

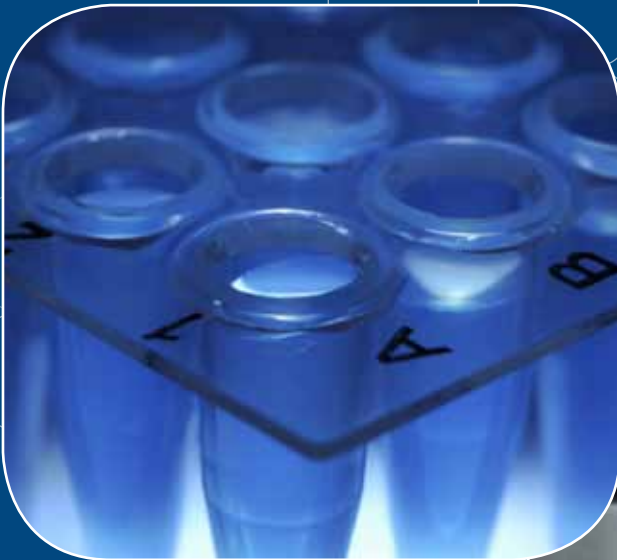
**ESCO**

WORLD CLASS. WORLDWIDE.



# Lexicon<sup>®</sup> II

**Ultra-Low Temperature Freezer**  
*Uncompromised Protection for your Samples*



Designed in the USA



## Welcome to Esco

*Esco's Vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.*

- A leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions.
- A world leader in biological safety cabinets.
- Esco has established offices in 13 countries such as Bahrain, China, India, Japan, Korea, Malaysia, Philippines, Singapore, South Africa, UK, US, Indonesia and Vietnam and is continually expanding.
- North American facilities in Pennsylvania; sales, service, logistics for US & Canada.
- Group total of more than 600 employees.
- Distributors in more than 100 countries.
- Products independently tested to international standards.
- Large R&D investments, world leading technologies.
- State-of-the-art production; vertically integrated manufacturing floor space.
- Worldwide service played out over a geographic expanse so broad that the sun never sets on what we do.



## Products and Application

### Life Sciences Laboratory Equipment

#### Sample Preparation

- Class I Biological Safety Cabinets
- Class II Type A2 Biological Safety Cabinets
- Class II Type B2 Biological Safety Cabinets
- Class III Biological Safety Cabinets
- Horizontal Laminar Flow Clean Benches
- Vertical Laminar Flow Clean Benches
- Laboratory Animal Research Workstations
- Freeze Dryers

#### Sample Cultivation

- CO<sub>2</sub> Incubators with Cooling System
- CO<sub>2</sub> Incubators with Stainless Steel Exterior
- CO<sub>2</sub> Incubators (Water Jacketed)
- Laboratory Shakers

#### Sample Analysis

- PCR Thermal Cyclers
- Conventional Thermal Cyclers
- Real-time PCR Systems

#### PCR Sample Handling

- Microplate Shakers
- PCR Cabinets

#### 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

#### Chemical Research

- Ductless Fume Hoods
- Laboratory Fume Hoods
- Fume Hood Airflow Monitors
- Exhaust Blowers
- Powder Weighing Balance Enclosures

#### General Equipment

##### Laboratory Thermostatic Products

- Laboratory Oven
- Laboratory Incubator
- Refrigerated Incubator
- Constant Climate Chamber

### Medical / IVF Equipment

- Time-Lapse Embryo Incubators
- Benchtop Multi-room Embryo Incubators

- CO<sub>2</sub> Incubators
- IVF Workstation

- Anti-Vibration Table
- CO<sub>2</sub> / O<sub>2</sub> Temperature Validation Unit

### Pharmaceutical Equipment

#### Airflow Containment

- Downflow Booths
- Ceiling Laminar Airflow Units
- Laminar Flow Horizontal Trolley
- Laminar Flow Vertical Trolley
- Laminar Flow Straddle Units
- Garment Storage Cabinet

#### Isolation Containment

- Aseptic Containment Isolator (ACTI)
- Weighing and Dispensing Containment Isolator (WDCI)
- General Processing Platform Isolator (GPPI)

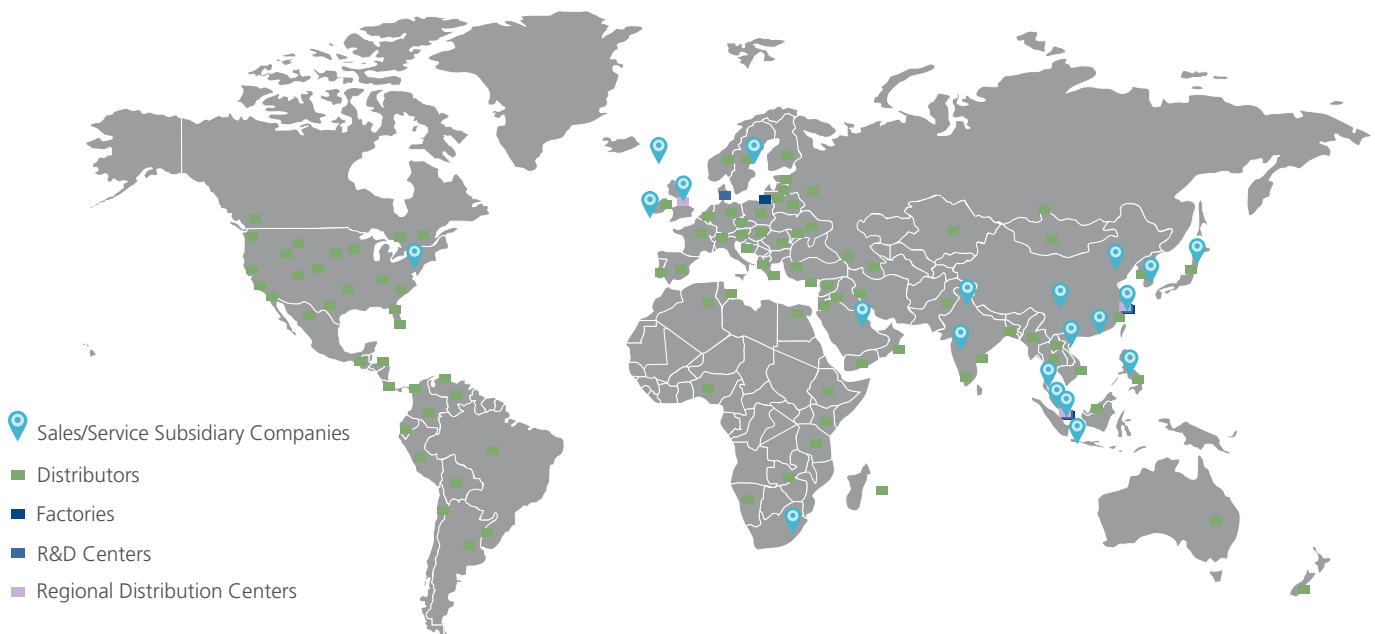
#### Cross Contamination Facility Integrated Barrier

- Cleanroom Air Showers
- Air Shower Pass Box
- Cleanroom Transfer Hatch
- Pass Boxes
- Soft Wall Cleanroom
- Dynamic Passboxes and Dynamic Floor Label Hatches

#### Barrier Isolation System

- Pharmacy Compounding Aseptic Containment Isolator (Recirculating)
- Pharmacy Compounding Aseptic Isolator
- Cytotoxic Safety Cabinets

## Global Network





## 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  $-80^{\circ}\text{C}$  continuously for years, reliability is of paramount importance to the researchers.

