Quincy Lab, Inc.

Model AFE Digital Series Lab Ovens

With Microprocessor Control & Digital Display

OPERATING MANUAL

Standard Contents

(1) AFE Series Lab Oven
(2) Adjustable chrome wire shelf
(4) Shelf brackets

⚠ Not For Use With Flammable Solvents or Gases.

SPECIFICATIONS	MODEL 10AFE	MODEL 20AFE	MODEL 30AFE	MODEL 40AFE
INTERIOR DIMENSIONS				
INCHES W x H x D	12x8.63x10	13x11.63x13	18x14.63x12	18x19.63x14
(CM) W x H x D	30.5x22x25.4	33x29.5x33	45.7x37x30.5	45.7x50x35.5
EXTERIOR DIMENSIONS				
INCHES W x H x D	14x20.5x12	15x24.5x15	20x28.5x14	20x33.5x16
(CM) W x H x D	35.5x52x30.5	38x61x38	52x72.4x35.5	52x85x40.63
TEMPERATURE RANGE Ambient + 25°F to: F / C	450°/232°	450°/232°	450°/232°	450°/232°
CONTROL STABILITY Typically +/- F / C	0.5°/ 1.0°	0.5°/ 1.0°	0.5°/ 1.0°	0.5°/ 1.0°
STANDARD ELECTRICAL				
VOLTS/AMPS	120/6.6*	120/8.8*	120/12.5*	120/12.5*
WATTS	800	1050	1500	1500
PLUG/NEMA	5-15P*	5-15P*	5-15P*	5-15P*
WEIGHT (lbs)				
SHIPPING	44	61	78	94
STAND ALONE	38	54	70	85

* Standard models voltage only, optional 220 voltage available. Check label on back of unit.

Common Unit Construction

Exterior: Powder Coated Steel
Insulation: Fiberglass
Thermo-control: PID Microprocessor
Interior: Aluminized Steel
Motor: Sleeve Bearing, Thermally Protected
Heater: Resistive-Tubular Incoloy

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Safety Precautions ⚠ Read Operating Instructions Thoroughly Prior to Operation

⚠ The AFE Series lab ovens are not designed for use with any flammable solvents or gases or for materials that may contain flammable solvents or gases. Use only a grounded outlet that is rated for your model's electrical requirement. Oven exterior walls and doors may become hot to the touch when operating at higher set temperatures. Do not leave the oven unattended during operation, especially when processing materials that have flash point temperatures lower than the model oven's maximum operating range. Do not modify the oven or control parameters to operate the oven above the stated maximum operating temperature.

Set-up

Position unit in its ultimate operating location. Keep a minimum of 2" of airspace around the unit and a minimum of 10" above the unit. Important: The exhaust ports should NOT be used as chamber access for temperature-measuring probes. Insertion of any such probe or device may damage or unbalance the circulating fan blade at the top of the oven chamber.

Install adjustable shelf by placing the ends of the wire shelf bracket into the corresponding holes located on the inner sides of the oven at the desired height. Push the ends of the bracket into the holes until the first bends in the bracket are against the wall, then rotate the bracket down. Place the shelf on the brackets. **(FIG 1)**

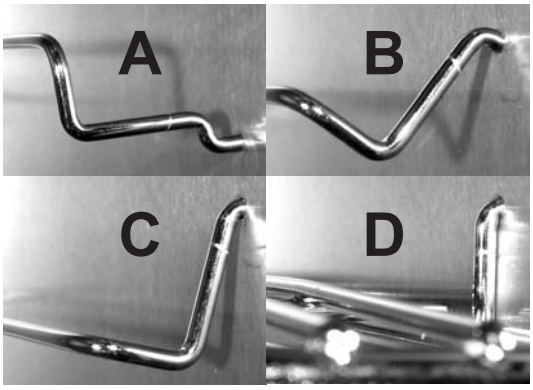


FIG. 1

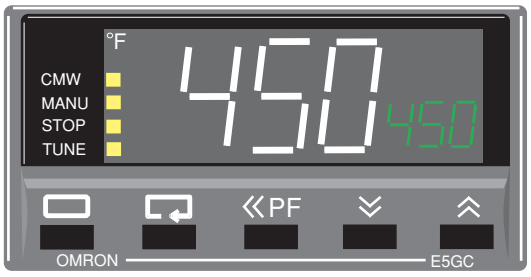
Plug the unit into a grounded outlet for your unit's rated voltage.

