



Model: IFA-110-8



Model: OFA-110-8

Isotherm®

Laboratory Thermostatic Products

Reliable Performance for Universal Applications



LABORATORY THERMOSTATIC PRODUCTS OVERVIEW

Forced Convection

Convection is a method of heat energy transfer that involves the movement of a fluid (gas or liquid). Fluid in contact with the heat source expands and tends to rise within the bulk of the fluid. Cooler fluid sinks to take its place, setting up a 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 oven is used for high-volume thermal convection applications. This provides uniform temperature throughout the chamber necessary for annealing, drying, sterilizing, and other industrial lab 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).



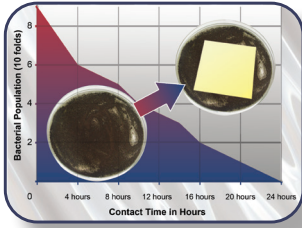
Forced Convection Laboratory Incubator

Laboratory incubators are devices that provide a temperature-controlled environment to support the growth of microbiological cultures. Typical forced convection 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).

Isotherm[®]

Forced Convection Laboratory Ovens

Esco Isotherm[®] laboratory ovens are designed with a forced-convection ventilation system, intuitive interface, microprocessor PID control with programming options, a 4-zone heated air jacket, and ergonomic features to provide quality and convenience.



Quality Esco Construction

- Electrogalvanized 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

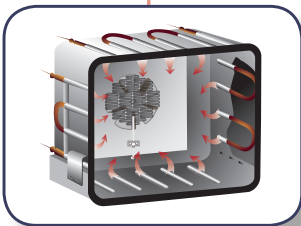
- Connected to an instrument-grade precision platinum temperature probe
- Prevents overshoot, ensures fast ramp time and stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service
- Air flow adjuster via slider for exchange rate of air
- Comes with a timer function (0000 - 9999 minutes) and up to 10 user-configurable program operations



Isotherm[®] Forced Convection Laboratory Oven Model OFA-110-_{_}

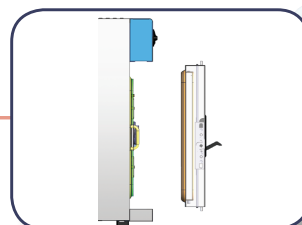
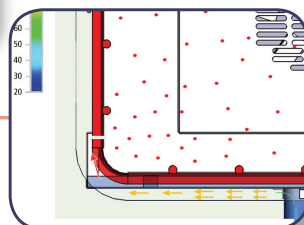
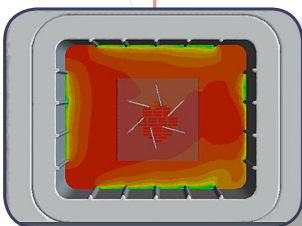
Pre-Heat Chamber Technology

- 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 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, creates uniform air circulation ensuring maximum temperature uniformity



Guide to Models, Forced Convection Laboratory Ovens

O F A - - -

Volume	Code	Electrical Rating	Code
54 L	54	220-240 VAC, 50/60 Hz, 1Ø	8
110 L	110	110-120 VAC, 50/60 Hz, 1Ø	9

