

ESCO

WORLD CLASS. WORLDWIDE.



Lexicon[®] II

Ultra-Low Temperature Freezer
Uncompromised Protection for your Samples

Model: UUS-714B



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 B1 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
- Laboratory Centrifuges

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

Forensic Sciences

- Evidence Drying Cabinet

Medical / IVF Equipment

Controlled Embryo Handling

- Fertilisafe™ ART Workstation
- AVT-I Anti Vibration Table
- Semi Closed Environment IVF

Safe Embryo Culture

- Miri® Multi room Benchtop Incubator
- CelCulture® CO₂ Incubator
- Mini Miri® Humidified Benchtop Incubator

Innovative Time Lapse Imaging

- Miri® Time-lapse Incubator

Accurate Quality Control

- Miri® GA Gas and Temperature Validation Unit
- Miri® GA Mini Gas Validation Unit

Unique Consumables

- CultureCoin

Healthcare

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™ MDCK
- Plus™ MDCK II
- BioNOC™ II macrocarriers
- GlucCell® Glucose Monitoring System
- CVD Kit

Filling Line Equipment

- Filling Line Isolators
- cRabs (close restricted access barriers)
- oRabs (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/Hermetic 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



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.

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 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





GOLD CONTROLLER

- Simple, intuitive operation
- Large display of actual temperature with a simultaneous display of set temperature and ambient temperature
- USB interface allows transfer of temperature data and the last 20 system events
- Advanced input voltage Buck/Boost transformer protects critical freezer components. Additional sample protection!!

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

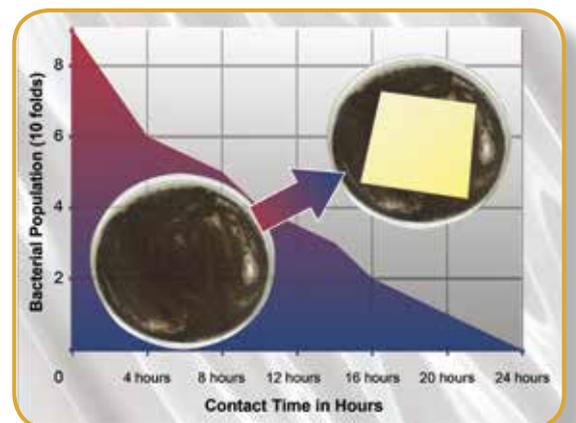
- Front-mounted.
- For independent temperature monitoring
- Provides permanent record of thermal performance



ISOCIDE™ POWDER COAT

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

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

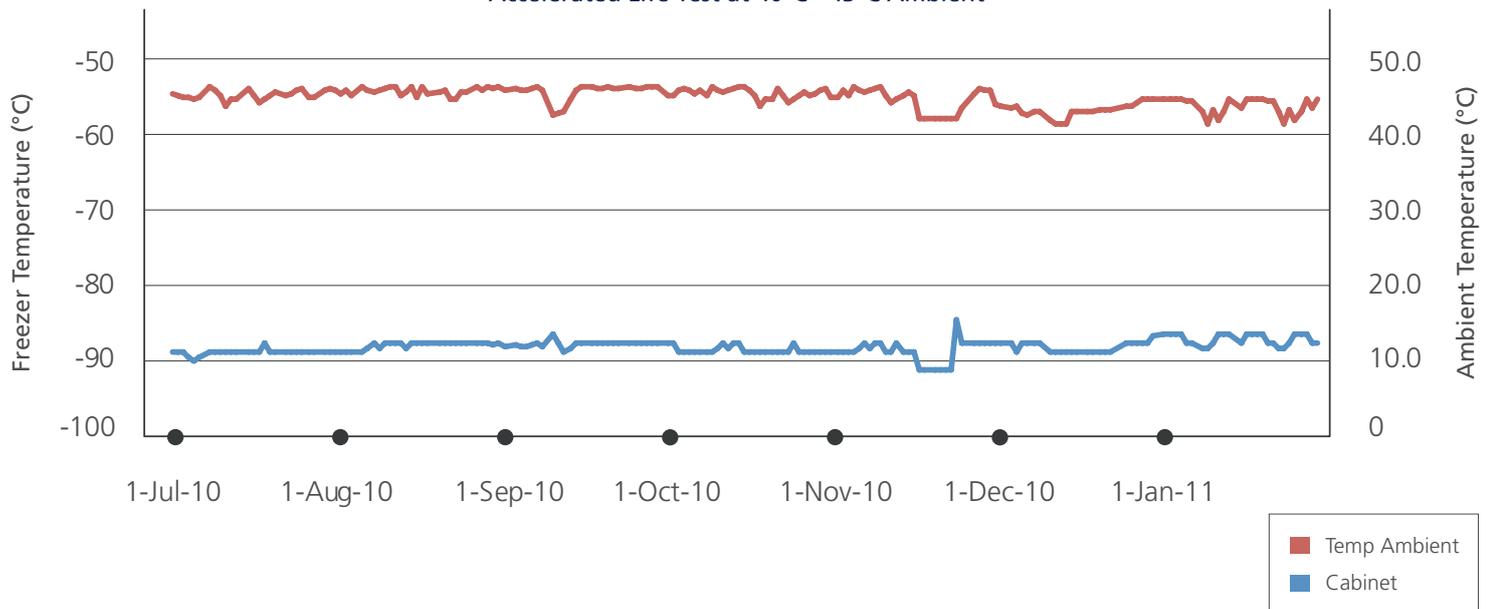


ENGINEERING EXCELLENCE & STRICT PROCESS CONTROL

- 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

Accelerated Life Test at 40°C - 43°C Ambient



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.

