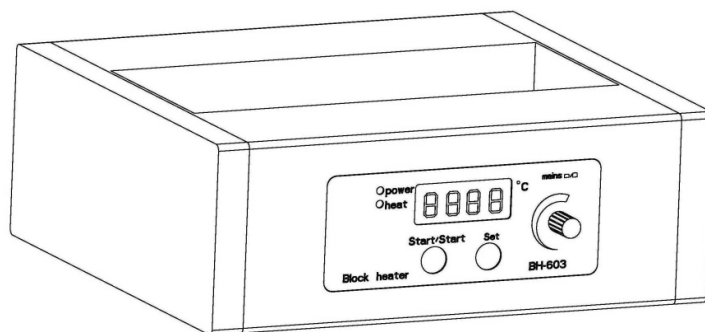


**BLOCK HEATER – MODELS DB-3-200-01, DB-3-130-01,
DB-2-130-01, DB-2-200-01, DB-2-200-02,
DB-1-130-01 and DB-1-200-01**

OPERATING MANUAL

VERSION 3.11



BEFORE USE:

Please read the following instructions:



Examine the integrity of the box before open. If box is broken, please check whether the instrument damaged. If so, please call your local distributors immediately. Do not try to plug into power outlet!



Read the Manual first before operating the instrument



For indoor use only



Use in a well-ventilated area



Ambient temperature range +5°C to +40°C



Relative humidity not exceeding 80%



Mains supply fluctuation not exceeding 10%

Warning



ALL UNITS MUST BE GROUNDED

Check the line supply is sufficient to meet the power requirement of the unit!

Warranty

Dynalab Corp. provides a 90 day warranty for the block heater.

This warranty does NOT apply if damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by incorrect installation, adaptation, modification, fitting of non-approved parts or repair by unauthorized personnel. When returned the defective products, customers should be responsible for the shipping and insurance costs

LIMITATION OF LIABILITY

NOTWITHSTANDING ANY OTHER PROVISIONS HEREIN, UNDER NO CIRCUMSTANCES IS EITHER PARTY LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, INDIRECT, MULTIPLE, ADMINISTRATIVE, OR PUNITIVE DAMAGES, OR ANY DAMAGE OF AN INDIRECT OR CONSEQUENTIAL NATURE ARISING OUT OF OR RELATED TO ITS PERFORMANCE, WHETHER BASED UPON BREACH OF AGREEMENT, WARRANTY, OR NEGLIGENCE AND WHETHER GROUNDED IN TORT, CONTRACT, CIVIL LAW, OR OTHER THEORIES OF LIABILITY, INCLUDING STRICT LIABILITY, EVEN IF ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. THE COMPANY'S TOTAL LIABILITY INCLUDING, BUT NOT LIMITED TO, LIABILITY FOR INDEMNITY, DEFENSE, AND HOLD HARMLESS OBLIGATIONS IS LIMITED TO NO MORE THAN THE AMOUNT PAID TO THE COMPANY UNDER THE CUSTOMER'S ORDER AND THE CUSTOMER AGREES TO INDEMNIFY THE COMPANY FOR ANY EXCESS AMOUNTS. TO THE EXTENT THAT THIS LIMITATION OF LIABILITY CONFLICTS WITH ANY OTHER PROVISION(S) OF THIS AGREEMENT, SUCH PROVISION(S) WILL BE REGARDED AS AMENDED TO WHATEVER EXTENT REQUIRED TO MAKE SUCH PROVISION(S) CONSISTENT WITH THIS PROVISION

Overview

DB-3-200-01 and DB-3-130-01 are designed to accommodate three different format aluminum blocks. And it comes with block handling tool (see Figure 2) and glass thermometer.

DB-3-200-01 has the digital display and simple operation buttons to fit the needs of users in the lab and has two lights to indicate the status of the operation and process.

Operation of Analog Unit

1. Select the appropriate block. Make certain that the block is clean on all sides as well as the hot plate of the unit. This will ensure proper heat conduction.
2. Place the block into the well of the unit and insert the proper tubes into the block. Make sure there is a good fit between tube and well.
3. Plug in Mains Cable and turn the unit on in the back of the unit.

Setting Operating Temperature Analog Unit

1. Turn the Temperature Control Knob on in the front of the unit to the required setting (OFF or 1-9). The actual temperature of the block depends on the type of block and fit. Thermal contact between block and unit is crucial for best results.
2. Different designs of insert blocks may cause actual temperatures to vary and speed of heating to vary. Place a thermometer in the special thermometer hole in one of the aluminum blocks to indicate proper temperature.
3. The unit will heat if the set temperature is higher than the current block temperature. This will be indicated by the heater indicator light.
4. The heater indicator light will begin to flash when the set temperature is approached. It will flash more slowly when the temperature is beginning to stabilize.

