Designed to meet the demanding requirements for scientific and laboratory research. Advanced engineered design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features. Provides energy efficient, convenient, safe and reliable performance for optimal storage temperature environments necessary for a wide range of life science, pharmacy, biological, medical, clinical, and industrial applications.
CONSTRUCTION

- CFC free polyurethane cabinet and door foam insulation.
- High-impact, smooth scratch and corrosion resistant painted exterior and smooth white painted interior, provides attractive appearance and easy to clean surfaces.
- Interior and exterior of the freezer cabinet are white painted galvanized steel.
- Combination cabinet mounted multi-bulb and door perimeter gaskets provide multiple points of door sealing. Ensures reliable frost resistant performance and enhances energy efficient cold performance for long term sample security and storage.
- Interior doors (5) independent hinged steel inner doors are constructed of insulated panels with magnetic catch and easy pull handles. Reduces cold loss during door openings and sample retrieval.
- Five internal storage compartments with four heavy duty reinforced stainless steel shelves. Shelves are adjustable in 1 inch increments. Compatible with optional stainless steel storage racks, fiberboard boxes and dividers for multiple storage needs.
- Multi-feed patent pending cold wall evaporator design provides superior refrigerant flow and maximizes cooling power by ensuring that the evaporator is always 100% in contact with the freezer wall, maximizing cold transfer into the freezer and heat removal from the chamber.
- Easy open integrated outer door latch and handle allows one-handed opening and closing.
- Door latch and handle key lock for added security and protected access to freezer contents.
- Three adjustable heavy-duty door hinges ensure outer door fit and positive seal.
- Exclusive chamber vacuum relief system allows convenient and fast re-entry to cabinet upon outer door closing.
- Door activated electro-magnetic switch for use with door ajar alarm, optional CO2/LN2 backup systems and vacuum relief system.
- 1 inch diameter sensor access ports (2), located in top and bottom of back wall of cabinet for use with monitoring sensor probes.
- Heavy duty swivel locking casters and two front adjustable leveling feet allow for easy mobility of freezer and stability upon final placement of freezer.
- Low profile external cabinet height.
SELECT™ CONTROL SYSTEM

- Advanced PLC (programmable logic) microprocessor controller (door mounted eye level display and interface) includes real time clock, event logging, alarm history, advanced alarms, alarm-test, and memory functions.
- Password protection (2 levels, setpoints and parameters) security for power, temperature and alarm settings.
- Key pad, multifunction, menu driven, LCD display for trouble free access on monitoring of all control features.
- Temperature adjustable in 0.1°C increments. Temperature display to 0.1°C increments.
- Control probe located in rear wall bottom left corner for optimal and accurate temperature measurement and control.
- Power on/off switch located in protected area on back of cabinet.
- Power failure alarm (audible and visual). Time selectable.
- Door ajar indicator (audible and visual).
- Remote alarm contact connections located on back of cabinet for easy installation and access.
- Compressor protection monitors compressor performance and automatically adjusts to internal and external conditions.
- Delayed startup (programmable) delays freezer restart after power interruption.
- Surge protection minimizes voltages spikes; protects system electronics.
- Exclusive voltage boost/buck system ensures proper operating voltage to operating system. Reduces incoming line voltage if too high and boosts line voltage if too low.
- Audible and visual Hi/Lo temperature alarms are user settable via controller keypad.
- On-board system and maintenance diagnostics continuously monitors system sensors to ensure optimal freezer performance.
- Ambient temperature monitor and alarm indicate room temperature conditions.
- 24-hour back-up microprocessor battery continuously recharged. Includes low battery indicator.
- 2-10 VDC cabinet air temperature transmitter.
- Dry erase board and pocket storage organizer for user comments, notes and documents storage. Dry eraser and markers included.

SELECT™ REFRIGERATION SYSTEM

- Nor-Lake Scientific’s Select™ Refrigeration system is powered by an advanced low noise high performance cascade refrigeration system using two next generation 1 HP hermetically-sealed compressors.
- Exclusive engineered super capacity (tri-tube) capillary tube system (patent pending) delivers refrigerant on demand matching with advanced heat exchanger design providing optimal heat removal and superior low temperature performance.
- Evaporator design enhances refrigerant flow increasing the overall efficiency, temperature uniformity and recovery performance.
- Air cooled condenser, high capacity with large surface area. Washable condenser filter maintains optimal efficiency and performance.
- Clean filter indicator advises when to remove and clean. Easy service and maintenance.
- CFC-Free, commercially available refrigerants are used: R404a in first stage; R508b in second stage.
Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezer
Advanced Cabinet & Construction Features

