Labotronics

Dry Bath Incubator

LB-60DBI

USER MANUAL

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1. Safety Measures

1) Before starting up, carefully read the operating instructions and ensure you follow the safety precautions.
2) Ensure that everyone can easily access the operating instructions.
3) Ensure that the appliance is only operated by qualified personnel.
4) Follow the safety instructions, guidelines, workplace health and safety requirements, and accident prevention procedures.
5) Protective ground contact, or earthing, is required for the socket.
6) Before turning on the device for the first time, check that the connector cable is appropriate for the kind of socket used and that a safe protective earth connection is established.
7) Burn risk! Be cautious when handling the heating plate and housing components. More than 120°C can be reached with the heating plate. After turning off, pay attention to the heat that remains. Unless the device is cold, it cannot be moved!
8) Avoid using the device underwater, with hazardous materials, or in explosive environments.
9) The appliance should be placed in a large space on a level, sturdy, clean, dry, non-slip, and fireproof surface.
10) The base plate needs to be undamaged and clean.
11) The mains voltage and the voltage indicated on the type plate must match.
12) The mains cord socket needs to be conveniently located.
13) The heated mounting plate must be kept away from the power supply line and the cables leading to the external sensors.
14) Before using the device and its accessories, ensure they are free of damage. Do not use broken parts.
15) **Caution!** This device can only be used to process or heat media whose flashpoint is higher than the 130°C safety limit.
16) Be cautious of risks because:
    - Flammable materials
    - Low-boiling-temperature combustible media
    - Incorrect container size
    - Overfilling of media
    - Unsafe condition of the container.
17) Only process material that will not have a hazardous reaction to the additional energy generated during processing. This also holds for any additional energy generated in other ways, such as light irradiation.
18) Keep in mind that contamination could result in unfavourable chemical reactions.
19) Put on your safety equipment according to the media's hazard classification. Otherwise, there is a risk from:
    - Splashing and evaporation of liquids
    - Ejection of parts
    - Release of toxic or combustible gases
20) Place the PT 1000 external temperature sensor in the hole designated for that purpose in the temperature control block, or submerge it at least 20 mm deep in the medium.

21) When attached, the external temperature sensor PT 1000 must always be placed inside the block or medium.
22) Liquid media should only be heated with the block. The heating plate should never be directly covered with liquid media!
23) Always unplug the device before attaching any attachments.
24) The plug-in power supply unit must be removed to unplug the appliance from the mains supply.
25) For the equipment's safety:
    - Only professionals are permitted to open the appliance.
    - Avoid partially covering the instrument, such as with film or metallic plates. Overheating is the outcome of this.
    - Keep the device and its attachments safe from collisions and knocks.
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    - Note the minimal distances (less than 100 mm) above the assembly, between the devices, and between the devices and the wall.