Constructed from high-quality proven components with energy-efficient refrigeration design, Esco Lexicon® II ULT freezers provide top notch protection that can withstand the test of time to guarantee the integrity of your samples.



### 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.



### EXCELLENT DOOR SEALS

- Triple gasket seal provides maximum protection against thermal intrusion.



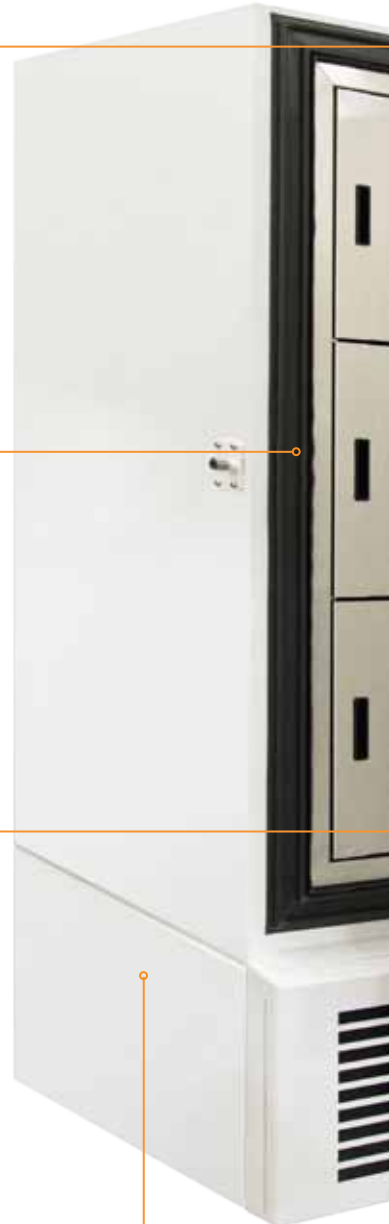
### 3 OR 5 INDIVIDUAL INNER DOORS

- 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.



### MODERN REFRIGERATION COMPONENTS

- High-performance reliable compressors.
- System is optimized to provide maximum efficiency in even the most extreme ambient conditions.





### SILVER CONTROLLER

- Simple, intuitive operation
- Large display of actual temperature.
- Clear indication of alarms

### 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



### OPTIONAL CHART RECORDER

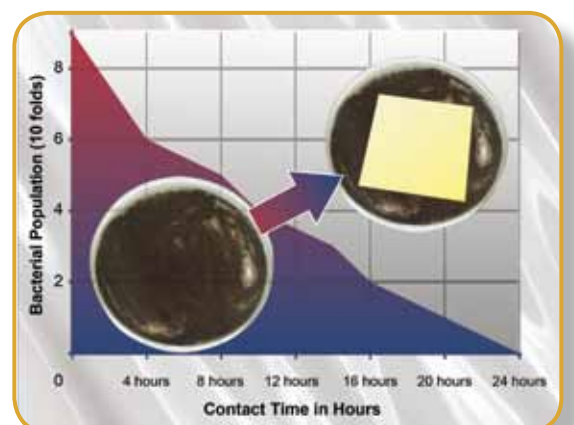
- Front-mounted.
- For independent temperature monitoring.
- Provides permanent record of thermal performance



### ISOCIDE™ POWDER COAT

- Silver-ion impregnated powder coat
- Inhibit microbial growth to improve safety

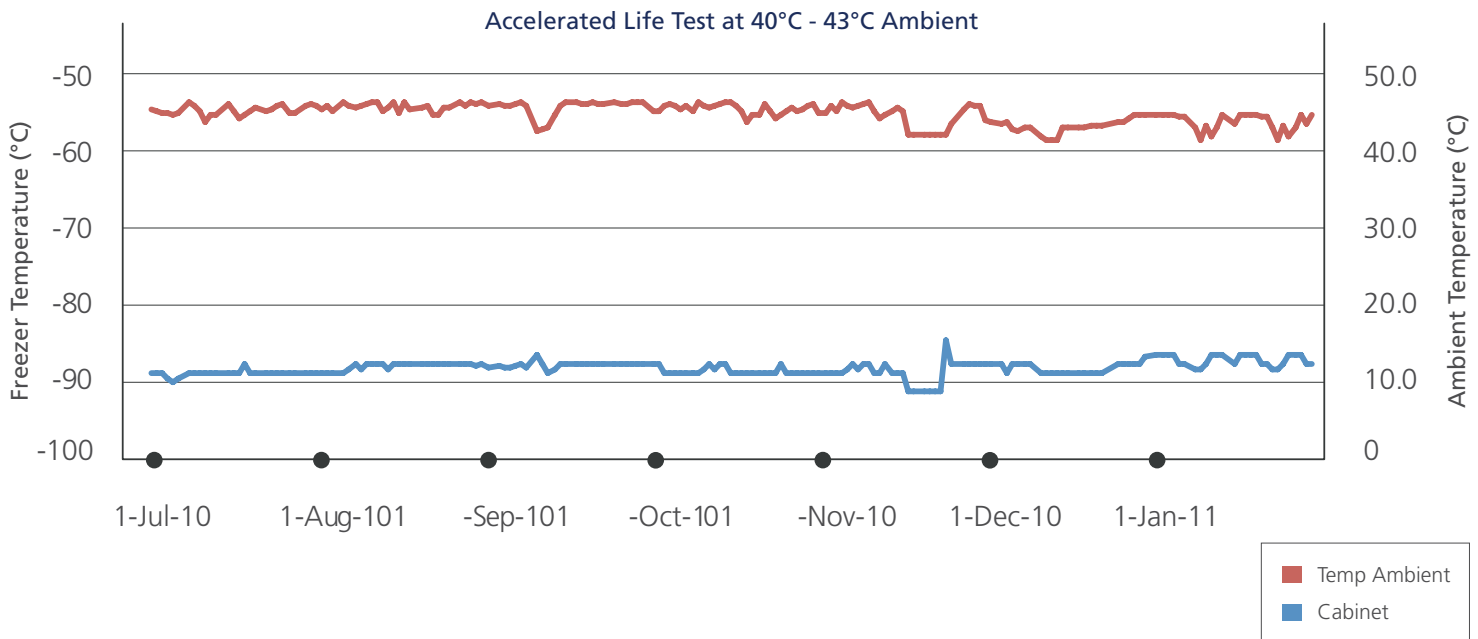
UUS-714A-1, 230 VAC, 50 Hz



## ENGINEERING EXCELLENCE & STRICT PROCESS CONTROL

- Strict evacuation protocols and process controls to ensure a clean, dry, 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.

