



Model: INA-110-8



Model: IFC-110-8



Model: IFA-110-8

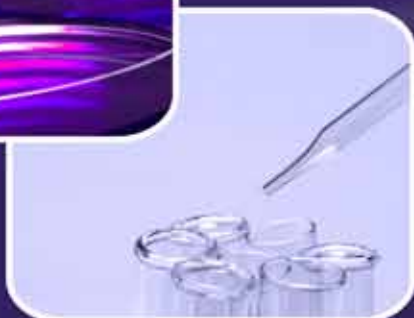


Model: OFA-110-8

Isotherm[®]

Laboratory Thermostatic Products

Reliable Performance for Universal Applications



ESCO

WORLD CLASS. WORLDWIDE.

ISOTHERM® LABORATORY THERMOSTATIC PRODUCTS

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WELCOME TO ESCO

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

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

Availability and Accessibility

Headquartered in Singapore, manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 12 major markets including the US, UK, Japan China and India. Our regional distribution centers are located in China, UK, India, Malaysia, Philippines, Singapore, South Africa, South Korea and United States of America. Because of our worldwide presence, you can be sure that Esco is within your reach.

High Quality, Reliable and Dependable

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

Esco Cares for Your Safety

Esco focus on providing safety not just for your samples but also for users.

Esco Cares for Your Comfort

Comfort of our users is ensured by building ergonomic designs and by reducing the noise levels of the units.

Esco Cares for the Environment

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

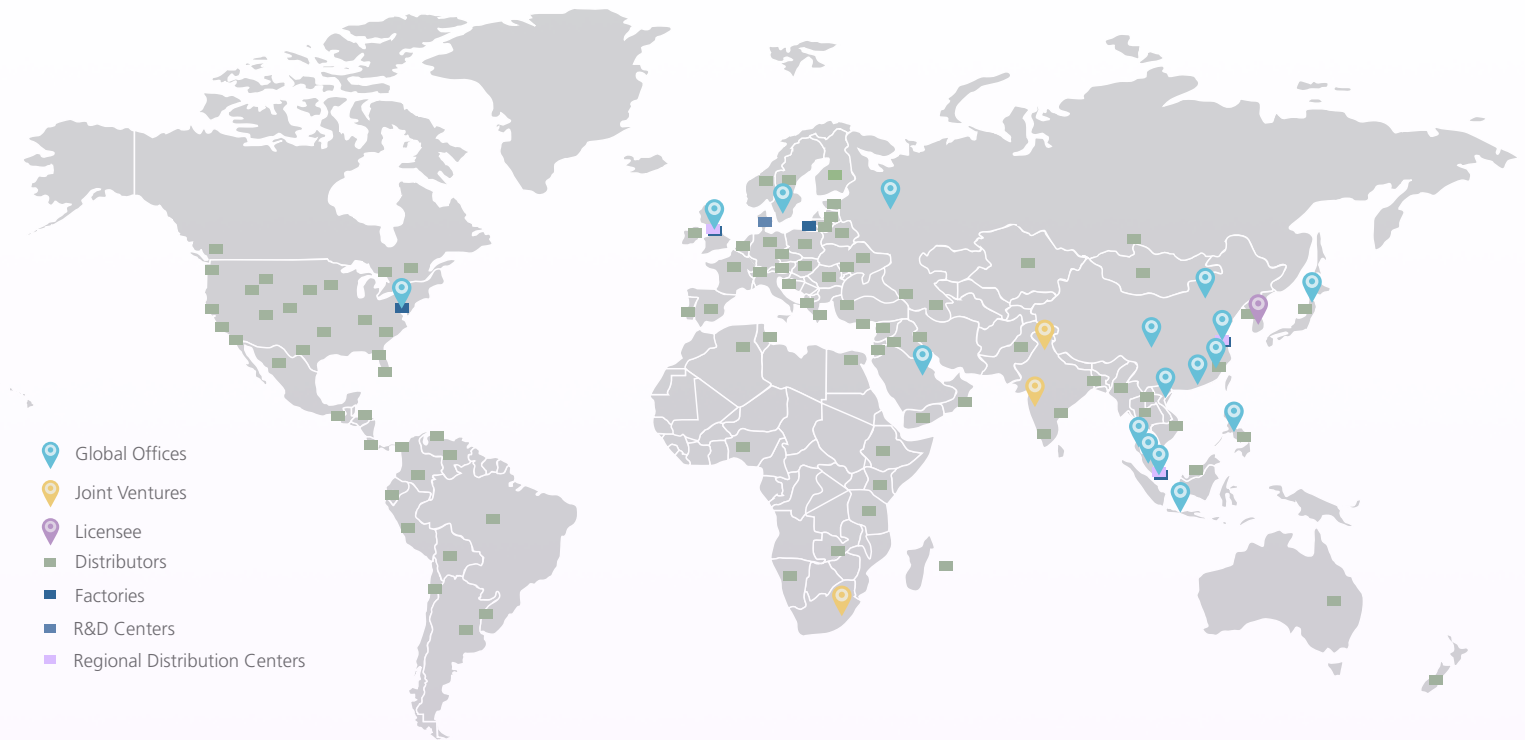
Customer Service and Support

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

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



GLOBAL NETWORK



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
- Laboratory Centrifuge

Sample Cultivation

- CO₂ Incubators with Cooling System
- CO₂ Incubators Direct Heat Air-Jacketed
- 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
 - Laboratory Incubator
 - Refrigerated Incubator

Medical / IVF Equipment

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

- CO₂ Incubators
- IVF Workstation

- Anti-Vibration Table
- CO₂ / O₂ 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
- Ventilated Balance Enclosure

Barrier Isolation System

- 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

LABORATORY THERMOSTATIC PRODUCTS OVERVIEW

Forced Convection and Natural Convection

Convection is a method of heat energy transfer that involves the movement of a fluid (gas or liquid). Fluid in contact with the source of heat expands and tends to rise within the bulk of the fluid. Cooler fluid sinks to take its place, setting up convection current. However, in a forced convection device, the fluid motion is generated by an external source (like a pump, fan, suction device, etc.).



