Isotherm®

Forced Convection Laboratory Ovens
Reliable Performance For Universal Applications
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.
- 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.
Forced Convection Laboratory Ovens

INTRODUCTION
Introducing Esco Isotherm® - world class laboratory ovens from Esco with the technologies and compliance to prove it. Ergonomic, intuitive interfaces, microprocessor PID controls with programming options, 4-zone heated air jacket, precisely tuned and tested ventilation and insulation package, all supported by Esco’s solutions-based sales and service representatives worldwide.

KEY FEATURES

ISOThERM® FORCED CONVECTION LABORATORY OVENS

Reliable Performance For Universal Applications

SOLARIS™ PRE-HEAT CHAMBER TECHNOLOGY

- Innovative design guarantees maximum thermal performance.
- No exposed heating elements located inside the chamber to ensure maximum user safety.
- 4-zone heated air jacket ensures stable heating and maximum temperature uniformity in the chamber.
- Standard temperature range of up to 300 °C for maximum application flexibility.
- Secure 2-point door seal and eccentric hinge ensure maximum gasket compression for stable chamber temperature.

Isotherm® Forced Convection Laboratory Ovens available in 5 sizes, 32L, 54L, 110L, 170L, 240L.
VENTIFLOW™ VENTILATION SYSTEM
- Forced convection design produces faster temperature response rates, improved uniformity, and reduced fluctuation.
- German made ebm-papst fan, permanently lubricated, maintenance free for uniform air circulation.
- Low energy consumption for reduced operating costs.
- Fan speed and air exchange rates are adjustable.
- Consistent air circulation and heat uniformity.
- Low noise during operation.
- Fresh air entry from the base of the chamber, combined with the rounded corners of the chamber interior and air exhaust at the rear of the chamber, creates uniform air circulation ensuring maximum temperature uniformity.
- Chamber fan inlet pulls air away from the user, preventing exposure of the user to blasts of hot air when the door is opened.

QUALITY ESCO CONSTRUCTION
- Electrogalvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish.
- External surfaces are powder coated with Esco ESOCIDE™ to eliminate 99.9% of surface bacteria within 24 hours of exposure.

SUPERIOR INSULATION
- Multi-layer chamber, pre-heat chamber, insulation and external carcass.
- Improves chamber temperature stability, while reducing external surface temperatures.
- Unique door ventilation design reduces door temperature even when the chamber temperature is at the maximum operating point.
- Superior insulation performance reduces heat load output to the laboratory, reduces operating power consumption, and lowers operating costs.
Forced Convection Laboratory Ovens

- Instrument-grade precision platinum temperature probe.
- Tuned PID control ensures fast ramp time, prevents overshoot, and ensures stable temperature once setpoint is achieved.
- Twin temperature displays for easy monitoring.
- Built-in menu is intuitive, easy to operate: left display shows parameter being set, and right display shows preset value.
- User programmable alarm setpoints.
- Display temperature units selectable between °C / °F.
- User programmable PIN to prevent unauthorized use.
- Anywhere from 10 programs with 5 segments to 1 program with 50 segments may be configured. Programs may be set up to repeat automatically.
- Audible confirmation of all settings.
- Diagnostic functions provide access to chamber historical temperatures and sensor read-outs to simplify service.
- Diagnostic LEDs on electronics PCB simplify service.

WIDE RANGE OF PROGRAM OPTIONS

Sample Program 1
Repeats of identical processes based on user’s setting of ‘start temp’, ‘arrival temp’, and running time after arrival. All settings can be done in a single program. For example, repeat a process from 50°C to 70°C and back.