General Specifications, Forced Convection Laboratory Ovens

Model	220-240 VAC, 50/60 Hz, 1Ø		OFA-54-8 2110002	OFA-110-8 2110003
	110-120 VAC, 50/60 Hz, 1Ø		OFA-54-9 2110009	OFA-110-9 2110008
Volume			54 L (1.9 cu. ft)	110 L (3.9 cu. ft)
Temperature Range	Ambient +7.5°C to 300°C			
Temperature Variation	70°C		± 0.6°C	± 0.6°C
	150°C		± 2.2°C	± 1.6°C
	250°C		± 4.0°C	± 4.1°C
Temperature Fluctuation	70°C		± 0.3°C	± 0.3°C
Heating Up Time*	70°C		40 min	45 min
	150°C		33 min	31 min
	250°C		58 min	58 min
Recovery Time after 30 sec door open*	70°C		5.5 min	7.5 min
	150°C		7 min	9.5 min
	250°C		8 min	10 min
Noise Level			49 dBA	49 dBA
Oven Construction	Main Body		Electrogalvanized steel with white oven-baked epoxy-polyester Isocide™ antimicrobial powder-coated finish	
	Chamber		Stainless steel, grade 304	
Number of shelves	Standard		2	2
	Maximum		5	6
Maximum Load per Shelf			15 Kg (33 lbs)	30 Kg (66 lbs)
External Dimensions (W x D x H)			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")
Internal Dimensions (W x D x H)			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")
Electrical	220-240 VAC, 50/60 Hz, 1Ø	Current Consumption	7.3A	9A
		Power Consumption	1680W	2080W
	110-120 VAC, 50/60 Hz, 1Ø	Current Consumption	15A	18A
		Power Consumption	1680W	2080W
Net Weight			52 Kg (115 lbs)	75 Kg (165 lbs)
Shipping Weight			66 Kg (146 lbs)	94 Kg (207 lbs)
Shipping Dimensions (W x D x H)			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")
Shipping Volume			0.49 m³ (17.3 cu. ft)	0.61 m³ (21.5 cu. ft)

*Up to 98% of the set value. For the set point ≥100°C, if the temperature reading is already 2°C below the set point, it will take longer time to reach set point, due to prevent overshoot.

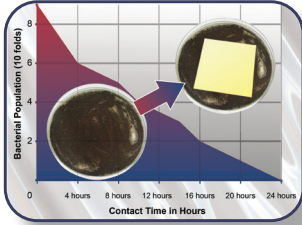
Note:

- 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

Esco Isotherm[®] forced convection laboratory incubator provides a temperature-controlled environment via forced convection design. It has an intuitive interface, microprocessor PID controls with programming options, a 4-zone heated air jacket, precisely tuned and tested ventilation, an insulation package, and ergonomic features to provide quality and convenience.



Quality Esco Construction

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



SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum temperature probe
- Prevents overshoot, ensures fast ramp time and stable temperature once set point is achieved
- Twin temperature display for easy monitoring ("Actual" and "Set Point" displays)
- Diagnostic LEDs simplify service
- Air flow adjuster via slider for exchange rate of air
- Comes with a timer function (0000 - 9999 minutes) and up to 10 user-configurable program operations

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



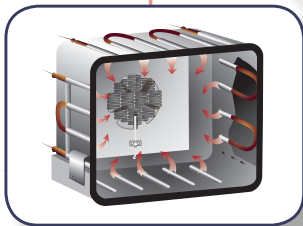
Glass Door

- For observing samples inside the chamber during operation

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

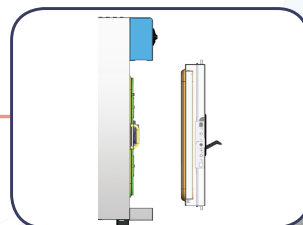
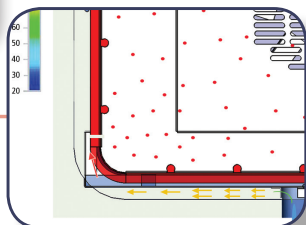
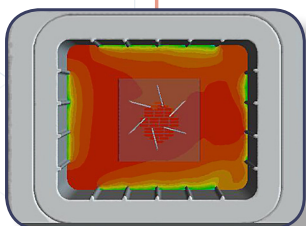
Pre-Heat Chamber Technology

- 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 100°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 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, creates uniform air circulation ensuring maximum temperature uniformity



Guide to Models, Forced Convection Laboratory Incubators

IFA - -

Volume	Code	Electrical Rating	Code
54 L	54	220-240 VAC, 50/60 Hz, 1Ø	8
110 L	110	110-120 VAC, 50/60 Hz, 1Ø	9