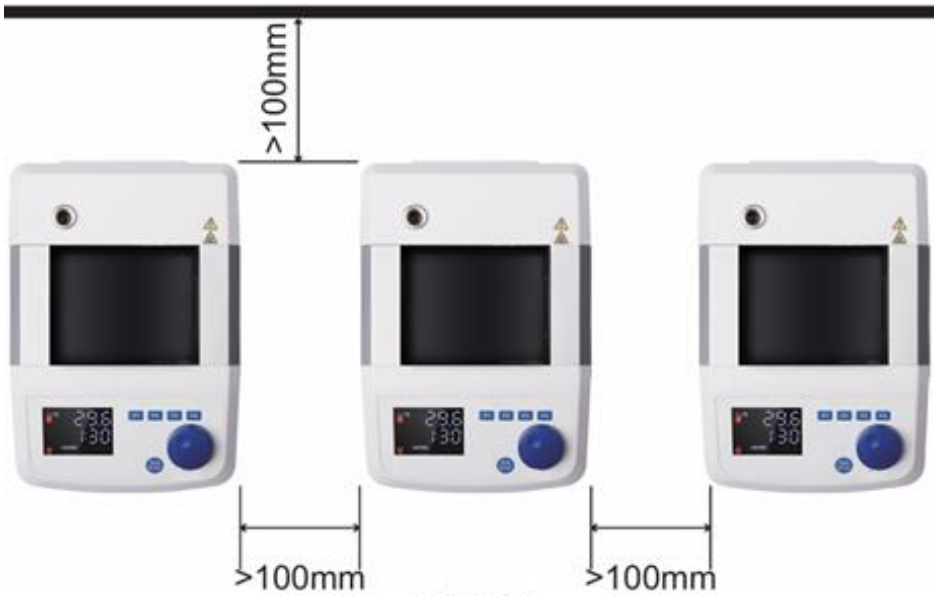

Figure-1

2. Introduction

Dry Bath Incubator LB-60DBI series is a microprocessor-controlled incubator unit with a temperature range of 5°C to 150°C. Features an aluminium heating block for rapid heating of samples, adding to its usage as a mini water bath. Temperature sensor allows direct temperature control in the sample vessel. Control knob aids in regulation of speed and temperature with maintenance of temperature uniformity at 0.2°C and 0.5°C. Integrated with a safety circuit for end user protection.

3. Features

- Single block model
- LED display for visualizing time and temperature
- Control knob - for regulating speed and temperature
- Displays temperature and time
- Displays error code for irregularity in temperature
- Multiple interchangeable blocks for processing different sample concentrates
- External temperature sensor for automatic calibration
- Fixed safety circuit (user safety)

4. Specifications

Model No.	LB-60DBI
Block capacity	1 Block
Heat output	165 W
Heating temperature range	5 °C – 150 °C
Heating rate	5 K/min
Temperature stability within the blocks at < 60°C	± 0.2 °C
Temperature stability within the blocks > 60°C	± 0.2 °C
Temperature Uniformity < 60°C	0.2 K
Temperature Uniformity >60°C	0.2 K
Permissible ambient temperature	5 °C – 40 °C
Fixed safety circuit temperature	180 °C
Permissible relative humidity	0.8
Time range	1 min - 99 hrs. 59 mins
Set-up plate dimensions	96 mm x 76 mm
Adjustment and display resolution	0.1 K
Protection class	IP 21
Set-up plate material	Aluminum alloy
Voltage	220 V - 240 V / 115 V
Frequency	50 Hz / 60 Hz
Power input	165 W
Dimensions (W x H x D)	152 x 86 x 190 mm
Weight	1.5kg

5. Applications

Used for In-Vitro diagnostic of specimens such as enzyme reaction, incubation and activation processes, coagulation studies, restriction digest and polymerase chain reaction, Hot Start thermocycler reactions.

6. Instrument Introduction

Instrument Structure:

