Ultra-low Temperature Freezer

Uncompromised Protection for your Samples

Lexicon® II
with Platinum Controller

Model: UUS-714C

Designed in the USA
Esco represents innovation and forward-thinking designs, which are all coupled with the highest standard quality since 1978. The Esco Group of Companies remains dedicated in delivering innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical and IVF community. With the most extensive product line in the industry, our products have passed a number of international standards and certifications. Esco operates under ISO 9001, ISO 14001 and ISO 13485.

**Availability and Accessibility.** Headquartered in Singapore, manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 12 major markets including the US, UK, Japan, China and India. Our regional distribution centers are located in Bangladesh, China, Denmark, Germany, Hong Kong, India, Indonesia, Italy, Japan, Lhuania, Malaysia, Philippines, Russia, Singapore, South Africa, South Korea, Russia, Taiwan, Thailand, UAE, United Kingdom, USA, and Vietnam. Because of our worldwide presence, you can be sure that Esco is within your reach.

**High Quality, Reliable and Dependable.** Our customers are confident that only with the best quality, reliable, and dependable products, can they be sure of the accuracy of their research and procedures. Cross functional teams from Esco Production, R&D, Quality Assurance and Senior Management, are regularly assembled to review and implement areas for improvement.

**Esco Cares for Your Safety.** Esco focuses on providing safety not just for your samples but also for you and the environment.

**Esco Cares for Your Comfort.** Comfort of our users is ensured by building ergonomic designs and by reducing the noise levels of the units.

**Esco Cares for the Environment.** One in every four of Esco’s employees is involved in Research and Development and a number of these evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying the parts we use to produce a new energy efficient technology, it also embodies the every aspect of the company.

**Customer Service and Support.** Our service does not stop once purchase has been made. Esco gives on-time customer service and offers end-user seminars, service training, preventive maintenance, provides educational materials and informative videos.

As Esco takes the opportunity to respond to the world’s needs, we aim not just to contribute in the advancement of scientific discoveries but also in making the world a safer, healthier and a better place to live in.
Research and Development

An integral part of our business planning effort is based on managing a robust research and development program in Singapore, China, Europe and the USA, balanced against an investment in service support, training and customer education. Compared to industry averages, Esco invests a significant percentage of annual revenues in research and development. As a result of our investment, and with continuous feedback and idea evaluation among our research, global sales, marketing, purchasing and manufacturing teams; Esco products reflect the best contemporary designs in performance, ergonomics and customer satisfaction.

- Engineers located in technology centers in Singapore, China, Europe and the USA
- Growing patent portfolio
- Core competencies:
  - Embedded system, sensor and software development and integration
  - Containment engineering for biohazards, chemical vapors and hazardous powders
  - Decontamination cycle development
  - Computational fluid dynamics
  - Temperature, humidity, gas and environmental control
  - Imaging systems
  - Wireless and remote monitoring
  - cGMP laboratory design

Production and Quality

Esco’s manufacturing advantage stems from our extensive degree of vertical integration, enabled by our world-leading high throughput. All processes, with a few exceptions, are performed in-house. This allows us to achieve quality and reliability that is truly world class.

- Incoming materials inspection and warehousing
- CNC-controlled sheet metal fabrication
- Full range of welding including MIG, TIG, Spot, and Robotic welding
- Environment-friendly powder coating lines
- Electromechanical final product assembly
- Electrical / electronics sub-assembly
- Multi-step electrical and physical performance testing
- Independent quality control at each step in the production cycle
- Microbiology, chemistry, containment test labs
- Instruments calibration laboratory

Esco’s focus on quality and timeliness is relentless. Continuous improvement is a mantra. Cross-functional teams from Esco Production, R&D, Quality Assurance, Senior Management, are regularly assembled to review and implement areas for improvement.

Every year, Esco manufacturing site is audited by certification bodies like ISO 9001, ISO 14001, ISO 13485, NSF International, and TUV Nord Germany. Our machines safety, workplace safety, and environmental safety are also audited by different government institutions.

All of the third party audits help our customer to ensure Esco manufacturing sites consistency of producing quality products and continual improvement.
# Ultra-low Temperature Freezers

## Lexicon® II

### Products and Application

#### Life Sciences Laboratory Equipment

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<td>• Real-time PCR Systems</td>
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<td>• Laboratory Animal Research Workstations</td>
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<td>• Laboratory Centrifuges</td>
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</table>

#### Sample Cultivation

- CO₂ Incubators, Direct Heat Air-Jacketed
- CO₂ Incubators with Cooling System
- CO₂ Incubators with Stainless Steel Exterior
- CO₂ Incubators (Water-Jacketed)
- Laboratory Shakers

#### Sample Storage & Sample Protection Solutions

- Ultra-low Temperature Freezers
- Lab Refrigerators and Freezers
- Sample Database Management Software
- Intelligent Remote Monitoring Application Protocol
- Remote Monitoring, Datalogging, Programming Software
- Wireless Monitoring System