General Operation

The unit is ready for your immediate use. All control parameters, calibration and tuning has been done at the factory, no adjustments are necessary.

Push the illuminated power button. The fan motor will start. All LED's on the temperature control will light up immediately and display the current chamber temperature and the set temperature.

Set temperature is constantly displayed in the lower right-hand corner of the display. To change the set temperature, simply press either the up arrow key or the down arrow key, until desired set temperature is reached **(FIG 2)**. The temperature control is set at the factory to read in 1/10 degree F or Fahrenheit units.



Enter/Exit Menu

Menu Scroll

Increase/Decrease Setpoint

(PRESS)

FIG. 2

To change temperature units or display resolution, see Menu Level Functions (page 3).

Once the unit nears the desired temperature allow the unit to cycle for 20 minutes at set point before temperature becomes fully stable. NOTE: Upon each initial powering-up, the control may typically overshoot the set temp by 3 or 4 degrees especially if the temperature set point is close to the operating ambient temperature. After equilibrium is achieved the control will hold set temperature within 1 unit degree.

Chamber Loading

Article processing times and temperature uniformity are largely dependent on load density and positioning. Load the oven so that air circulation within the oven is not impaired. Here are some general guidelines:

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OPERATING MANUAL INSERT

Chamber Loading

Article or media processing times and temperature uniformity are largely dependent on load density and positioning. Load oven so that air circulation within the oven is not impaired. Here are some general guidelines:

Leave a space between multiple articles on a shelf.

Position articles on shelves as shown in **(FIG 4),** for best results avoid placing articles or media against or within an inch of the walls, especially on the lower shelf, allowing unrestricted air flow around articles and contributing to even and consistent heating.

Use of large solid trays, or foil on shelves severely limits the oven's ability to distribute heat evenly and uniformly. **(FIG 5)** Since not enough heat rises within the chamber, thermometer readings give false indication that temperature setting is too low. Higher temperature adjustments made as a result of these readings could overheat the lower-placed articles or media.

