0 (R290), 0 (R170) OUP. 0 (R290), 0 (R170)				
Electrical System ConfigurationController LevelTopPower Switch(Rear) Main Circuit BreakerController TypeHIC Interface: 7-segment Display with Capacitive Touch Screen ButtonsSetpoint SecurityYesCompressor Safe GuardHigh Temp Cutout Switch, Current, Logic protection Control SensorConnectivity / Remote OutputsRS485/4-20mA output/Dry ContactsThermo Fisher CloudInstrumentConnect™ Remote Monitoring (compatible) AdjustableAdjustable Warm/Cold AlarmsFully AdjustableCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberIndustrial Rated, Hermetically Sealed / 2 Tompressor/NumberCompressor/NumberCapillary TubeEvaporator TypeEnhanced Tube and Fin with Forced-Air Cooling Expansion DeviceEvaporator TypeEnhanced Cold Wall DesignDefrostManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsOUP: 0 (R290), 0 (R170) OUP. 0 (R290), 0 (R170)OutputCirclesol, 0 (R290), 0 (R170) OUP. 0 (R290), 0 (R170)			<b>5</b> -20	
Controller LevelTopPower Switch(Rear) Main Circuit BreakerController TypeHIC Interface: 7-segment Display with Capacitive Touch Screen ButtonsSetpoint SecurityYesCompressor Safe GuardHigh Temp Cutout Switch, Current, Logic protection Connectivity / Nemote OutputsControl SensorSingle RTD (1000 ohm Platinum RTD)Connectivity / Remote OutputsRS4854-20mA output/DyD ContactsThermo Fisher CloudInstrumentConnect™ Remote Monitoring (compatible)AdjustableFully AdjustableRefrigeration SystemTwo Stage Cascade SystemCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor/TypeEnhanced Tube and Fin with Forced-Air CoolingExapansion DeviceCapillary TubeEvaporator TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/Znd Stage)R290 / R170-R290 MixEnvironmental EffectsOUP: 0 (R280); 0 (R170)		LN2 or CO2 Backup System, Chart Recorder, VIC Capacitive Touch Screen Input and Display		
Controller LevelTopPower Switch(Rear) Main Circuit BreakerController TypeHIC Interface: 7-segment Display with Capacitive Touch Screen ButtonsSetpoint SecurityYesCompressor Safe GuardHigh Temp Cutout Switch, Current, Logic protection Control SensorControl SensorSingle RTD (1000 ohm Platinum RTD)Connedivity / Remote OutputsRS485/4-20mA output/Dry ContactsThermo Fisher CloudInstrumentConnect <sup>™</sup> Remote Monitoring (compatible)AdjustableFully AdjustableCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor/TypeEnhanced Tube and Fin with Forced-Air CoolingExpansion DeviceCapillary TubeEvaporiot TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsGWP: 3 (R280), 6 (R170) ODP: 0 (R280); 0 (R170)	Fle	ctrical System Configuration	-70	
Power Switch       (Rear) Main Circuit Breaker         Controller Type       HIC Interface: 7-segment Display with Capacitive Touch Screen Buttons         Setpoint Security       Yes         Compressor Safe Guard       High Temp Cutout Switch, Current, Logic protection         Control Sensor       Single RTD (1000 ohm Platinum RTD)         Connectivity / Remote Outputs       RS485/4-20mA output/Dry Contacts         Thermo Fisher Cloud       InstrumentConnect <sup>™</sup> Remote Monitoring (compatible)         Adjustable Warm/Cold Alarms       Fully Adjustable         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor/Type       Enhanced Tube and Fin with Forced-Air Cooling         Exapansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/Znd Stage)       R290 / R170+R290 Mix         Environmental Effects       ODP: 0 (R290), 6 (R170)		· · · · · · · · · · · · · · · · · · ·		
Controller Type       HIC Interface: 7-segment Display with Capacitive Touch Screen Buttons         Setpoint Security       Yes         Compressor Safe Guard       High Temp Cutout Switch, Current, Logic protection         Control Sensor       Single RTD (1000 ohm Platinum RTD)         Connectivity / Remote Outputs       RS485/4-20mA output/Dry Contacts         Thermo Fisher Cloud       InstrumentConnect™ Remote Monitoring (compatible)         Adjustable Warm/Cold Alarms       Fully Adjustable         Refrigeration Configuration       Avg         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/Znd Stage)       R290 / R170+R290 Mix         Environmental Effects       ODP: 0 (R290); 0 (R170)		•		