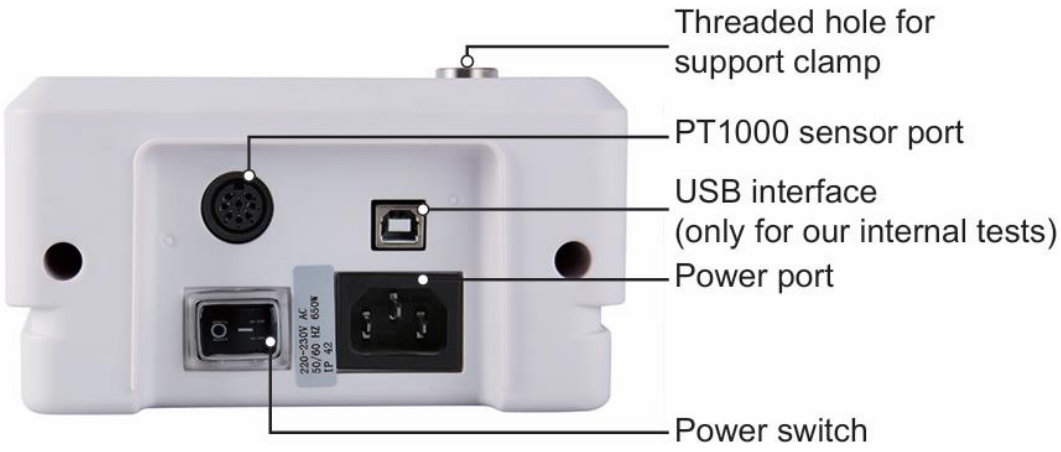

Figure-2 Rear View

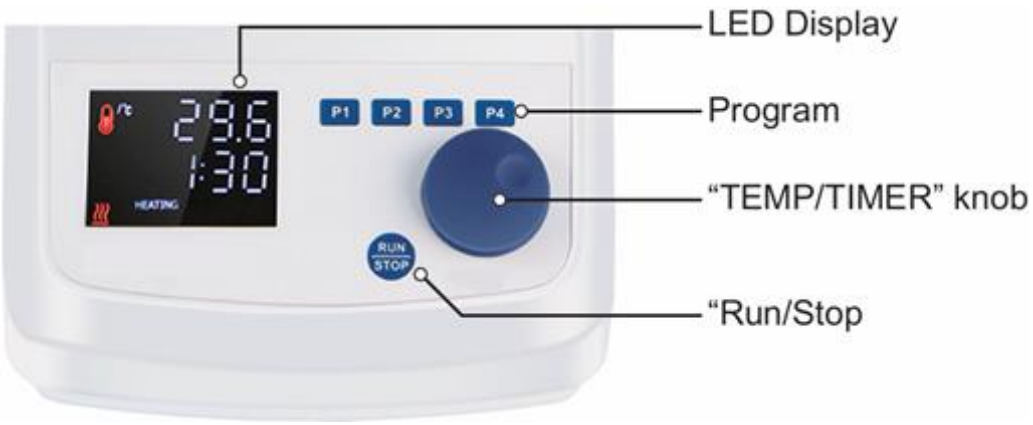

Figure-3 Front view

7. Operations

7.1 Unpacking

Examine the device for damage after carefully unpacking it. It is crucial to identify any damage caused by transportation as soon as the equipment is unpacked.

7.2 Operation instructions

7.2.1 Temperature Setting

Only when the machine is turned on can the temperature be adjusted; it cannot be changed while the machine is operating. When you press the blue **"TEMP/TIMER"** knob, the temperature value on the LED display will flash. You can then adjust the temperature by rotating the knob horizontally.

7.2.2 Time Setting

Only after the machine is turned on can the time setting be used; it cannot be used while the machine is operating. The time value on the LED display will flash once you press the blue **"TEMP/TIMER"** knob twice. You can then set the time by rotating the knob horizontally.

7.2.3 Switch between Fahrenheit Temperature and Celsius Temperature

Press P1 and P2 at the same time to switch between the Fahrenheit and Celsius temperatures.

7.2.4 Program

1) **Create a new program**
   The system can store four temperature and time programs. To record the updated data as P1, P2, P3, or P4, accordingly, long-press P1, P2, P3, or P4 after the machine stops functioning.

2) **Program for quick operation**
   To access the related temperature and time data stored by the various programs, short-press P1, P2, P3, or P4. The blue knob can also be rotated by the user to select the various applications.

3) **Reservation mode**
   Press P1 and P3 at the same time to enter and exit reservation mode. The heating time can be reserved by the user in the reservation mode. Once the scheduled time has passed, the machine will begin heating up until the user turns it off. When the reservation mode is ended, the unit will instantly begin heating by selecting **"start"**, and the timing will begin to function once the predetermined temperature is attained. Once the predetermined duration has passed, the heating unit quits.

7.3 Temperature Calibration

Before being shipped, the instrument is calibrated. The user can calibrate the device again by doing the following if, for some reason, the displayed temperature differs from the real temperature.

1) When you simultaneously press P1 and P4, the system will enter the calibration mode. It is an internal probe calibration with CB01 displayed when the PT1000 is not attached. It may display CB02 or CB03 when the PT1000 is attached. External probe calibration is done manually with CB03 and automatically with CB02. Both the internal and external probe calibrations follow a similar procedure. The internal and external probes must be calibrated using internal and external probe calibration, respectively.
2) Press the blue **"TEMP/TIMER"** knob to switch between CB02 and CB03 when the PT1000 is attached. The CB02 automated calibration cannot function unless the external probe has been calibrated (it is calibrated before shipment). No additional thermometer is required when using CB02 mode; by selecting **"Run/Stop"** the calibration will begin automatically and proceed sequentially from 30°C to 90°C.
3) P1, P2, P3, and P4 designate the calibration points of 30°C, 50°C, 70°C, and 90°C, respectively, in the calibration mode. The calibration point must begin at 30°C when in automated calibration mode.
4) Place a thermometer into the block hole after inserting a high-boiling-point sample (such as glycerin) that is above 100°C. (Ensure that the thermometer probe is submerged in the sample and that the precision is within 0.1°C.) Ensure to insert the thermometer into the hole that is either in the centre of the block or near it.
5) The system will be in **"Heating"** mode when you press "**Run/Stop**".
6) After using the "**Holding**" mode for around half an hour, check the thermometer's readings. Press the **"TEMP/TIMER"** blue knob to change the machine's temperature based on the thermometer's measurement.
7) To preserve the calibration value and stop the system from heating up, press "**Run/Stop**".
8) To calibrate the calibration of other calibration points for an external probe, follow the same procedures as before. The steps are not necessary when in automatic calibration mode. When self-calibration is finished, the data will be immediately saved.
9) After the calibration, restart the device.

