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# Digital Dry Bath

## Instruction Manual

Catalog # 1660562  
1660563





## Bio-Rad Technical Support Department

The Bio-Rad Technical Support Department in the U.S. is open Monday through Friday, 5:00 AM to 5:00 PM, Pacific time.

**Phone:** 1-800-424-6723, option 2

**Email:** Support@bio-rad.com (U.S./Canada only)

For technical assistance outside the U.S. and Canada, contact your local technical support office or click the Contact Us link at [www.bio-rad.com](http://www.bio-rad.com).

## Legal Notices

Bio-Rad reserves the right to modify its products and services at any time. This instruction manual is subject to change without notice.

Although prepared to ensure accuracy, Bio-Rad assumes no liability for errors, or for any damages resulting from the application or use of this information.

## Warranty

The Digital Dry Bath and associated accessories are covered by a standard Bio-Rad warranty. Contact your local Bio-Rad Laboratories office for details of the warranty.

## Safety Warnings



A **Warning!** symbol in this manual warns you about potential sources of injury or harm, including risk of electrical shock.



**Warning!** Do not attempt to repair or remove the outer case of the Digital Dry Bath or other accessories. If you open this instrument, you put yourself at risk for harm to body or equipment from electrical shock.



This symbol on the instrument indicates the presence of a potential hazard that could result in electrical shock.



This symbol on the instrument indicates a hot surface that may result in injury including burns.

## WEEE Disposal Requirements



The Digital Dry Bath contains electrical or electronic materials and is marked with the crossed-out wheeled bin. It should not be disposed of as unsorted waste and must be collected separately, according to European Union Directive 2012/19/EU on waste and electronic equipment — WEEE Directive.

Before disposal, contact your local Bio-Rad representative for country-specific instructions.

## Ordering Information

Catalog#	Description
1660562	<b>Digital Dry Bath with 1.5 mL Heating Block, 120 V</b>
1660563	<b>Digital Dry Bath with 1.5 mL Heating Block, 230V EU/UK</b>
1660571EDU	<b>Digital Dry Bath with 4 Heating Blocks, 120 V</b>
1660572EDU	<b>Digital Dry Bath with 4 Heating Blocks, 230V EU/UK</b>
1660565	<b>Digital Dry Bath Heating Block, 0.5 mL</b>
1660566	<b>Digital Dry Bath Heating Block, 2.0 mL</b>
1660567	<b>Digital Dry Bath Heating Block, 15 mL</b>
1660570	<b>Digital Dry Bath Heating Block Kit , 0.5 mL, 2.0 mL and 15 mL</b>



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# 1 Introduction

Bio-Rad's Digital Dry Bath provides comprehensive designs for a wide variety of life science research applications. Excellent temperature control can deliver accurate and reliable experimental results from one experiment to another.

# Specifications

Table 1. Digital Dry Bath Specifications.

Description	Specification
Temperature range	Ambient +5°C to 150°C
Temperature display resolution	0.1°C 4-digit LED
Temperature uniformity	±0.2°C (at 37°C in block)
Temperature accuracy	±0.3°C
Temperature controller	Microprocessor, user calibratable
Timer	1 to 99 hours, 59 min or continuous in 1-min increments
Operating altitude	≤2,000 meters
Control	PI microprocessor controller
Dimensions W x D x H	8.3 x 12.4 x 4.7 in. (21 x 31.5 x 12 cm)
Weight	7.0 lb (3.2 kg)
Location	Indoor use only
Polution Raiting	Pollution Degree 2
Working Environment Temperature	5-40°C

## Electrical Requirements

1660562	120 V +/- 10%	50/60 Hz, 1 A, Fuse 1.6 AT
1660563	230 V +/- 10%	50/60 Hz, 0.5 A, Fuse 1 AT

## General Safety Recommendations

- **Do not** use this product in an explosive environment
- **Do not** use in the presence of flammable or combustible material
- **Do not** heat substances that react violently when heated
- **Do not** touch block when hot or when unit is heating. Use block lifter
- **Do not** spill liquids into the well area or into the unit's side vent holes
- **Connect unit** only to a properly grounded outlet



**Warning!** Do not touch area around block or block well when unit is hot. This can result in bodily injury, including burns.



**Warning!** Modification of this product or use of the product in any manner not specified by this instruction manual may cause injury and/or may void the warranty.

# 2 Instrument Installation

## Instrument Components

- Digital Dry Bath basic unit
- Digital Dry Bath lid
- Power cord(s)
- Block Lifter
- Instruction manual
- 1.5 mL heat block

## Unpacking the Instrument

1. Unpack the Digital Dry Bath carefully and store all packaging materials for future use.
2. Examine the instrument carefully for any damage. Ensure that all parts of the instrument listed above are included with the product. If any item is missing or damaged, contact your local Bio-Rad office.
3. Check the information on the instrument label on the rear of the machine for the model type and serial number.
4. Check that the power cord has a prong configuration that is compatible with the local standard.