## LOW ENERGY CONSUMPTION



Energy Consumption (KWh/day) at  $T_{set} = 80^{\circ}\text{C}$

|  |        |
|--|--------|
| Esco UUS-714A-1-SS or UUS-714A-1 energy usage (KWh/day)  | 15.81* |
| Estimated conventional freezer energy usage (KWh/day)  | 24.3** |
| 10-year energy cost savings over conventional freezer in USD (based on 0.10\$/KWh)                               | 3,099  |
| 10-year carbon footprint reduction over conventional freezer in kg CO <sub>2</sub> (0.58kg CO <sub>2</sub> /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 \*\*\*

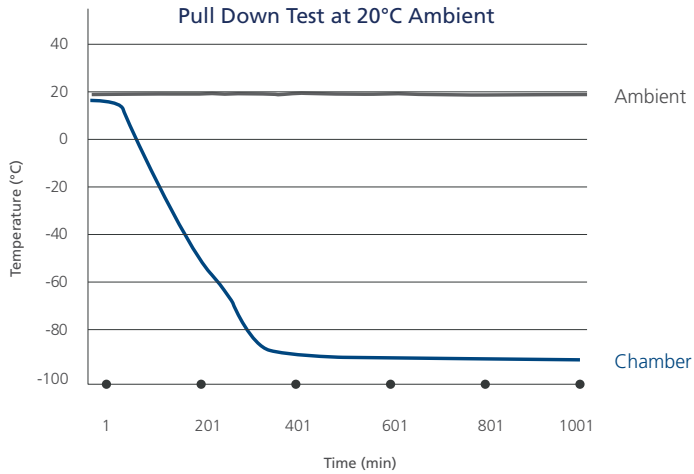
|  |        |
|--|--------|
| Esco UUS-714A-1 Heat Emission to lab space (KW)  | 0.78   |
| Estimated conventional freezer heat emission (KW)  | 0.92   |
| Less amount of heat emitted that needs to be removed by air-conditioner in the lab space (KWh/Day) | 3.2    |
| 10-year energy cost savings over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

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

## ENVIRONMENTALLY FRIENDLY

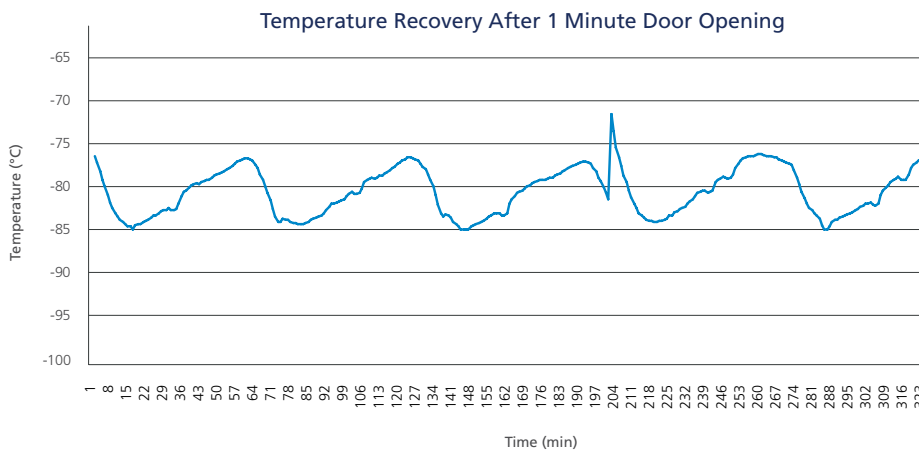
- Only CFC-free blowing agent is used.
- Only environmentally friendly CFC-free and HCFC-free HFC refrigerants are used.
- CFC and HCFC compounds have high impact on the ozone in the Earth's atmosphere, whereas HFC does not contain chlorine and is not harmful to the earth's atmosphere.
- Biodegradable, high-performance synthetic polyolester oil is used.

# SUPERIOR SAMPLE PROTECTION



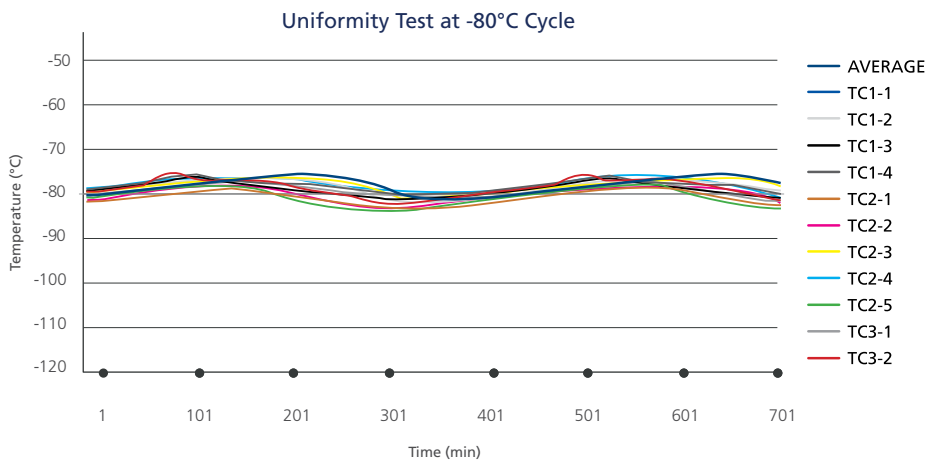
## FAST PULL DOWN

- Pull down time is the time required to bring down the temperature of the ULT freezer from ambient to the set temperature.
- Esco Lexicon® 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 min. door opening\*. Fast recovery in temperature ensures integrity of stored samples.



