

### Desert Chamber Pro<sup>™</sup> Manual

DRY2023- Turbofan Slide Drying Oven



**Biocare Medical** 

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### Warranty



Not for use with flammable solvents or gases

The Desert Chamber Pro warranty is for one year from receipt of purchase and covers all parts and labor when performed solely by Biocare Medical. Warranty is invalidated if equipment is abused, damaged, or improperly maintained by customer. Warranty is not transferable to any other party should the equipment be resold or transferred by the customer to another party. To the extent permitted by law, Biocare Medical disclaims any liability for any incidental or consequential damages related to this equipment or for any warranty related services it performs.

### Overview

This innovative compact oven from Biocare Medical is extremely efficient and is specially designed for the rapid drying of slides. The combination of a small footprint, turbo fan, 365-watt element and a digital programmable temperature process controller makes this oven superior to other conventional drying ovens. This controller will autocalibrate for the amount of mass and volume placed inside the oven, keeping the inside temperature constant and accurate. The Desert Chamber Pro can be programmed with variable segments, times, temperatures and alarms.

### Instrument Components



### Specifications

Interior Dimensions: 10.5 (W) x 9.5 (H) x 11.5 (D) inches / 26.7 (W) x 24.1 (H) 29.2 (D) centimeters Exterior Dimensions:

13 (W) x 16 (H) x 13.5 (D) inches / 33.3 (W) x 40.6 (H) x 34.3 (D) centimeters Weight: 27 pounds, 12.2 kilograms

Cubic Foot Capacity: 0.7 cubic feet

Standard Electrical: 115 volts / 365 watts (DRY2023US) Temperature Range: Ambient - 100 °C

## Unit Specifications

Operating Environment:

Indoor use. Installation Category II, Polution Degree 2, ambient temperature 10 °C - 35 °C (50 °F - 95 °F); 80% maximum relative humidity.

Storage Temperature: -10 °C - 70 °C (14 °F - 158 °F); 70% maximum relative humidity. Approvals: Underwriter's

Laboratory Listed, Laboratory Equipment, C/UL

United States / Canadian. E212550 (115 VAC models only)

Compliance: UL Standard 61010-1, IEC 61010-1, 2nd Edition

# Unit Construction

Exterior: Powder-coated steel

Insulation: Fiberglass

Thermo-control: PID microprocessor Interior: Aluminum

Door: Steel insulated

Heater: Resistive-tubular Incoloy

### Contents

Inspect the packaging and immediately report any damage to Biocare Medical.

- 1. Oven with Digital Programmable Temperature Process Controller
- 2. Adjustable Shelves
- 3. Wire Shelf Brackets
- 4. Removable Drip Tray



## Assembling the Oven

- 1. Position the unit in its ultimate operating location, keeping a minimum of two inches of space around the unit and ten inches of space above the unit.
- 2. Place the removable drip tray on the bottom of the oven. (Figure 1)
- 3. Push the ends of the wire shelf brackets into the holes until the first bend is against the wall. Then rotate the bracket down. (Figure 2)
- 4. Place the adjustable shelves on top of the brackets. (Figure 3)
- 5. Plug the Desert Chamber into a properly grounded receptacle (either 115 volt or 230 volt, depending upon the model).







### **Electrical Precautions**

Basic safety precautions should always be followed when using electrical equipment.

- Do not immerse cord or plug in water.
- Unplug the instrument when not in use and before cleaning.
- Do not operate the instrument with a damaged cord or plug.
- Do not let the cord hang over the edge of a table or counter or touch hot surfaces.

#### Important Note

The oven temperature has been calibrated at the factory and should not be adjusted by the end-user. If any problems arise with the oven, call Biocare Medical for technical service at 800-799-9499.

### Maintenance

The Desert Chamber Pro oven is designed to be virtually maintenance-free. However, the oven does require periodic cleaning and chamber temperature accuracy verification in order to maintain operational and safety standards. Periodically check the rear air intake vents for dirt or dust build-up. Keep the intake and exit ports clear of obstruction and free of dust and dirt. Once a year, check the actual oven chamber temperature against a known accurate temperature measurement device. To clean exterior and interior surfaces, use a damp cloth with an all-purpose cleaner. Avoid commercially available oven cleaners.

## Slide Drying Protocol

Drying slides correctly is essential for tissue processing.

