![ESCO - WORLD CLASS. WORLDWIDE.]

Lexicon®

Ultra-low Temperature Freezer
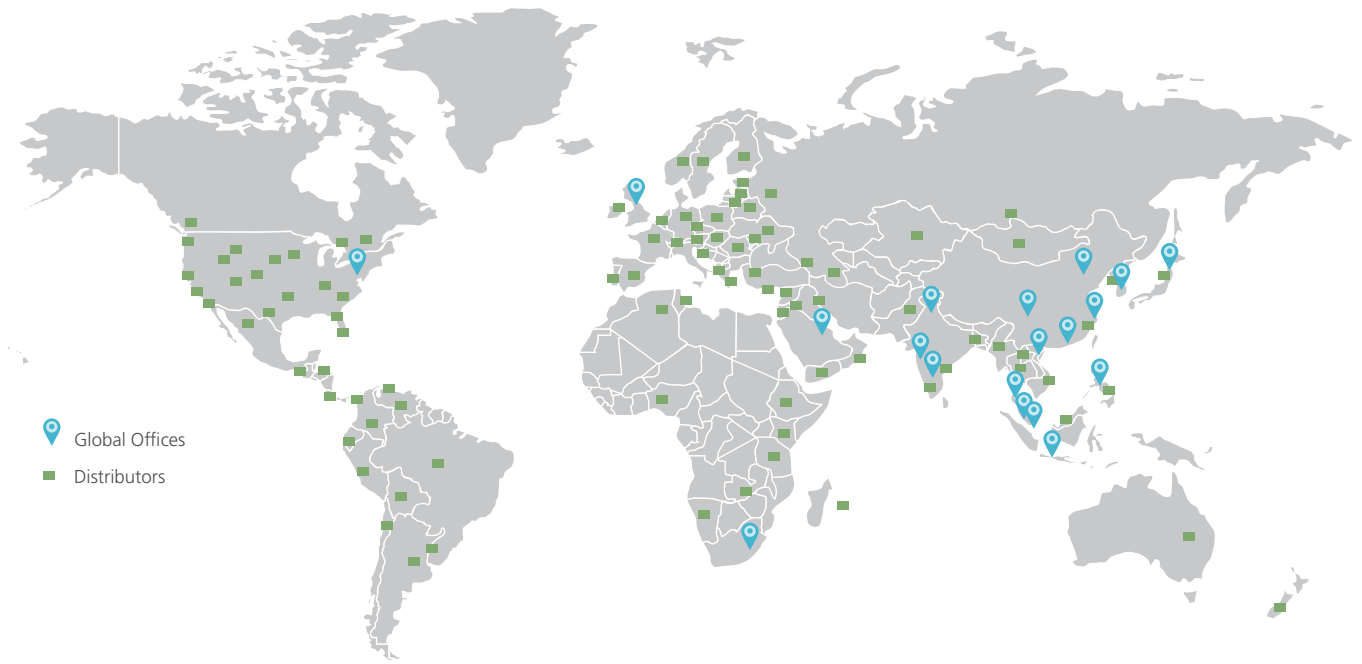*ULT Vault for Your Samples*

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, UK, US, Vietnam, South Africa and Indonesia 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.
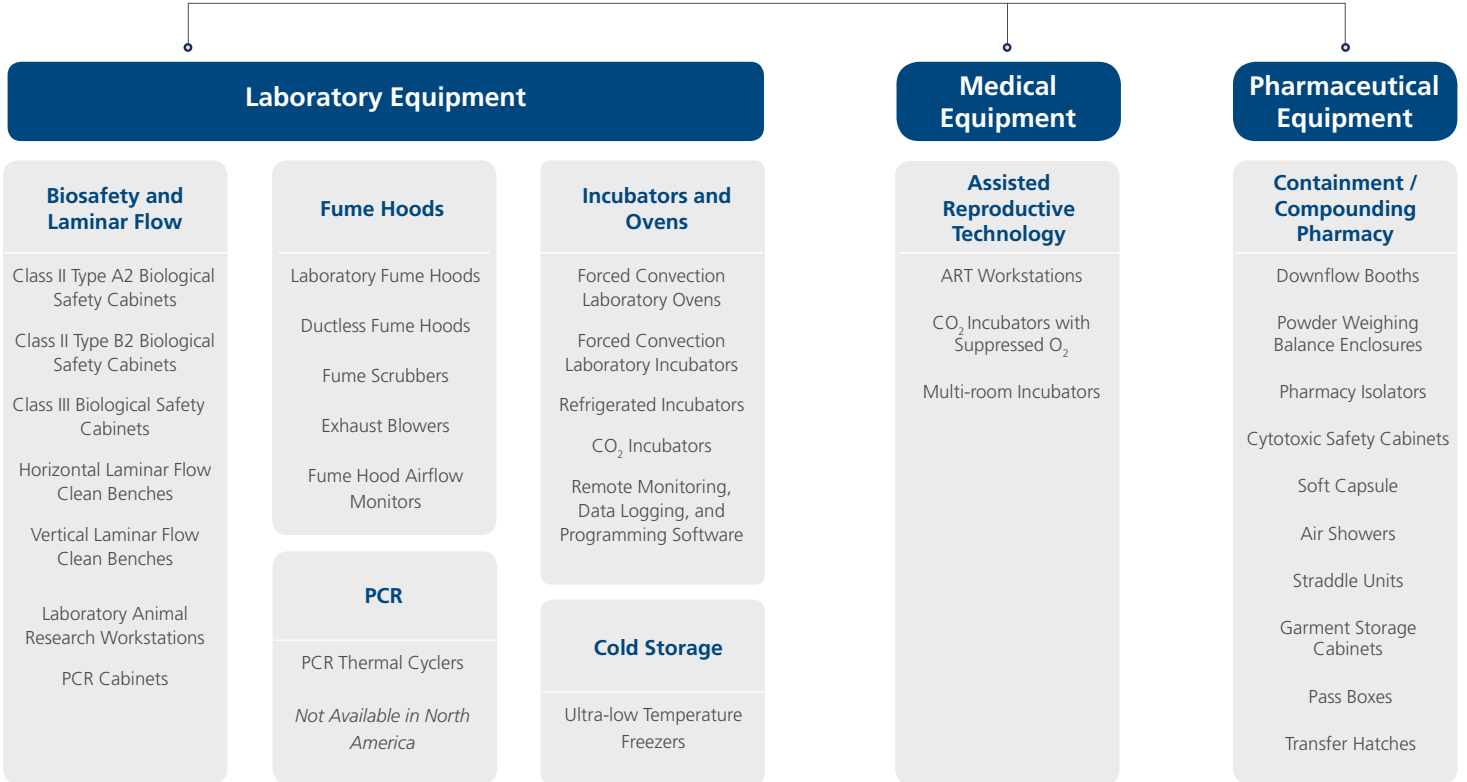
GLOBAL NETWORK