Forced Convection Laboratory Oven

Laboratory ovens are used for high-forced volume thermal convection applications. These ovens generally provide uniform temperatures throughout. Process applications for laboratory ovens can be for annealing, die-bond curing, drying, Polyimide baking, sterilizing, and other industrial laboratory functions. Typical sizes are from one cubic foot (28 liters) to 32 cubic feet (906 liters) with temperatures that can reach 300°C (572°F).



Forced Convection Laboratory Incubator and Natural Convection Laboratory Incubator

Laboratory incubator is an equipment for controlling the temperature, humidity, and other conditions in which a microbiological culture is being grown. Typical incubators are insulated boxes with an adjustable heater, going up to 60°C to 65°C (140°F to 149°F), though some can go slightly higher (generally to no more than 100°C).

Incubators can vary in size from tabletop to units the size of small rooms. As for temperature, most commonly used is approximately 36°C to 37°C (97°F to 99°F).



Refrigerated Incubator

Incubator are designed to maintain 20°C necessary to perform a test called a Biochemical Oxygen Demand (BOD). It involves incubating samples saturated with oxygen at 20°C usually for five days.

Incubators designed to maintain temperatures below ambient to as low as about 10°C are generally called low temperature incubators.

Isotherm[®]

Forced Convection Laboratory Ovens

Introducing Esco Isotherm[®] - world class laboratory ovens from Esco for high-forced volume thermal convection applications such as drying and curing among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm[®] is your reliable oven for universal application.

Superior Insulation

- Improves chamber stability while reducing external surface temperatures
- Reduces heat load output to the laboratory and operating power consumption, and lowers operating costs

SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum-temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service

Quality Esco Construction

- Electro-galvanized steel exteriors
- Isocide™ coated external surfaces to eliminate 99.9% of surface bacteria within 24 hours of exposure



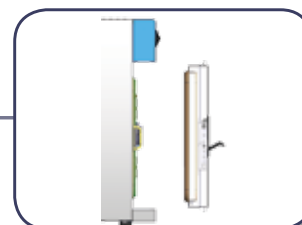
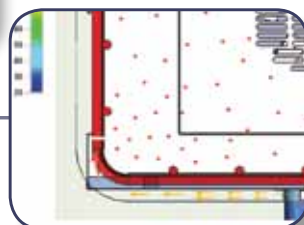
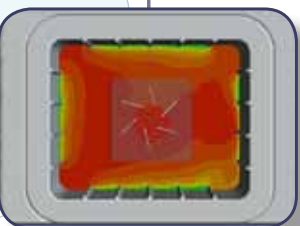
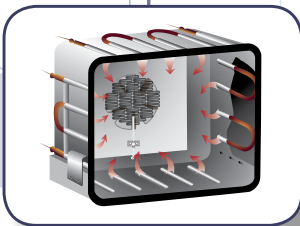
Isotherm[®] Forced Convection Laboratory Oven Model OFA-110-8

Solaris™ Pre-Heat Chamber Technology

- Guarantees maximum thermal performance
- 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 stability
- 2-point door seal and eccentric hinge ensures maximum gasket compression for stable chamber temperature

Ventiflow™ Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Permanently lubricated and maintenance-free German-made EBM-PAPST fan for uniform air circulation
- Low energy consumption and low noise level
- Adjustable fan speed and air exchange rates
- 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



Guide to Models, Forced Convection Laboratory Ovens

O F A - - -

| External Width | Code | Electrical Rating | Code |
|----------------|------------|---------------------------|----------|
| 32 L | 32 | 220-240 VAC, 50-60 Hz, 1Ø | 8 |
| 54 L | 54 | 110-120 VAC, 50-60 Hz, 1Ø | 9 |
| 110 L | 110 | | |
| 170 L | 170 | | |
| 240 L | 240 | | |