- Polyurethane (cabinet and door) insulation
- Five independent insulated hinged inner doors and compartments. Easy pull handles
- White painted steel interior liner
- Multi-bulb gaskets on door and cabinet
- Electromagnetic door handle switch
- Integrated easy open and close door handle and latch with key lock. Padlock compatible.
- Cabinet temperature probe
- Ambient temperature probe
- Heat exchanger probe
- Inventory systems rack and boxes (optional)
- Stainless steel reinforced shelves (4)
- Vacuum pressure relief (exclusive)
- Down feed heavy gauge evaporator design
- Access ports (2) 1” diameter (back wall)
- White painted exterior cabinet and door
- Locking casters and leveling legs
- Super Tri-Tube capillary system (patent pending) (exclusive)
- Refrigeration system is powered by (2) advanced low noise compressors
- Super capacity fans
- White painted steel interior liner
- CFC free commercially available refrigerants
- Slide out condenser filter for ease in cleaning
- Air cooled condenser with large surface area
- Integrated easy open and close door handle and latch with key lock. Padlock compatible.
- Cabnet temperature probe
- Inventory systems rack and boxes (optional)
- Stainless steel reinforced shelves (4)
- Vacuum pressure relief (exclusive)
- Down feed heavy gauge evaporator design
- Access ports (2) 1” diameter (back wall)
- White painted exterior cabinet and door
- Locking casters and leveling legs
- Super Tri-Tube capillary system (patent pending) (exclusive)
- Refrigeration system is powered by (2) advanced low noise compressors
- Super capacity fans
- White painted steel interior liner
- CFC free commercially available refrigerants
- Slide out condenser filter for ease in cleaning
- Air cooled condenser with large surface area
- Integrated easy open and close door handle and latch with key lock. Padlock compatible.
Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezer
Advanced Controller & Monitor Features

- Advanced Controller & Monitor Features
- Pocket organizer
- Document Storage
- Dry erase board
- Door mounted, key pad, menu driven, LCD Display
- Temperature adjustable in .1ºC increments
- Real time clock
- Alarm test
- Door ajar indicator
- Power failure alarm (audible & visual)
- Password protection (2 levels)
- Hi and Lo alarms (audible and visual)
- Alarm event monitoring
- On-Board diagnostics
- Remote alarm contacts
- Automatic controller battery backup
- Battery backup
- Integrated voltage boost/buck system (patent pending)
- Surge protector
- Temperature chart recorder (optional)
- 2 to 10 VDC cabinet air temperature transmitter
- Ambient temperature indicator and alarm
- Dry erase board
- Dry eraser and markers
- Pocket organizer
- Document Storage
- Delayed programmable start-up
- Compressor protection monitor
- Power on/off switch
- Ambient temperature indicator and alarm
- Real time clock
- Door ajar indicator
- Power failure alarm (audible & visual)
- Password protection (2 levels)
- Hi and Lo alarms (audible and visual)
- Alarm event monitoring
- On-Board diagnostics
- Remote alarm contacts
- Automatic controller battery backup
- Battery backup
- Integrated voltage boost/buck system (patent pending)
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- Temperature chart recorder (optional)
- 2 to 10 VDC cabinet air temperature transmitter
- Ambient temperature indicator and alarm
- Dry erase board
- Dry eraser and markers
- Pocket organizer
- Document Storage
- Delayed programmable start-up
- Compressor protection monitor
- Power on/off switch
Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezers
Temperature Range: -50°C to -86°C

<table>
<thead>
<tr>
<th>Voltage Model Suffix Code</th>
<th>Voltage Description</th>
<th>NEMA Plug</th>
<th>NEMA Receptacle</th>
<th>Amps</th>
<th>Breaker</th>
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<td>5-20P</td>
<td>5-20R</td>
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<td>208/230V, 1PH, 60HZ</td>
<td>6-15P</td>
<td>6-15R</td>
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<td>15</td>
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<td>/5</td>
<td>220V, 1PH, 50HZ</td>
<td>Power Inlet IEC 60320 Module</td>
<td>Cord Supplied Locally</td>
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<td>15</td>
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/0 and /4 units are UL and C-UL listed.
### Features & Specifications