Use distilled water only in the Water Bath. Do not use any organic or inorganic adhesion products such as gelatin. The water bath temperature should be 10 - 12 °C lower than the paraffin melting point - usually 40 - 45 °C.

For tissue processing, use Biocare Medical Kling-On Slides or other positively charged slides for optimal tissue adhesion. Shake the slides with a snapping action of the wrist to remove excess water that may be trapped between the tissue section and the glass slide. Drain slides in a vertical position for 5 - 10 minutes.

Place slides in a slide rack and tap on the counter to remove residual water. Position slide rack in oven. Close oven door. Dry slides using one of the Preset Programs.

Note: the times may vary according to the number of slides placed in the oven.

#### Technical Notes:

Under-fixed tissue is less likely to adhere to the slide properly. Ideally, the tissue should be grossed at 3mm, placed in 20X volume of formalin and fixed for 16-24 hours to allow adequate infiltration prior to processing.

Do not dry tissue slides at temperatures higher than 60 - 70 °C, or for longer than one hour. Longer drying times or higher temperatures may compromise results.

## Slide Loading Guidelines

Load the oven so that air circulation within the oven is not impeded.

- Stagger slide racks on the shelves.
- Do not overload; leave a space between racks being processed.
- For the best processing performance for a single item, place it in the center of the oven.
- Do not use acids or corrosive reagents inside the oven.

## Manual Operation Instructions

#### Selection of Celsius (°C) or Fahrenheit (°F)

- 1. To change from Celsius (<sup>o</sup>C) to Fahrenheit (<sup>o</sup>F) press 'P' button until 'unit' appears.
- 2. Press the up arrow for Fahrenheit and down arrow for Celsius. Press 'P' to save the change.

#### Setting Temperature

- 1. Turn on the oven by pushing the Power button. The button will light red when the unit is on.
- 2. Before starting a manual operation, press the 'P' button until 'RUN' is displayed and turn 'RUN' on by selecting the up arrow once steps are completed.
- 3. To manually adjust the temperature, turn off Programs by pressing 'P' button until 'PRG' appears, then select the down arrow to select 'NONE'.
- 4. To change temperature press 'P' until the temperature is displayed, use the up or down arrow to select temperature.

Note: The white LED is the actual temperature inside the oven. The blue LED is the target temperature.

#### Setting the Countdown Timer

The Desert Chamber Pro is packaged with a separate digital timer to track incubation time but also the oven is equipped with a timer feature. The instructions below are provided to program time on the instrument.

- 1. Press and hold 'P' until Time Start Mode appears (T.STRO appears at the end of the timer and press down arrow to select F. The F value allows the timer to be manually activated by pressing the F/arrow button. Press 'P 'to advance to the next step.
- 2. Press the down arrow to select DN, for Time Countdown Direction (T.DIR) this instructs the controller to count down. Press 'P' to advance or F/arrow to go back.
- 3. Use the up or down arrow to select unit of time, Time Base Setting, (T.TB). To select HH:MM (hours, minutes) or MM: SS (minutes or seconds). Press 'P' to advance or F/arrow to go back.
- 4. Use the up or down arrow to select desired time, Time Interval Adjustment (T1). Press 'P' to advance or F/arrow to go back.
- 5. Select the parameters below and press P to advance.

T1.E Set this parameter to NO. Continue to next timer parameter. T. END Set this parameter to OFF. Continue with the next timer parameter. T2 Set this parameter to 0000. Continue with the next timer parameter.

- 6. Using the up or down arrow select what happens at the end of the timer under TRUN. ON means the temperature controller continues to operate, OFF means end controller heating operation at the end of the timer. Press 'P' once more to complete set-up and return to temperature display.
- 7. Once timer is set, press Start, pause, and Stop/Cancel the timer count by doing the following:
  - Start- Press F/arrow once
  - Pause- Press F/arrow once
  - Stop/Cancel -Press F/ arrow for 3 seconds

#### Stopping a Manual Run

- 1. Press the 'P' button until 'RUN' is displayed then use the down arrow button to select 'OFF'.
- 2. Do not end a programmed run prematurely by turning off the using the On/Off button. Make sure the LED display shows the temperatures before stopping a manual run using the On/Off button. Run Off will be displayed until the LED displays the temperatures. This may take several minutes.
- 3. To turn off the oven, push the Power button.