General Specifications, Forced Convection Laboratory Ovens

| Model | 220-240 VAC, 50/60 Hz, 1Ø | OFA-32-8 2110001 | OFA-54-8 2110002 | OFA-110-8 2110003 | OFA-170-8 2110006 | OFA-240-8 2110007 |
|---------------------------------------|------------------------------|--|---|--|--|--|
| | | OFA-32-8-SS 2110012 | OFA-54-8-SS 2110013 | OFA-110-8-SS 2110014 | OFA-170-8-SS 2110015 | OFA-240-8-SS 2110016 |
| | 110-120 VAC, 50/60 Hz, 1Ø | OFA 32-9 2110010 | OFA-54-9 2110009 | OFA-110-9 2110008 | OFA-170-9 2110020 | OFA-240-9 2110021 |
| | | OFA-32-9-SS 2110023 | OFA-54-9-SS 2110022 | OFA-110-9-SS 2110011 | OFA-170-9-SS 2110024 | OFA-240-9-SS 2110025 |
| Volume | | 32 L (1.1 cu. ft) | 54 L (1.9 cu. ft) | 110 L (3.9 cu. ft) | 170 L (6.0 cu. ft) | 240 L (8.5 cu. ft) |
| Temperature Range | | Ambient +7.5°C to 300°C | | | | |
| Temperature Variation | 70°C | ≤± 0.7°C | ≤± 0.6°C | ≤± 0.6°C | ≤± 1.3°C | ≤± 1.3°C |
| | 150°C | ≤± 1.5°C | ≤± 2.2°C | ≤± 1.6°C | ≤± 3.5°C | ≤± 3.6°C |
| | 250°C | ≤± 3.3°C | ≤± 4.0°C | ≤± 4.1°C | ≤± 8.5°C | ≤± 6.4°C |
| Temperature Fluctuation | 70°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.4°C | ≤± 0.5°C |
| Heating Up Time* | 70°C | 36 min | 40 min | 45 min | 40 min | 41 min |
| | 150°C | 40 min | 33 min | 31 min | 39 min | 58 min |
| | 250°C | 32 min | 58 min | 58 min | 48 min | 58 min |
| Recovery Time after 30 sec door open* | 70°C | 6 min | 5.5 min | 7.5 min | 3 min | 4.5 min |
| | 150°C | 7 min | 7 min | 9.5 min | 4 min | 6 min |
| | 250°C | 7 min | 8 min | 10 min | 7.5 min | 7 min |
| Noise Level | | 51 dBA | 49 dBA | 49 dBA | 51 dBA | 52 dBA |
| Oven Construction | Main Body | Electro-galvanized steel with Epoxy-polyester hybrid Isocide™ powder coating | | | | |
| | Chamber | Stainless steel, grade 304 | | | | |
| Number of shelves | Standard | 2 | 2 | 2 | 2 | 2 |
| | Maximum | 4 | 5 | 6 | 7 | 9 |
| 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 (21.7" x 17.2" x 24.2") | 550 x 527 x 695 mm (21.7" x 20.7" x 27.4") | 710 x 587 x 785 mm (28" x 23.1" x 30.9") | 740 x 800 x 910 mm (28.8" x 31.5" x 35.8") | 800 x 827 x 1030 mm (31.5" x 32.5" x 40.6") |
| Internal Dimensions (W x D x H) | | 400 x 250 x 320 mm (15.7" x 9.8" x 12.6") | 400 x 340 x 400 mm (15.7" x 13.4" x 15.7") | 560 x 400 x 490 mm (22" x 15.7" x 19.3") | 580 x 500 x 580 mm (22.8" x 19.7" x 22.8") | 645 x 527 x 700 mm (25.4" x 20.7" 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 (W x D x H) | | 620 x 530 x 840 mm (24.4" x 20.9" x 33.1") | 630 x 620 x 920 mm (24.8" x 24.4" x 36.2") | 780 x 680 x 1020 mm (30.7" x 26.8" x 40.2") | 900 x 900 x 1100 mm (35.4" x 35.4" x 43.3") | 900 x 900 x 1200 mm (35.4" x 35.4" x 47.2") |
| Shipping Volume | | 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) |

*Up to 98% of the set value

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 to DIN 12880 standards as per factory type test condition.
- Stainless steel exterior option is available for all sizes.

Isotherm[®]

Forced Convection Laboratory Incubators

Introducing Esco Isotherm[®] - world class laboratory incubators from Esco for thermal convection applications such as bacteria culture and Coliform determination among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm[®] is your reliable incubator for universal application.

Quality Esco Construction

- Electro-galvanized steel exteriors
- Isocide[™] coated external surfaces to eliminate 99.9% of surface bacteria within 24 hours of exposure

Superior Insulation

- Improves chamber stability while reducing external surface temperatures
- Reduces heat load output to the laboratory and operating power consumption, and lowers operating costs

SmartSense[™] Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum-temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service

Glass Door

- For observing samples inside the chamber during operation



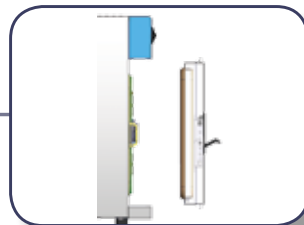
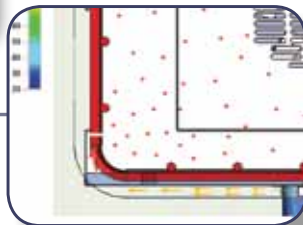
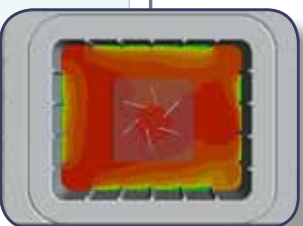
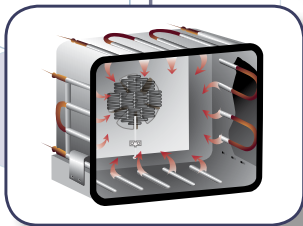
Isotherm[®] Forced Convection Laboratory Incubator, Model IFA-110-8

Solaris[™] Pre-Heat Chamber Technology

- Guarantees maximum thermal performance
- 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 stability
- 2-point door seal and eccentric hinge ensures maximum gasket compression for stable chamber temperature

Ventiflow[™] Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Permanently lubricated and maintenance-free German-made EBM-PAPST fan for uniform air circulation
- Low energy consumption and low noise level
- Adjustable fan speed and air exchange rates
- 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



Guide to Models, Forced Convection Laboratory Incubators

I F A - -

| External Width | Code | Electrical Rating | Code |
|----------------|------------|---------------------------|----------|
| 32 L | 32 | 220-240 VAC, 50-60 Hz, 1Ø | 8 |
| 54 L | 54 | 110-120 VAC, 50-60 Hz, 1Ø | 9 |
| 110 L | 110 | | |
| 170 L | 170 | | |
| 240 L | 240 | | |