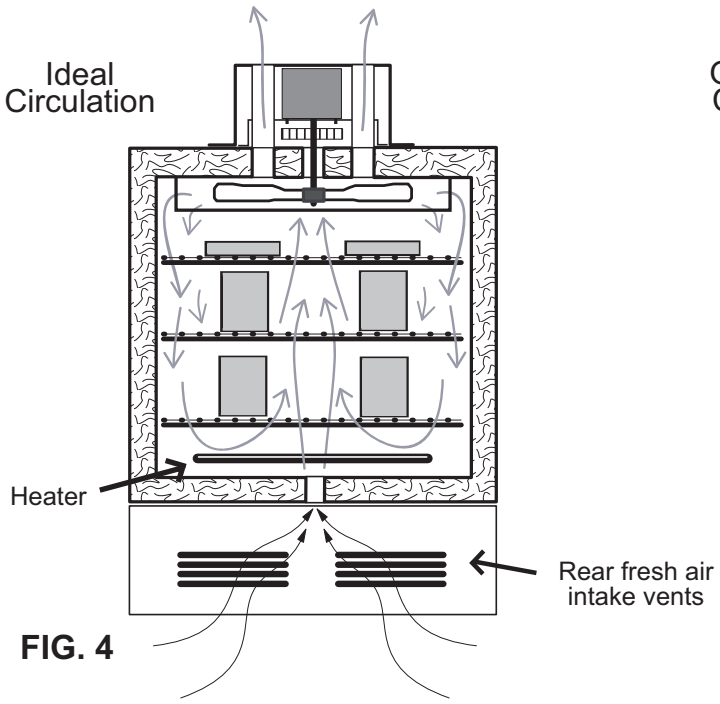

FIG. 4

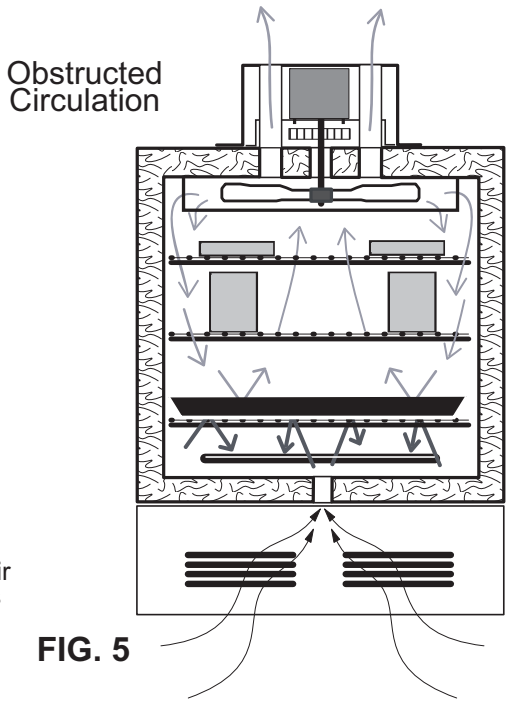

FIG. 5

Do not overload the unit with large (in quantity OR size), or high-density loads. This will show by non-uniform processing and long or impossible "heat-through" times. To help determine a large load's suitability, compare the time it takes for the temperature to recover to the original empty chamber set temperature once load is placed. To reduce recovery time, reduce load accordingly. Also, large loads such as a beaker containing 2 liters of solution, may require an elevated set temperature for the solution to reach and maintain a lower target temperature.

Care should also be taken to avoid placing items on the top-most shelf too close to the holes in the fan plenum. This will restrict the flow of air passing through the plenum and reduce the amount of pre-heated air being circulated through the entire chamber and cause longer than normal heat-through times and inconsistent or unstable oven temperatures.

For best processing performance for a single item, adjust one shelf so that the article is centered in the oven chamber.

NOTE: The unit's minimum operating temperature is largely determined by ambient temperature. The unit can operate 25 degrees F (approximately 14 degrees C) above room temperature but temperature stability may be degraded. Temperature stability improves appreciably for settings that exceed ambient by 30 degrees F or better. As a general rule, the lower the ambient temperature, the lower the maximum adjustable operating temperature.

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Menu Level Functions Guide

To access menu for common menu functions, please refer to ***Menu Guide*** below: Menu setting changes are quick and easy with the our new 5-button digital microprocessor. Through the use of these controls you can: set the operating temperaure, lock the set-temperature, select either degrees F or C, calibrate your unit to your independent device, slect a different thermocouple type, and auto-tune your oven to your specific application.

Digital Controller Function Buttons

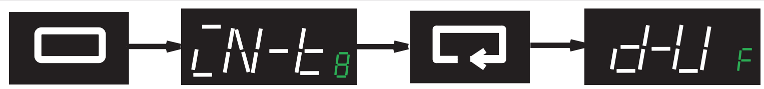
Enter / Exit MENU	MENU Scroll	Changes digit cursor on set temperature	Decrease	Increase

To set setpoint temperature

Decrease | Increase

Up and down arrow keys (shown left) are used to increase or decrease set-point control temperature as desired by user

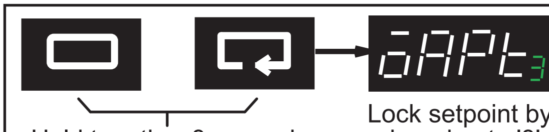
To adjust control to read in C or F temperature units



Hold 3 sec. → View → Hit ONCE → Use keys to choose F or C

Default set to F

To lock setpoint temperature

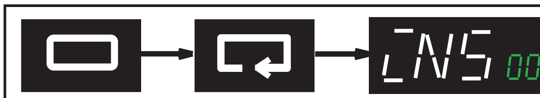


Hold together 3 seconds

Lock setpoint by changing to '3'

Default set to 0

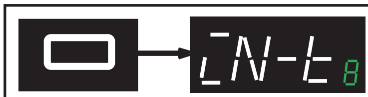
To calibrate control to independent probe/sensor



Hit ONCE → Hit ONCE → Use keys to enter temperature shift in degrees

To calibrate oven, add (or subtract) the temperature differential, to the existing iNS value shown at prompt

To change thermocouple type

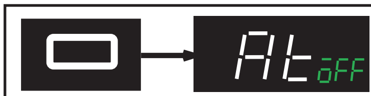


Hold 3 sec. → Use keys to change type

Default set to "J"

All Lab Series Ovens are factory equipped with a standard "J-type" thermocouple as the default, but you may change from this type of thermocouple to either a different thermocouple, RTD, or infrared sensor, depending on your particular application. Due to the four-digit LED limit of the display, when changing to some of the alternate device types, you may lose the decimal feature allowing you to view temperatures in tenths of a degree.