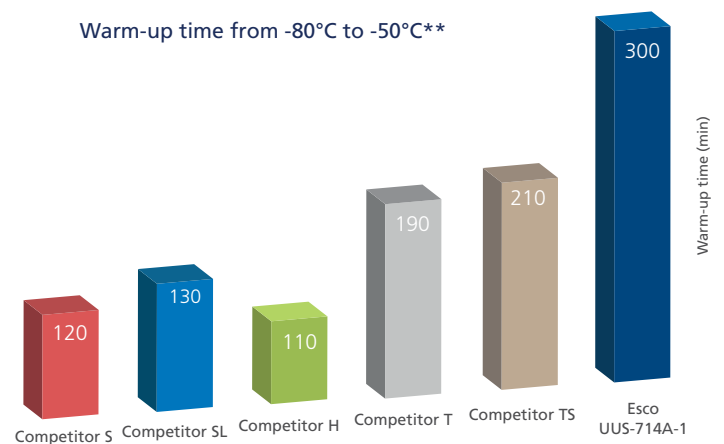
## EXCELLENT UNIFORMITY

- 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.

Warm-up time from -80°C to -50°C\*\*



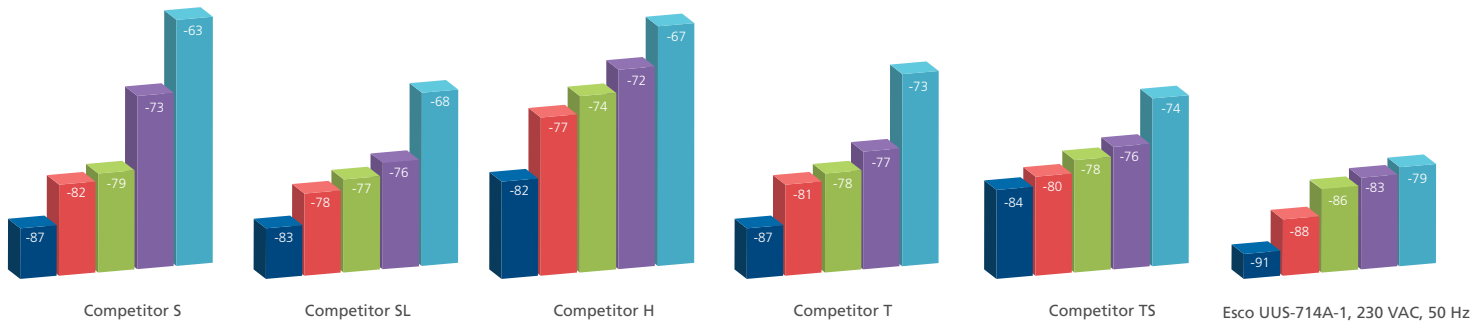


## LARGE RESERVE CAPACITY

- 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\*\*



## 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.

\*Units were factory tested under controlled environmental conditions per Esco method. Esco does not guarantee identical results in the field under differing conditions. Original report available upon request. UUS-668A-1 units were used for all the tests above.

\*\*Performance data are available upon request.

# 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

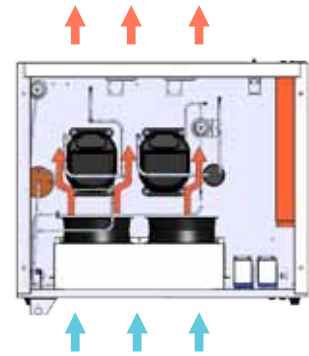
## EFFECTIVE COOLING TECHNOLOGY

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



Mullion Heater

- 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 for easy door closing.



- 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.

## SUPERIOR INSULATION SYSTEM

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



5" thick polyurethane foamed in place in the main cabinet, 4.5" on the door.



Outer wall

Insulation

Inner chamber wall

Triple gasket seal protects against thermal leaks and prevents frost build-up.

## QUICKOPEN™ FAST DOOR RE-OPEN SYSTEM



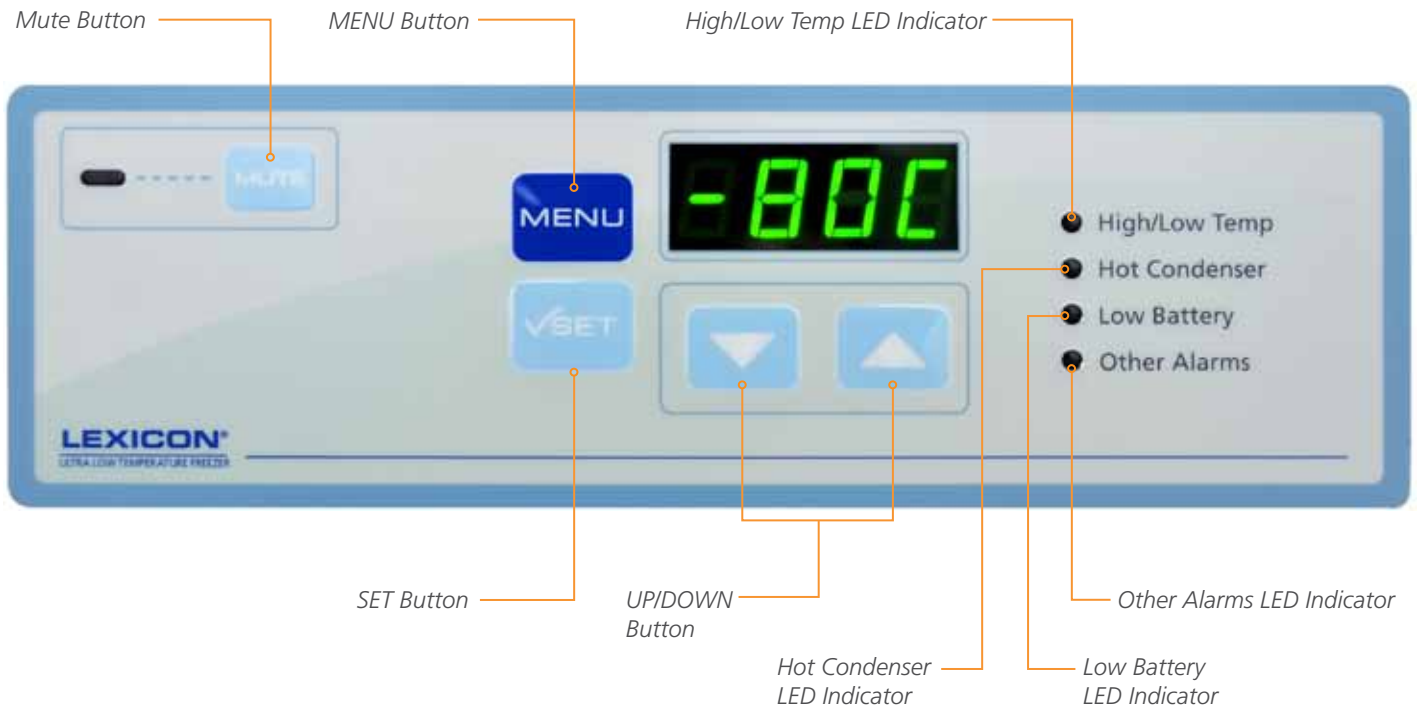
Esco designed Pressure Equalization Port (PEP) relieves the vacuum that is formed inside the chamber after door opening.