Please note there will be a lag time between the heater and the block.

Operation of Digital Unit

For the digital: DB-3-200-01, DB-2-200-01, DB-2-200-02 and DB-1-200-01:

1. Put the block into the blocks compartment (see Figure 1A), use block handling tool (Figure 1B) to add and remove the block
2. Plug the power cord to the source, and make sure that the plug is firmly pressed. Turning on the switch on the back, and the light in the front will be on. The light will be flashing until the temperature reaches equilibrium. Use thermometer measuring the temperature, turn the knob to adjust temperature. Leave the Heated Block on to keep the temperature at stable level. It takes sometimes to reach the equilibrium.

ALWAYS KEEP THE MACHINE AWAY FROM DRAFTY AREA TO AVOID THE EFFECT OF THE ENVIRONMENTAL TEMPERAURE ON THE TEMPERATURE CONTROL OF THE BLOCK HEATERS!

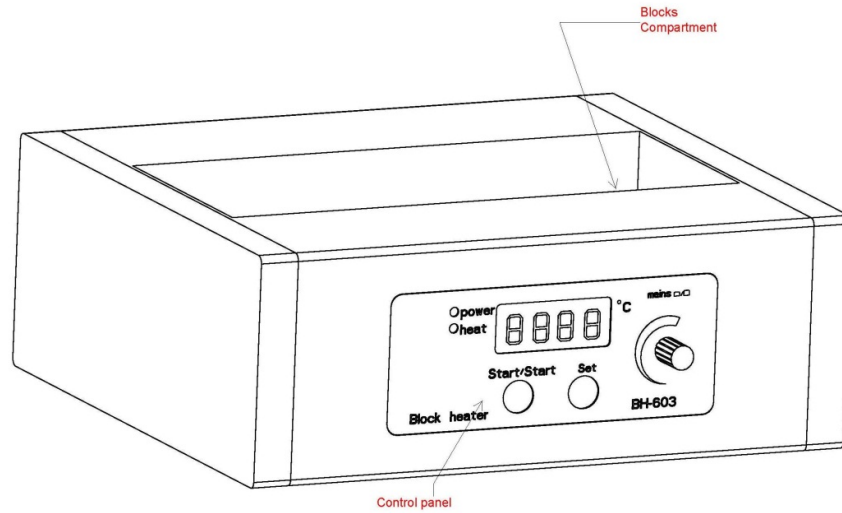


Figure1A.



Figure1B. Removing Tool

2. Plug the power cord to the source, and make sure that the plug is firmly pressed. Turn on the machine by switching the on/off switch (see Figure 2).



Figure 2: The rear view of the Block Heater. 1, on/off switch; 2, IEC power inlet; 3, fuse holder

3. When turning on the machine, the display will immediately show “_ _ _ _”, and then shows the actual temperature in Celsius. The “power” light is off at this time. And when the block temperature is over 50 °C, the “heat” light is on, otherwise, it is off, too.

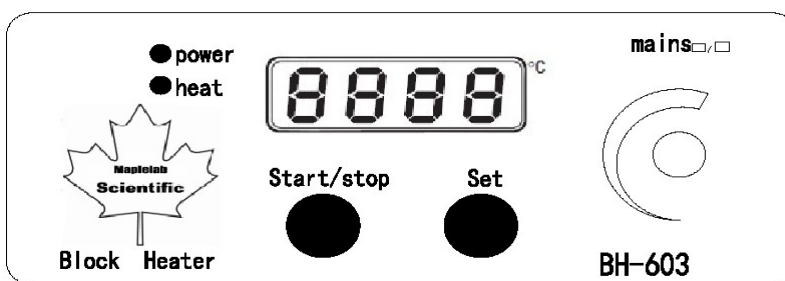


Figure 3: The front panel view of the DB-3-200-01

4. Setting Operating Temperature:

- Turn the Temperature Control Knob on in the front of the unit to the required setting (OFF or 1-9). The actual temperature of the block depends on the type of block and fit. Thermal contact between block and unit is crucial for best results.

- Different designs of insert blocks may cause actual temperatures to vary and speed of heating to vary. Place a thermometer in the special thermometer hole in one of the aluminum blocks to indicate proper temperature.

- The unit will heat if the set temperature is higher than the current block temperature. This will be indicated by the heater indicator light.

- The heater indicator light will begin to flash when the set temperature is approached. It will flash more slowly when the temperature is beginning to stabilize.