- Global Offices
- Distributors

PRODUCTS AND APPLICATION

Esco Life Science Tools

Laboratory Equipment

Biosafety and Laminar Flow

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

PCR Cabinets

Fume Hoods

Laboratory Fume Hoods

Ductless Fume Hoods

Fume Scrubbers

Exhaust Blowers

Fume Hood Airflow Monitors

PCR

PCR Thermal Cyclers

Not Available in North America

Incubators and Ovens

Forced Convection Laboratory Ovens

Forced Convection Laboratory Incubators

Refrigerated Incubators

CO_2 Incubators

Remote Monitoring, Data Logging, and Programming Software

Cold Storage

Ultra-low Temperature Freezers

Medical Equipment

Assisted Reproductive Technology

ART Workstations

CO_2 Incubators with Suppressed O_2

Multi-room Incubators

Pharmaceutical Equipment

Containment / Compounding Pharmacy

Downflow Booths

Powder Weighing Balance Enclosures

Pharmacy Isolators

Cytotoxic Safety Cabinets

Soft Capsule

Air Showers

Straddle Units

Garment Storage Cabinets

Pass Boxes

Transfer Hatches

Lexicon®
Ultra-low Temperature Freezers

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 researchers.

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

KEY FEATURES

LEXICON® ULTRA-LOW TEMPERATURE FREEZERS

ULT Vault for Your Samples

Lexicon® Ultra-low Temperature Freezers available in 4 sizes: 439L, 552L, 668L, 793L.

RELIABLE 5" INSULATION
With superb 5" thick insulation in place, Esco Lexicon cabinets provide superior performance.

5 INDIVIDUAL INNER DOORS
- 5 individual inner doors can be opened independently to minimize sample exposure.
- 1 continuous stainless steel hinge is used for excellent alignment of the inner doors to ensure a good seal.
- 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

QUALITY ESCO CONSTRUCTION

- Electrogalvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish.
- External surfaces are powder coated with Esco ISOCIDE™ 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

OPTIONAL CHART RECORDER

- Front-mounted.
- For independent temperature monitoring.
- Provides permanent record of thermal performance
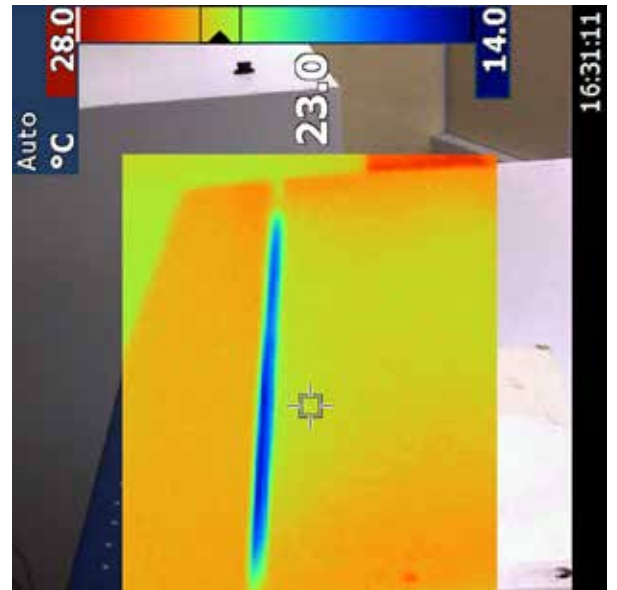
FRONT-MOUNTED CONDENSER FILTER