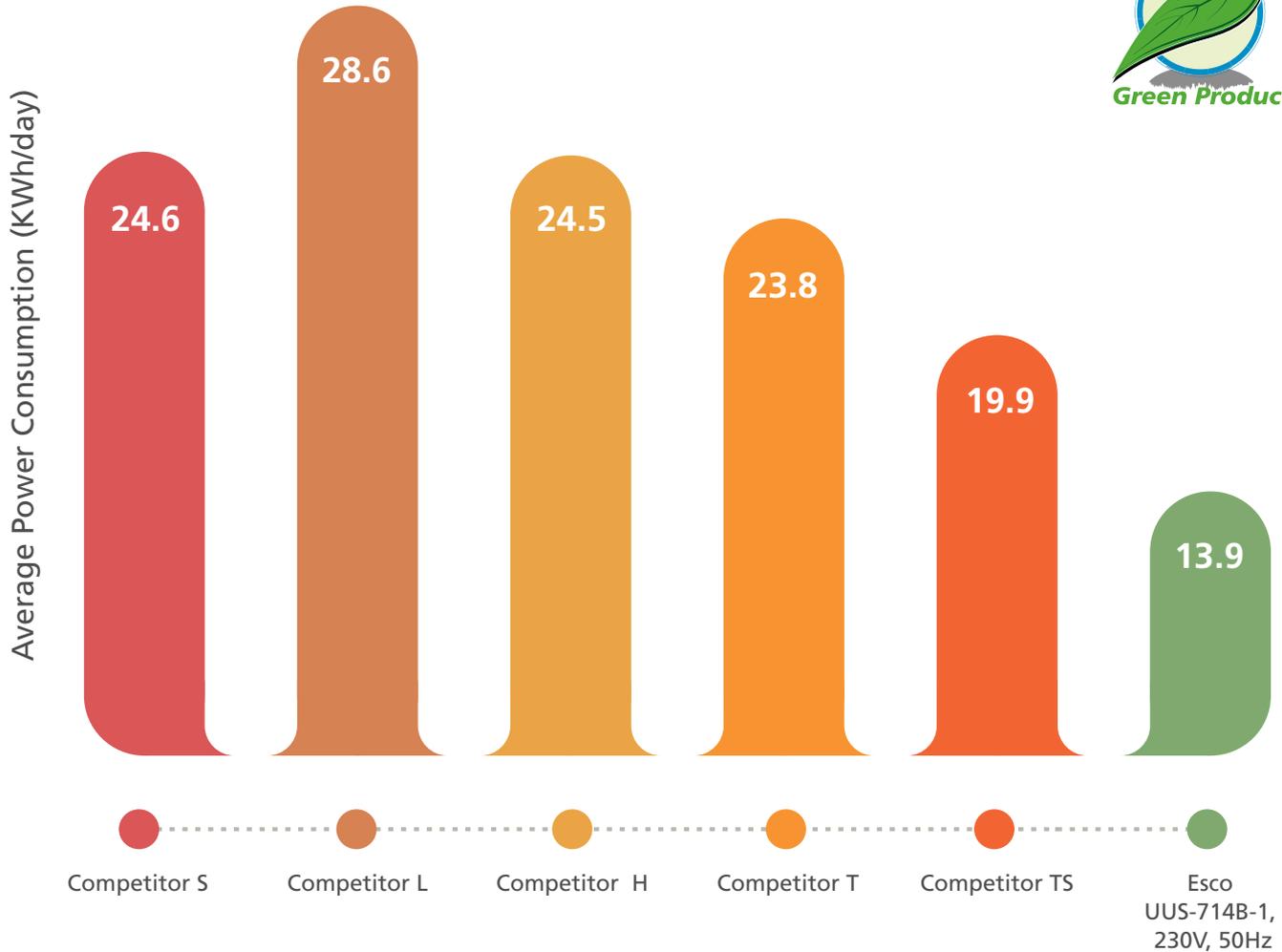
Superior performance, lower energy costs, better protection.

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-714B-1-SS or UUS-714B-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)	3,099
10-year carbon footprint reduction over conventional freezer in kg CO ₂ (0.58 kg CO ₂ /KWh)	17,973

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

ENVIRONMENT FRIENDLY

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

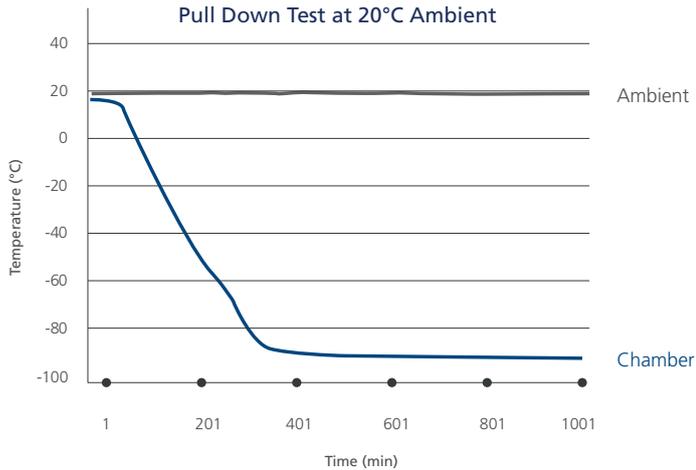
LOW HEAT EMISSION TO AMBIENT

Esco UUS-714B-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.