Sample Program 2
Running different processes sequentially based on user’s setting of ‘start temp’, ‘arrival temp’, and running time after arrival. Different programs may be linked to extend the total number of sequences, thus creating virtually unlimited programming options.
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 (with U-Series Controller)
- CelCulture® – CO₂ Incubator (CCL)
- CelMate® - CO₂ Incubator (CLM)
- Isotherm® – Forced Convection Oven (OFA)
- Isotherm® – Forced Convection Incubator (IFA)
- Isotherm® – Low Temperature Incubator (IFC)

OTHER SUPERB FEATURES

FORCED CONVECTION LABORATORY OVEN APPLICATIONS

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>MATERIAL/ SAMPLE</th>
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<tbody>
<tr>
<td>Drying</td>
<td>Glassware</td>
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<tr>
<td></td>
<td>Powders</td>
</tr>
<tr>
<td></td>
<td>Paper, textile</td>
</tr>
<tr>
<td></td>
<td>Soil, sand</td>
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<tr>
<td></td>
<td>Electronics</td>
</tr>
<tr>
<td></td>
<td>Pharmaceutical preparations</td>
</tr>
<tr>
<td>Material testing</td>
<td>Cables</td>
</tr>
<tr>
<td></td>
<td>Plastics</td>
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</table>

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>MATERIAL/ SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing</td>
<td>Paint</td>
</tr>
<tr>
<td></td>
<td>Adhesives</td>
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<tr>
<td></td>
<td>Plastics</td>
</tr>
<tr>
<td></td>
<td>Metals</td>
</tr>
<tr>
<td>Heated storage</td>
<td>Pills, drugs</td>
</tr>
<tr>
<td>Vulcanization</td>
<td>Rubber</td>
</tr>
</tbody>
</table>

SAFE, SUPERIOR PROTECTION FOR SAMPLE, USER AND THE ENVIRONMENT

- Multiple redundant over-temperature protection systems to guarantee maximum sample and user protection.
- Electronic over-temperature protection built into the microprocessor.
- Redundant mechanical over-temperature protection, adjustable from the front, independent from the microprocessor.
- Overall temperature protection meets DIN 12880 Class 3.1.
- Red LED illuminates if external mechanical temperature protection is engaged.
- Controller will control temperature at the over-temperature setpoint.
- All electrical components are UL recognized.
- Electrical circuit protection in accordance with UL requirements.
ERGONOMIC DESIGN
ACCESS FOR TEMPERATURE VALIDATION AND MAPPING

Forced Convection Laboratory Ovens

Forced Convection Laboratory Ovens

• Diagnostic functions in the microprocessor include historical read-out of temperatures.
• Diagnostic menu provides read-out of all sensor inputs and controller settings.
• Service can be carried out from the front.
• All electronic components are isolated from the work chamber and easily accessible for replacement.
• Low service costs.

OPTIMAL STAINLESS STEEL EXTERIOR

- Corrosion resistant surface.
- Robust construction.
- Meets pharmaceutical & clinical laboratory requirements.

ERGONOMIC DOOR HANDLE WITH KEYLOCK

- "Cleanroom" design with minimal joints and crevices is easy to clean.
- Single-piece stainless steel chamber with rounded corners.

EASY-TO-CLEAN

- "Cleanroom" design with minimal joints and crevices is easy to clean.
- Single-piece stainless steel chamber with rounded corners.

EASY-TO-SERVICE

The RS485 provides serial communication port for PC. It can be daisy chained from product to product and connected to a PC.

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EASY-TO-SERVICE

The RS485 provides serial communication port for PC. It can be daisy chained from product to product and connected to a PC.
OPTIONS AND ACCESSORIES

Wall bracket (only for 32L and 54L chambers)
Accommodates desired operating heights.

Support stands fixed height at 703 mm (27.7")

Reversed door swing (factory installed)

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.

TESTING AND CERTIFICATION

Esco Isotherm Laboratory Ovens were tested, validated and have passed the calibration conducted by Testo Industrial Services GmbH, an ISO/IEC17025 accredited testing laboratory. The measuring installation used for calibration are regularly calibrated and traceable to the national standards of the German Federal Physical Technical Institute (PTB).