**Nor-Lake**

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>NSSUF151WWW/0</th>
<th>VWR Cat. No.</th>
<th>NSSUF191WWW/0</th>
<th>VWR Cat. No.</th>
<th>NSSUF241WWW/0</th>
<th>VWR Cat. No.</th>
<th>NSSUF281WWW/0</th>
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<td>10040-480</td>
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<td>89368-502</td>
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<tr>
<td>Crated Weight (lbs) (kg)</td>
<td>645 (297)</td>
<td>685 (316)</td>
<td>715 (325)</td>
<td>745 (338)</td>
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<td>Crated Height (in) (cm)</td>
<td>83 (211)</td>
<td>83 (211)</td>
<td>83 (211)</td>
<td>83 (211)</td>
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<tr>
<td>Crated Width (in) (cm)</td>
<td>39.4 (100)</td>
<td>39.4 (100)</td>
<td>45.2 (115)</td>
<td>51 (130)</td>
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<td>Crated Depth (in) (cm)</td>
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<td>43 (109)</td>
<td>43 (109)</td>
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<td>Interior Height (in) (cm)</td>
<td>53 (134)</td>
<td>53 (134)</td>
<td>53 (134)</td>
<td>53 (134)</td>
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<tr>
<td>Interior Width (in) (cm)</td>
<td>19.4 (49.3)</td>
<td>25.2 (64)</td>
<td>31.1 (78)</td>
<td>36.8 (93)</td>
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<td>Interior Depth (in) (cm)</td>
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<td>24.3 (61)</td>
<td>24.3 (61)</td>
<td>24.3 (61)</td>
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<td>Exterior Height (in) (cm)</td>
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<td>77.8 (197)</td>
<td>77.8 (197)</td>
<td>77.8 (197)</td>
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<tr>
<td>Exterior Width (in) (cm)</td>
<td>36.5 (92)</td>
<td>36.5 (92)</td>
<td>42.3 (107)</td>
<td>48.2 (122)</td>
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<td>Exterior Depth (in) (cm)</td>
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<td>36.1 (91)</td>
<td>36.1 (91)</td>
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<tr>
<td>Capacity (CuFt) (L)</td>
<td>14.3 (405)</td>
<td>18.9 (539)</td>
<td>23.2 (659)</td>
<td>27.5 (781)</td>
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</table>

Exterior dimensions include allowances for hinges, door handle and control panel.

### Rack & Box Capacities for 2” Fiberboard Boxes

<table>
<thead>
<tr>
<th>Internal Chamber (CuFt) (L)</th>
<th>14.3 (405)</th>
<th>18.9 (539)</th>
<th>23.2 (659)</th>
<th>27.5 (781)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Outer Doors</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Number of Inner Doors</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Number of Shelves/ Compartments</td>
<td>4/5</td>
<td>4/5</td>
<td>4/5</td>
<td>4/5</td>
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<tr>
<td>Total Quantity of Racks with 2” Boxes (Full Capacity)</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
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<tr>
<td>Quantity of 2” Boxes per Rack (Full Capacity)</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Total Quantity of 2” Boxes per Cabinet (Full Capacity)</td>
<td>240</td>
<td>320</td>
<td>400</td>
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### Rack & Box Capacities for 3” Fiberboard Boxes

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<thead>
<tr>
<th>Internal Chamber (CuFt) (L)</th>
<th>14.3 (405)</th>
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<th>23.2 (659)</th>
<th>27.5 (781)</th>
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</thead>
<tbody>
<tr>
<td>Number of Outer Doors</td>
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<td>1</td>
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<tr>
<td>Number of Inner Doors</td>
<td>5</td>
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<td>5</td>
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<tr>
<td>Number of Shelves/ Compartments</td>
<td>4/5</td>
<td>4/5</td>
<td>4/5</td>
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<tr>
<td>Total Quantity of Racks with 3” Boxes (Full Capacity)</td>
<td>15</td>
<td>20</td>
<td>25</td>
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<tr>
<td>Quantity of 3” Boxes per Rack (Full Capacity)</td>
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<td>Total Quantity of 3” Boxes per Cabinet (Full Capacity)</td>
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<td>240</td>
<td>300</td>
<td>360</td>
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### Options & Accessories

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<th>Nor-Lake</th>
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<td># NBOX2</td>
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<td># RECORDULT</td>
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<td># TLCORD615P</td>
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### ULT Freezer Storage Applications

- antibiotics
- autopsy material
- blood
- body fluids
- cells
- chemicals
- chemistry materials
- conditioning cultures
- DNA/RNA
- drugs
- electronics
- environmental samples
- enzymes
- epoxy
- fungi
- glycerin stocks
- insect artifacts
- plant samples
- plasma
- proteins
- reagents
- serum
- tissues
- urine
- vaccines
- virus
- yeast

### WARRANTY

DOMESTIC - 18 months parts and labor (total 5 year compressor) warranty parts

INTERNATIONAL - 18 months parts warranty