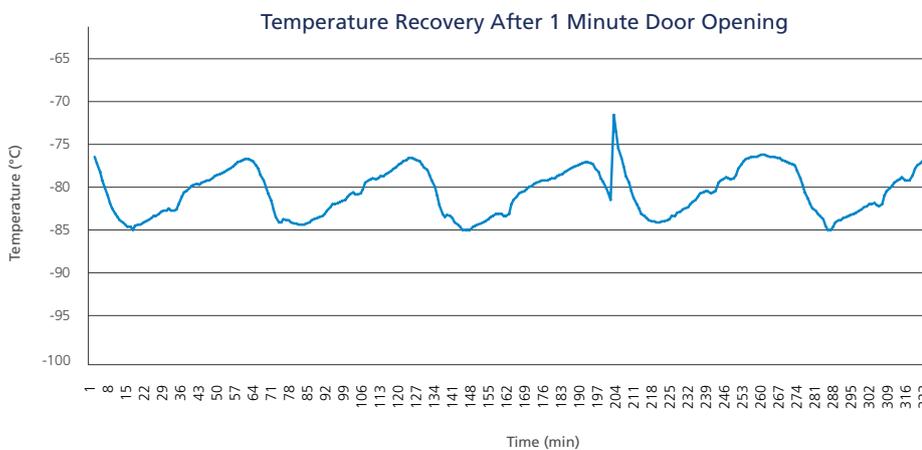
- CFC and HCFC compounds have high impact on the ozone in the Earth's atmosphere, whereas HFC does not contain chlorine and is not harmful to the earth's atmosphere.
- Biodegradable, high-performance synthetic polyolester oil is used.

SUPERIOR SAMPLE PROTECTION



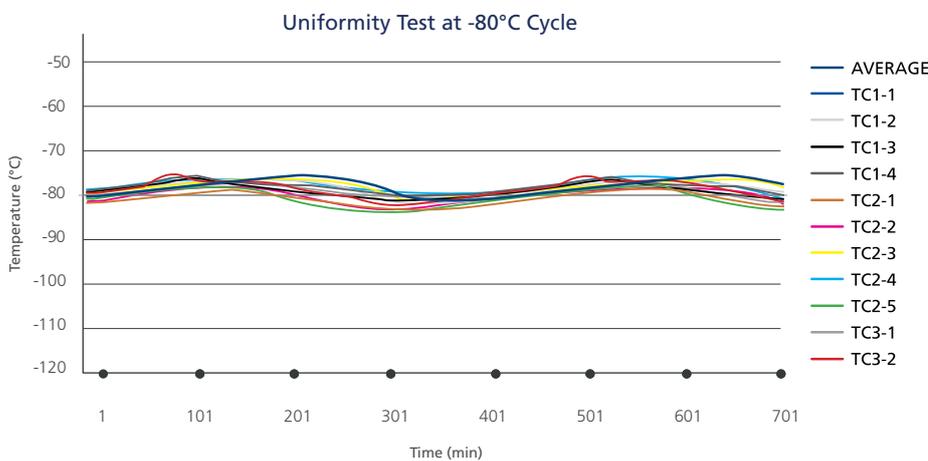
FAST PULL DOWN

- 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.



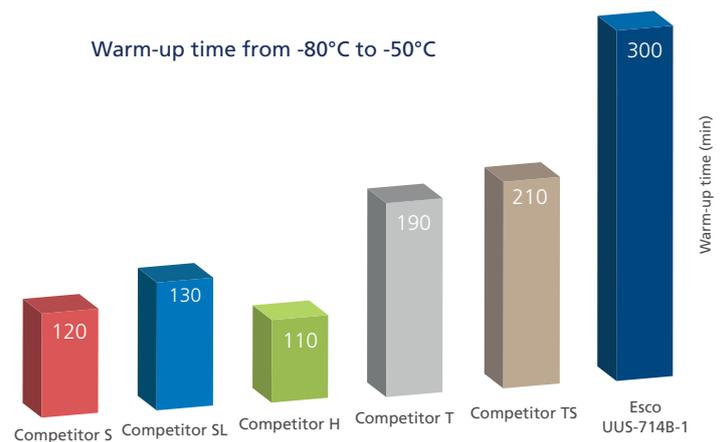
EXCELLENT UNIFORMITY

- 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.

Warm-up time from -80°C to -50°C

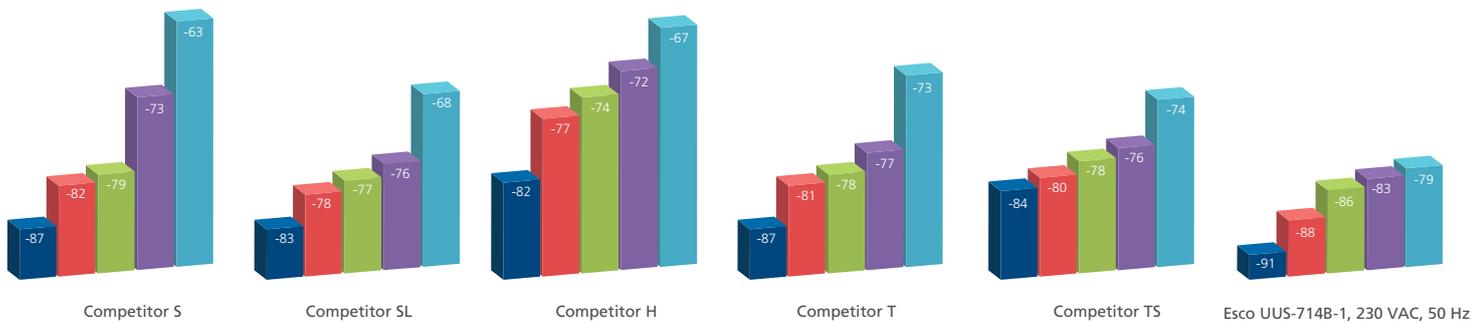


LARGE RESERVE CAPACITY

- 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.