General Specifications, Forced Convection Laboratory Incubators

Model	220-240 VAC, 50/60 Hz, 1Ø		IFA-54-8 2100002	IFA-110-8 2100003
	110-120 VAC, 50/60 Hz, 1Ø		IFA-54-9 2100018	IFA-110-9 2100020
Volume			54 L (1.9 cu. ft)	110 L (3.9 cu. ft)
Temperature Range			Ambient +7.5°C to 100°C	
Temperature Variation	37°C		± 0.3°C	± 0.3°C
	50°C		± 0.3°C	± 0.5°C
Temperature Fluctuation	37°C		± 0.3°C	± 0.3°C
	50°C		± 0.3°C	± 0.3°C
Heating Up Time*	37°C		23 min	30 min
	50°C		35 min	52 min
Recovery Time after 30 sec door open*	37°C		1.5 min	3 min
	50°C		3 min	5.5 min
Noise Level			48 dBA	49 dBA
Incubator Construction	Main Body		Electrogalvanized steel with white oven-baked epoxy-polyester Isocide™ antimicrobial powder-coated finish	
	Chamber		Stainless steel, grade 304	
Number of shelves	Standard		2	2
	Maximum		5	6
Maximum Load per Shelf			15 Kg (33 lbs)	30 Kg (66 lbs)
External Dimensions (W x D x H)			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")
Internal Dimensions (W x D x H)			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")
Electrical	220-240 VAC, 50/60 Hz, 1Ø	Current Consumption	8A	4.8A
		Power Consumption	880W	1080W
	110-120 VAC, 50/60 Hz, 1Ø	Current Consumption	8A	9.6A
		Power Consumption	880W	1080W
Net Weight			55 Kg (121 lbs)	79 Kg (174 lbs)
Shipping Weight			69 Kg (152 lbs)	98 Kg (216 lbs)
Shipping Dimensions (W x D x H)			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")
Shipping Volume			0.49 m³ (17.3 cu. ft)	0.61 m³ (21.5 cu. ft)

*Up to 98% of the set value. For the set point $\geq 100^{\circ}\text{C}$, if the temperature reading is already 2°C below the set point, it will take longer time to reach set point, due to prevent overshoot.

Note:

- All technical specifications are specified for units with standard equipment at an ambient temperature of 25°C and a voltage fluctuation of $\pm 10\%$.
- 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



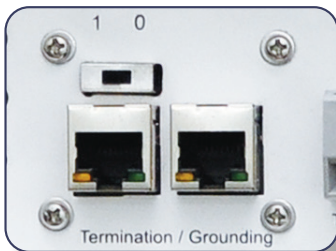
Safe, Superior Protection for Sample, User and the Environment

- Multiple redundant overtemperature protection systems guarantee maximum sample and user protection
- Over-all temperature protection meets DIN 12880 Class 3.1 standards



Ergonomic Design

- Access port for temperature validation and mapping



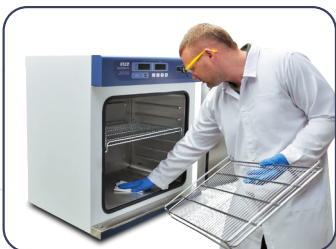
RS485 Communication Port

- 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 dismountable 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 Ovens

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 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

OPTIONS AND ACCESSORIES



Wall bracket (only for 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 715 mm (28")



Additional Shelf

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

ORDERING INFORMATION

Unit Ordering

Model	Item Code	Description
OFA-54-8	2110002	Isotherm® Forced Convection Oven, 54 L, 220-240 VAC, 50/60 Hz
OFA-54-9	2110009	Isotherm® Forced Convection Oven, 54 L, 110-120 VAC, 50/60 Hz
OFA-110-8	2110003	Isotherm® Forced Convection Oven, 110 L, 220-240 VAC, 50/60 Hz
OFA-110-9	2110008	Isotherm® Forced Convection Oven, 110 L, 110-120 VAC, 50/60 Hz