General Specifications, Forced Convection Laboratory Incubators

| Model | 220-240 VAC, 50/60 Hz, 1Ø | IFA-32-8 2100001 | IFA-54-8 2100002 | IFA-110-8 2100003 | IFA-170-8 2100014 | IFA-240-8 2100015 |
|--|------------------------------|--|---|--|--|--|
| | | IFA-32-8-SS 2100021 | IFA-54-8-SS 2100022 | IFA-110-8-SS 2100016 | IFA-170-8-SS 2100024 | IFA-240-8-SS 2100025 |
| | 110-120 VAC, 50/60 Hz, 1Ø | IFA 32-9 2100017 | IFA-54-9 2100018 | IFA-110-9 2100020 | IFA-170-9 2100049 | IFA-240-9 2100050 |
| | | IFA-32-9-SS 2100052 | IFA-54-9-SS 2100051 | IFA-110-9-SS 2100053 | IFA-170-9-SS 2100054 | IFA-240-9-SS 2100055 |
| Volume | | 32 L (1.1 cu. ft) | 54 L (1.9 cu. ft) | 110 L (3.9 cu. ft) | 170 L (6.0 cu. ft) | 240 L (8.5 cu. ft) |
| Temperature Range | | Ambient +7.5°C to 100°C | | | | |
| Temperature Variation | 37°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.4°C | ≤± 0.4°C |
| | 50°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.5°C | ≤± 0.7°C | ≤± 0.6°C |
| Temperature Fluctuation | 37°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.5°C | ≤± 0.3°C |
| | 50°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.5°C | ≤± 0.3°C |
| Heating Up Time* | 37°C | 28 min | 23 min | 30 min | 38 min | 35 min |
| | 50°C | 35 min | 35 min | 52 min | 46 min | 55 min |
| Recovery Time after 30 sec door open* | 37°C | 1.5 min | 1.5 min | 3 min | 1 min | 1.5 min |
| | 50°C | 4 min | 3 min | 5.5 min | 3 min | 3 min |
| Noise Level | | 49 dBA | 48 dBA | 49 dBA | 51 dBA | 51 dBA |
| Oven Construction | Main Body | Electro-galvanized steel with Epoxy-polyester hybrid Isocide™ powder coating | | | | |
| | Chamber | Stainless steel, grade 304 | | | | |
| Number of shelves | Standard | 2 | 2 | 2 | 2 | 2 |
| | Maximum | 4 | 5 | 6 | 7 | 9 |
| 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 (21.7" x 17.2" x 24.2") | 550 x 527 x 695 mm (21.7" x 20.7" x 27.4") | 710 x 587 x 785 mm (28" x 23.1" x 30.9") | 740 x 800 x 910 mm (28.8" x 31.5" x 35.8") | 800 x 827 x 1030 mm (31.5" x 32.5" x 40.6") |
| Internal Dimensions (W x D x H) | | 400 x 250 x 320 mm (15.7" x 9.8" x 12.6") | 400 x 340 x 400 mm (15.7" x 13.4" x 15.7") | 560 x 400 x 490 mm (22" x 15.7" x 19.3") | 580 x 500 x 580 mm (22.8" x 19.7" x 22.8") | 645 x 527 x 700 mm (25.4" x 20.7" x 27.6") |
| Net Weight | | 45 Kg (99 lbs) | 55 Kg (121 lbs) | 79 Kg (174 lbs) | 118 Kg (260 lbs) | 144 Kg (318 lbs) |
| Shipping Weight | | 57 Kg (126 lbs) | 69 Kg (152 lbs) | 98 Kg (216 lbs) | 140 Kg (309 lbs) | 166 Kg (366 lbs) |
| Shipping Dimensions (W x D x H) | | 620 x 530 x 840 mm (24.4" x 20.9" x 33.1") | 630 x 620 x 920 mm (24.8" x 24.4" x 36.2") | 780 x 680 x 1020 mm (30.7" x 26.8" x 40.2") | 900 x 900 x 1100 mm (35.4" x 35.4" x 43.3") | 900 x 900 x 1200 mm (35.4" x 35.4" x 47.2") |
| Shipping Volume | | 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) |

*Up to 98% of the set value

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 to DIN 12880 standards as per factory type test condition.
- Stainless steel exterior option is available for all sizes.

Isotherm[®]

Natural Convection Laboratory Incubators

Introducing Esco Isotherm[®]- world class laboratory incubators from Esco for thermal applications that prefers natural convection design to minimize disturbance to the items being cultured such as bacteria culture and Coliform determination among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested insulation package, Esco Isotherm[®] is your reliable oven for universal application.