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

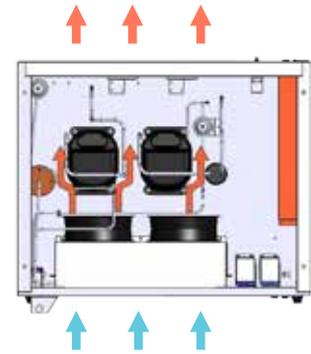
EFFECTIVE COOLING TECHNOLOGY

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 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.



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



Outer wall

Insulation

Inner chamber wall

5" thick polyurethane foam is placed in the main cabinet and 4.5" on the door.

QUICKOPEN™ FAST DOOR RE-OPEN SYSTEM

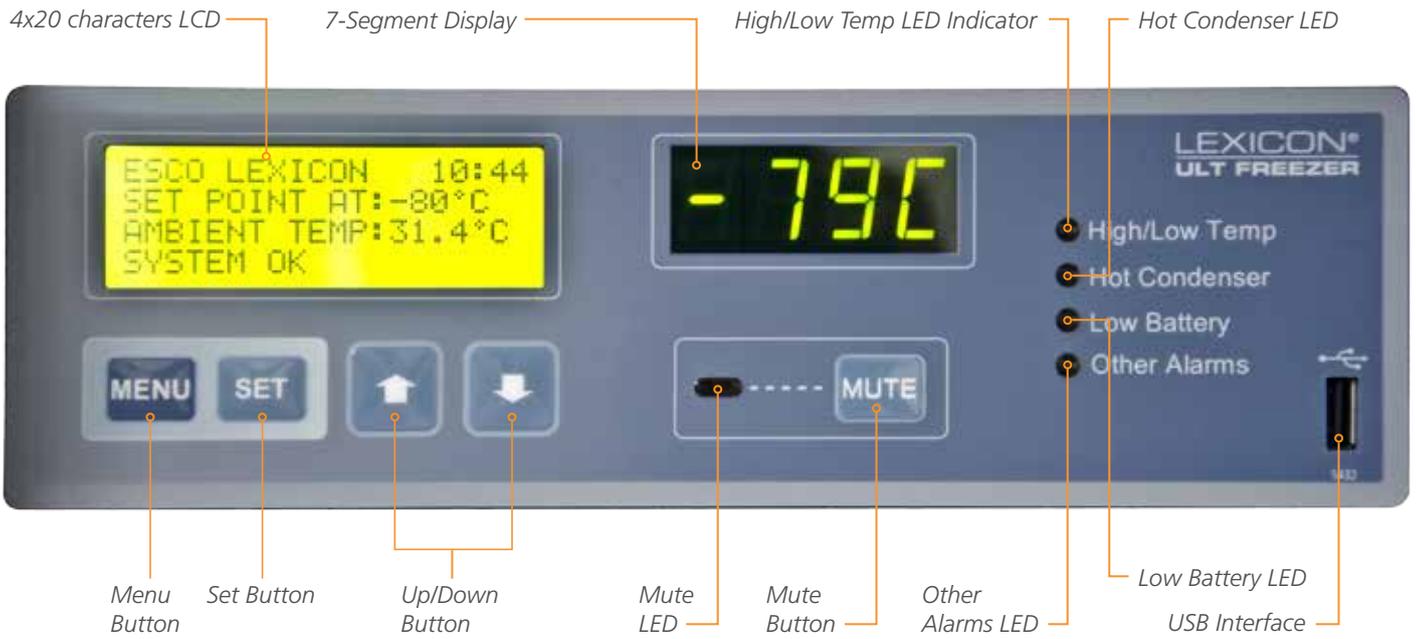


Esco designed Pressure Equalization Port (PEP) to relieve the vacuum that is formed inside the chamber after door opening. PEP is temperature-controlled to prevent ice formation on the port.

Pressure Equalization Port (PEP)



Ergonomically designed door handle allows one-handed door opening.



AALTO GOLD CONTROLLER - a powerful controller with more advanced features

- Simple, intuitive operation
- Large display of actual temperature with a simultaneous display of set temperature and ambient temperature
- USB interface allows transfer of temperature data and the last 20 system events
- Advanced input voltage Buck/Boost transformer protects critical freezer components. Additional sample protection!