#### General Equipment

- Laboratory Oven
- Forced Convection Laboratory Incubator
- Natural Convection Laboratory Incubator
- Refrigerated Incubator

#### Medical / IVF Equipment

<table>
<thead>
<tr>
<th>Controlled Embryo Handling</th>
<th>Safe Embryo Culture</th>
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<th>Unique Consumables</th>
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<tr>
<td>• Fertilisafe™ ART Workstation</td>
<td>• Mifi® Multi room Benchtop Incubator</td>
<td>• Mifi® GA Gas and Temperature Validation Unit</td>
<td>• CultureCoin</td>
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- Real-time PCR Systems

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#### General Equipment

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- Forced Convection Laboratory Incubator
- Natural Convection Laboratory Incubator
- Refrigerated Incubator

#### Forensic Sciences

- Evidence Drying Cabinet

#### Sample Preparation

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- Class II Type A2 Biological Safety Cabinets
- Class II Type B1 Biological Safety Cabinets
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- Class III Biological Safety Cabinets

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**Esco Pharma Products**

**Airflow Containment Products**

- Downflow Booths
- Ceiling Laminar Airflow Units
- Laminar Flow Horizontal/Vertical Trolley
- Enterprise™ Laminar Flow Straddle Unites

**Isolation Containment**

- Aseptic Containment Barrier Isolator
- General Processing Platform Isolator
- Weighing and Dispensing Containment Isolator
- Turbulent Flow Aseptic Containment Isolator
- Healthcare Platform Isolator
- Streamline Compounding Isolator

**Cross Contamination Facility Integrated Barrier**

- BioPass™ Pass Through
- Infinity® Air Shower Pass Box
- Cleanroom Air Shower
- Infinity® Cleanroom Transfer Hatch
- Infinity® Pass Box
- Soft capsule® Soft Wall Cleanroom
- Dynamic Passboxes and Dynamic Floor Label Hatches
- Laminar Flow Storage Cabinet

**Ventilation Containment**

- Ventilated Balance Enclosure

**VacciXcell Products**

**Bioreactors and Fermenters**

- CelCradle™
- TideCell®
- VacciXcell™ Hybrid Bioreactor

**Cell Culture Monitoring, Media and Consumables**

- Super Plus™
- Plus™ Vero
- Plus™ MOCX
- Plus™ MOCX II
- BioNOC™ II macrocarriers
- GlucCell® Glucose Monitoring System
- CVD Kit

**Filling Line Equipment**

- Filling Line Isolators
- cRBs (close restricted access barriers)
- oRBs (open restricted access barriers)

**Integrated Solutions**

- Cell Processing Isolator
- Cell Processing Center

**TaPestle Rx Products and Services**

**PRODUCTS**

- Pharmacy Automation and Compounding Supply
- Compounding Pharmacy Isolators (SCI, HPI, CBI, GPPi)
- Safety Cabinets and Enclosures (Class II BSC, VBE, LFC)
- Radiopharmacy Hoods and Isolators
- Aseptic Filling Systems

**Healthcare and Laboratory Construction Components**

- Prefabricated Walls (Airecell™)
- Prefabricated Containerized Facility (Prefab™)
- Series Ceiling Systems
- Hygienic/Hermetico Door Systems
- Surgical Scrub Sinks
- Vinyl Tiles and Epoxy
- Laboratory Fit-outs
  - Worktops
  - Frames
  - Specialty Storage cabinets
  - Service Spines & Reagent Shelving

**SERVICES**

- Conceptualization
- Planning
- Procurement
- Installation

**FACILITY DESIGNS**

- Process Architecture
- Biocontainment/Biosafety
- Pharmacy Compounding/Nuclear Medicine
- Cleanroom, Vaccine and Cell Processing
- Laboratory
- Containerized Facility
- ART/IVF
- Cold Chain

*Southeast Asian Markets only*
Esco believes that your samples are precious, unique, non-replaceable, and represent your life’s work. The mission of an Ultra-low Temperature (ULT) Freezer is simply to protect your samples by keeping them cold. Until you say otherwise. If anything will interfere with this mission, your freezer should let you know before it becomes a problem.
INTRODUCTION

Ultra-Low Temperature (ULT) Freezers are widely used in scientific research for long-term storage of samples. As ULT freezers are often operated at -80°C continuously for years, reliability is of paramount importance to the researchers.

KEY FEATURES

LEXICON® II ULTRA-LOW TEMPERATURE FREEZERS

Uncompromised Protection for Your Samples

3 OR 5 INDIVIDUAL INNER DOORS

• 3 or 5 individual inner doors can be opened independently to minimize sample exposure.
• Inner door slip-joint hinge design allows for easy door dismantling during maintenance and cleaning.
• Compatibility with existing racking system from competitors.
• Magnetic door contact for rapid closure.