- Please note there will be a lag time between the heater and the block.

5. Press “Start/stop” button to start the operation. The “power” light is on and “heat” light is flashing at this point. When reaching the equilibrium, the “heat” light is steady on. The equilibrium point is set @ 0.1 degree of the accuracy. It might take longer time to reach.

Caution: when putting the cold test tubes or other vials, it may cause the tubes/vials to break!

6. When running, i.e. the “power” light on, the set point of the heated block could not be changed. To change the set point of the temperature, press “Start/stop” button to stop the run (the “power” light will go off), and then change the set point as indicated in the step 4.

7. The DB-3-200-01 always shows the actual temperature reading. To see the set point temperature, press the “Set” button, and the LED will show the set point temperature.

8. After use, wait until the block cool down to below 50 degrees (the “heat” light is off) and turn off the block heater.

Calibration

The digital types of Block Heaters can easily be calibrated to show any blocks/vials and tubes' temperature in the displayed LED. Due to the differences in the mass of the various aluminum blocks, environmental air temperature, thermal radiation, and many other factors, the Block Heater may need to be re-calibrated when switching different blocks and when the environmental changed. The DB-3-200-01 has been calibrated based on 16 mm Blocks.

DB-3-200-01 can be calibrated using one to five points. The calibration steps are described in the followings:

1. Prepare the thermistor, or thermometer temperature measurement devices. You can calibrate the block or even the temperature of the solution in the vials/tubes. Make sure the thermistor or sensor well contacted with the blocks or vials/tubes solution.
2. Calibration could not be made during running (i.e. the "Power" light on). Press "Start/stop" button first to stop run if the machine is running.
3. Press "mains" turning knob (please note that it should be "press" not "turn") first, then press "Start/stop" button, simultaneously release both, the display will show "C __ X", which X indicates the stage of the calibration. For example, in the first calibration, it will display "C __ 1".
4. Press "set" button, and turn the "mains" turning knob to the desired temperature calibration point, release the "set" button, and press "mains" to start the calibration. In this time, the "power" light will be on, and the "heat" light will be flashing. The display showed "C __ X" flashing.
5. When reaching the equilibrium set temperature, the display will stop flashing. In this stage, you can enter the actual block or vial temperature from reading the block or vial temperature from external temperature measurement device: Press "set" button and turning the "mains" knob to the actual temperature value, release the "set" button, and press the "mains" knob. The machine will take the real value to take effect in the next run. In this case the CL-201 will display "C __ X+1" (X + 1 indicates the next number of the calibration stage) and continue to flash: Repeat the step 4 to enter the next calibration set temperature.

The maximum calibration point is five. When finishing five point of the calibration, the machine will automatically exit from the calibration program and return to the pre-start status: the "power" light will go off and the "heat" light will go "on" when temperature is over 50 °C.

6. The calibration can be interrupted anytime by pressing "Start/stop" button and "mains" knob as indicated in step 3: If the process interrupted before the completion of the calibration stage, the machine will only take the previous calibration point. For example, if the process interrupted between the first and second point calibration stages, then the machine will take the first calibration point and becomes one-point calibration; If the

process interrupted between stage 4 and 5, then the machine will take the previous 4 points data as the calibrated value, and becomes 4-points calibration.

7. During calibration, the calibration set point could not be changed unless interrupting the process by pressing the “Start/stop” and “mains” knob as indicated in the step 3.

8. Always using the same type of the block to avoid the discrepancy. The calibrated displayed value only accurately indicates the value of the block/vial that actually measured from external temperature measurement device.

For DB-2-200-02:

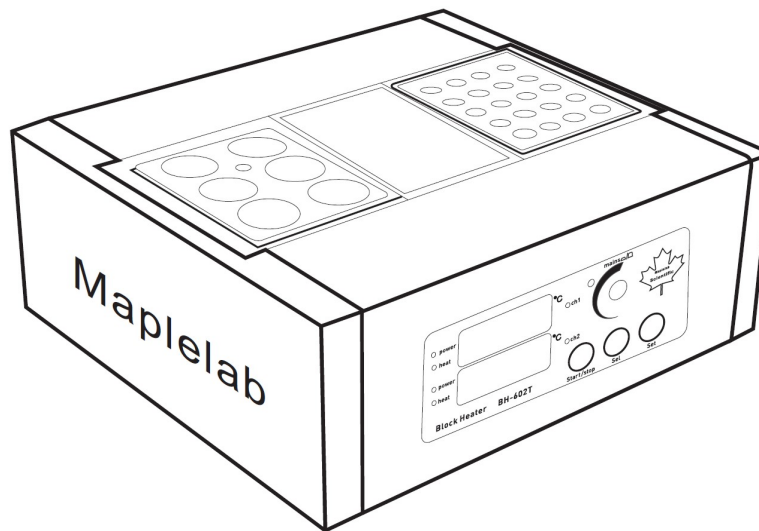


Figure 4: DB-2-200-02 Overview: Ch1: The left hand side (with six-hole block); Ch2: The right hand side with 20 hole block)