Buttoms           Setpoint Security         Yes           Compressor Safe Guard         High Temp Cutout Switch, Current, Logic protection           Control Sensor         Single RTD (1000 ohm Platinum RTD)           Connectivity / Remote Outputs         RS485/4-20mA output/Dy Contacts           Thermo Fisher Cloud         InstrumentConnect <sup>™</sup> Remote Monitoring (compatible)           Adjustable Warm/Cold Alarms         Fully Adjustable           Compressor/Number         Industrial Rated, Hermetically Sealed / 2           Compressor/Number         Industrial Rated, Hermetically Sealed / 2           Compressor/Style         Thom of Fibrer Cooling           Exponence         Capillary Tube           Exponence         Capillary Tube           Environmental Effects         GWP-3 (R200), 6 (R170)           Op: 0 (R200), 0 (R170)         Op: 0 (R200), 0 (R170)		HIC Interface: 7-segment Display with Capacitive Touch Screen	the instant particular control control	
Compressor Safe Guard       High Temp Cutout Switch, Current, Logic protection         Control Sensor       Single RTD (1000 ohm Platinum RTD)         Connectivity / Remote Outputs       RS485/4-20mA output/Dry Contacts         Thermo Fisher Cloud       InstrumentConnect™ Remote Monitoring (compatible)         Adjustable Warm/Cold Alarms       Fully Adjustable         600V Upright ULT at -80C Cycle         MAX       MIN         Adjustable Warm/Cold Alarms       Fully Adjustable         Refrigeration Configuration         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor/Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Defrost Method       Manual Defrost         Refrigerant (1st/2nd Stage)       R290 / R170+R290 Mix         Environmental Effects       ODP: 0 (R290); 0 (R170)			8	
Control SensorSingle RTD (1000 ohm Platinum RTD)Connectivity / Remote OutputsRS485/4-20mA output/Dry ContactsThermo Fisher CloudInstrumentConnect™ Remote Monitoring (compatible)Adjustable Warm/Cold AlarmsFully Adjustable600V Upright ULT at -80C CycleMAXMINAvG-73MaxMINAvGRefrigeration SystemTwo Stage Cascade SystemCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor Capacity*797 WCondenser TypeEnhanced Tube and Fin with Forced-Air CoolingExpansion DeviceCapillary TubeEvaporator TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsODP: 0 (R290); 0 (R170)				
Connectivity / Remote Outputs       RS485/4-20mA output/Dry Contacts         Thermo Fisher Cloud       InstrumentConnect™ Remote Monitoring (compatible)         Adjustable Warm/Cold Alarms       Fully Adjustable         600V Upright ULT at -80C Cycle         MAX       MIN         Adjustable Warm/Cold Alarms       Fully Adjustable         Comfiguration         Refrigeration System       Two Stage Cascade System         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/2nd Stage)       GWP: 3 (R290), 6 (R170)         Environmental Effects       ODP: 0 (R290); 0 (R170)				
Thermo Fisher Cloud       InstrumentConnect™ Remote Monitoring (compatible)         Adjustable Warm/Cold Alarms       Fully Adjustable         Adjustable Warm/Cold Alarms       Fully Adjustable         Refrigeration System       Two Stage Cascade System         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/2nd Stage)       GWP: 3 (R290), 6 (R170)         Environmental Effects       ODP: 0 (R290); 0 (R170)	Control Sensor			
Adjustable Warm/Cold Alarms       Fully Adjustable         Adjustable Warm/Cold Alarms       Fully Adjustable         Refrigeration Configuration       -73         Refrigeration System       Two Stage Cascade System         Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/2nd Stage)       R290 / R170+R290 Mix         Environmental Effects       ODP: 0 (R290); 0 (R170)	onnectivity / Remote Outputs	RS485/4-20mA output/Dry Contacts	600V Upright ULT at -80C Cycle	
