

# Lab ARMOR Lab Armor® DryTemp™ User's Manual

Cat. No. 52120-200 DryTemp™ – Digital Dry Bath 120v  
Cat. No. 52230-200 DryTemp™ – Digital Dry Bath 230v

## Related Products

Cat. No. 52100-BLK Bead Block™ – Single Black with 0.25 L Beads  
Cat. No. 52100-BLU Bead Block™ – Single Blue with 0.25 L Beads  
Cat. No. 52100-GLD Bead Block™ – Single Gold with 0.25 L Beads  
Cat. No. 52100-RED Bead Block™ – Single, Red with 0.25 L Beads  
Cat. No. 52100-SLV Bead Block™ – Single, Silver with 0.25 L Beads  
Cat. No. 52200-BLK Bead Block™ – Double, Black with 0.5 L Beads  
Cat. No. 52200-BLU Bead Block™ – Double, Blue with 0.5 L Beads  
Cat. No. 52200-GLD Bead Block™ – Double, Gold with 0.5 L Beads  
Cat. No. 52200-RED Bead Block™ – Double, Red with 0.5 L Beads  
Cat. No. 52200-SLV Bead Block™ – Double, Silver with 0.5 L Beads

## Description

DryTemp™ by Lab Armor® is a microprocessor controlled dry bath designed for use with Bead Block™ and Lab Armor® Beads. DryTemp™ provides for optimal temperature uniformity and accuracy while incubating common lab vessels, including microfuge tubes, test tubes, and even microplates and slides. The DryTemp™/Bead Block™ system replaces common drilled-out aluminum block dry baths in the lab and eliminates the need for using different size blocks to fit different sample vessels. Bead Block™ can be lifted out of the DryTemp™ unit for portable use anywhere in the lab. Each DryTemp™ has a bright LED display, easy to set temperature and time controls.

## Intended Use

For research use only:



**CAUTION:** Hot surfaces, especially on the block, can cause serious injury or burns. Do not put water or liquids into the well as shock, serious injury and death may occur. Do not heat flammable or explosive substances as serious injury and death may occur.

## Features:

- ✓ Compatible with a broad temperature range from Ambient +5 to 150°C.
- ✓ Transfers dry heat with high efficiency to warm, thaw, and incubate samples at constant temperatures.
- ✓ Accepts and supports any shape vessel, including, tubes, plates, dishes, and other non-water-tight vessels.
- ✓ Stays clean and disinfects easily.

## Tips and Hints

- ✓ Keep bath dry of liquids during use to avoid damaging bead performance.
- ✓ Wash clean of any spills with soap and water; *completely dry* beads before returning to the bath.
- ✓ If necessary, disinfect beads periodically with 70% ethanol solution; spray lightly then stir into bath.
- ✓ Avoid using strong acids, bases, including bleach solutions, and detergents, which can tarnish the Beads.
- ✓ Always use gloves when handling beads to avoid contaminating the bath.
- ✓ Beads have been shown to perform for a minimum of 2 years from date of manufacture when using good laboratory practices. If beads become dull with misuse or do not perform as intended, it is recommended to replace the beads.

## Warranty

DryTemp™ comes with a 2-year warranty.

## Notifications

The trademarks mentioned herein are the property of Lab Armor, LLC.  
Lab Armor® Beads are patent pending.  
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## Specifications

<b>Temp. Range:</b>	Ambient +5 to 150°C
<b>Temp. Resolution:</b>	0.1°C
<b>Temp. Accuracy:</b>	+/- 0.2°C
<b>Temp. Increments:</b>	0.1°C
<b>Timer:</b>	1 to 999 minutes
<b>Dimensions (WxDxH)</b>	8.7 x 10.3 x 3.2 in (22 x 2 x 8 cm)
<b>Chamber Dim. (WxDxH)</b>	3.25 x 5.5 x 2.5 in (8.4 x 14 x 6.4 cm)
<b>Chamber:</b>	Fast Heating Aluminum
<b>Operating Temp. Range:</b>	+4°C to + 65°C
<b>Warranty:</b>	2 Years
<b>Electrical:</b>	115V or 230 V 50-60Hz

## Set up and Operation

Use the following procedures to set up your DryTemp™ system.

### Preparation

Place DryTemp™ on a stable, flat surface away from air vents and any equipment exhaust vents. Plug DryTemp™ into a properly grounded outlet of the correct voltage. Insert block(s) filled with Lab Armor® Beads into the heating well. **Caution: blocks may be hot!** Using the switch on the back of the unit, turn the power on. The DryTemp™ will make a “beep” sound, illuminate each digit on the display left to right and briefly illuminate the red and green lamps while it performs a unit test. After the unit test, the display will begin showing the well temperature and the unit will begin heating the block to the previously set temperature and flashing the **Heating** lamp.