**Note:** Attempting to stop a manual run using the toggle switch will result in the oven retaining the current run settings.

If the program controls become jammed due to an electrical power surge or power outage, unplug the unit's power cord, wait a few seconds and plug it back in to reset.

# Preset Program Descriptions



### Preset Program Operation Instructions

#### Program 1: Standard Program

Set Temperature 1 - 37 °C for 30 minutes Set Temperature 2 - 60 °C for 30 minutes

#### Program 2: Fast Dry Program

Set Temperature 1 - 45 °C for 20 minutes Set Temperature 2 - 70 °C for 10 minutes\*

#### Program 3: Bulk Program

Set Temperature 1 - 45 °C for 20 minutes Set Temperature 2 - 70 °C for 30 minutes\*

#### Program 4: Overnight Program

Set Temperature 1 - 37 °C for 60 minutes Set Temperature 2 - 60 °C for 60 minutes

#### Program 5: Delayed Program

Set Temperature 1 - 25 °C for 720 minutes Set Temperature 2 - 37 °C for 60 minutes Set Temperature 3 - 60 °C for 60 minutes

**Note:** The programs listed include segments to allow for temperature to ramp up from one Set Temperature to the next Set Temperature. Review Appendix 2 Program Settings for more information on set temperature and ramp up durations.

Starting a Program (Run On):

- 1. Press the power button to activate the oven a red light will indicate that the oven is in the "on" position, and the screen will display the actual temperature.
- 2. Before selecting and starting a Program, press the 'P' button until 'RUN' is displayed and turn 'RUN' on by selecting the up arrow.
- 3. Press 'P' 4x "" The screen will display 'PRG' for Programs.
- 4. Press the up or down arrow to select program number.
- 5. Wait for 3 seconds, then the screen will display the current temperature of oven and the target temperature.
- 6. At the start of a run the display will flash 'RUN'. When the set temperature is reached the 'RUN' display will stop flashing.

Stopping a Program (Run Off):

- 1. Press the 'P' button until 'RUN' is displayed then use the down arrow button to select 'OFF.'
- 2. To turn the power to the oven off, press the red power button. The red indicator light will turn off.

Note: It is important not to prematurely power down the Desert Chamber Pro before stopping a run that is in progress

## Editing a Program

- 1. Press and Hold to see PR.TB (Program time base). Select between HH:MM (hours: minutes) or MM:SS (Minutes: Seconds)
- 2. Press once to advance to PR.P (Function Resume Program). Select one of the options which defines the behavior of the controller when it resumes from power interruption.

PROG - Returns at the beginning of the program
P.SEG - Returns at the beginning of the segment
T.SEG - Returns at the exact point where it stopped
OFF - Returns with the controller disabled (RUN = No)

3. Press once to advance to PR \_ (Number of program to edit). Select the program number (1 thru 5) to be edited/viewed. Once you select a program number to edit, the parameters that follow refer to the selected program.

4. Press 'P' once to advance to P.TOL (Maximum deviation from SP). Input the maximum allowable deviation from PV with respect to SP (set-point). If exceeded, the program is suspended (the internal timer freezes) until PV (process value) is within the allowable deviation value.

- 5. Programming set-points and time Set Temperature s
  - Press 'P' once to advance to P.SPO (Program SP 0 to 4). Set the SP temperature of the program.
  - Press 'P' once to advance to P.T1 (Program Set Temperature Time). Set the duration time of the Set Temperature in the program being edited.
  - Press 'P' once to advance to P.E.1, (Program Event). Set this to parameter to OFF, alarm settings cannot be modified.

6. Repeat steps 5-7 for each additional Set Temperature on the same program

7.Press 'P' once to advance to LP (link Programs). Select a program number to be linked to another after the initial program ends. It is possible to create large, more complex program with up to 20 Set Temperature s. Thus, at the end of the execution of a linked program, the controller immediately starts executing the next selected program.

## Appendix 1 Function Menu

Flowchart for menu selection.



**GENERAL OPERATION MENU** 

### Appendix 2 Program Settings

The 15 minute segments duration time is given for ramping and achieving the required temperature when going from one point to another which would then begin the soak timer after reaching the set-point.



### Program 2







# Appendix 2 Program Settings (continued)

### Program 4



### Program 5