EXCELLENT DOOR SEALS

• Triple gasket seal provides maximum protection against thermal intrusion.

MODERN REFRIGERATION COMPONENTS

• High-performance reliable compressors.
• System is optimized to provide maximum efficiency in even the most extreme ambient conditions.
SAMPLE PORT
- 1" (25mm) diameter for easy access through wall
- Easy external monitoring port for redundant monitoring system.
- Optimally placed on top of the cabinet to eliminate thermal risk to your samples
- 2 sample ports configuration is available upon request.

QUALITY ESCO CONSTRUCTION
- Electrogalvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish.
- External surfaces are powder coated with Esco BOCIDE® to eliminate 99.9% of surface bacteria within 24 hours of exposure.
- Ensures healthier, safer and cleaner lab environment.

PRESSURE EQUALIZATION PORT (PEP)
- Heated port with spring-assisted mechanism to prevent icing on the vent
- Allows the freezer door to be opened shortly after adding samples.
- Located on the main door for easy cleaning

FRONT-MOUNTED CONDENSER FILTER
- Easily accessible without tools.
- Washable design saves money.

OPTIONAL CHART RECORDER
- Front-mounted.
- For independent temperature monitoring.
- Provides permanent record of thermal performance
PREDICTIVE FAILURE MONITORING SYSTEM (PFMS) (PATENT PENDING)

- What better way to protect samples than to alert users to an upcoming problem BEFORE the actual problem occurs.
- Esco’s revolutionary predictive failure monitoring system knows how your freezer is supposed to perform. By carefully monitoring the freezer’s refrigeration system internals, the predictive failure monitoring system can alert users to many freezer problems while the freezer can still maintain the set temperature to protect your samples.
- If an alert is necessary, the freezer can notify an assigned contact by email with the use of its Ethernet connected systems or by SMS messaging with the optional SMS modem.

EVENT MONITORING AND NETWORK NOTIFICATION SYSTEM

- Trying to figure out who accessed the freezer last? How long the door was opened? What freezer events happened when? The new freezer event monitoring system can record events for at least 15 year!
- The event monitoring and alert subsystem is always on guard to protect your samples. The system can classify alerts into yellow cautions and serious red conditions. If the door is left open for too long then a yellow alert is created. If the open door condition causes serious temperature change then the condition is escalated to a red alert.
- The controller always sounds an alarm locally but is smart enough to alert specific users by email depending on the severity of alert.
FREEZER SECURITY SYSTEM

• Who has access to your freezer and your samples? Ordinary freezers can use a key or a padlock for security but maintaining control with these mechanical items is very difficult. Keys can be lost or taken when workers leave the lab. To change the combination of a lock requires a new lock and if you have many freezers how do you keep track of all the combinations? It can be quite maddening.

• If security is enabled by the freezer administrator, the new Lexicon® II ULT with the Aalto Platinum controller maintains complete user accounts for everyone in the laboratory. Different users can have access to different freezer controller functions. For example, a technician can just gain access to samples. However, a researcher might have control over freezer temperature. Lastly, an administrator has access to input and remove user accounts and configure all freezer settings.

• In addition, the system administrator can define if freezer access must be done by a password, a security keycard, or both a password and a security keycard to open the electronic lock on the freezer keeping your samples as secure as possible! If a worker leaves the lab, the administrator can simply delete their account keeping the samples secure.
INTERACTIVE SAMPLE INVENTORY SYSTEM WITH ACCESS FROM THE FREEZER CONTROLLER – SAMPLETRACKER SAMPLE INVENTORY SYSTEM (PATENT PENDING)

- Finding your individual sample can be quite difficult in the cold frosty environment. Thus, SampleTracker is a user configurable database to keep track of your samples. This feature makes it easy to find your sample in the database and in the freezer. Search the database by one field or any number of user defined fields. Print reports for the samples you want with or without barcodes.

- Database searches can even be performed using the Lexicon® II Aalto Platinum controller. Input a user ID or scan a report with a barcode using a barcode scanner on the freezer and the Aalto Platinum controller will display the sample location right on the freezer screen. Simple! If you think you know where your sample is, enter the sample ID after retrieval to confirm the sample. If it is the right one, great! If not, the freezer screen will show you the location where to return the sample.

- The controller screen is used to check the sample you have taken out and when it is time to return the sample to storage, your samples will be verified and secured with the added security of knowing whether the laboratory is using the intended samples.

- SampleTracker is a multi-user program that provides a simple graphical interface to quickly perform all common sample handling tasks
- Use of templates allows easy lab/freezer configuration.
- No limit to the number of user defined fields.
- SampleTracker can be use independently for any brand and types of ULT freezer.
- Ability to make sample aliquots with complete graphical tracking of parents, daughter, and sub-daughter samples.
• Powerful search engine allows for customized queries

• Complete audit trail capability with 21 CFR Part 11 compliance.