Pressure Equalization Port (PEP)

PEP is temperature controlled to prevent ice formation on the port.



Ergonomically designed door handle allows one-handed door opening.



**FEATURES:**

- Bigger and better looking controller, more intuitive for the users
- More alarms available to alert users of any abnormality found during operation (i.e. hot condenser, power failure, low battery, door open)
- Equipped with RS-485 for PC interface and compatible with Esco Voyager® software for remote monitoring, datalogging and programming.
- Also newly equipped with 12V DC backup battery for power failure alarm and display for the controller.

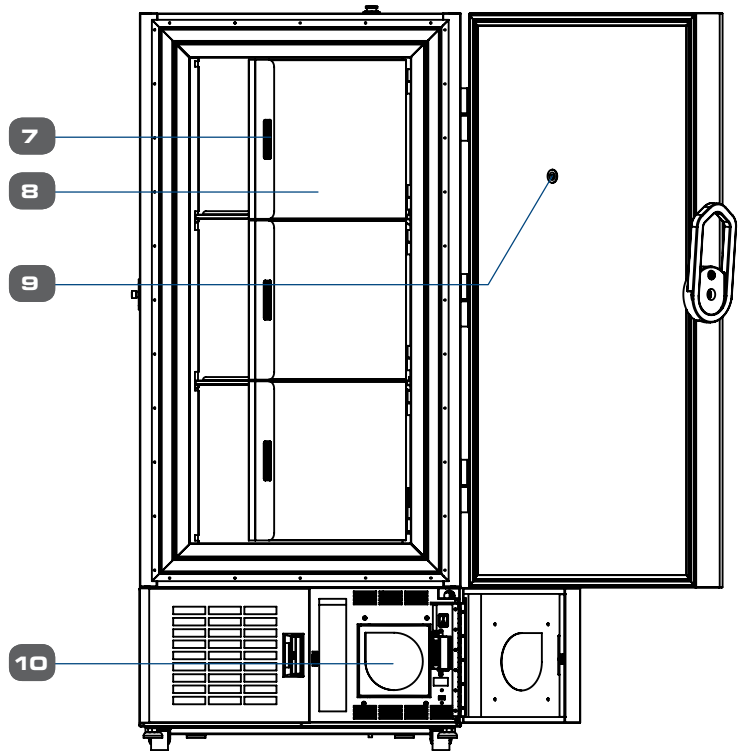
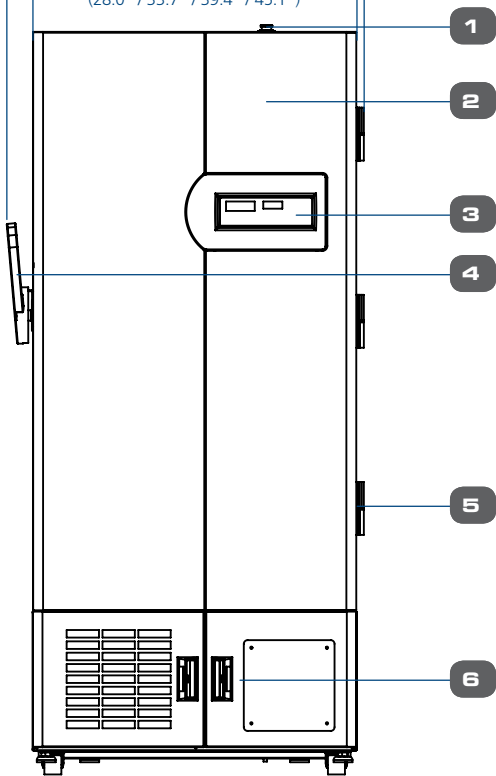
| GUIDE TO MODELS               |      |         |      |          |      |                    |      |            |      |                    |      |                                |      |
|-------------------------------|------|---------|------|----------|------|--------------------|------|------------|------|--------------------|------|--------------------------------|------|
| <b>UUS-363A-1-SS-5D</b>       |      |         |      |          |      |                    |      |            |      |                    |      |                                |      |
| MODEL                         | Code | TYPE    | Code | UNIT     | Code | SIZE               | Code | CONTROLLER | Code | ELECTRICAL RATING  | Code | INTERNAL DOOR                  | Code |
| Ultra-Low Temperature Freezer | U    | Upright | U    | Standard | S    | 363 L (13 cu. ft.) | 363  | Silver     | A    | 220-240 VAC, 50 Hz | 1    | 3 Internal Door Configuration  | 3D   |
|                               |      |         |      |          |      | 480 L (17 cu. ft.) | 480  |            |      | 220-240 VAC, 60 Hz | 3    | 5 Internal Doors Configuration | 5D   |
|                               |      |         |      |          |      | 597 L (21 cu. ft.) | 597  |            |      |                    |      |                                |      |
|                               |      |         |      |          |      | 714 L (25 cu. ft.) | 714  |            |      |                    |      |                                |      |