## Instrument Placement

When selecting a location for the Digital Dry Bath consider the following:

- The instrument should be placed on a smooth, horizontal and nonflammable surface
- The instrument must be in an upright position during operation
- Ensure that there is sufficient clearance along the back of the instrument for air circulation
- Ensure that there is sufficient clearance around and above the instrument to allow for easy access to the instrument and opening of the lid
- Avoid locations that are subject to drafts or moving air from heating or air conditioning vents or air blown by other equipment



**Warning!** Do not use this instrument near flammable or explosive materials.

**Note:** Place the instrument so that the power cord is readily accessible and can be pulled out of the electrical outlet easily.

## Connecting Power

1. Plug the supplied power cord into the back of the instrument.
2. Plug the power cord into the appropriate grounded outlet.



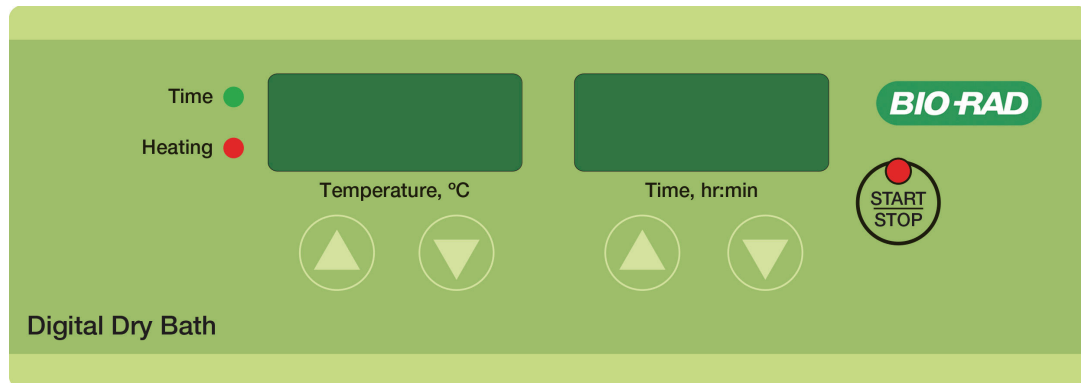
**Warning!** Do not store or operate this instrument near a sink or water source as contact with water could cause electrical shock



**Warning!** The outlet voltage must match the voltage listed on the instrument label. Failure to supply appropriate power may damage the instrument and void warranty.










# 3 Operating the Digital Dry Bath

## Introduction



1. **On/Off power switch** — located on back of unit. Turns primary power on and off.
2. **Start/Stop button** — starts and stops the unit. Associated red indicator light is illuminated when unit is in heating mode, and is off in temperature set and timer set modes.
3. **Heating indicator light, red** — illuminates when unit is in heating mode and unit is applying heat to the block. Will be on continuously during heat-up; cycles on and off when the unit is at the set temperature.
4. **Time indicator light, green** — illuminates when unit is in running mode.
5. **Temperature up/down arrows** — raises/lowers set temperature when unit is in set mode.
6. **Timer up/down arrows** — raises/lowers set time when unit is in set mode.

## Basic Operations

1. Place the Bio-Rad Digital Dry Bath on a sturdy and level surface in a safe, dry place, away from laboratory traffic.
2. Ensure that the power switch is Off, then plug the three-pronged power cord into a grounded three-prong AC outlet of the appropriate voltage.
3. Select a suitable heating block and use the lifter to place the heat block into the dry bath well.
4. Turn the power On.
5. Run temperature calibration procedure when using the instrument for the first time (see Section 4 Calibration).
6. Press the Temperature arrows  or  to adjust setting to the desired temperature.
7. Press Timer arrows  or  to adjust to the desired heating time. To select the continuous hold function, adjust the time to 00:00. The time display will show hold after pressing  to start the unit.
8. Press  to start heating.
9. If timer must be reset during heating, press  once to deactivate heating, reset the timer and then press  to restart the heating.
10. Press  again to stop the unit.
11. If using the lid, align the magnets with the shaded area on the instrument's surface and the lid will attach itself to the housing. To remove the lid, press one hand firmly on the housing and lift the lid with the other. The lid cannot be used with tubes that extend >25 mm above the heating block.

# 4 Calibration

Calibration allows the unit temperature display to be adjusted or matched to the temperature of a single sample or to a calibrated thermometer, thereby making an independent temperature measure of the block.