The statement of conformity was made according to DIN EN ISO 14253-1, according to calibration instruction QSA 7.5-02.

ORDERING INFORMATION

UNIT ORDERING

<table>
<thead>
<tr>
<th>MODELS</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>OFA-32-8</td>
<td>Isotherm® General Purpose Oven, 32L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-32-8-SS</td>
<td>Isotherm General Purpose Oven, Stainless Steel Exterior Cabinet, 32L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-54-8</td>
<td>Isotherm® General Purpose Oven, 54L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-54-8-SS</td>
<td>Isotherm General Purpose Oven, Stainless Steel Exterior Cabinet, 54L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-110-8</td>
<td>Isotherm® General Purpose Oven, 110L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-110-8-SS</td>
<td>Isotherm General Purpose Oven, Stainless Steel Exterior Cabinet, 110L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-170-8</td>
<td>Isotherm® General Purpose Oven, 170L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-170-8-SS</td>
<td>Isotherm General Purpose Oven, Stainless Steel Exterior Cabinet, 170L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-240-8</td>
<td>Isotherm® General Purpose Oven, 240L, 220-240VAC 50/60Hz</td>
</tr>
<tr>
<td>OFA-240-8-SS</td>
<td>Isotherm General Purpose Oven, Stainless Steel Exterior Cabinet, 240L, 220-240VAC 50/60Hz</td>
</tr>
</tbody>
</table>
**ORDERING INFORMATION**

### ACCESSORIES ORDERING

<table>
<thead>
<tr>
<th>ACCESSORIES</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>TOA-1005</td>
<td>Wall bracket for OFA-32-8</td>
</tr>
<tr>
<td>TOA-1006</td>
<td>Wall bracket for OFA-54-8</td>
</tr>
<tr>
<td>TOA-1007</td>
<td>Support stand, 703mm (27.7&quot;) for OFA-32-8</td>
</tr>
<tr>
<td>TOA-1008</td>
<td>Support stand, 703mm (27.7&quot;) for OFA-54-8</td>
</tr>
<tr>
<td>TOA-1009</td>
<td>Support stand, 703mm (27.7&quot;) for OFA-110-8</td>
</tr>
<tr>
<td>TOA-1010</td>
<td>Support stand, 703mm (27.7&quot;) for OFA-170-8</td>
</tr>
<tr>
<td>TOA-1011</td>
<td>Support stand, 703mm (27.7&quot;) for OFA-240-8</td>
</tr>
<tr>
<td>TOA-1012</td>
<td>Additional shelf, for OFA-32-8</td>
</tr>
<tr>
<td>TOA-1013</td>
<td>Additional shelf, for OFA-54-8</td>
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<tr>
<td>TOA-1014</td>
<td>Additional shelf, for OFA-110-8</td>
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<tr>
<td>TOA-1018</td>
<td>Additional shelf, for OFA-170-8</td>
</tr>
<tr>
<td>TOA-1019</td>
<td>Additional shelf, for OFA-240-8</td>
</tr>
<tr>
<td>5250001</td>
<td>Voyager software kit</td>
</tr>
</tbody>
</table>

### TECHNICAL SPECIFICATIONS

**OFA 32L, 54L, 110L**

- 555mm / 550mm / 710mm (21.7" / 21.7" / 28.0")
- 437mm / 527mm / 587mm (17.2" / 20.7" / 23.1")

**OFA 170L & 240L**

- 740mm / 800mm (29.1" / 31.5")
- 800mm / 827mm (31.5" / 32.6")

1. Control Panel
2. Door Handle
3. Door Key Lock
4. Shelves
5. Air Exhaust
6. Fan
7. Power Supply Inlet
8. RS485 Communication Port
9. Access Port
### GENERAL SPECIFICATIONS