-73Refrigeration ConfigurationRefrigeration SystemTwo Stage Cascade SystemCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor Capacity*797 WCondenser TypeEnhanced Tube and Fin with Forced-Air CoolingExpansion DeviceCapillary TubeEvaporator TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/2nd Stage)GWP: 3 (R290), 6 (R170)Environmental EffectsGWP: 3 (R290); 0 (R170)	Thermo Fisher Cloud	InstrumentConnect™ Remote Monitoring (compatible)	MAX MIN AVG	
Refrigeration ConfigurationRefrigeration SystemTwo Stage Cascade SystemCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor Capacity*797 WCondenser TypeEnhanced Tube and Fin with Forced-Air CoolingExpansion DeviceCapillary TubeEvaporator TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsGWP: 3 (R290), 6 (R170)ODP: 0 (R290); 0 (R170)0	djustable Warm/Cold Alarms	Fully Adjustable	-73	
Refrigeration SystemRefrigeration SystemTwo Stage Cascade SystemCompressor/NumberIndustrial Rated, Hermetically Sealed / 2Compressor Capacity*797 WCondenser TypeEnhanced Tube and Fin with Forced-Air CoolingExpansion DeviceCapillary TubeEvaporator TypeEnhanced Cold Wall DesignDefrost MethodManual DefrostRefrigerant (1st/2nd Stage)R290 / R170+R290 MixEnvironmental EffectsGWP: 3 (R290), 6 (R170)O1202403604800120240360480		Defeinanchian Comfinementian	the second second second second second second second second	
Compressor/Number       Industrial Rated, Hermetically Sealed / 2         Compressor Capacity*       797 W         Condenser Type       Enhanced Tube and Fin with Forced-Air Cooling         Expansion Device       Capillary Tube         Evaporator Type       Enhanced Cold Wall Design         Defrost Method       Manual Defrost         Refrigerant (1st/2nd Stage)       R290 / R170+R290 Mix         Environmental Effects       ODP: 0 (R290); 0 (R170)				
Evaporator Type         Enhanced Cold Wall Design           Defrost Method         Manual Defrost           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)			2 -77 W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/	
Evaporator Type         Enhanced Cold Wall Design           Defrost Method         Manual Defrost           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)	Compressor/Number			
Evaporator Type         Enhanced Cold Wall Design           Defrost Method         Manual Defrost           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)	Compressor Capacity*	797 W	<b>5</b> -79	
Evaporator Type         Enhanced Cold Wall Design           Defrost Method         Manual Defrost           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)	Condenser Type	Enhanced Tube and Fin with Forced-Air Cooling	₽ IVVVVVVVVVVVVVVVVVVVVVV	
Evaporator Type         Enhanced Cold Wall Design           Defrost Method         Manual Defrost           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)		-	-81 <u>V V V V V V V V V V V V V V V V V V V</u>	
Defrost Method         Manual Defrost         -83 <td></td> <td></td> <td>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</td> <td></td>			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Denos (wended         Manada Denos           Refrigerant (1st/2nd Stage)         R290 / R170+R290 Mix           Environmental Effects         GWP: 3 (R290), 6 (R170) ODP: 0 (R290); 0 (R170)			-83 <u>VVVVVVVVVVVVVV</u> VVVVVV	
GWP: 3 (R290) , 6 (R170)         -85           Environmental Effects         ODP: 0 (R290); 0 (R170)         0         120         240         360         480         600         720				
GWP: 3 (R290) , 6 (R170)         0         120         240         360         480         600         720	Retrigerant (1st/2nd Stage)		-85	
021.0 (1200), 0 (1110)	Environmental Effects		75203	
Elammahla Yes	Flammable	Yes	Time, minutes	

Performance is nominal and individual units may vary.
 Freezer performance will differ due to product amount, product size and operating conditions.
 Continuous product enhancements may, without notice, result in amendments or omissions to this specification. Thermo Scientific

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Manufacturer measured compressor capacity taken at standard -35°C/45°C (Evap/Cond) condition.

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