Superior Insulation

- Improves chamber stability while reducing external surface temperatures
- Reduces heat load output to the laboratory and operating power consumption, and lowers operating costs



SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum-temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service

Quality Esco Construction

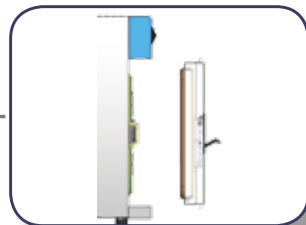
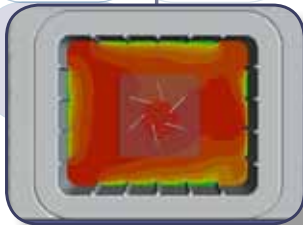
- Electro-galvanized steel exteriors
- Isocide™ coated external surfaces to eliminate 99.9% of surface bacteria within 24 hours of exposure



Isotherm® Forced Convection Laboratory Incubator, Model INA-110-8

Solaris™ Pre-Heat Chamber Technology

- Guarantees maximum thermal performance
- 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 stability
- 2-point door seal and eccentric hinge ensures maximum gasket compression for stable chamber temperature



Glass Door

- For observing samples inside the chamber during operation

Guide to Models, Natural Convection Laboratory Incubators

I N A - -

| External Width | Code | Electrical Rating | Code |
|----------------|------------|---------------------------|----------|
| 32 L | 32 | 220-240 VAC, 50-60 Hz, 1Ø | 8 |
| 54 L | 54 | | |
| 110 L | 110 | | |
| 170 L | 170 | | |
| 240 L | 240 | | |

General Specifications, Natural Convection Laboratory Incubators

| Model | 220-240 VAC, 50/60 Hz, 1Ø | INA-32-8 2100045 | INA-54-8 2100046 | INA-110-8 2100044 | INA-170-8 2100047 | INA-240-8 2100048 |
|--|------------------------------|--|---|--|---|---|
| Volume | | 32 L (1.1 cu. ft) | 54 L (1.9 cu. ft) | 110 L (3.9 cu. ft) | 170 L (6.0 cu. ft) | 240 L (8.5 cu. ft) |
| Temperature Range | | Ambient +7.5°C to 80°C | | | | |
| Temperature Variation | 37°C | ≤± 0.6°C | ≤± 0.5°C | ≤± 0.5°C | ≤± 0.8°C | ≤± 0.7°C |
| Temperature Fluctuation | 37°C | ≤± 0.3°C | ≤± 0.4°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| Heating Up Time* | 37°C | 30 min | 39 min | 36 min | 42 mins | 46 min |
| Recovery Time after 30 sec door open* | 37°C | 3 min | 3.5 min | 3 mins | 3.5 min | 3.5 min |
| Oven Construction | Main Body | Electro-galvanized steel with Epoxy-polyester hybrid Isocide™ powder coating | | | | |
| | Chamber | Stainless steel, grade 304 | | | | |
| Number of shelves | Standard | 2 | 2 | 2 | 2 | 2 |
| | Maximum | 4 | 5 | 6 | 7 | 9 |
| 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) | | 630 x 437 x 652 mm (24.8" x 17.2" x 25.7") | 630 x 531 x 733 mm (24.8" x 20.9" x 28.9") | 790 x 592 x 819 mm (31.1" x 23.3" x 32.2") | 810 x 693 x 889 mm (31.9" x 27.3" x 35.0") | 875 x 693 x 1005 mm (34.4" x 27.3" x 39.6") |
| Internal Dimensions (W x D x H) | | 400 x 250 x 320 mm (15.7" x 9.8" x 12.6") | 400 x 340 x 400 mm (15.7" x 13.4" x 15.7") | 560 x 400 x 490 mm (22" x 15.7" x 19.3") | 580 x 500 x 580 mm (22.8" x 19.7" x 22.8") | 645 x 520 x 700 mm (25.4" x 20.5" x 27.6") |
| Net Weight | | 45 Kg (99 lbs) | 55 Kg (121 lbs) | 79 Kg (174 lbs) | 92.5Kg (204 lbs) | 112Kg (246 lbs) |
| Shipping Weight | | 54.5 Kg (120 lbs) | 65 (143 lbs) | 92 Kg (203 lbs) | 111 Kg (245 lbs) | 131Kg (289 lbs) |
| Shipping Dimensions (W x D x H) | | 720 x 650 x 865 mm (28.3" x 25.6" x 34.1") | 720 x 650 x 945 mm (28.3" x 25.6" x 37.2") | 895 x 720 x 1030 mm (35.2" x 28.3" x 40.6") | 1115 x 895 x 1100 mm (43.9" x 35.2" x 43.3") | 1115 x 895 x 1215 mm (43.9" x 35.2" x 47.8") |
| Shipping Volume | | 0.40m ³ (14.1 cu. ft) | 0.44 m ³ (15.5 cu. ft) | 0.66 m ³ (23.3 cu. ft) | 1.09 m ³ (38.5 cu. ft) | 1.21 m ³ (42.7 cu. ft) |

*Up to 98% of the set value

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 to DIN 12880 standards as per factory type test condition.
- Stainless steel exterior option is available for all sizes.

Isotherm[®] Refrigerated Incubators



Introducing Esco Isotherm[®] - world class laboratory incubators from Esco for applications such as BOD determination and environmental research among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm[®] is your reliable refrigerated incubator for universal application.

Pre-Heat Chamber Technology

- Ensures stable heating and maximum temperature uniformity in the chamber
- Standard temperature range of 0°C up to 100°C for maximum application flexibility
- 2-point door seal and eccentric hinge ensures maximum gasket compression for stable chamber temperature

SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum-temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service

UV Disinfection

- Can be manually or automatically operated

Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Ventilated stainless steel shelves contribute to uniform air circulation
- Low energy consumption and low noise level

*Isotherm[®] Refrigerated Incubator,
Model IFC-110-8*

Glass Door

- For observing samples inside the chamber during operation

Water Reservoir

- For water collection during defrosting

Side Access Port

- For temperature validation and mapping

Auto-Defrost System

- Auto-heating activates and continues for a predetermined time during operation
- Auto-defrosting during operation and activates regularly
- Influence on temperature fluctuation and uniformity is minimal

Quality Esco Construction

- Electro-galvanized steel exteriors
- Isocide™ coated external surfaces to eliminate 99.9% of surface bacteria within 24 hours of exposure