- Easily accessible without tools.
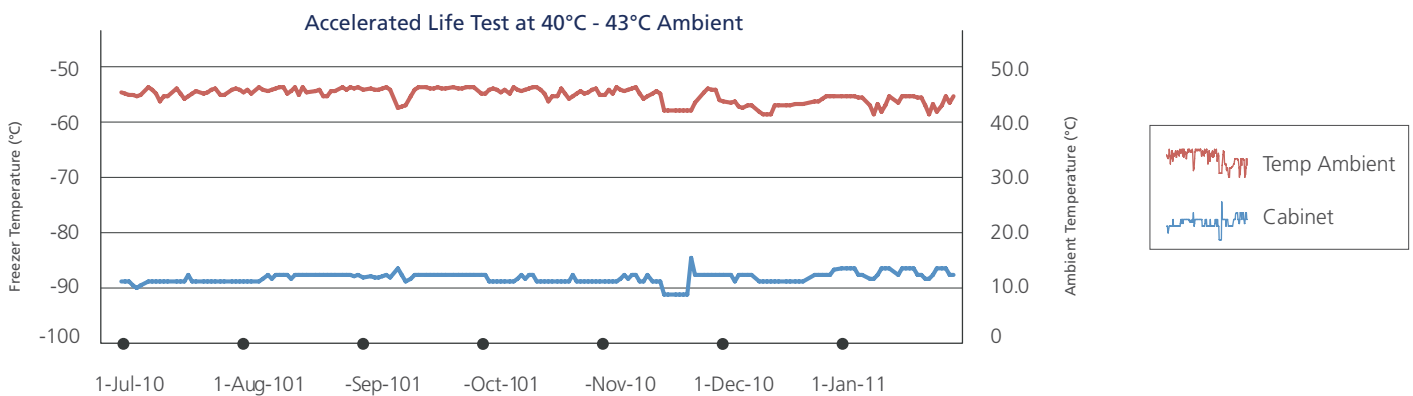- Washable design saves money.

ENGINEERING EXCELLENCE & STRICT PROCESS CONTROL

- First in the industry to use thermal imager to ensure cabinet integrity.
- 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 oil drying, 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.

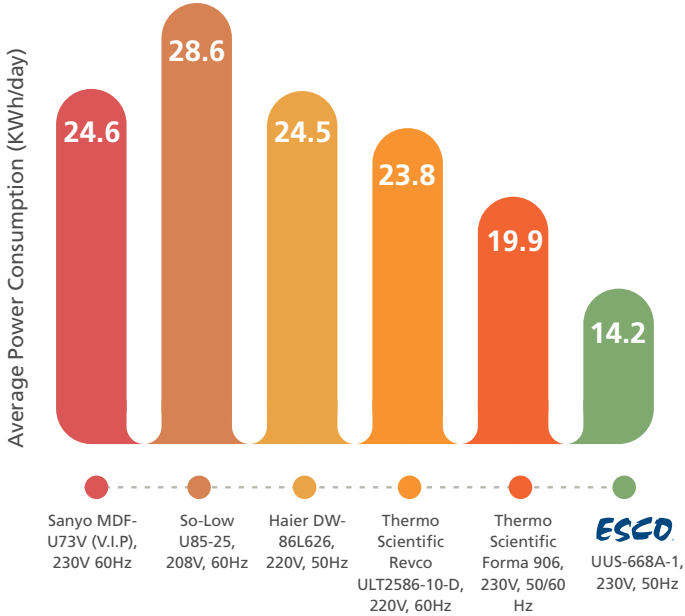*Superior performance, lower energy costs, better protection.*

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.

ENERGY EFFICIENT

Green Product

LOW ENERGY CONSUMPTION

Average Power Consumption (KWh/day)

Value	Model
24.6	Sanyo MDF-U73V (V.I.P), 230V 60Hz
28.6	So-Low U85-25, 208V, 60Hz
24.5	Haier DW-86L626, 220V, 50Hz
23.8	Thermo Scientific Revco ULT2586-10-D, 220V, 60Hz
19.9	Thermo Scientific Forma 906, 230V, 50/60 Hz
14.2	ESCO UUS-668A-1, 230V, 50Hz

Energy Consumption (KWh/day) at T_{set} = 80°C

Esco UUS-668A-1 energy usage (KWh/day)	14.2*
Estimated conventional freezer energy usage (KWh/day)	24.3**
10-year energy cost savings over conventional freezer in USD (based on 0.10$/KWh)	3,504
10-year carbon footprint reduction over conventional freezer in kg CO_2 (0.58kg CO_2/kWh)	20,332

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

LOW HEAT EMISSION TO AMBIENT ***

Esco UUS-668A-1 Heat Emission to lab space (KW)	0.745*
Estimated conventional freezer heat emission (KW)	0.915
Less amount of heat emitted that needs to be removed by air-conditioner in the lab space (KWh/Day)	4.08
10-year energy cost savings over conventional freezer in USD (based on 0.10$/KWh)	1489.2

- 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.
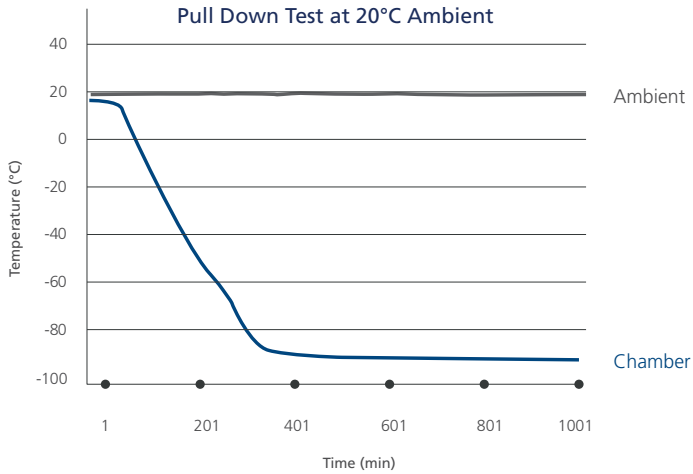- Biodegradable, high-performance synthetic polyolester oil is used.