# GENERAL SPECIFICATIONS

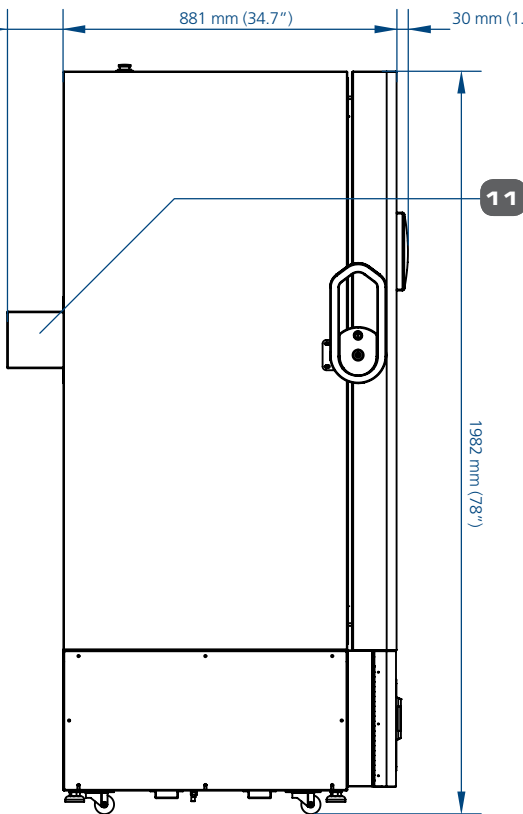
## ULTRA-LOW TEMPERATURE FREEZERS

|  | UUS-363A-1-SS/<br>UUS-363A-1-5D-SS<br>UUS-363A-3-SS/<br>UUS-363A-3-5D-SS | UUS-480A-1-SS/<br>UUS-480A-1-5D-SS<br>UUS-480A-3-SS/<br>UUS-480A-3-5D-SS | UUS-597A-1-SS/<br>UUS-597A-1-5D-SS<br>UUS-597A-3-SS/<br>UUS-597A-3-5D-SS | UUS-714A-1-SS/<br>UUS-714A-1-5D-SS<br>UUS-714A-3-SS/<br>UUS-714A-3-5D-SS |
|--|--|--|--|--|
| 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 (21.1 cu ft)   | 714 (25.2 cu ft)   |
| Energy Consumption   | 13.5 kWh/day   | 14.7 kWh/day   | 14.7 kWh/day   | 15.8 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°C)                      | 276  | 347  | 353  | 473  |
| Temperature Recovery Time After 1 Minute Door Opening              | 24 minutes   | 36 minutes   | 36 minutes   | 36 minutes   |
| 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  |
| Reserve Capacity at 0 Watt   | -87.1  | -89.2  | -87.8  | -91  |
| Reserve Capacity at 40 Watts                                       | -85.1  | -86.5  | -85.8  | -88  |
| Reserve Capacity at 60 Watts                                       | -82.8  | -80.9  | -83.1  | -86  |
| Reserve Capacity at 90 Watts                                       | -77.9  | -77.5  | -80.1  | -83  |
| Reserve Capacity at 120 Watts                                      | -73.2  | -74.2  | -76.4  | -79  |
| Noise Level in dBA   | 55.9   | 56.3   | 56.1   | 59.1   |
| External Dimension (W x D x H)                                     | 710 x 885 x 1980 mm<br>(28" x 34.8" x 78")                               | 855 x 885 x 1980 mm<br>(33.6" x 34.8" x 78")                             | 1000 x 885 x 1980 mm<br>(39.4" x 34.8" x 78")                            | 1145 x 885 x 1980 mm<br>(45.1" x 34.8" x 78")                            |
| True Dimensions Silver   | 805 x 945 x 1980 mm<br>(31.7" x 37.2" x 78")                             | 950 x 945 x 1980 mm<br>(37.4" x 37.2" x 78")                             | 1095 x 945 x 1980 mm<br>(43.1" x 37.2" x 78")                            | 1240 x 945 x 1980 mm<br>(48.8" x 37.2" x 78")                            |
| Internal Dimensions  | 450 x 620 x 1300 mm<br>(17.7" x 24.4" x 51.2")                           | 595 x 620 x 1300 mm<br>(23.4" x 24.4" x 51.2")                           | 740 x 620 x 1300 mm<br>(29.1" x 24.4" x 51.2")                           | 885 x 620 x 1300 mm<br>(34.8" x 24.4" x 51.2")                           |
| Electrical Rating  | 12/13 A, 230 VAC, 50 Hz, 1Ø<br>12/13 A, 230 VAC, 60 Hz, 1Ø               | 12/13 A, 230 VAC, 50 Hz, 1Ø<br>12/13 A, 230 VAC, 60 Hz, 1Ø               | 12/13 A, 230 VAC, 50 Hz, 1Ø<br>12/13 A, 230 VAC, 60 Hz, 1Ø               | 12/13 A, 230 VAC, 50 Hz, 1Ø<br>12/13 A, 230 VAC, 60 Hz, 1Ø               |
| Number of Outer Door   | 1  |  |  |  |
| Number of Inner Doors  | 3 or 5   |  |  |  |
| Number of Storage Racks per Shelf                                  | 3  | 4  | 5  | 6  |
| Number 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 0.9 mm   |  |  | SS304 1.2 mm   |
| Shelves Area   | 438 x 570 mm<br>(17.2" x 22.4")  | 583 x 570 mm<br>(22.9" x 22.4")  | 728 x 570 mm<br>(28.6" x 22.4")  | 873 x 570 mm<br>(34.4" x 22.4")  |
| Maximum Load per Shelf   | 50 Kg (110 lbs) per shelf  |  | 90 Kg (198 lbs) per shelf  |  |
| Net Weight   | 271 Kg (597 lbs)   | 300 Kg (661 lbs)   | 305 Kg (672 lbs)   | 350 Kg (772 lbs)   |
| Shipping Weight  | 321 Kg (707 lbs)   | 350 Kg (771 lbs)   | 358 Kg (790 lbs)   | 410 Kg (903 lbs)   |
| Shipping Dimensions (W x D x H)                                    | 900 x 1000 x 2140 mm<br>(35.4" x 39.4" x 83.5")                          | 1040 x 1000 x 2140 mm<br>(40.9" x 39.4" x 83.5")                         | 1100 x 1050 x 2140 mm<br>(43.3" x 41.3" x 84.3")                         | 1260 x 1050 x 2140 mm<br>(49.6" x 41.3" x 84.3")                         |

70 mm (2.8")      710 / 855 / 1000 / 1145 mm  
(28.0" / 33.7" / 39.4" / 45.1")      20 mm (0.8")



150 mm (5.9")      881 mm (34.7")      30 mm (1.2")



- 1. Access Port
- 2. Main Door
- 3. Control Panel
- 4. Main Door Handle
- 5. Main Door Hinge
- 6. Front Bottom Door
- 7. Embedded Pulls
- 8. Inner Door
- 9. PEP Port
- 10. Optional Chart Recorder Box
- 11. Omega Bracket