Model	Item Code	Description
IFA-54-8	2100002	Isotherm® Forced Convection Incubator, 54 L, 220-240 VAC, 50/60 Hz
IFA-54-9	2100018	Isotherm® Forced Convection Incubator, 54 L, 110-120 VAC, 50/60 Hz
IFA-110-8	2100003	Isotherm® Forced Convection Incubator, 110 L, 220-240 VAC, 50/60 Hz
IFA-110-9	2100016	Isotherm® Forced Convection Incubator, 110 L, 110-120 VAC, 50/60 Hz

ACCESSORIES ORDERING

Model Code	Item Code	Description	Available for
TOA-1006	5070327	Wall bracket for 54 L	OFA, IFA
TOA-1008	5130107	Support stand, 715mm (28") for 54 L	OFA, IFA
TOA-1009	5130108	Support stand, 715mm (28") for 110 L	OFA, IFA
TOA-1013	5070329	Additional shelves for 54 L	OFA, IFA
TOA-1014	5070330	Additional shelves for 110 L	OFA, IFA
5250001-U	5250001	Voyager Software Kit	OFA, IFA
9010179	9010179	IQ/OQ Document	OFA, IFA

TESTING AND CERTIFICATION

biomedis
Kalibrierservice GmbH & Co. KG
Kerkraider Strasse 2 • 35384 Gießen
Tel. +49 6602 12 • Fax +49 6602 13
e-mail info@biomedis.de • www.biomedis.de

Test-report No.: 160312

Customer: Esco Micro Pte. Ltd.
21 Changi South Street 1
Singapore 486777

Location: biomedis Kalibrierservice GmbH & Co. KG
Kerkraider Strasse 2
D-35384 Gießen, Germany
Prüfplatz 3

Object: Isotherm Laboratory Incubator

Manufacturer: Esco

Type: IFA 110-B

Serial no.: 2011-58950

biomedis ID-No.: —

Measuring procedure: The calibration was performed in accordance to ISO DIN 12890. 27 thermocouples were arranged in the chamber as you can see in the appendix. Arrangement of sensors in the chamber. The testable volume was performed under unloaded condition.

Actual state: The device is calibrated and ready for use

Hereby we confirm that the calibration was realized by an ISO/IEC 17025 accredited testing laboratory. The measuring installations used for calibration are regularly calibrated and traceable to the national standards of the German Federal Physical Technical Institute (PTB).

Seal Date of calibration: 2012-03-16
Signature: (Thomas Angerer)

Date of the recommended re-calibration: 2015-03

This calibration certificate may only be reproduced in whole but not in part and the conditions of the issuing laboratory. Calibration certificates without signature are not valid. The seal may only be used if attached to the certificate.

Kalibrier-Zertifikat Calibration certificate 706216

Objekt: Isotherm Laboratory Incubator

Hersteller: Esco Micro Pte Ltd

Typ: IFA 110-B

Serial No.: 2011-58951

Hersteller No.: —

Prüfplatz No.: —

Equipment No.: 11181-000

Standort: —

Auftraggeber: Esco Micro Pte Ltd

Kunden No.: 90-40777 Singapore

Auftrag No.: 1447886

Bestell-Nr.: 5888229 / 8000 0701

Datum der Kalibrierung: 10.09.2012

Datum der nächsten Nachkalibrierung: 10.09.2015

Konformitätsbewertung: Messwert (vorhalb der zulässigen Abweichung) Messwert außerhalb der zulässigen Abweichung

1. Die Messunsicherheit wurde nach GUM an dem Darstellungspunkt bestimmt und enthält die Unsicherheit des Prüflings. Die Messunsicherheit erfolgt nach DIN EN ISO 15525 gemäß der Kalibrierungsnorm DIN EN ISO 17025.

Dieser Kalibrierschein darf nur vollständig weitervertrieben werden. Auszüge oder Änderungen bedürfen der Genehmigung über

biomedis Kalibrierservice GmbH • Gießenstrasse 3, 35384 Gießen • Fax +49 660 2001 8070 • www.biomedis.de

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	CAN/CSA-22.2, No. 61010-1; EN 61010-1, Europe; IEC 61010-1, Worldwide

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