* 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.

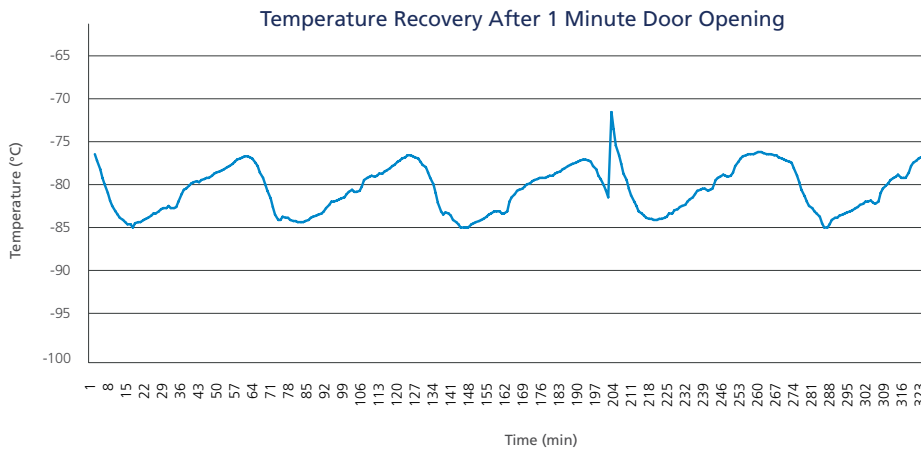** Average value of the Brand Sanyo to Brand Forma.

*** Performance data are available upon request

SUPERIOR SAMPLE PROTECTION
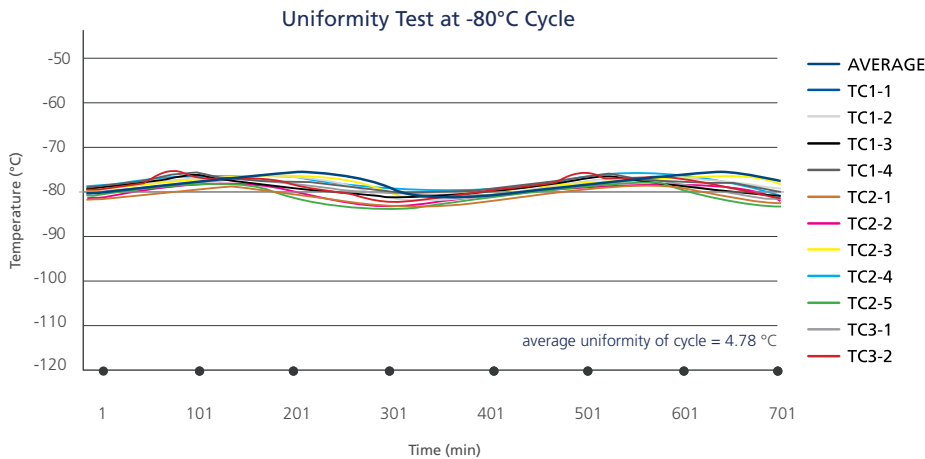
Pull Down Test at 20°C Ambient

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*.

Temperature Recovery After 1 Minute Door Opening

FAST TEMPERATURE RECOVERY AFTER DOOR OPENING

- Esco Lexicon® recovers temperature in minutes following a 1 min. door opening*. Fast recovery in temperature ensures integrity of stored samples.

Uniformity Test at -80°C Cycle

Legend: AVERAGE, TC1-1, TC1-2, TC1-3, TC1-4, TC2-1, TC2-2, TC2-3, TC2-4, TC2-5, TC3-1, TC3-2
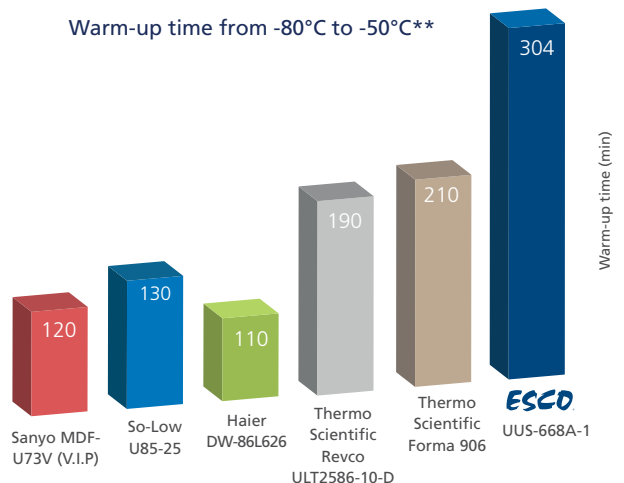
average uniformity of cycle = 4.78 °C

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® 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® 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**