## ORDERING INFORMATION

| MODELS                  |                         | DESCRIPTION  |
|-------------------------|-------------------------|--|
| 230 VAC, 50 Hz          | 230 VAC, 60 Hz          | LEXICON® II AALTO SILVER CONTROLLER<br>WITH STANDARD SS CHAMBER WITH 3 INNER DOORS |
| UUS-363A-1-SS (2180098) | UUS-363A-3-SS (2180120) | Ultra-Low temperature Freezer; Upright; 13 cu ft (363 L)                           |
| UUS-480A-1-SS (2180100) | UUS-480A-3-SS (2180101) | Ultra-Low temperature Freezer; Upright; 17 cu ft (480 L)                           |
| UUS-597A-1-SS (2180104) | UUS-597A-3-SS (2180106) | Ultra-Low temperature Freezer; Upright; 21 cu ft (597 L)                           |
| UUS-714A-1-SS (2180108) | UUS-714A-3-SS (2180109) | Ultra-Low temperature Freezer; Upright; 25 cu ft (714 L)                           |

| MODELS                     |                            | DESCRIPTION  |
|----------------------------|----------------------------|--|
| 230 VAC, 50 Hz             | 230 VAC, 60 Hz             | LEXICON® II AALTO SILVER CONTROLLER<br>WITH STANDARD SS CHAMBER WITH 5 INNER DOORS |
| UUS-363A-1-5D-SS (2180119) | UUS-363A-3-5D-SS (2180121) | Ultra-Low temperature Freezer; Upright; 13 cu ft (363 L)                           |
| UUS-480A-1-5D-SS (2180095) | UUS-480A-3-5D-SS (2180102) | Ultra-Low temperature Freezer; Upright; 17 cu ft (480 L)                           |
| UUS-597A-1-5D-SS (2180105) | UUS-597A-3-5D-SS (2180107) | Ultra-Low temperature Freezer; Upright; 21 cu ft (597 L)                           |
| UUS-714A-1-5D-SS (2180096) | UUS-714A-3-5D-SS (2180123) | Ultra-Low temperature Freezer; Upright; 25 cu ft (714 L)                           |

| ACCESSORIES            | DESCRIPTION  |
|------------------------|--|
| 5070512-U              | Reorder (Chart recorder, 7-day chart paper, pens, universal outlet)                                    |
| 5070901-U              | Additional Shelving Kit for 363 L  |
| 5070902-U              | Additional Shelving Kit for 480 L  |
| 5070903-U              | Additional Shelving Kit for 597 L  |
| 5070904-U              | Additional Shelving Kit for 714 L  |
| 1180061-U              | Standard Cardboard 2-inch Box  |
| 1180062-U              | Standard Cardboard 3-inch Box  |
| 1180063-U              | Standard Cardboard 100-Cell Divider  |
| 1180064-U              | Standard Cardboard 81-Cell Divider   |
| 1180065-U              | Standard Cardboard 64-Cell Divider   |
| 1180066-U              | Standard Cardboard 49-Cell Divider   |
| 5170527-U              | Modifiable Clip Rack with 3 inner door configuration   |
| 5170526-U              | Modifiable Clip Rack with 5 inner door configuration   |
| 5170644-U              | 3" Drawer Rack with 3 inner door configuration   |
| 5170647-U              | 3" Drawer Rack with 5 inner door configuration   |
| 5170645-U              | 2" Drawer Rack with 3 inner door configuration   |
| 5170646-U              | 2" Drawer Rack with 5 inner door configuration   |
| 5170646-U              | Drawer Rack for 2-inch high boxes for Lexicon® II with 5 inner door configuration (139 x 551 x 228 mm) |
| 5170645-U              | Drawer Rack for 2-inch high boxes for Lexicon® II with 3 inner door configuration (139 x 551 x 398 mm) |
| 5170647-U              | Drawer Rack for 3-inch high boxes for Lexicon® II with 5 inner door configuration (139 x 551 x 245 mm) |
| 5170644-U              | Drawer Rack for 3-inch high boxes for Lexicon® II with 3 inner door configuration (139 x 551 x 441 mm) |
| 5170438-U              | LCO <sub>2</sub> back-up system  |
| 1260040-U              | Ice Scraper  |
| 1260039-U              | Cryo Safety Gloves   |
| 9010101-U              | IQ/OQ Documentation  |
| 1260016-U              | 2" Drawer type rack for Lexicon® II (363 L, 480 L, 597 L and 714 L) with 5 Inner Door Configuration    |
| 1260018-U              | 3" Drawer type rack for Lexicon® II (363 L, 480 L, 597 L and 714 L) with 5 Inner Door Configuration    |
| 5250001-U              | Voyager® Software Kit  |
| 1260019-U              | 6" Temperature Chart, 7day, 60/pack  |
| 1260020-U              | Chart Recorder Pen Replacement 6 pens/pack   |
| 8020002                | iRMAP Subscription   |
| (see PROtect brochure) | PROtect  |

## OPTIONS AND ACCESSORIES



### Chart Recorder Kit (5070512-U)

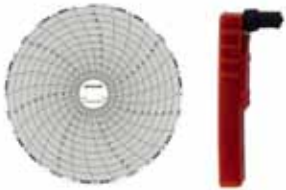
The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument, for on-the-spot written documentation of freezer chamber temperature. This model offers a 6" chart of temperature data.

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



### 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.



### 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 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 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 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 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 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 4 shelves and 16 clips. Extra shelves are available and each shelf comes with 4 clips.



#### LCO<sub>2</sub> Back-up System (5170438-U)

LCO<sub>2</sub> back-up system injects liquid CO<sub>2</sub> 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, CO<sub>2</sub> 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 (5170527-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.
- Made of stainless steel and has handles. Each rack includes 6 L-Clips and 9 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 (5170526-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.
- Made of stainless steel and has handles. Each rack includes 6 L-Clips and 9 T-Clips.
- Size: 137 x 556 x 395 mm (W x D x H)



#### 3" Drawer rack for Lexicon® II with 3 inner door configuration (5170644-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 (5170647-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 (5170645-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 228 mm (W x D x H)



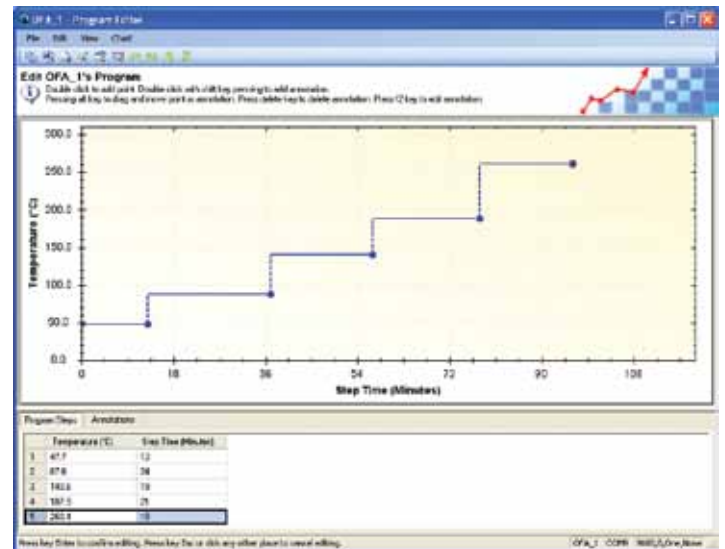
#### 2" Drawer rack for Lexicon® II with 5 inner door configuration (5170646-U)