• Directly interfaces to the Lexicon® II Aalto Platinum controller to perform searches and to check-out, check-in, and dispose of samples at the freezer. You can even attach photos of the samples taken at the freezer.
ENGINEERING EXCELLENCE & STRICT PROCESS CONTROL

- Strict evacuation protocols and process controls to ensure a clean, dry, and leak-free system
- Climate controlled assembly area to eliminate particulates and maintain a constant ambient temperature
- Computer controlled foaming machine to eliminate foaming variables
- Advanced data logging system to ensure all units are tested and analyzed properly and documented
- In-house designed and developed evacuation and charging process equipment specifically designed for the manufacture of ultra-low cascade refrigeration systems

EXCEPTIONAL RELIABILITY

Esco has used industry-accepted Highly Accelerated Life Testing (HALT) to stress test a large number of Lexicon Freezers at extreme conditions. The Lexicon freezers passed these extreme stress tests insuring a design that is optimized to protect your precious samples.

In accordance with ANSI/ASHRAE 72-2005 and ARI 1200-2006/2008 guidelines and as tested by a UL validated third party test lab, DNS USA, the Esco Lexicon ULT Freezer surpassed the performance of 5 major competitors with lower energy consumption, superior cabinet performance (as measured by warm-up time), and demonstrated a larger BTU refrigeration reserve capacity.

Superior performance, lower energy costs, better protection.

QUALITY COMPONENTS

All freezer components were selected from many tear-down and comparison tests. Only the most reliable components were selected.

- Danfoss® compressors are reliable and have high performance.
- Danfoss® filter drier is optimized for HFC refrigerants and uses 100% 3Å molecular sieve core for high moisture drying capacity. (Moisture equates to clogs in the system!).
- Condenser is oversized by design to provide a greater capacity for cooling.
- Condenser fans generate high airflow and have quiet operation.
- Energy efficient high performance oil separator eliminates solid contaminants along with excess oil from the system and enhances the entire system's performance.
- One seamless full wrap copper evaporator tube with no joints reduces any possibility of leaks in the field.
- Highly efficient corrosion resistant and pressure resistant heat exchanger used for maximum heat transfer.
Ultra-low Temperature Freezers

Lexicon® II

LOW ENERGY CONSUMPTION

Average Power Consumption (KWh/day)

- Competitor S: 24.6
- Competitor L: 28.6
- Competitor H: 24.5
- Competitor T: 23.8
- Competitor TS: 19.9
- Esco UUS-714C-1, 230V, 50Hz: 13.9

Competitor S
Competitor L
Competitor H
Competitor T
Competitor TS
Esco UUS-714C-1, 230V, 50Hz

Energy Consumption (KWh/day) at Tset = -80°C

- Esco UUS-714C-1-SS or UUS-714C-1 energy usage (KWh/day): 13.9
- Estimated conventional freezer energy usage (KWh/day): 24.3
- 10-year energy cost savings over conventional freezer in USD (based on 0.10$/KWh): 3,790
- 10-year carbon footprint reduction over conventional freezer in kg CO₂ (0.58 kg CO₂/KWh): 17,973

Esco energy consumption is the lowest of all manufacturers’ conventional ULT freezers of similar size compared above.

LOW HEAT EMISSION TO AMBIENT

- Esco UUS-714C-1 Heat Emission to lab space (KW): 0.78
- Estimated conventional freezer heat emission (KW): 0.92
- Less amount of heat emitted that needs to be removed by air-conditioner in the lab space (KWh/Day): 3.2
- 10-year energy cost savings over conventional freezer in USD (based on 0.10$/KWh): 1165.1

ENVIRONMENT FRIENDLY

- Less heat emission than conventional ULT freezers of similar size.
- Substantial savings on air-conditioning costs.

- Only CFC-free blowing agent is used.
- Only environmentally friendly CFC-free and HCFC-free HFC refrigerants are used.

- CFC and HCFC compounds have high impact on the ozone in the Earth’s atmosphere, whereas HFC does not contain chlorine and is not harmful to the earth’s atmosphere.
- Biodegradable, high-performance synthetic polyolester oil is used.
SUPERIOR SAMPLE PROTECTION

FAST PULL DOWN
- Pull down time is the time required to bring down the temperature of the ULT freezer from ambient to the set temperature.
- Esco Lexicon® II has a short pull down time which signifies an efficient refrigeration system*.

FAST TEMPERATURE RECOVERY AFTER DOOR OPENING
- Esco Lexicon® II recovers temperature in minutes following a 1 minute door opening*. Fast recovery in temperature ensures integrity of stored samples.