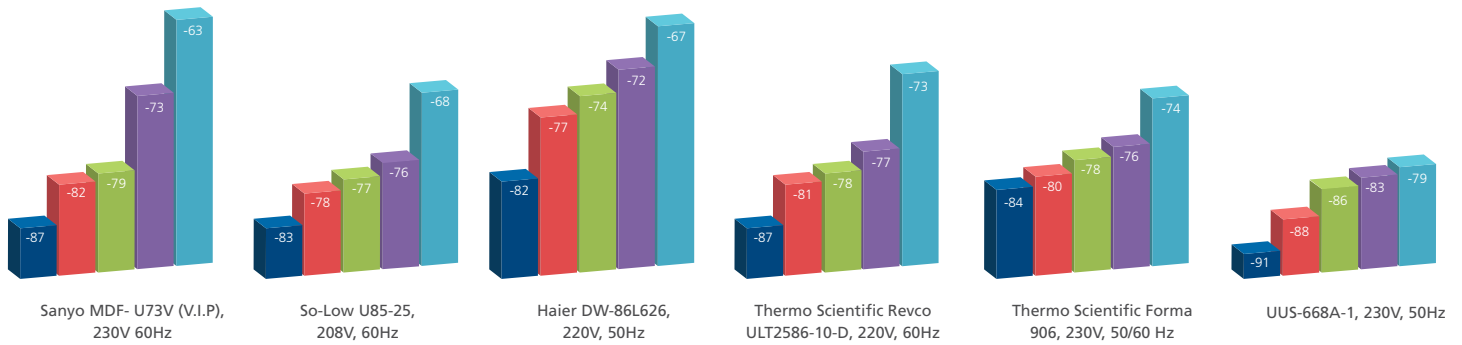| Freezer	Warm-up time (min)
Sanyo MDF-U73V (V.I.P)	120
So-Low U85-25	130
Haier DW-86L626	110
Thermo Scientific Revco ULT2586-10-D	190
Thermo Scientific Forma 906	210
ESCO UUS-668A-1	304

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.

■ 0 Watt	■ 90 Watt
■ 40 Watt	■ 120 Watt
■ 60 Watt	

BTU Reserve Average of 16 Probes**

Sanyo MDF- U73V (V.I.P), 230V 60Hz: -87, -82, -79, -73, -63
So-Low U85-25, 208V, 60Hz: -83, -78, -77, -76, -68
Haier DW-86L626, 220V, 50Hz: -82, -77, -74, -72, -67
Thermo Scientific Revco ULT2586-10-D, 220V, 60Hz: -87, -81, -78, -77, -73
Thermo Scientific Forma 906, 230V, 50/60 Hz: -84, -80, -78, -76, -74
UUS-668A-1, 230V, 50Hz: -91, -88, -86, -83, -79

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® 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.
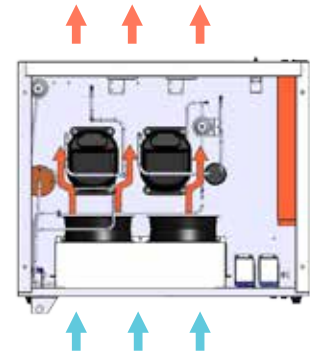
INTELLIGENT DESIGN

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.

Outer wall

Insulation

Inner chamber wall

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

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.
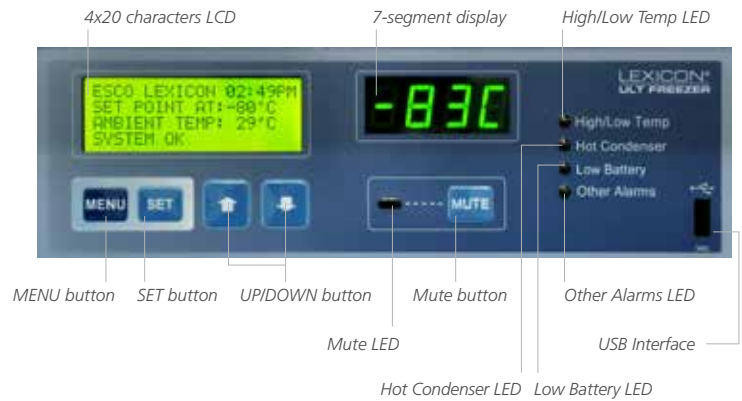
CONTROLLER TYPES

NEW S-SERIES CONTROLLER

Mute button   MENU button   High/Low Temp LED

SET button   UP/DOWN button   Other Alarms LED

Hot Condenser LED   Low Battery LED

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.

ADVANCED U-SERIES CONTROLLER

4x20 characters LCD   7-segment display   High/Low Temp LED

ESCO LEXICON 02:49PM
SET POINT AT:-80°C
AMBIENT TEMP: 29°C
SYSTEM OK

MENU button   SET button   UP/DOWN button   Mute button   Other Alarms LED

Mute LED   USB Interface

Hot Condenser LED   Low Battery LED

Features

• Advanced control for various user demands.

• USB Pen drive interface to download the data from flash memory.

• Event Log - 20 latest events are stored in the non-volatile memory.

• AC Voltage sensing with high & low voltage stabilization protects freezer components.

• Help Menu.

Voyager®

Remote Monitoring, Datalogging, Programming Software

Esco Voyager® is a PC-based software package developed for the remote monitoring, datalogging, and programming / device configuration of Esco thermostatic products.