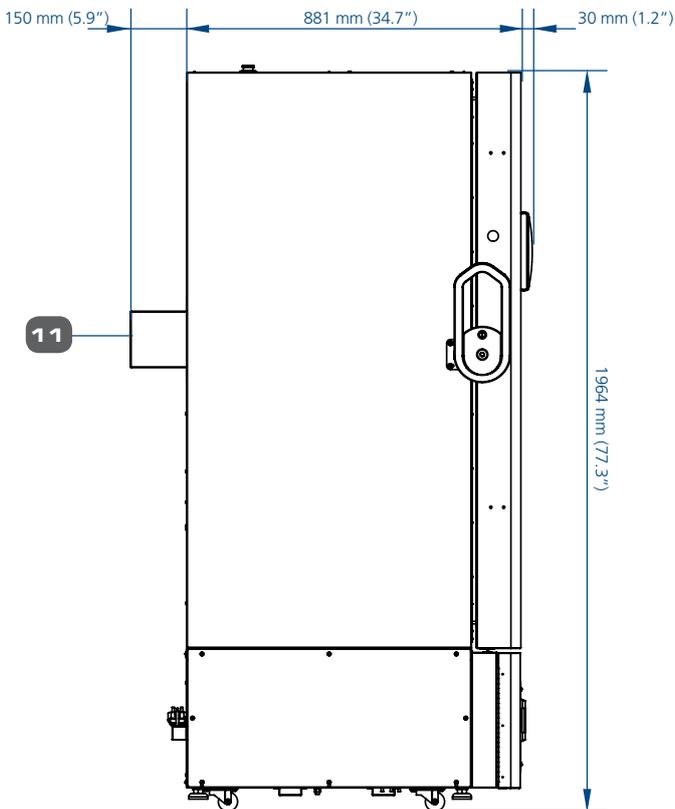
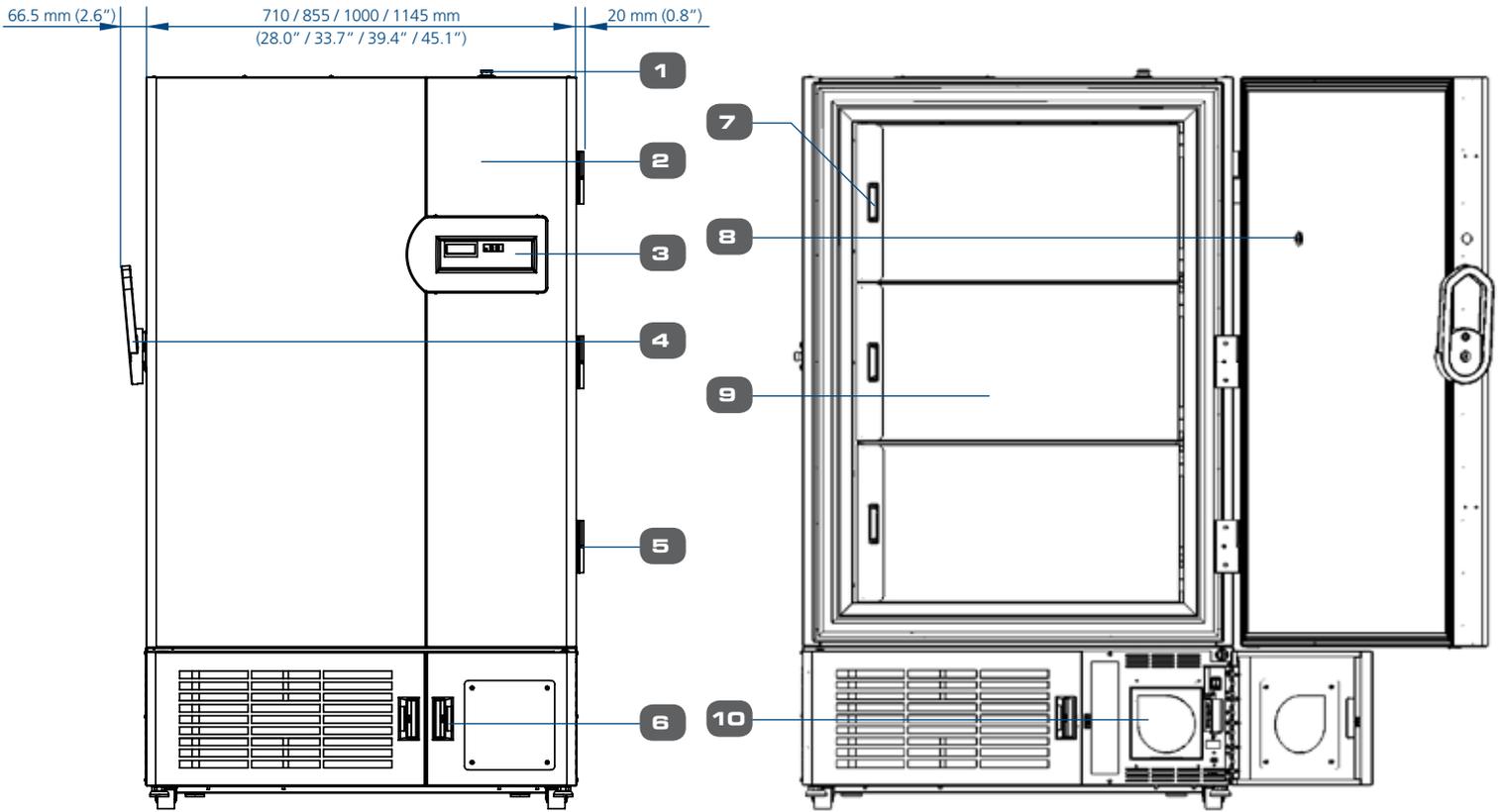
GUIDE TO MODELS													
UUS-363B-1-SS-5D													
MODEL	Code	TYPE	Code	UNIT	Code	SIZE	Code	CONTROLLER	Code	ELECTRICAL RATING	Code	INTERNAL DOOR	Code
Ultra-Low Temperature Freezer	U	Upright	U	Standard	S	363 L (13 cu. ft.)	363	Gold	B	220-240 VAC, 50 Hz	1	3 Internal Door Configuration	3D
						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-363B-1-SS (2180098) UUS-363B-1-5D-SS (2180119) UUS-363B-3-SS (2180120) UUS-363B-3-5D-SS (2180121)	UUS-480B-1-SS (2180100) UUS-480B-1-5D-SS (2180095) UUS-480B-3-SS (2180101) UUS-480B-3-5D-SS (2180102)	UUS-597B-1-SS (2180104) UUS-597B-1-5D-SS (2180105) UUS-597B-3-SS (2180106) UUS-597B-3-5D-SS (2180107)	UUS-714B-1-SS (2180108) UUS-714B-1-5D-SS (2180096) UUS-714B-3-SS (2180109) UUS-714B-3-5D-SS (2180123)
Temperature Range	-50 to -86 °C			
Ambient Temperature Range	15 to 32°C (59 to 90 °F)			
Capacity	363 L (12.8 ft³)	480 L (16.9 ft³)	597 (21.1 ft³)	714 (25.2 ft³)
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°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 (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 Gold	805 x 945 x 1980 mm (31.7" x 37.2" x 78")	950 x 945 x 1980 mm (37.4" x 37.2" x 78")	1095 x 945 x 1980 mm (43.1" x 37.2" x 78")	1240 x 945 x 1980 mm (48.8" x 37.2" 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	12/13 A, 230 VAC, 50 Hz, 1Ø 12/13 A, 230 VAC, 60 Hz, 1Ø	12/13 A, 230 VAC, 50 Hz, 1Ø 12/13 A, 230 VAC, 60 Hz, 1Ø	12/13 A, 230 VAC, 50 Hz, 1Ø 12/13 A, 230 VAC, 60 Hz, 1Ø	12/13 A, 230 VAC, 50 Hz, 1Ø 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 thickness			SS304 1.2 mm 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")
Maximum Load per Shelf	50 Kg (110 lbs) per shelf		90 Kg (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 (798 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")