German-Made EBM Papst Fan

- Permanently lubricated and maintenance-free for uniform air circulation

Guide to Models, Refrigerated Incubators

I F C - -

| External Width | Code | Electrical Rating | Code |
|----------------|------------|---------------------------|----------|
| 32 L | 32 | 220-240 VAC, 50-60 Hz, 1Ø | 8 |
| 54 L | 54 | | |
| 110 L | 110 | | |
| 170 L | 170 | | |
| 240 L | 240 | | |

General Specifications, Refrigerated Incubators

| Model | 220-240 VAC, 50/60 Hz, 1Ø | IFC-110-8 2100010 | IFC-170-8 2100035 | IFC-240-8 2100011 |
|--|------------------------------|--|--|--|
| | | IFC-110-8-SS 2100026 | IFC-170-8-SS 2100056 | IFC-240-8-SS 2100027 |
| Volume | | 110 L (3.9 cu. ft) | 170 L (6.0 cu. ft) | 240 L (8.5 cu. ft) |
| Temperature Range | | 0°C ~ 100°C | | |
| Temperature Variation per DIN 12880 Spatial Uniformity | 15°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| | 25°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| | 37°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| Temperature Fluctuation per DIN 12880 Control Fluctuation | 15°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| | 25°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| | 37°C | ≤± 0.3°C | ≤± 0.3°C | ≤± 0.3°C |
| Heating Up Time* | 37°C | 31 min | 27 min | 37 min |
| Recovery Time after 30 sec door open* | 5°C | 3 min | 4 min | 5 min |
| | 37°C | 2 min | 3 min | 3 min |
| | 50°C | 2 min | 3 min | 3 min |
| Power Supply (220-240V, AC, 50/60Hz, 1Ø)** | Power Consumption at 15°C | 400 W | 481 W | 481 W |
| | Power Consumption at 25°C | 431 W | 563 W | 563 W |
| | Cabinet Full Load Amps (FLA) | 6 A | 6 A | 6 A |
| Incubator Construction | Main Body | Electro-galvanized steel with Epoxy-polyester hybrid Isocide™ powder coating | | |
| Number of Shelves | Chamber | Stainless steel, grade 304 | | |
| | Standard | 2 | 2 | 2 |
| | Maximum | 4 | 7 | 8 |
| Maximum Load per Shelf | | 30 Kg (66 lbs) | | |
| External Dimensions (W x D x H) | | 820 x 730 x 1185 mm (32.3" x 28.7" x 45.6") | 815 x 840 x 1311 mm (30.1" x 33.1" x 51.5") | 841 x 871 x 1462 mm (33.1" x 34.3" x 53.3") |
| Internal Dimensions (W x D x H) | | 600 x 399 x 480 mm (23.6" x 15.7" x 18.9") | 620 x 500 x 550 mm (24.4" x 19.7" x 21.6") | 645 x 530 x 700 mm (25.4" x 20.9" x 27.6") |
| Net Weight | | 134 Kg (295 lbs) | 155 Kg (342 lbs) | 164 Kg (362 lbs) |
| Shipping Weight | | 166 Kg (366 lbs) | 180 Kg (397 lbs) | 195 Kg (430 lbs) |
| Shipping Dimensions, (W x D x H) | | 878 x 787 x 1425 mm (34.5" x 30.9" x 56.") | 930 x 900 x 1700 mm (36.6" x 36.6" x 66.9") | 891 x 933 x 1628 mm (35.0" x 36.7" x 64.1") |
| Shipping Volume | | 0.98 m ³ (34.6 cu. ft) | 1.47 m ³ (51.9 cu. ft) | 1.35 m ³ (47.7 cu. ft) |

*Up to 98% of the set value

**In order to calculate the current at maximum power consumption, divide maximum power consumption by the voltage

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 to DIN 12880 standards as per factory type test condition.
- Stainless steel exterior option is available for all sizes.

OTHER SUPERB FEATURES OF ISOTHERM® LABORATORY THERMOSTATIC PRODUCTS



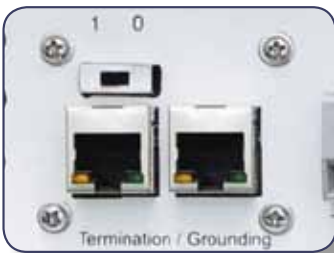
Safe, Superior Protection for Sample, User and the Environment

- Multiple redundant over-temperature protection systems guarantee maximum sample and user protection
- Over-all temperature protection meets DIN 12880 Class 3.1 standards
- All electrical components are UL recognized
- Electrical circuit protection is in accordance with UL requirements



Ergonomic Design

- Access port for temperature validation and mapping



RS485 Communication Port

- Provides serial communication port for PC that can be daisy chained from product to product and connected to a PC



Ergonomic Door Handle with Keylock

- For gravity assisted operation and prevents unauthorized access to sensitive samples



Easy-To-Clean

- "Cleanroom" design, single-piece stainless steel chamber with rounded corners and dismantlable glass door



Easy-To-Service

- Diagnostics functions include historical read-out of temperatures, sensor inputs and controller settings
- Service can be carried out from the front and electrical components are isolated from the work chamber and easily accessible for replacement
- Low service costs

APPLICATIONS

Forced Convection Laboratory Oven

| Application | Material/Sample |
|------------------|-----------------------------|
| Drying | Glassware |
| | Powder |
| | Paper & Textile |
| | Soil and Sand |
| | Electronics |
| | Pharmaceutical Preparations |
| | Tape |
| Material Testing | Cables |
| | Plastics |
| Curing | Adhesives |
| | Plastics |
| | Metals |
| Heated Storage | Drugs and Pills |
| Vulcanization | Rubber |