To Auto-tune oven



Hit ONCE → Use keys to change setting

Default set to 40%

All ovens are Auto-tuned at the factory using the 'At-1' option for faster response time. You may, however, want to Auto-tune your oven to your specific application. To do this, once at the 'At' prompt (at left), use arrow keys to initiate either Auto-tune option: 'At-1' (for 40% Auto-tune), or 'At-2' (for 100% Autotune). The 40% Auto-tune (At-1), will stabilize the oven temperature quicker and with less 'overshoot' than the 100%, but will be somewhat less precise. The 100% Auto-tune (At-2), will take longer to stabilize oven temperature but will be more precise, and take a little longer to complete the Auto-tune process.

Control Self Diagnostics

Control prompts will only display when a fault or alarm condition exists.

ALARM Codes "S.ERR" & "- - - -"

or

Indicates Input Error

Check to make sure Thermocouple wiring is connected securely

ALARM Code "E333"

Indicates Internal Circuit Error

Turn Controller OFF and On. If problem remains, replace Controller

ALARM Code "E111"

Indicates Internal Memory Error

Turn Controller OFF and On. If problem remains, replace Controller

Common Replacement Components

All replacement components are readily available and are easily replaced in the field.

COMPONENT	MODEL	VOLTAGE	PART #	COMPONENT	MODEL	VOLTAGE	PART #
Motor	All	115 Volt	205-2030	Digital Controller	All	All	401-1230
Motor	All	230 Volt	205-2031	Relay	All	All	401-1233
Rocker Switch	All	115 Volt 230 Volt	201-2213 201-2213-1	Fuse (10 amp)	10, 20	All	Q-1191
Thermocouple	All	All	701-6253	Fuse (15 amp)	30, 40	All	Q-1190
Friction Catch (set)	All	All	101-2221	Fuse Holder (red)	All	All	Q-1198
6' Cord & Plug	20, 30, 40	115 Volt 230 Volt	101-1403 101-1403-1	Wire Shelf	10	All	101-1000
6' Cord & Plug	10	115 Volt 230 Volt	101-1603 101-1603-1	Shelf Supports (2)	10	All	101-1001
Fan Blade	10	All	205-1018	Wire Shelf	20	All	201-2000
Fan Blade	20, 30	All	205-2018	Wire Shelf	30	All	101-3000
Fan Blade	40	All	205-3018	Wire Shelf	40	All	201-4000
Fan Blade 3" Heat Sink	All	All	205-4018	Shelf Supports (2)	20, 30, 40	All	101-3001

⚠ Periodic Oven Maintenance

The AFE Series Lab Ovens are designed to be virtually maintenance free. But operational safety requires periodic cleaning and chamber temperature accuracy verification. Periodically check the rear air intake vents for dirt or dust build-up. Keep the intake & exit ports clear of obstruction and clean of dust and dirt. Once a year, check the actual oven chamber temperature against a known accurate temperature measurement device. Maintain temperature accuracy to within 5 degrees F of the control setting. Calibrate the control as necessary. To clean exterior and interior surfaces, use a damp cloth or with an all-purpose cleaner. Avoid commercially available oven cleaners.

Technical Support

If you have any questions or need technical assistance, please contact Quincy Lab Tech Support at:

Email: information@quincylab.com
Voice: 800-482-HEAT (4328)
Fax: 773-622-2282

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Limited Warranty

Quincy Lab, Inc. warrants to the original purchaser that this product will be free from defects in material and workmanship under normal use throughout the warranty period. The standard warranty period for this instrument is eighteen months from date of shipment. The instrument warranty is supplemented with a three year warranty on the heating element. Please refer to your invoice or shipping documents to determine the active warranty period. This warranty covers parts & labor (labor at factory only) and shipping cost for replacement parts.