Voyager® interfaces with individual Esco equipment over RS485 using the EscoBUS communications protocol. Up to 16 devices of equipment may be interfaced to a single PC.

Compatible Equipment

• Lexicon® – Ultra-low Temperature Freezer

• CelCulture® – CO_2 Incubator (CCL)

• Isotherm® – Forced Convection Oven (OFA)

• Isotherm® – Forced Convection Incubator (IFA)

• Isotherm® – Refrigerated Incubator (IFC)
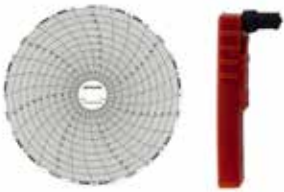
OPTIONS AND ACCESSORIES

6" Chart Recorder, Temp, 115/230VAC 50/60HZ

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.

Temperature Chart and Pen Replacements for 6" Chart Recorder

- 6" Temperature Chart, 7day, 60/pack
- Chart Recorder Pen Repacement 6pens/pack

Standard Cardboard 2-inch Box

Fiberboard boxes have the dimension of 5.25"X5.25"X2" (or 130 X130X50 mm). All boxes do not come with dividers. Dividers have to be ordered separately.

Standard Cardboard 3-inch Box

Fiberboard boxes have the dimension of 5.25"X5.25"X3" (or 130 X130X80 mm). All boxes do not come with dividers. Dividers have to be ordered separately.

Additional shelving kit

Each Lexicon® ULT freezer comes standard with 4 shelves and 16 clips. Extra shelves are available and each shelf comes with 4 clips.

Standard Cardboard 100-cell Divider

100-cell Dividers are made of 10X10, 7/16" cells and each divider holds 100 12 mm wide vials.

Standard Cardboard 81-cell Divider

81-cell Dividers are made of 9X9, 1/4" cells and each divider holds 81 13mm wide vials.

Standard Cardboard 64-cell Divider

64-cell Dividers are made of 8X8, 9/16" cells and each divider holds 64 14mm wide vials.

Standard Cardboard 49-cell Divider

49-cell Dividers are made of 7X7, 5/8" cells and each divider holds 49 16mm wide vials.

Modifiable Clip Rack for Standard 2-inch and/or 3-inch Boxes (UUS-552/668/793 model)

The modifiable clip rack (236 x 565 x 140mm) is able to fit standard 5.25" x 5.25" x 2" (130 X 130 X 50 mm) boxes and/or standard 5.25" x 5.25" x 3" (130 X 130 X 80 mm) boxes by changing the position of the clips. It is made of stainless steel and has handles. Each rack includes 6 L-Clips and 9 T-Clips.

Drawer type rack for 2-inch and/or 3-inch Boxes

- 2" Drawer type rack for UUS-439 model (228mm X 421mm X 140mm)
- 2" Drawer type rack for UUS-552/668/793 model (228mm X 558mm X 140mm)
- 3" Drawer type rack for UUS-439 model (246mm X 421mm X 140mm)
- 3" Drawer type rack for UUS-552/668/793 model (246mm X 558mm X 140mm)

LCO₂ Back-up System

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

LN₂ Back-up System

LN2 back-up system injects liquid N2 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: -200°C to +50°C
- Resolution: 1°C
- Audio & visual alarms
- Relay output for central alarm systems or automatic dialers.
- Battery back-up with trickle charger
- Door safety interlock switch to prevent liquid CO2 injection while door is open

Ice Scraper

Ice scraper is available for cleaning ice built up on door gasket, PEP and other places in the freezer.

Cryo Safety Gloves

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

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

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_2 Incubators and Ultra-low Temperature Freezer