ENGINEERING DRAWING



- 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. PEP Port
- 9. Inner Door
- 10. Optional Chart Recorder Box
- 11. Omega Bracket

ORDERING INFORMATION

MODELS		DESCRIPTION
230 VAC, 50 Hz	230 VAC, 60 Hz	LEXICON® II AALTO GOLD CONTROLLER WITH STANDARD SS CHAMBER WITH 3 INNER DOORS
UUS-363B-1-SS (2180055)	UUS-363B-3-SS (2180067)	Ultra-Low temperature Freezer; Upright; 13 ft³ (363 L)
UUS-480B-1-SS (2180056)	UUS-480B-3-SS (2180068)	Ultra-Low temperature Freezer; Upright; 17 ft³ (480 L)
UUS-597B-1-SS (2180057)	UUS-597B-3-SS (2180069)	Ultra-Low temperature Freezer; Upright; 21 ft³ (597 L)
UUS-714B-1-SS (2180058)	UUS-714B-3-SS (2180070)	Ultra-Low temperature Freezer; Upright; 25 ft³ (714 L)

MODELS		DESCRIPTION
230 VAC, 50 Hz	230 VAC, 60 Hz	LEXICON® II AALTO GOLD CONTROLLER WITH STANDARD SS CHAMBER WITH 5 INNER DOORS
UUS-363B-1-5D-SS (2180059)	UUS-363B-3-5D-SS (2180079)	Ultra-Low temperature Freezer; Upright; 13 ft³ (363 L)
UUS-480B-1-5D-SS (2180060)	UUS-480B-3-5D-SS (2180080)	Ultra-Low temperature Freezer; Upright; 17 ft³ (480 L)
UUS-597B-1-5D-SS (2180061)	UUS-597B-3-5D-SS (2180081)	Ultra-Low temperature Freezer; Upright; 21 ft³ (597 L)
UUS-714B-1-5D-SS (2180062)	UUS-714B-3-5D-SS (2180082)	Ultra-Low temperature Freezer; Upright; 25 ft³ (714 L)

ACCESSORIES	DESCRIPTION
5070512-U	Recorder Kit (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
5170438-U	LCO ₂ back-up system
1260040-U	Ice Scraper
1260039-U	Cryo Safety Gloves
9010101-U	IQ/OQ Documentation
5250001-U	Voyager® Software Kit with iRMAP (Intelligent Remote Monitoring Application Protocol)
1260019-U	6" Temperature Chart, 7day, 60/pack
1260020-U	Chart Recorder Pen Replacement 6 pens/pack
(see PROtect brochure)	PROtect

OPTIONS AND ACCESSORIES



Chart Recorder Kit (5070512-U)

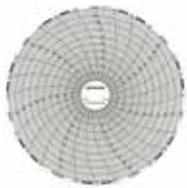
The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument, for on-the-spot written documentation of freezer chamber temperature. This model offers a 6" chart of temperature data.

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



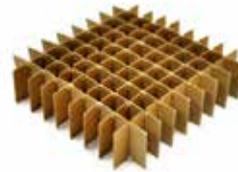
Standard Cardboard 100-cell Divider (1180063-U)

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)



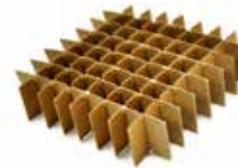
Standard Cardboard 81-cell Divider (1180064-U)

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.



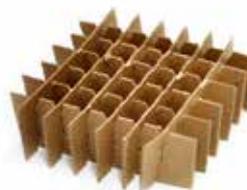
Standard Cardboard 64-cell Divider (1180065-U)

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 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.