8. Maintenance

The appliance is influenced solely by its statistical failure rate and the natural wear and tear of its components. Only use cleaning solutions that have been specifically approved for use with our instruments.

Dyes	Isopropyl alcohol
Constructions materials	Water containing tenside/isopropyl alcohol
Cosmetics	Water containing tenside/isopropyl alcohol
Foodstuffs	Water containing a tenside
Fuels	Water containing a tenside

When cleaning, disconnect the main plug and keep moisture out of the appliance. When cleaning the instruments, put on the appropriate protective gloves. It is not permitted to submerge electrical instruments in the cleaning solution.

9. Troubleshooting

Error code:
The unit will display the relevant error code and emit a warning beep if it is unable to function correctly due to the following defects.

Item	Fault description	Fault code
1	External sensor short-circuit	E1
2	Internal sensor open circuit	E2
3	Internal sensor short-circuit	E3
4	The external sensor isn't in the block	E4

10. Block Selection

Accessory No	Block capacity
B1	Single block, Eppendorf tube, 20 x 1.5 ml, Φ 11.5 mm x 36.9 mm
B2	Single block, Conical tubes, 12 x 15 ml, Φ 17.1 mm x 44.5 mm
B3	Single block, Conical tubes, 5 x 50 ml, Φ 29.0 mm x 47.6 mm
B4	Single block, PCR tube, 30 x 0.5 ml, Φ 7.9 mm x 27.6 mm
B5	Single block, Micro tube combination, 6/10/5 x 0.5/1.5/2 ml
B6	Single block, Micro tube, 20 x 1.5 ml, Φ 11.1 mm x 39.1 mm
B7	Single block, Eppendorf tubes, 20 x 2.0 ml, Φ 11.5 mm x 38.1 mm
B8	Single block, Corning tubes,20 x 2.0 ml, Φ 10.9 mm x 38.1 mm
B9	Single block, test tube combination, 6/5/3 x 6/12/13/25 mm
B10	Single block, centrifuge combination, 4/3/2 x 1.5/15/50 ml
B11	Single block, Round tubes, 30 x 6 mm, Φ 8.3 mm x 48.4 mm
B12	Single block, Round tubes, 24 x 10 mm, Φ 10.7 mm x 48.4 mm
B13	Single block, Round tubes, 16 x 12 mm / 13 mm, Φ 13.9 mm x 48.4 mm
B14	Single block, Round tubes, 20 x 12 mm / 13 mm, Φ 13.9 mm x 48.4 mm
B15	Single block, Round tubes, 12 x 15 mm / 16 mm, Φ 17.5 mm x 48.4 mm
B16	Single block, Round tubes, 8 x 20 mm, Φ 21 mm x 48.4 mm
B17	Single block, Round tubes, 6 x 25 mm, Φ 26.2 mm x 48.4 mm
B18	Single block, Round tubes, 4 x 35 mm, Φ 35 mm x 47.6 mm
B19	Single block, Round tubes, 12 x 17 mm / 18 mm, Φ 19.1 mm x 48.4 mm
B20	Single block, vials, 20 x 12 mm, Φ 12.7 mm x 30 mm
B21	Single block, vials,20 x 15 mm, Φ 15.8 mm x 35 mm
B22	Single block, vials, 12 x 17 mm, Φ 17.8 mm x 45 mm
B23	Single block, vials, 12 x 19 mm, Φ 19.7 mm x 45 mm
B24	Single block, vials, 9 x 21 mm, Φ 21.7 mm x 45 mm
B25	Single block, vials, 8 x 23 mm, Φ23.8 mm x 45 mm
B26	Single block, vials, 8 x 25 mm, Φ 25.8 mm x 45 mm
B27	Single block, vials, 6 x 28 mm, Φ 28.8 mm x 45 mm
B28	Single block, vials, 15 x 16 mm, Φ 16.4 mm x 45 mm
B29	Single block, 10 x 8 PCR tube strips, 0.2 ml tubes
B30	Single block, 64 PCR tube strips, 0.2 ml tubes
B31	Single block, 2 x 6 cuvettes, 12.5 mm