ORDERING INFORMATION

UNITS ORDERING

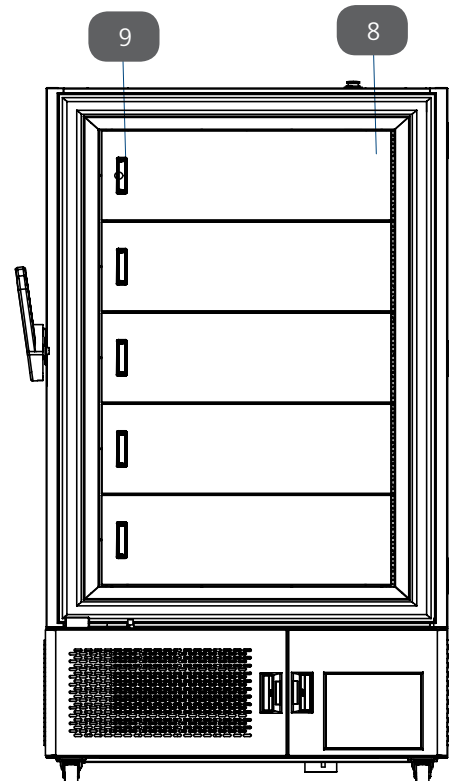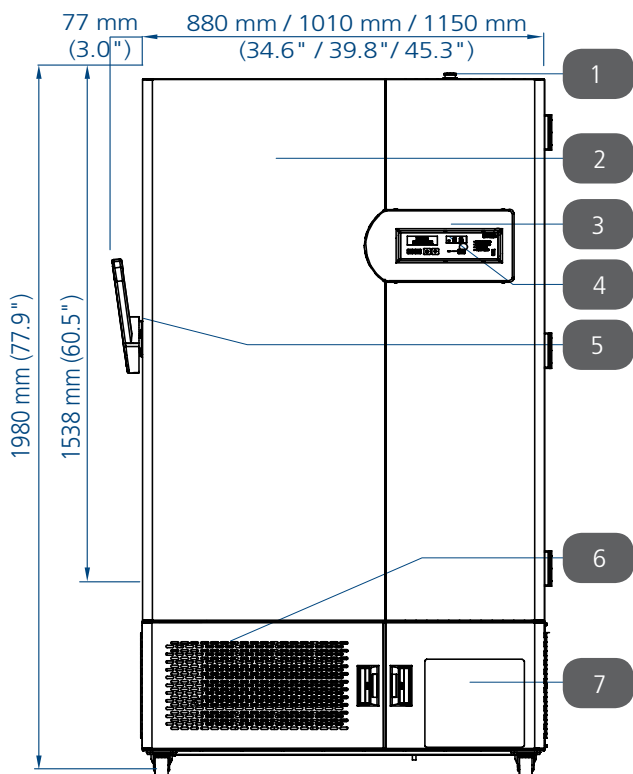| MODELS	DESCRIPTION (S-SERIES CONTROLLER)
UUS-439A-1-G2	Ultra low temp. freezer; Upright; 16 cu. Ft (439L); S-series controller; 230V, 50 hz
UUS-552A-1-G2	Ultra low temp. freezer; Upright; 20 cu. Ft (552L); S-series controller; 230V, 50 hz
UUS-668A-1-G2	Ultra low temp. freezer; Upright; 24 cu. Ft (668L); S-series controller; 230V, 50 hz
UUS-793A-1-G2	Ultra low temp. freezer; Upright; 28 cu. Ft (793L); S-series controller; 230V, 50 hz

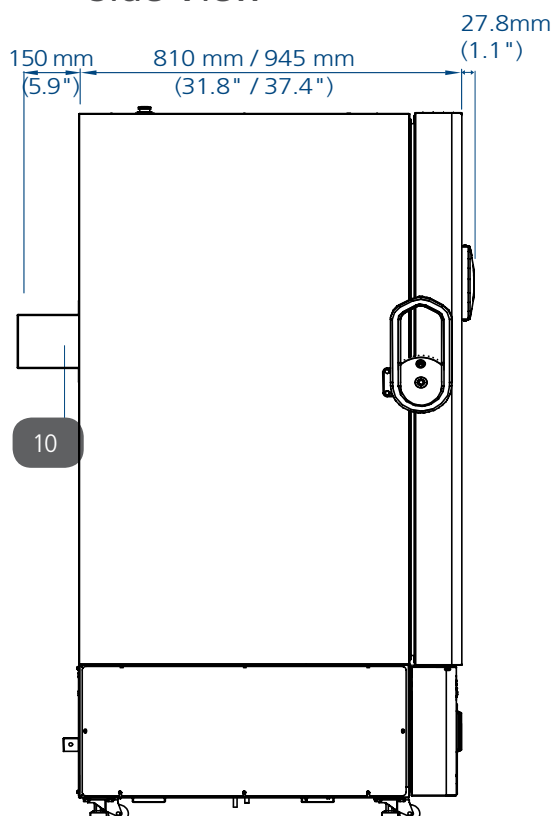| MODELS	DESCRIPTION (U-SERIES CONTROLLER)
UUS-439B-1	Ultra low temp. freezer; Upright; 16 cu. Ft (439L); U-series controller; 230V, 50 hz
UUS-552B-1	Ultra low temp. freezer; Upright; 20 cu. Ft (552L); U-series controller; 230V, 50 hz
UUS-668B-1	Ultra low temp. freezer; Upright; 24 cu. Ft (668L); U-series controller; 230V, 50 hz
UUS-793B-1	Ultra low temp. freezer; Upright; 28 cu. Ft (793L); U-series controller; 230V, 50 hz

ACCESSORIES ORDERING

ACCESSORIES	DESCRIPTION
1080585-U	Accessory, Chart Recorder, 115/230VAC 50/60HZ
1180060-U	Accessory, Modifiable Clip Rack for Standard 2-inch High Boxes and/or 3-inch High Boxes
5070464-U	Accessory, Additional shelving kit for UUS-439
5070465-U	Accessory, Additional shelving kit for UUS-552
5170356-U	Accessory, Additional shelving kit for UUS-668
5070466-U	Accessory, Additional shelving kit for UUS-793
1180061-U	Accessory, Standard Cardboard 2-inch Box
1180062-U	Accessory, Standard Cardboard 3-inch Box
1180063-U	Accessory, Standard Cardboard 100-Cell Divider
1180064-U	Accessory, Standard Cardboard 81-Cell Divider
1180065-U	Accessory, Standard Cardboard 64-Cell Divider
1180066-U	Accessory, Standard Cardboard 49-Cell Divider
5170438-U	Accessory, LCO$_2$ back-up system
5170357-U	Accessory, LN$_2$ back-up system
9010103-U	Accessory, Ice Scraper
9010102-U	Accessory, Cryo Safety Gloves
9010101-U	Accessory, IQ/OQ Documentation
1260015-U	2" Drawer type rack for UUS-439 model
1260016-U	2" Drawer type rack for UUS-552/668/793 model
1260017-U	3" Drawer type rack for UUS-439 model
1260018-U	3" Drawer type rack for UUS-552/668/793 model
5250001-U	Voyager Software Kit
1260019-U	6" Temperature Chart, 7day, 60/pack
1260020-U	Chart Recorder Pen Replacement 6 pens/pack