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 (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 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 (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 240 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 398 mm (W x D x H)



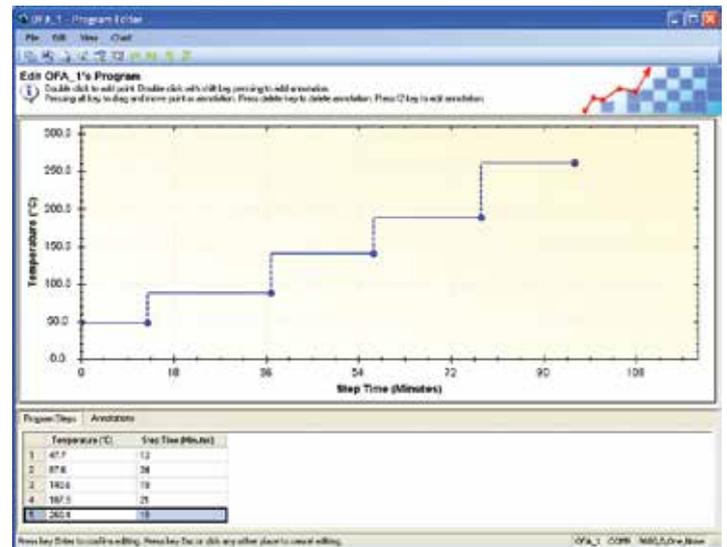
2" Drawer rack for Lexicon® II with 5 inner door configuration (5170646-U)

- 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

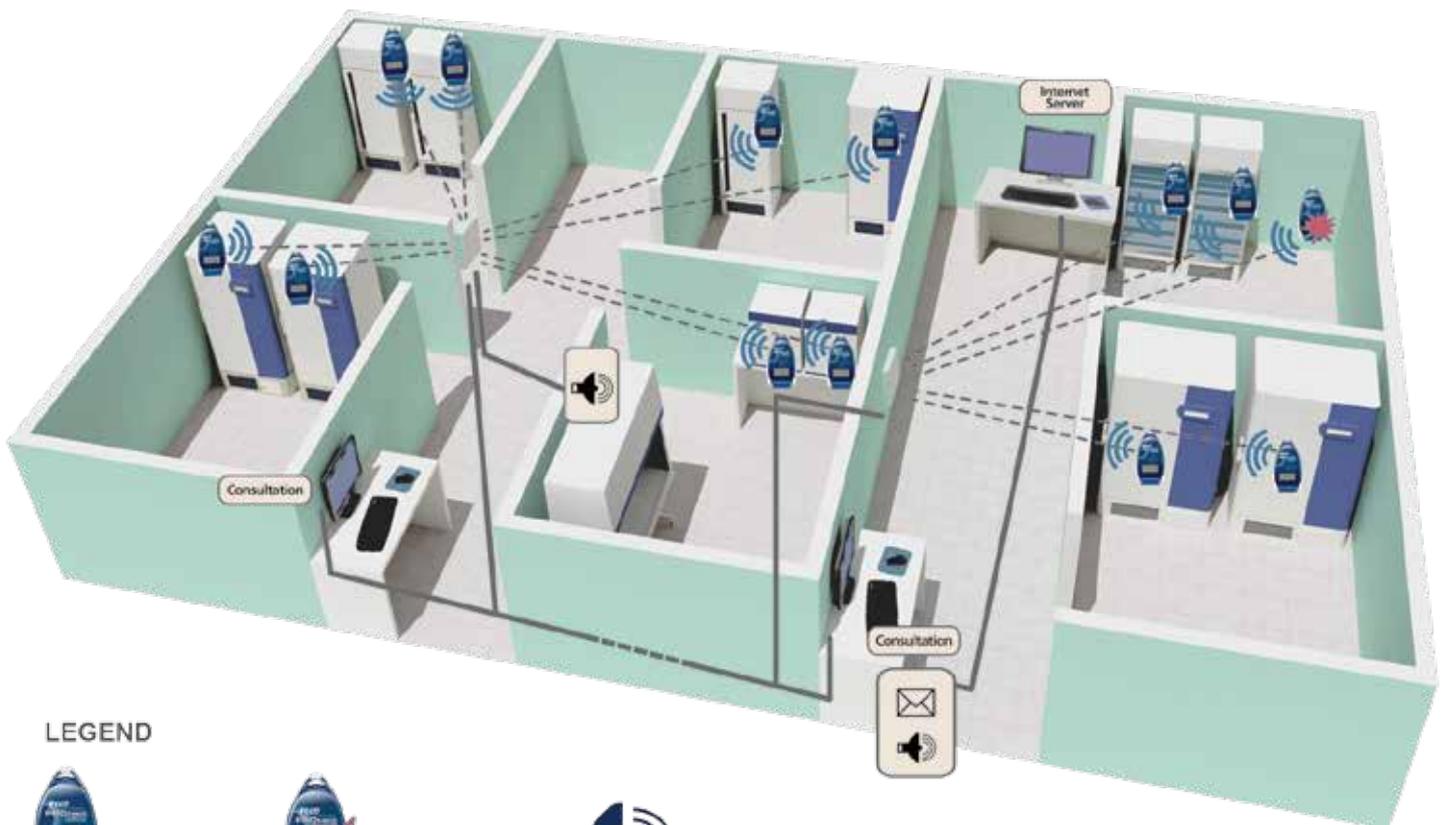
- With iRMAP optional service, Esco will remotely monitor your Esco freezers in case of issues that might threaten your samples, Esco will call the supplied customer contact to provide assistance.
- iRMAP allows Esco to guard your samples 24 hours a day/7 days a week. Esco can even provide proactive 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.