Forced and Natural Convection Laboratory Incubators

| Application | Material/Sample |
|----------------------------------|----------------------------|
| Microbiological Culture | Bacteria, Yeasts and Molds |
| Coliform Determination | Bacteria |
| Egg Incubation | Eggs |
| Heated Storage | Media & Samples |
| Gene Cloning | Bacteria, Yeasts and Molds |
| Pharmaceutical Stability Testing | Pathogenic Bacteria |
| Food and Beverage Testing | Bacteria, Yeast and Molds |
| Paraffin Embedding | Paraffin |

Refrigerated Incubators

| Application | Material/Sample |
|--|---------------------------|
| BOD Determination of Wastewater and Sewage | Bacteria |
| Plant Cell Growth | Plant Cell |
| Fish and Insect Cell Growth | Fish and Insect Cells |
| Fermentation Studies | Bacteria and Yeasts |
| Microbiological Culture | Bacteria, Yeast and Molds |
| Pharmaceutical Stability Testing | Pathogenic Bacteria |

OPTIONS AND ACCESSORIES



Wall bracket (only for 32 L and 54 L chambers)

- Accommodates desired operating heights



Reversed Door Swing (Factory Installed)



Voyager® Software Kit

- Esco Voyager® is a PC-based software package developed for remote monitoring, datalogging and programming/device configuration of Esco controlled environment laboratory equipment



Support stands fixed height at 703 mm (27.7")



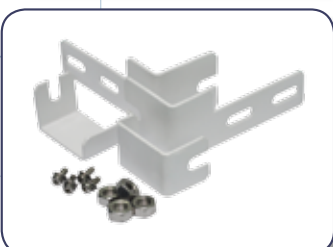
Additional Shelf

- Two shelves are included for 32 L, 54 L, 110 L, 170 L and 240 L models as standard. Additional shelves may be ordered.



Optional Stainless Steel Exterior

- Robust construction and corrosion-resistant surface that meets pharmaceutical and clinical laboratory requirements



Stacking Kit

- Stacking kit is a provision to stack one thermostatic product on top of another unit. Four stacking brackets are included as standard inside the Accessories Kit Box with each incubator.

ORDERING INFORMATION

Unit Ordering

| Model | Item Code | Description |
|--------------|-----------|--|
| OFA-32-8 | 2110001 | Isotherm® General Purpose Oven, 32 L, 220-240 VAC, 50/60 Hz |
| OFA-32-9 | 2110010 | Isotherm® General Purpose Oven, 32 L, 110-120 VAC, 50/60 Hz |
| OFA-32-8-SS | 2110012 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 32 L, 220-240 VAC, 50/60 Hz |
| OFA-32-9-SS | 2110023 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 32 L, 110-120 VAC, 50/60 Hz |
| OFA-54-8 | 2110002 | Isotherm® General Purpose Oven, 54 L, 220-240 VAC, 50/60 Hz |
| OFA-54-9 | 2110009 | Isotherm® General Purpose Oven, 54 L, 110-120 VAC, 50/60 Hz |
| OFA-54-8-SS | 2110013 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 54 L, 220-240 VAC, 50/60 Hz |
| OFA-54-9-SS | 2110022 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 54 L, 110-120 VAC, 50/60 Hz |
| OFA-110-8 | 2110003 | Isotherm® General Purpose Oven, 110 L, 220-240 VAC, 50/60 Hz |
| OFA-110-9 | 2110008 | Isotherm® General Purpose Oven, 110 L, 110-120 VAC, 50/60 Hz |
| OFA-110-8-SS | 2110014 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 110 L, 220-240 VAC, 50/60 Hz |
| OFA-110-9-SS | 2110011 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 110 L, 110-120 VAC, 50/60 Hz |
| OFA-170-8 | 2110006 | Isotherm® General Purpose Oven, 170 L, 220-240 VAC, 50/60 Hz |
| OFA-170-9 | 2110020 | Isotherm® General Purpose Oven, 170 L, 110-120 VAC, 50/60 Hz |
| OFA-170-8-SS | 2110015 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 170 L, 220-240 VAC, 50/60 Hz |
| OFA-170-9-SS | 2110024 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 170 L, 110-120 VAC, 50/60 Hz |
| OFA-240-8 | 2110007 | Isotherm® General Purpose Oven, 240 L, 220-240 VAC, 50/60 Hz |
| OFA-240-9 | 2110021 | Isotherm® General Purpose Oven, 240 L, 110-120 VAC, 50/60 Hz |
| OFA-240-8-SS | 2110016 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 240 L, 220-240 VAC, 50/60 Hz |
| OFA-240-9-SS | 2110025 | Isotherm® General Purpose Oven, Stainless Steel Exterior Cabinet, 240 L, 110-120 VAC, 50/60 Hz |

| Model | Item Code | Description |
|--------------|-----------|--|
| IFC-110-8 | 2100010 | Isotherm® Refrigerated Incubator, 110 L, 220-240 VAC, 50/60 Hz |
| IFC-110-8-SS | 2100026 | Isotherm® Refrigerated Incubator, Stainless Steel Exterior Cabinet, 110 L, 220-240 VAC, 50/60 Hz |
| IFC-170-8 | 2100035 | Isotherm® Refrigerated Incubator, 170 L, 220-240 VAC, 50/60 Hz |
| IFC-170-8-SS | 2100056 | Isotherm® Refrigerated Incubator, Stainless Steel Exterior Cabinet, 170 L, 220-240 VAC, 50/60 Hz |
| IFC-240-8 | 2100011 | Isotherm® Refrigerated Incubator, 240 L, 220-240 VAC, 50/60 Hz |
| IFC-240-8-SS | 2100027 | Isotherm® Refrigerated Incubator, Stainless Steel Exterior Cabinet, 240 L, 220-240 VAC, 50/60 Hz |