EXCELLENT UNIFORMITY
- Uniformity test measures the difference between the coldest spot and warmest spot in the freezer chamber when the freezer is operating at set temperature.
- Esco Lexicon® II has excellent uniformity under normal operating conditions*. This guarantees that all samples are at the correct temperature.

EXTENDED WARM-UP TIME DURING A POWER FAILURE
- Warm-up time measures the time taken for temperature to rise up (from -80°C to -50°C) when the power is interrupted.
- With a robust insulation system in place, Esco Lexicon® II has the best warm-up time among the freezers compared on the right*. Slower warm-up during an extended power failure buys the user time for carrying out a back-up plan.

* For comparison purposes only.

** Temperature recovery time for -80°C to -50°C.
LARGE RESERVE CAPACITY

- Reserve capacity test records the lowest temperature the freezer is able to sustain when a heat source is placed in the freezer. This resembles real life situations when hot samples are placed in the freezer. The lower the temperature the freezer can sustain, the higher chance the freezer can maintain the set temperature when warm samples are placed in the freezer.
- Esco reserve capacity surpasses that of all major brands tested below.

![BTU Reserve Average of 16 Probes**](image)

LOW NOISE OPERATION

- According to OSHA 1910.95 Occupational Noise Exposure Regulation, the sound level of the work place has to fall below 90 dBA for an employee who works 8 hours/day.
- Total noise in a lab is highly dependent upon the equipment that emits the greatest amount of noise.
- Esco Lexicon® II ultra-low freezer has a noise level of approximately 56 dBA*. This ensures a quiet and pleasant working environment for lab users.

EASY TO SERVICE

- Embedded thermocouples in the foam for easy field troubleshooting.
- Filter driers are located at the deck for easy replacement.
- Adjustable main door hinge and latch.
- Condenser filter is conveniently located at the front of the freezer. This allows easy access for inspection, cleaning and/or changing.
- 5-year warranty on compressors, 5 years on complete system.

TESTING AND CERTIFICATION

The Esco Lexicon Ultra-Low Temperature Freezer is listed by Underwriters Laboratory (UL), to meet the requirements of both the U.S. and Canada standards for electrical/mechanical integrity.
INTELLIGENT DESIGN

EFFECTIVE COOLING TECHNOLOGY

HeatRecycler™ Technology allows efficient recycling of the heat generated by the system. This reduces power consumption and prolongs the life of the freezer.

- Two additional “heat exchangers” to channel heat energy.
- “Mullion heater” recycles excess heat from 1st stage compressor to heat up main door gasket. This prevents ice from forming on the gasket and provides easy door closing.

SUPERIOR INSULATION SYSTEM

Maximum product protection is provided by Lexicon’s superior insulation system.

- 2-Stage cascade refrigeration system.
- Two fans are employed to draw consistent airflow from the front to the back of the freezer to cool the condenser.
- Two 1-hp hermetic compressors operated at a low speed for longer life.
- The compressors sit directly behind the fans and are air-cooled for better operating conditions.

QUICKOPEN™ FAST DOOR RE-OPEN SYSTEM

Esco designed Pressure Equalization Port (PEP) to relieve the vacuum that is formed inside the chamber after door opening. PEP is temperature-controlled to prevent ice formation on the port.

Ergonomically designed door handle allows one-handed door opening.
GUIDE TO MODELS

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<td>Upright</td>
<td>U</td>
<td>Standard</td>
<td>S</td>
<td>363 L (13 cu. ft.)</td>
<td>363</td>
<td>Platinum</td>
<td>220-240 VAC, 50 Hz</td>
<td>1</td>
<td>3 Internal Door Configuration</td>
<td>3D</td>
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<td>480 L (17 cu. ft.)</td>
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TOUCHSCREEN PANEL

HOME
- The button will take the user to the configured home screen.

LOGIN
- Pressing this icon takes the user to login screen.

MENU
- This button is disabled if user has not logged in. Once user has logged in, pressing this button takes the user to the menu screen.

HEALTH
- This icon will appear red/yellow to indicate a problem as per health conditions. Pressing this will load the Health status screen.

EVENT DATALOG
- Pressing this button, the user is shown the event log.

ALARM LOG
- This icon will flash if an alarm condition occurs. Pressing this icon will take the user to the Alarm log.