The Digital Dry Bath is calibrated at the factory at 37, 60, 90, 120, and 140°C using a standard 20 x 13 mm heating block. You may choose to recalibrate the unit for the following reasons:

- Use of a heating block with a high rate of heat loss, such as a 15 ml heating block; recalibration can improve accuracy with that heating block
- Use of very loose fitting or oddly shaped vessels; recalibration can help match the display temperature to the actual sample temperature
- Use of a temperature that is much higher or lower than 40°C; recalibration can improve accuracy at that temperature

To calibrate the Digital Dry Bath, use the following procedure:

1. Turn the unit off using the On/Off power switch.
2. Place a thermometer of known accuracy into the block thermometer hole or place a thermocouple or other temperature sensor in your sample. Make sure there is a good fit between thermometer and heat block or good contact between sensor and sample or sensor and block.

**Note:** Thermometers used for calibration purposes should have a written calibration certificate and be traceable back to NIST or some other certified body. General lab thermometers are often not accurate enough for calibration work.

3. Press and hold Start/Stop while simultaneously powering up the unit by flipping the On/Off power switch.
4. Once you hear the continuous beeping sound from the dry bath, release both buttons. The left display will show a set temperature, and the right display will show Adjt.
5. Use the Temperature Up/Down arrows to set the temperature at which you want to calibrate the unit. Then press Start/Stop.
6. Allow time (up to 30 minutes) for the unit to heat up to your set temperature and to equilibrate at this temperature. The left display will start flashing when equilibration is reached.
7. After the left display has started flashing, read the thermometer (or sensor meter) and use the up down arrows to adjust the display to the thermometer or sensor reading. Then press Start/Stop.
8. The unit will beep, then begin to automatically adjust its operating temperature to your original set point with the recalibration factor included. Set the desired time, allow sufficient time or the unit to re-equilibrate (~10 min), then again compare the thermometer or sensor reading to the calibrated display. They should match closely. If they don't, repeat the calibration procedure.

# 5 Troubleshooting

Service Problem	Explanation/Solution
Display/Indicator lights do not light up	<ol style="list-style-type: none"> <li>1. Check power cord and outlet</li> <li>2. Check On/Off power switch</li> <li>3. Check fuse</li> <li>4. Call Bio-Rad Technical Support Department</li> </ol>
Unit not heating	<ol style="list-style-type: none"> <li>1. Confirm set point is not below room temperature</li> <li>2. Check that Start/Stop indicator light is illuminated</li> <li>3. Press Start/Stop</li> <li>4. Call Bio-Rad Technical Support Department</li> </ol>
Unit display overshoots set temperature	<ol style="list-style-type: none"> <li>1. This is normal operation. The display set point overshoots on initial heat-up, but the heating block and sample do not overshoot.</li> <li>2. See Section 2 Operating the Digital Dry Bath in the manual</li> </ol>
Block or sample temperature is not the same as display temperature	<ol style="list-style-type: none"> <li>1. Confirm that the unit is in heating mode</li> <li>2. Check that unit is not sitting in a drafty area</li> <li>3. Check accuracy of thermometer</li> <li>4. Verify thermometer is making good contact with the heat block</li> <li>5. Follow calibration procedure</li> </ol>
Factory Reset	<p>The unit can be reset to all the calibration points that were set at the factory. Press and hold the two temperature buttons, then turn on the power switch. The display will show the version number (represented as "U-X.X", where X values depend on which firmware version was installed), then switch to normal heating mode.</p>
Display shows Err1	<p>Displays when the incorrect temperature calibration is entered, or if there is an internal problem with the stand alone temperature sensor.</p>
Display shows Err2	<p>During the normal heating mode, if the stand alone temperature sensor identifies that the actual temperature is 10°C higher than set temperature, the unit will display this error.</p>
Display shows Err3	<p>If the set temperature is lower than the block temperature by 10°C or more, the unit will not function and will display this error message.</p>
Display shows Err4	<p>If the unit does not reach the set temperature in 2 hours, the unit will stop heating and display this error message.</p>

# 6 Maintenance and Cleaning Instructions

## Cleaning

Ensure that the Digital Dry Bath and block are cool and the power cord is disconnected before performing any cleaning or maintenance. Repair or maintenance should be performed only by an authorized service technician.

The dry bath may be cleaned with a moist cloth containing a mild soap solution. Do not immerse the dry bath in water or any liquid.

The heating blocks may also be cleaned in a mild soapy solution. Be sure that all items are thoroughly dry before attempting to connect the cord or use the unit.

## Spills

In the event liquid is accidentally spilled into the bath or well area, disconnect the plug from the outlet and turn the unit upside down to minimize liquid contact with the internal components. Remove the bottom cover and inspect to assure liquid has not contacted heater elements, electronic controls, or connectors. Have a qualified service technician clean the unit and replace any damaged parts.



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