*   U-field installed by user; T-field installed by technician; F-factory installed

TECHNICAL SPECIFICATIONS

Front View

77 mm (3.0")

880 mm / 1010 mm / 1150 mm (34.6" / 39.8" / 45.3")

1980 mm (77.9")

1538 mm (60.5")

1
2
3
4
5
6
7

9
8

Side View

150 mm (5.9")

810 mm / 945 mm (31.8" / 37.4")

27.8mm (1.1")

10

1. Access port
2. Main door
3. PEP cover
4. Control panel
5. Main door handle
6. Front bottom door
7. Chart recorder box (optional)
8. Inner doors
9. Embedded pulls
10. Omega bracket

GENERAL SPECIFICATIONS

ULTRA-LOW TEMPERATURE FREEZERS

		UUS-439A-1-G2 / UUS-439B-1	UUS-552A-1-G2 / UUS-552B-1	UUS-668A-1-G2 / UUS-668B-1	UUS-793A-1-G2 / UUS-793B-1
Temp. Range		-50 to -86°C			
Cooling performance at ambient 25°C - no load		-86°C			
Ambient Temp. Range		15 to 32°C (59 to 89°F)			
External Dimension (W x D x H)		880 x 810 x 1980 mm (34.6" x 31.9" x 78")	880 x 945 x 1980 mm (34.6" x 37.4" x 78")	1010 x 945 x 1980 mm (40.0" x 37.4" x 78")	1150 x 945 x 1980 mm (45.3" x 37.4" x 78")
True External Dimension (W x D x H)	S-Series Controller	957 x 853 x 1992 mm (37.6" x 33.5" x 78.4")	957 x 988 x 1992 mm (37.6" x 38.8" x 78.4")	1087 x 988 x 1992 mm (42.7" x 38.8" x 78.4")	1227 x 988 x 1992 mm (48.3" x 38.8" x 78.4")
	U-Series Controller	957 x 838 x 1992 mm (37.6" x 32.9" x 78.4")	957 x 973 x 1992mm (37.6" x 38.3" x 78.4")	1087 x 973 x 1992 mm (42.7" x 38.3" x 78.4")	1227 x 973 x 1992 mm (48.3" x 38.3" x 78.4")
Internal Dimension (W x D x H)		620 x 543.8 x 1304 mm (24.4 x 21.4 x 51.3)	620 x 683.8 x 1304 mm (24.4 x 26.9 x 51.3)	750 x 683.8 x 1304mm (30.0" x 26.9" x 51.0")	890 x 683.8 x 1304 mm (35 x 26.9 x 51.3)
Capacity		439.7 L (15.5 cu.ft)	552.8 L (19.5 cu.ft)	668.8 L (23.6 cu.ft)	793.6 L (28 cu.ft)
Electrical Rating		12/13A 230V 50 Hz 1Ø	12/13A 230V 50 Hz 1Ø	12/13A 230V 50 Hz 1Ø	12/13A 230V 50 Hz 1Ø
Compressor		2 hermetic 1.0 hp compressors			
Condenser		Enhanced finned-tube, forced-air cooled condenser			
Insulation Type		Polyurethane foam			
Refrigerant Type		Environmentally friendly HFC refrigerants			
Temperature Controller		Microprocessor Controller			
Number of Outer / Inner Doors		1 / 5			
No. of storage racks per shelf		4	4	5	6
No. of storage racks per unit		20	20	25	30
Shelves	Material	SS304, adjustable, 4 shelves			
	Shelf Area (W x D)	608 x 481 mm (23.9" x 18.9")	608 x 611 mm (23.9" x 24")	738 x 611 mm (28.9" x 25.1")	878 x 611 mm (34.5" x 24")
	Max Load	50 kg (110 lbs) per shelf			
Storage Box Capacity (With Modifiable Clip Rack)	2" Box	NA	320	400	480
	3" Box	NA	240	300	360
Storage Box Capacity (With Drawer type Rack)	2" Box	240	320	400	480
	3" Box	180	240	300	360
Electrical Rating / Full Load Amps		230V, 50Hz, 1Φ / 12A			
Power Consumption at -80°C		Approximately 14.1 KWh/day	Approximately 16.0 KWh/day	Approximately 14.2 KWh/day	Approximately 17.8 KWh/day
Net Weight		291.5 kg (642 lbs)	321 kg (708 lbs)	326.5 kg (720 lbs)	375 kg (826 lbs)
Shipping Weight		341 kg (739 lbs)	371 kg (813 lbs)	378 kg (833 lbs)	430 kg (928 lbs)
Shipping Dimensions (W x D x H)		1138 x 1068 x 2121 mm (44.8" x 42.0" x 83.5")	1138 x 1068 x 2121 mm (44.8" x 42.0" x 83.5")	1138 x 1068 x 2121 mm (44.8" x 42.0" x 83.5")	1278 x 1068 x 2121 mm (50.3" x 42.0" x 83.5")

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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
us.escoglobal.com • usa@escoglobal.com

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

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