SLIDER
- This button will enable the user to view the hidden icons.
### GENERAL SPECIFICATIONS

#### ULTRA-LOW TEMPERATURE FREEZERS

<table>
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<tr>
<th>Controller</th>
<th>Electrical Rating</th>
<th>Model (363L)</th>
<th>Model (480L)</th>
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<td>UUS-597C-3-SD-SS (2180107)</td>
<td>UUS-714C-3-SD-SS (2180123)</td>
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</tbody>
</table>

**Temperature Range**
-50 to -86°C

**Ambient Temperature Range**
15 to 32°C (59 to 90°F)

**Capacity**
- 363 L (12.8 cu ft)
- 480 L (16.9 cu ft)
- 597 L (21.1 cu ft)
- 714 L (25.2 cu ft)

**Energy Consumption**
- Approx. 10.08 kWh/day
- Approx. 11 kWh/day
- Approx. 11.52 kWh/day
- Approx. 13.92 kWh/day

**Heat Emission**
- 0.64 kW
- 0.67 kW
- 0.71 kW
- 0.78 kW

**Pull Down Time In Minutes (from amb to -80)**
- 276
- 347
- 353
- 473

**Temperature Recovery Time After 1 Minute Door Opening**
- 24 minutes
- 36 minutes
- 36 minutes
- 36 minutes

**Warmest Temperature After 1 Minute Door Opening**
- (-) 77.6 °C
- (-) 76.8 °C
- (-) 74.6 °C
- (-) 75.9 °C

**Average Uniformity of Cycle (-80°C)**
- 6.3 °C
- 6.3 °C
- 6.8 °C
- 6.9 °C

**Warm-up Time from -80°C to -50°C (Minutes)**
- 262
- 260
- 261
- 300

**Noise Level in dB**
- 55.9 dBA
- 56.3 dBA
- 56.1 dBA
- 59.1 dBA

**External Dimension (W x D x H)**
- 710 X 885 X 1980 mm (28” x 34.8” x 78”)
- 855 X 885 X 1980 mm (33.6” x 34.8” x 78”)
- 1000 X 885 X 1980 mm (39.4” x 34.8” x 78”)
- 1145 X 885 X 1980 mm (45.1” x 34.8” x 78”)

**True Dimensions Platinum**
- 710 X 885 X 1980 mm (28” x 34.8” x 78”)
- 855 X 885 X 1980 mm (33.6” x 34.8” x 78”)
- 1000 X 885 X 1980 mm (39.4” x 34.8” x 78”)
- 1145 X 885 X 1980 mm (45.1” x 34.8” x 78”)

**Internal Dimensions**
- 450 x 620 x 1300 mm (17.7” x 24.4” x 51.2”)
- 595 x 620 x 1300 mm (23.4” x 24.4” x 51.2”)
- 740 x 620 x 1300 mm (29.1” x 24.4” x 51.2”)
- 885 x 620 x 1300 mm (34.8” x 24.4” x 51.2”)

**Electrical Rating**
- 12/13A 230V 50 Hz 1Ø
- 12/13A 230V 60 Hz 1Ø

**Number of Outer Door**
- 1

**Number of Inner Doors**
- 3 or 5

**No. of storage racks per shelf**
- 3
- 4
- 5
- 6

**No. of storage racks per unit**
- 9 or 15
- 12 or 20
- 15 or 25
- 18 or 30

**Storage box capacities for 2” cardboard boxes (With 3 inner doors)**
- 252
- 336
- 420
- 504

**Storage box capacities for 3” cardboard boxes (With 3 inner doors)**
- 180
- 240
- 300
- 360

**Storage box capacities for 2” cardboard boxes (With 5 inner doors)**
- 240
- 320
- 400
- 480

**Storage box capacities for 3” cardboard boxes (With 5 inner doors)**
- 180
- 240
- 300
- 360

**Shelves material**
- SS304 (0.9mm) thickness
- SS304 (1.2mm) thickness

**Shelves Area**
- 438 x 570 mm (17.2” x 22.4”)
- 583 x 570 mm (22.9” x 22.4”)
- 728 x 570 mm (28.6” x 22.4”)
- 873 x 570 mm (34.4” x 22.4”)

**Max Load of per shelf**
- 50kg (110 lbs) per shelf
- 90kg (198 lbs) per shelf

**Net Weight**
- 277 kg (610 lbs)
- 304 kg (670 lbs)
- 326 kg (718 lbs)
- 360 kg (793 lbs)

**Shipping Weight**
- 329 kg (725 lbs)
- 362 kg (795 lbs)
- 388 kg (855 lbs)
- 428 kg (943 lbs)

**Shipping Dimensions (W x D x H)**
- 900 x 1100 x 2200 mm (35.4” x 43.3” x 86.6”)
- 1000 x 1100 x 2200 mm (39.3” x 43.3” x 86.6”)
- 1150 x 1100 x 2200 mm (45.2” x 43.3” x 86.6”)
- 1300 x 1100 x 2200 mm (51.2” x 43.3” x 86.6”)

**Notes:**
- Units were factory tested under controlled environmental conditions per Esco method. Esco does not guarantee identical results in the field under differing conditions.
- Units were tested using 3 inner door configuration and without samples inside.
- Original reports are available upon request.
1. Access Port
2. Main Door
3. Control Panel
4. Main Door Handle
5. Main Door Hinge
6. Condenser Filter Door
7. Embedded Pulls
8. Inner Door
9. PEP Port
10. Optional Chart Recorder Box
11. Omega Bracket
OPTIONS AND ACCESSORIES

Chart Recorder Kit (5070512-U)
The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument, for on-the-spot written documentation of freezer chamber temperature. This model offers a 6” chart of temperature data.