#### FORCED CONVECTION LABORATORY OVENS

<table>
<thead>
<tr>
<th>Volume</th>
<th>32 liter (1.13 cu.ft)</th>
<th>54 liter (1.91 cu.ft)</th>
<th>110 liter (3.88 cu.ft)</th>
<th>170 liter (6.00 cu.ft)</th>
<th>240 liter (8.48 cu.ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature Range</strong></td>
<td>Ambient +7.5°C to 300°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Variation</strong> Per DIN 12880</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 70 °C</td>
<td>&lt;=+/-0.7°C</td>
<td>&lt;=+/-0.8°C</td>
<td>&lt;=+/-1.0°C</td>
<td>&lt;=+/-1.5°C</td>
<td>&lt;=+/-1.3°C</td>
</tr>
<tr>
<td>at 150 °C</td>
<td>&lt;=+/-1.5°C</td>
<td>&lt;=+/-1.6°C</td>
<td>&lt;=+/-2.0°C</td>
<td>&lt;=+/-4.1°C</td>
<td>&lt;=+/-4.6°C</td>
</tr>
<tr>
<td>at 250 °C</td>
<td>&lt;=+/-3.3°C</td>
<td>&lt;=+/-2.1°C</td>
<td>&lt;=+/-3.1°C</td>
<td>&lt;=+/-6.2°C</td>
<td>&lt;=+/-8.7°C</td>
</tr>
<tr>
<td><strong>Temperature Fluctuation</strong> Per DIN 12880</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 70 °C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
</tr>
<tr>
<td>at 150 °C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.6°C</td>
<td>&lt;=+/-1.3°C</td>
</tr>
<tr>
<td>at 250 °C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-0.3°C</td>
<td>&lt;=+/-1.5°C</td>
<td>&lt;=+/-2.2°C</td>
</tr>
<tr>
<td><strong>Heating up time</strong></td>
<td>36 minutes</td>
<td>41 minutes</td>
<td>45 minutes</td>
<td>44 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td>at 70 °C</td>
<td>25 minutes</td>
<td>32 minutes</td>
<td>59 minutes</td>
<td>52 minutes</td>
<td>52 minutes</td>
</tr>
<tr>
<td>at 150 °C</td>
<td>37 minutes</td>
<td>40 minutes</td>
<td>61 minutes</td>
<td>57 minutes</td>
<td>91 minutes</td>
</tr>
<tr>
<td><strong>Recovery time after 30 sec door opening</strong></td>
<td>6 minutes</td>
<td>6 minutes</td>
<td>12 minutes</td>
<td>3 minutes</td>
<td>20 minutes</td>
</tr>
<tr>
<td>at 70 °C</td>
<td>6 minutes</td>
<td>6 minutes</td>
<td>11 minutes</td>
<td>9 minutes</td>
<td>10 minutes</td>
</tr>
<tr>
<td>at 150 °C</td>
<td>6 minutes</td>
<td>7 minutes</td>
<td>7 minutes</td>
<td>8 minutes</td>
<td>12 minutes</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>97 W</td>
<td>38 W</td>
<td>121 W</td>
<td>162 W</td>
<td>194 W</td>
</tr>
<tr>
<td>at 70 °C</td>
<td>270 W</td>
<td>356 W</td>
<td>440 W</td>
<td>492 W</td>
<td>519 W</td>
</tr>
<tr>
<td>at 150 °C</td>
<td>519 W</td>
<td>701 W</td>
<td>1020 W</td>
<td>932 W</td>
<td>1088 W</td>
</tr>
<tr>
<td><strong>Maximum Power Consumption</strong></td>
<td>1533 W</td>
<td>1707 W</td>
<td>2252 W</td>
<td>2176 W</td>
<td>2382 W</td>
</tr>
<tr>
<td><strong>Noise Level</strong></td>
<td>51 dB</td>
<td>49 dB</td>
<td>49 dB</td>
<td>51 dB</td>
<td>52 dB</td>
</tr>
</tbody>
</table>