### Setting the Temperature

Use the **Up** and **Down** arrow buttons to increase or decrease the temperature setting. The temperature can be set in tenths of a degree C. Once the temperature is set, the display will then revert to showing the well temperature and the **Heating** lamp will flash until the set temperature has been reached. The temperature setting is automatically remembered if power is turned off or if the power is lost.

### Using and Setting the Timer

DryTemp™ has a built-in digital timer function that sounds a “beeping” alarm when the set time has been reached. The timer does **NOT** turn off the heater when the set time is reached. The Timer feature alerts the user that the time setting has been reached but does not disturb samples being heated.

Press the **Mode** button to illuminate the **Timer** lamp and place DryTemp™ into the timer set mode. Use the **Up** and **Down** arrow buttons to set the desired time in one-minute increments on the display. Once time has been set and after about three seconds, DryTemp™ will make a “beep” sound, illuminate the green **Temp-Run** lamp and automatically begin the timer. The display will revert to showing the well temperature and the red **Timer** lamp will be extinguished. When the display shows the well temperature, pressing the **Mode** button will cause the display to show how much time remains on the timer in minutes.

When time has expired, the DryTemp™ will briefly sound the “beeping” alarm and flash the red **Heating** lamp. The display will show a set of characters that represent the word “OVER” with only a partial R shown. Sample heating will be unaffected. At this point the user can press the **Mode** button to start the timed cycle over again or press the **Down** arrow button and the display will show the current well temperature without re-starting the timer. The green **Temp-Run** lamp will remain illuminated until the Timer mode is entered again or the power is turned off.

It is best to allow DryTemp™ to first reach the desired temperature before setting and using the timer function. Because the timer does not affect sample heating, it can also be used as a general-purpose timer for other lab activities. The timer setting is automatically remembered if the unit power is turned off or if power is lost.

## User Calibration Function

DryTemp™ is calibrated at the factory and is highly accurate. DryTemp™ also has a user calibration feature, which allows users to fine adjust the dry bath display to match certified lab reference thermometers or reference temperature sensing meters. Adjusting unit calibration should only be attempted using certified thermometers or temperature sensors with accuracy certificates. Use the following procedure to calibrate the DryTemp™:

1. The unit must be turned off. Press and hold down the **Mode** button. While holding down the **Mode** button, turn the unit on using the power switch at the back.
2. The display will step through the digits and then show the current temperature setting with the right hand digit flashing. Release the **Mode** button after the right hand digit begins flashing.
3. Set the temperature to the desired calibration temperature using the **Up** and **Down** buttons.
4. Press and release the **Mode** button. The unit will start heating to the set calibration temperature.
5. Allow 45 minutes for DryTemp™ to equilibrate at the set calibration temperature. The right hand digit will begin flashing again when the dry bath has equilibrated at the calibration temperature.
6. After the display begins flashing, use a **certified** reference thermometer or temperature sensor to check the Bead Block™ or sample temperature. Insert the thermometer into the Beads at about 3 to 5 cm. If the reference thermometer shows a difference from the display, you can adjust the display to match the thermometer by using the **Up** and **Down** buttons.
7. After using the reference thermometer and adjusting the display if necessary, press the **Mode** button to exit the calibration mode. DryTemp™ will then be calibrated to the reference thermometer at the selected temperature point and ready for operation.

### EER Code on the display

If the DryTemp™ temperature sensor is shorted or senses an ambient temperature below 0°C, the display will show the error code EER.

## DryTemp™ Use

Use the following procedures to optimize the use of your DryTemp™ system.

### Optimization and Validation for Specific Applications

Although the DryTemp™/Bead Block™ system is a suitable alternative to solid dry bath aluminum heat blocks, in general, it is best practice to always verify and validate new laboratory equipment for compatibility with current protocols. The goal is to reproduce the conditions of the original experiment performed in a standard dry bath. For most applications, optimization is not required. But, in order to determine if bath optimization or protocol adjustments are necessary for a given application, first compare performance in both a solid dry bath aluminum heat block and in Bead Block™. Once a protocol is validated, in order to ensure reproducibility, always keep the established conditions constant between experiments for a given application.

### Bury Vessels in Beads to Avoid Condensation

When using a solid dry bath aluminum heat block, vessels have an internal temperature gradient since only a portion of the vessel is recessed into the block and the remaining is exposed to room temperature. This often produces condensation under the lid of a vessel, which can alter the concentration of the sample. In a Bead Block™, the following can be performed to eliminate condensation under the lid. Incubate vessels at an angle and bury or completely submerged the vessel into Lab Armor®™ Bead.

### Technical Support

For additional product and technical information, such as product manuals or technical articles on the use of DryTemp™ and Lab Armor® Beads for common laboratory applications, please visit our website at [www.labarmor.com](http://www.labarmor.com). For further assistance, please email our Technical Support team at [www.info@labarmor.com](mailto:www.info@labarmor.com).