Kit includes the 6” temperature chart recorder, 1 pack pen replacement, 1 pack 7-day paper and universal outlet.

Temperature Chart and Pen Replacements for 6” Chart Recorder
- 6” Temperature Chart, 7day, 60/pack (1260019-U)
- Chart Recorder Pen Replacement 6pens/pack (1260020-U)

Standard Cardboard 2-inch Box (1180061-U)
Fiberboard boxes have the dimension of 130 x 130 x 50 mm (5.25” x 5.25” x 2”). All boxes do not come with dividers. Dividers have to be ordered separately.

Standard Cardboard 3-inch Box (1180062-U)
Fiberboard boxes have the dimension of 130 x 130 x 80 mm (5.25” x 5.25” x 3”). All boxes do not come with dividers. Dividers have to be ordered separately.

Standard Cardboard 100-cell Divider (1180063-U)
100-cell Dividers are made of 10x10, 7/16” cells and each divider holds 100 12 mm wide vials.

Standard Cardboard 81-cell Divider (1180064-U)
81-cell Dividers are made of 9x9, 1/4” cells and each divider holds 81 13 mm wide vials.

Standard Cardboard 64-cell Divider (1180065-U)
64-cell Dividers are made of 8x8, 9/16” cells and each divider holds 64 14 mm wide vials.

Standard Cardboard 49-cell Divider (1180066-U)
49-cell Dividers are made of 7x7, 5/8” cells and each divider holds 49 16 mm wide vials.

Additional Shelving Kit
UUS-363 (5070901-U), UUS-480 (5070902-U) UUS-597 (5070903-U), UUS-714 (5070904-U)
Each Lexicon® II ULT freezer comes standard with 2 shelves, 8 clips for three inner doors and 4 shelves, 16 clips for five inner doors.
Extra shelves are available and each shelf comes with 4 clips.

SMS Module System
GPRS/GSM Modem accessory for SMS Alerts on Esco Lexicon® ULT freezers. The GPRS/GSM Modem is an optional accessory and is compatible with Lexicon II with Aalto Gold and Platinum Controller.
**Sample Tracker**
Sample inventory system to track all stored laboratory samples.

**LCO₂ Back-up System (5170438-U)**
LCO₂ back-up system injects liquid CO₂ on demand when cabinet temperature warms to a pre-set level. Back-up system kits include all hardware except the supply cylinder. In the event of a power failure, the system will operate on a charged battery.
- Display Temp. Range: -40 to -70°C
- Resolution: 1°C
- Audio & visual alarms

**Ice Scraper (1260040-U)**
Ice scraper is available for cleaning ice built up on door gasket, PEP and other places in the freezer.

**Cryo Safety Gloves (1260039-U)**
Mid-arm style cryo safety gloves are available for use with ultra-cold surfaces. Cryo safety gloves protect hands and arm when inserting or removing inventory.

**IQ/OQ Protocol (9010101-U)**
IQ/OQ protocol document is available for verifying that the equipment has been installed in accordance with installation specifications and is functioning and operating at the intended operational parameters.

**Voyager® Software Kit (5250001-U)**
Esco Voyager® is a PC-based software package developed for the remote monitoring, datalogging and programming / device configuration of Esco controlled environment laboratory equipment. Compatible equipment includes Laboratory Ovens and Incubators, Low Temperature Incubator, CO₂ Incubators and Ultra-Low Temperature Freezer

**PROtect - Independent and Redundant Monitoring System (5250001-U)**
- PROtect has no dependency on the freezer electronics so in the event of a catastrophic failure that would prevent all other systems from notifying the user, PROtect can provide the necessary alerts to protect your irreplaceable samples.
- Multiple installations in remote buildings can be monitored and multiple users can access the system simultaneously.
- The monitored cold storage device communicates to the central monitoring computer by radio frequency transmission allowing for long communication distances and extended battery life.
- Can be used to monitor up to 99 systems on a single software package or more systems/multiple locations with an optional software package.
Modifiable Clip rack for Lexicon® II with 3 inner door configuration (S170527-U)

- Can fit standard 130 x 130 x 50 mm (5.25” x 5.25” x 2”) boxes and/or standard 130 x 130 x 80 mm (5.25” x 5.25” x 3”) boxes by changing the position of the clips.
- 28 boxes can be fitted for 2” cardboard box and 20 boxes can be fitted for the 3” cardboard box.
- Made of stainless steel and has handles. Each rack includes 12 L-Clips and 18 T-Clips.
- Size: 137 x 556 x 395 mm (W x D x H)