**Oven Construction**
- **Main Body**: Electrogalvanized steel with white oven-baked epoxy-polyester powder-coated finish
- **Stainless steel, grade 304**
- **Chamber**: Stainless steel, grade 304
- **Number of Shelves**
  - Standard: 2
  - Maximum: 5
- **Maximum Load Per Shelf**
  - 15 kg (33 lbs)
  - 15 kg (33 lbs)
  - 30 kg (66 lbs)
  - 30 kg (66 lbs)
  - 30 kg (66 lbs)
- **External Dimensions (W x D x H)**
  - 550 x 437 x 615 mm
  - 550 x 527 x 695 mm
  - 710 x 587 x 785 mm
  - 740 x 800 x 910 mm
  - 800 x 827 x 1030 mm
  - 21.7" x 17.2" x 24.2"
  - 21.7" x 20.7" x 27.4"
  - 28.0" x 23.1" x 30.9"
  - 29.1" x 31.5" x 35.8"
  - 31.5" x 32.6" x 40.6"
- **Internal Dimensions (W x D x H)**
  - 400 x 250 x 320 mm
  - 400 x 340 x 400 mm
  - 560 x 400 x 490 mm
  - 580 x 500 x 580 mm
  - 640 x 527 x 700 mm
  - 15.7" x 9.8" x 12.6"
  - 15.7" x 13.4" x 15.7"
  - 22.0" x 15.7" x 19.3"
  - 22.8" x 19.7" x 22.8"
  - 25.2" x 20.8" x 27.6"
- **Net Weight**
  - 43 kg (95 lbs)
  - 52 kg (115 lbs)
  - 75 kg (165 lbs)
  - 114 kg (251 lbs)
  - 138 kg (304 lbs)
- **Shipping Weight**
  - 55 kg (121 lbs)
  - 66 kg (146 lbs)
  - 94 kg (207 lbs)
  - 136 kg (300 lbs)
  - 160 kg (353 lbs)
- **Shipping Dimensions, Maximum (W x D x H)**
  - 620 x 530 x 840 mm
  - 630 x 620 x 920 mm
  - 780 x 680 x 1020 mm
  - 900 x 900 x 1100 mm
  - 24.4" x 20.9" x 33.1"
  - 24.8" x 24.4" x 36.2"
  - 30.7" x 26.8" x 40.2"
  - 35.4" x 35.4" x 43.3"
  - 900 x 900 x 1200 mm
- **Shipping Volume, Maximum**
  - 0.37 m³ (13.1 cu.ft)
  - 0.49 m³ (17.3 cu.ft)
  - 0.61 m³ (21.5 cu.ft)
  - 0.89 m³ (31.4 cu.ft)
  - 0.97 m³ (34.3 cu.ft)

**Electrical Safety**
- **Power consumption at 70°C**
- **Power consumption at 150°C**
- **Power consumption at 250°C**
- **Maximum Power Consumption**
- **Electrical (220-240V, AC, 50/60Hz, 1Ф)**

**NOTE:**
- All technical specifications are specified for units with standard equipment at an ambient temperature of 25°C and a voltage fluctuation of ±10%.
- The temperature data are determined in accordance with DIN 12880 standards as per factory type test condition.
- Esco reserves the right to alter technical specifications at all times.

* Stainless steel exterior option is available for all sizes.
** In order to calculate the current at maximum power consumption, divide maximum power consumption by the voltage.
Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions. Products sold in more than 100 countries include biological safety cabinets, compounding pharmacy equipment, containment/pharma products, ductless fume hoods, in vitro fertilization workstations, lab animal research products, laboratory fume hoods, laboratory ovens and incubators, laminar flow clean benches and PCR products and instrumentation. With the most extensive product line in the industry, Esco has passed more tests, in more languages, for more certifications, throughout more countries than any biosafety cabinet manufacturer in the world. Esco remains dedicated to delivering innovative solutions for the clinical, life science, research and industrial laboratory community.


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