Alarm Time (YYYY-MM-DD HH:MM:SS)	Alarm Description (Message)	Alarm Log
2017-2013 03:02 PM	2017-2013 03:02 PM	CLEAN FUP
2017-2013 03:08 PM	2017-2013 03:08 PM	WATKIN BELOW OUT OFF LINE
2017-2013 03:08 PM	2017-2013 03:08 PM	WATKIN BELOW OUT OFF LINE
2017-2013 03:08 PM	2017-2013 03:08 PM	WATKIN BELOW OUT OFF LINE
2017-2013 03:09 PM	2017-2013 03:09 PM	TEMPERATURE HIGH ALARM
2017-2013 03:07 PM	2017-2013 03:07 PM	HEAT EXCHANGER
2017-2013 03:08 PM	2017-2013 03:08 PM	WATKIN BELOW OUT OFF LINE
2017-2013 03:07 PM	2017-2013 03:07 PM	WATKIN BELOW OUT OFF LINE
2017-2013 03:30 PM	2017-2013 03:30 PM	HEAT EXCHANGER
2017-2013 03:27 AM	2017-2013 03:27 AM	TEMPERATURE HIGH ALARM
2017-2013 03:27 AM	2017-2013 03:27 AM	POWER FAILURE
2017-2013 03:24 AM	2017-2013 03:24 AM	POWER FAILURE
2017-2013 03:23 AM	2017-2013 03:23 AM	POWER FAILURE
2017-2013 03:22 AM	2017-2013 03:22 AM	POWER FAILURE

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.



LEGEND



ESCO Protect
UN/DG



ESCO Protect
ALARM



Visual and
Audible Alert



ESCO Protect
EMD-1

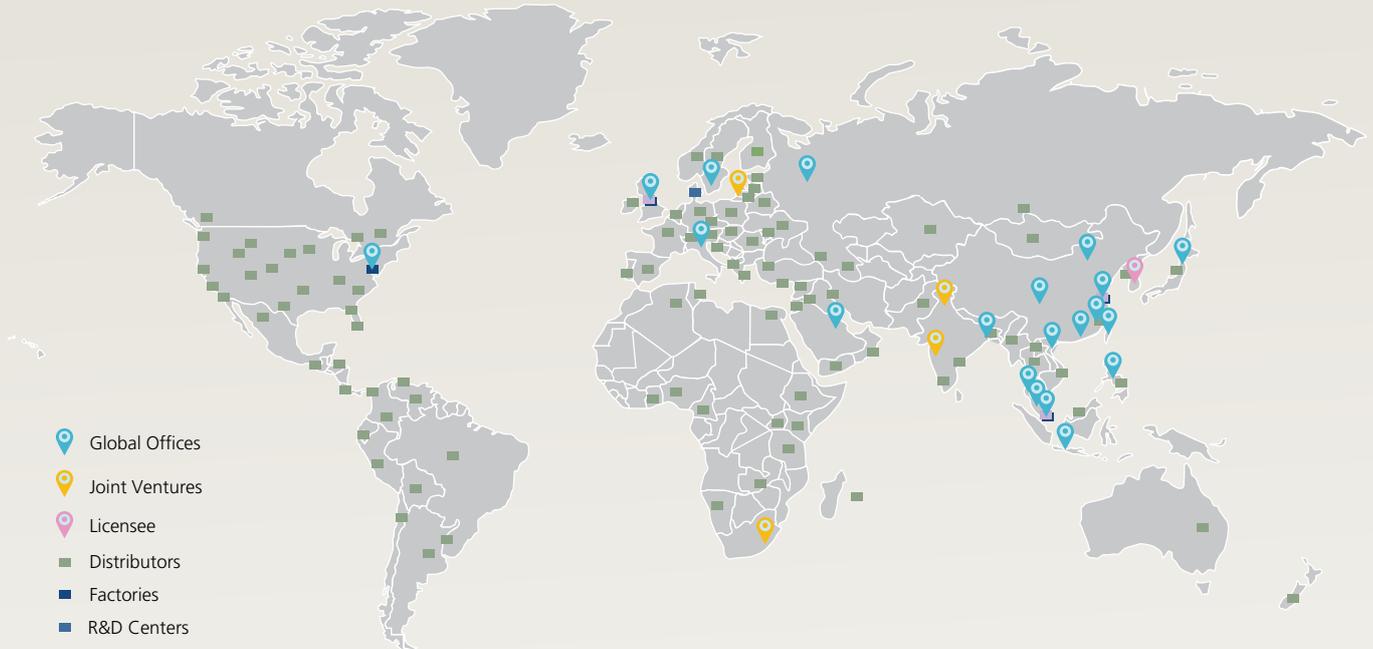


Email Alert

Ethernet network

Radio Communication
(200-300m)

ESCO GLOBAL NETWORK



- 📍 Global Offices
- 📍 Joint Ventures
- 📍 Licensee
- Distributors
- Factories
- R&D Centers
- Regional Distribution Centers



- ART Equipment
- Biological Safety Cabinets
- CO₂ Incubators
- Compounding Pharmacy Equipment
- Containment / Pharma Products
- Ductless Fume Hoods
- Freeze Dryers
- Lab Animal Research Products
- Laboratory Centrifuges
- Laboratory Fume Hoods
- Laboratory Ovens and Incubators
- Laboratory Shakers
- Laminar Flow Clean Benches
- PCR Cabinets
- PCR Thermal Cyclers
- Powder Weighing Balance Enclosures
- Ultra-low Temperature Freezers

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

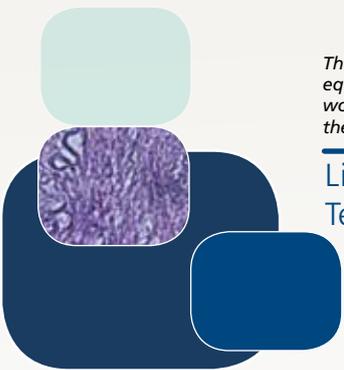


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