| Model | Description | |
|--------------|-------------|---|
| IFA-32-8 | 2100001 | Isotherm® General Purpose Incubator, 32 L, 220-240 VAC, 50/60 Hz |
| IFA-32-9 | 2100017 | Isotherm® General Purpose Incubator, 32 L, 110-120 VAC, 50/60 Hz |
| IFA-32-8-SS | 2100021 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 32 L, 220-240 VAC, 50/60 Hz |
| IFA-32-9-SS | 2100052 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 32 L, 110-120 VAC, 50/60 Hz |
| IFA-54-8 | 2100002 | Isotherm® General Purpose Incubator, 54 L, 220-240 VAC, 50/60 Hz |
| IFA-54-9 | 2100018 | Isotherm® General Purpose Incubator, 54 L, 110-120 VAC, 50/60 Hz |
| IFA-54-8-SS | 2100022 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 54 L, 220-240 VAC, 50/60 Hz |
| IFA-54-9-SS | 2100051 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 54L, 110-120 VAC, 50/60 Hz |
| IFA-110-8 | 2100003 | Isotherm® General Purpose Incubator, 110 L, 220-240 VAC, 50/60 Hz |
| IFA-110-9 | 2100016 | Isotherm® General Purpose Incubator, 110 L, 110-120 VAC, 50/60 Hz |
| IFA-110-8-SS | 2100020 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 110 L, 220-240 VAC, 50/60 Hz |
| IFA-110-9-SS | 2100053 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 110 L, 110-120 VAC, 50/60 Hz |
| IFA-170-8 | 2100014 | Isotherm® General Purpose Incubator, 170 L, 220-240 VAC, 50/60 Hz |
| IFA-170-9 | 2100049 | Isotherm® General Purpose Incubator, 170 L, 110-120 VAC, 50/60 Hz |
| IFA-170-8-SS | 2100024 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 170 L, 220-240 VAC, 50/60 Hz |
| IFA-170-9-SS | 2100054 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 170 L, 110-120 VAC, 50/60 Hz |
| IFA-240-8 | 2100015 | Isotherm® General Purpose Incubator, 240 L, 220-240 VAC, 50/60 Hz |
| IFA-240-9 | 2100050 | Isotherm® General Purpose Incubator, 240 L, 110-120 VAC, 50/60 Hz |
| IFA-240-8-SS | 2100025 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 240 L, 220-240 VAC, 50/60 Hz |
| IFA-240-9-SS | 2100055 | Isotherm® General Purpose Incubator, Stainless Steel Exterior Cabinet, 240 L, 110-120 VAC, 50/60 Hz |

| Model | Description | |
|-----------|-------------|--|
| INA-32-8 | 2100045 | Isotherm® Natural Convection Incubator, 32 L, 220-240 VAC, 50/60 Hz |
| INA-54-8 | 2100046 | Isotherm® Natural Convection Incubator, 54 L, 220-240 VAC, 50/60 Hz |
| INA-110-8 | 2100044 | Isotherm® Natural Convection Incubator, 110 L, 220-240 VAC, 50/60 Hz |
| INA-170-8 | 2100047 | Isotherm® Natural Convection Incubator, 170 L, 220-240 VAC, 50/60 Hz |
| INA-240-8 | 2100048 | Isotherm® Natural Convection Incubator, 240 L, 220-240 VAC, 50/60 Hz |

ACCESSORIES ORDERING

| Model Code | Item Code | Description |
|------------|-----------|---|
| TOA-1005 | 5070326 | Wall bracket for 32 L |
| TOA-1006 | 5070327 | Wall bracket for 54 L |
| TOA-1007 | 5130106 | Support Stand, 703 mm (27.7") for 32 L |
| TOA-1008 | 5130107 | Support Stand, 703 mm (27.7") for 54 L |
| TOA-1009 | 5130108 | Support Stand, 703 mm (27.7") for 110 L |
| TOA-1010 | 5130109 | Support Stand, 703 mm (27.7") for 170 L |
| TOA-1011 | 5130110 | Support Stand, 703 mm (27.7") for 240 L |
| TOA-1012 | 5070328 | Additional Shelf, for 32 L |
| TOA-1013 | 5070329 | Additional Shelf, for 54 L |
| TOA-1014 | 5070330 | Additional Shelf, for 110 L |
| TOA-1018 | 5070331 | Additional Shelf, for 170 L |
| TOA-1019 | 5070332 | Additional Shelf, for 240 L |
| TOA-1022 | 5070609 | IQ/OQ Document |
| Voyager® | 5250001 | Voyager® Software Kit |
| COA-2008-F | 5170483 | Stacking Kit |

TESTING AND CERTIFICATION



Esco Isotherm® Laboratory Thermostatic Products were tested, validated and have passed the calibration conducted by Biomedis, an ISO/IEC 17025 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).

| Standard Compliances | Temperature Safety | Electrical Safety |
|----------------------|---------------------|--|
| | DIN 12880 Class 3.1 | UL 61010-1, USA; CAN/CSA-22.2, No. 61010-1; EN 61010-1, Europe; IEC 61010-1, Worldwide |



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

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