- 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)

## VOYAGER® SOFTWARE - CENTRAL CONTROL AND MONITORING SYSTEM

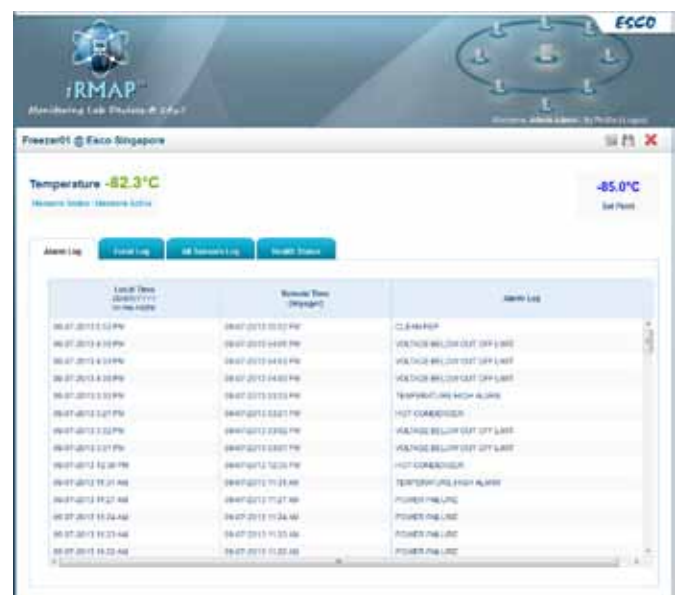
### Extra Protection for Your Sample

- 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 for 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.



### LEGEND



ESCO Protect  
UN/DG



ESCO Protect  
ALARM



Visual and  
Audible Alert



ESCO Protect  
EMD-1

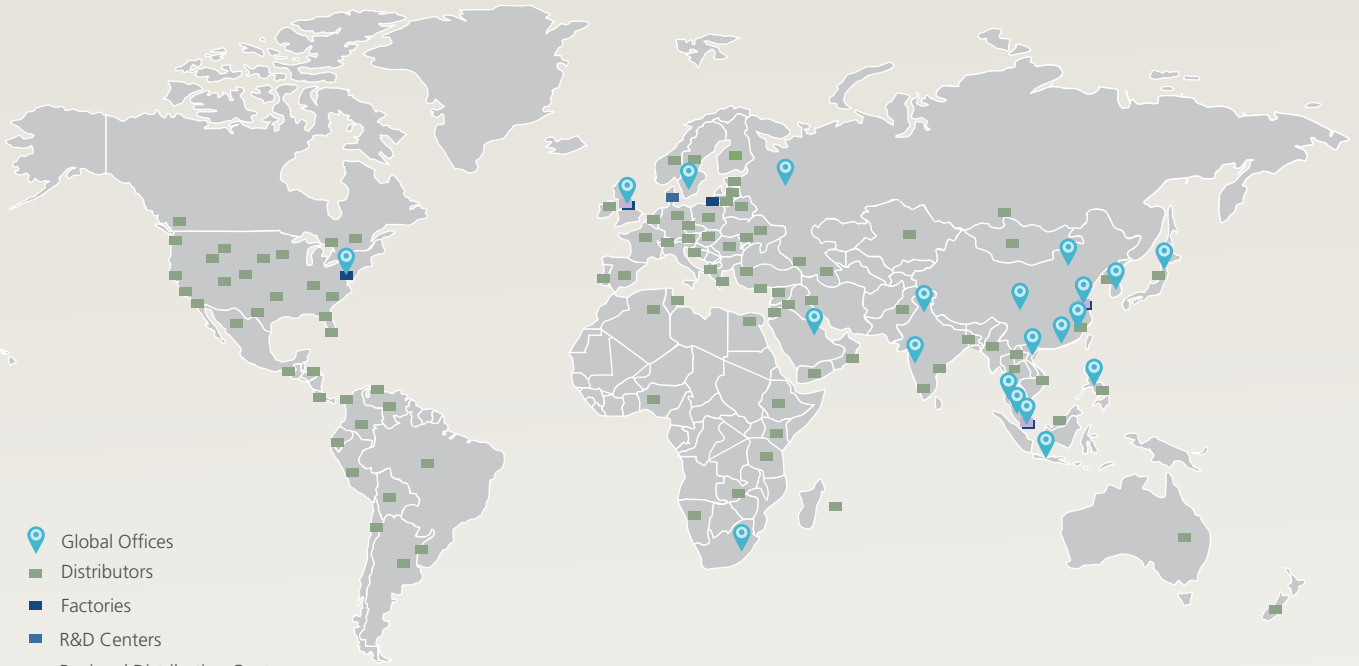







Email Alert

Ethernet network

Radio Communication  
(200-300m)

# ESCO GLOBAL NETWORK



-  Global Offices
-  Distributors
-  Factories
-  R&D Centers
-  Regional Distribution Centers



- ART Equipment
- Biological Safety Cabinets
- CO<sub>2</sub> Incubators
- Cold Storage
- Compounding Pharmacy Equipment
- Containment / Pharma Products
- Ductless Fume Hoods
- Lab Animal Research Products
- Laboratory Fume Hoods
- Laboratory Incubators
- Laboratory Ovens
- Laminar Flow Cabinets
- Laboratory Shakers
- PCR Cabinets
- PCR Thermal Cyclers
- Powder Weighing Balance Enclosures

The Esco Group of Companies is a global life sciences tools provider with sales in over 100 countries. The group is active in lab equipment, pharma equipment and medical devices. Manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, service and marketing subsidiaries are located in 12 major markets including the US, UK, Singapore, Japan, China and India. Regional distribution centers are located in the US, UK, and Singapore.

Life Science • Chemical Research • Assisted Reproductive Technology (ART) • Pharmaceutical Equipment • General Equipment



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Esco Micro Pte. Ltd. • 21 Changi South Street 1 • Singapore 486 777  
 Tel +65 6542 0833 • Fax +65 6542 6920 • mail@escoglobal.com  
 www.escoglobal.com

Esco Technologies, Inc. • 2940 Turnpike Drive, Units 15-16 • Hatboro, PA 19040, USA  
 Toll-Free USA and Canada 877-479-3726 • Tel 215-441-9661 • Fax 215-441-9660  
 eti.sales@escoglobal.com • www.escolifesciences.us

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**Wolflabs**

# Wolf Laboratories Limited

[www.wolflabs.co.uk](http://www.wolflabs.co.uk)

Tel: 01759 301142

Fax: 01759 301143

[sales@wolflabs.co.uk](mailto:sales@wolflabs.co.uk)



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