Modifiable Clip rack for Lexicon® II with 5 inner door configuration (S170526-U)

- Can fit standard 130 x 130 x 50 mm (5.25” x 5.25” x 2”) boxes and/or standard 130 x 130 x 80 mm (5.25” x 5.25” x 3”) boxes by changing the position of the clips.
- 16 boxes can be fitted for 2” cardboard box and 12 boxes can be fitted for the 3” cardboard box.
- Made of stainless steel and has handles. Each rack includes 6 L-Clips and 9 T-Clips.
- Size: 137 x 556 x 240 mm (W x D x H)

3” Drawer rack for Lexicon® II with 3 inner door configuration (S170644-U)

- Can fit standard 130 x 130 x 80 mm (5.25” x 5.25” x 3”) boxes
- Has 5 shelves and contain 4 boxes per shelf.
- Made of stainless steel and has handles.
- Size: 139 x 551 x 441 mm (W x D x H)

3” Drawer rack for Lexicon® II with 5 inner door configuration (S170647-U)

- Can fit standard 130 x 130 x 80 mm (5.25” x 5.25” x 3”) boxes
- Has 3 shelves and contain 4 boxes per shelf.
- Made of stainless steel and has handles.
- Size: 139 x 551 x 245 mm (W x D x H)

2” Drawer rack for Lexicon® II with 3 inner door configuration (S170645-U)

- Can fit standard 130 x 130 x 50 mm (5.25” x 5.25” x 2”) boxes
- Has 7 shelves and contain 4 boxes per shelf.
- Made of stainless steel and has handles.
- Size: 139 x 551 x 398 mm (W x D x H)

2” Drawer rack for Lexicon® II with 5 inner door configuration (S170646-U)

- Can fit standard 130 x 130 x 50 mm (5.25” x 5.25” x 2”) boxes
- Has 4 shelves and contain 4 boxes per shelf.
- Made of stainless steel and has handles.
- Size: 139 x 551 x 228 mm (W x D x H)
### MODELS

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<td>UUS-363C-3 (2180083)</td>
<td>Ultra-Low temperature Freezer; Upright; 13 cu ft (363 L)</td>
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<td>UUS-480C-1 (2180030)</td>
<td>UUS-480C-3 (2180084)</td>
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<td>UUS-597C-1 (2180031)</td>
<td>UUS-597C-3 (2180085)</td>
<td>Ultra-Low temperature Freezer; Upright; 21 cu ft (597 L)</td>
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<td>UUS-714C-3 (2180086)</td>
<td>Ultra-Low temperature Freezer; Upright; 25 cu ft (714 L)</td>
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<tr>
<td>UUS-363C-1-5D (2180087)</td>
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<td>Ultra-Low temperature Freezer; Upright; 13 cu ft (363 L)</td>
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<td>UUS-480C-3-5D (2180092)</td>
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<td>UUS-597C-3-5D (2180093)</td>
<td>Ultra-Low temperature Freezer; Upright; 21 cu ft (597 L)</td>
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### ACCESSORIES

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(see PROtect brochure)
VOYAGER® SOFTWARE - CENTRAL CONTROL AND MONITORING SYSTEM
Extra Protection for Your Sample

• Lexicon® II freezers with the Aalto controller can communicate with Voyager® via RS485 connection.
• All information is kept securely inside the facility firewall. Once connected, Voyager® can notify users from a central location of any freezer alert or condition that can threaten sample safety or integrity.
• Voyager® can communicate with the available intelligent Remote Monitoring Application Protocol service (iRMAP).

INTELLIGENT REMOTE MONITORING APPLICATION PROTOCOL (IRMAP) SERVICE

• With iRMAP optional service, Esco will remotely monitor your Esco freezers in case of issues that might threaten your samples. Esco will call the supplied customer contact to provide assistance.
• iRMAP allows Esco to guard your samples 24 hours a day/7 days a week. Esco can even provide proactive service response if the predictive failure monitoring system finds a fault in your Esco freezer.
• If the user elects to transmit data outside of their facility, then Voyager® will encrypt the data twice and allow the freezer data to be monitored by iRMAP services at the Esco monitoring headquarters.
PROtect - INDEPENDENT AND REDUNDANT MONITORING SYSTEM

- PROtect has no dependency on the freezer electronics so, in the event of a catastrophic failure that would prevent all other systems from notifying the user, PROtect can provide the necessary alerts to protect your irreplaceable samples.
- Multiple installations in remote buildings can be monitored and multiple users can access the system simultaneously.
- The monitored cold storage device communicates to the central monitoring computer by radio frequency transmission allowing long communication distances and extended battery life.
- Can be used in ULT freezers (-86°C), cryogenic applications (-196°C), and standard lab refrigerators (4°C) and freezers (-30 to -40°C).
- Can be used to monitor up to 99 systems on a single software package or more systems/multiple locations with an optional software package.