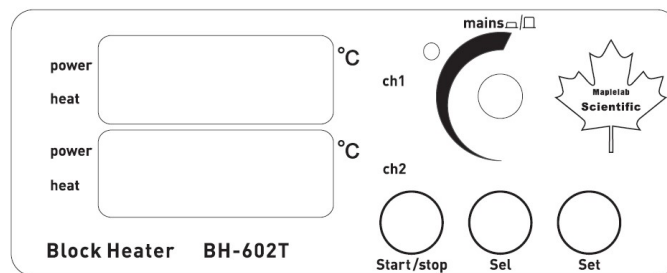


Figure 5: The front panel view of the DB-2-200-02

Please make sure that the correct channel corresponding to the designated block before to do the operation. The DB-2-200-02 comes with additional LED display and “sel” button for users to select the channel. All operation and calibration is the same as in DB-3-200-01, but before to do that, please press the “sel” button to select the channel (the LED light will be ON when the channel got selected).

Selection of the Aluminum Blocks

We provide various aluminum blocks to accommodate different vials/tubes:

| Part Number | Tube size (Diameter or ml) | Number of the holes | Hole sizes (Diameter X Depth) in mm |
|-------------|----------------------------|---------------------|-------------------------------------|
| DB0001 | 27 mm | 6 | 26.75 X 48 |
| DB0002 | 0.5 ml | 30 | 7.9 X 15.6 + 11.2, 9° taper |
| DB0003 | 0.2 ml | 96 | 6.0 X 17.3, 9° taper |
| DB0005 | 1.5 ml | 20 | 10.7 X 22.5 + 13, 9° taper |
| DB0006 | 50 ml Flat bottom | 2 | 45 X 46 |
| DB0007 | 10 mm | 20 | 10.8 X 35 |
| DB0009 | 2 ml | 20 | 10.5 X 33 |
| DB0010 | 13 mm | 20 | 13.5 X 47 |
| DB0013 | 1.5 ml | 20 | 10.7 X 14, 9° taper |
| DB0015 | 12 mm | 20 | 12.5 X 47 |
| DB 0015-33 | 12 mm | 20 | 12.5 X 33 |
| DB0016 | 16 mm | 12 | 16.5 X 47 |
| DB0017 | 2 ml | 20 | 10.5 X 47 |
| DB0018 | 19 mm Block | 8 | 19.5 X 47 |
| DB0019 | 33 mm Block | 4 | 33.5 X 47 |

Technical Specification

| | |
|-----------------------------------|--|
| Working temperature range Ambient | +5°C to 200°C |
| Settable temperature range | 0.0°C to 200.0°C |
| Temperature stability | ±0.1°C at 40°C |
| Temperature stability | ±0.15°C at 100°C |
| Temperature display | 4 digit LED |
| Set point resolution | 0.1°C |
| Set point to accuracy | ±1°C |
| Electrical supply | Voltage Cycles Power 230V 50Hz-60Hz 650W or 110V-120V 50Hz-60Hz 650W |

Declaration of Conformity

These products listed in this manual comply with EN 61326-1: 2006 and fulfill EMC testing requirement of Medical Device Directive (2004/108/EC) listed in the report number CE2012-OTE8003E; and EN 61010-1 plus EN 61010-2-010: 2003 of the LVD directive 2006/95/EC in the listed report number CE2012-AVE8006S.

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Signed:

Date:

Inspection Report

Model _____

Serial Number _____

Safety

1. Integrity

√

2. Packing status

√

3. Correct warning label

√

4. Electrical earth continuity

√

5. Electrical Insulation

√

6. Electrical Flash Test

√

Functional

1. Visual acceptance

√

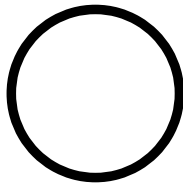
2. Appropriate control function

√

3. Indicators

√

Quality Control Inspector



Dynalab Corp. | 175 Humboldt Street, Suite 300 | Rochester, NY 14610

Tel: 800-334-7585 | Fax: 585-334-0241

www.dynalon.com | E: dynaloninfo@dyna-labware.com