A Geno Technology, Inc. (USA) brand name

Dual Temperature Dry Bath Incubator

Cat. No. BT1114, BT1115, BT1116

1-800-628-7730 ♦ 1-314-991-6034 ♦ info@BTLabSystems.com

Thanks for choosing BT Lab Systems' Dual Temperature Dry Bath Incubator. This operation manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully.

IMPORTANT SAFETY INFORMATION

- Please read this operation manual carefully before using the instrument.
- The operation, maintenance and repair of the instrument should comply with the basic guidelines and warning below. Ignoring these instructions will affect the life of the instrument and safety precautions.
- This product is an indoor Instrument.
- These units are designed for laboratory use by persons knowledgeable in safe laboratory practices.
- The operator should never open or repair the instrument. Opening or repairing the instrument will void the guarantee and can cause accidents.
- The power plug should safeguard against an electric shock. The 3-pin plug supplied with the instrument should be matched with a suitable grounded socket.
- The temperature of the metal block will be very high during the normal operation. This will produce scalding or boiling liquid. Do not touch any part of the body to the instrument to avoid scalding.
- The instrument should be used in an area with low temperature, little dust, no water, no sunshine or hard light and with good air circulation. Do not use where there is corrosive gas or a strong magnetic field. Keep far away from central heating, camp stove and other hot sources. Do not put the instrument in a wet and dusty area. The vent on the instrument is designed for aeration. Do not wall up or cover the vent. The distance between each device should be more than 100cm when there is more than one instrument.
- Power off when not in use. If the instrument will not be used for a long period, unplug, and cover with a piece of cloth to protect it from dust.
- In case of the following, unplug the instrument at once and contact BT Lab Systems.
    - The instrument comes into contact with liquid
    - The instrument gets soaked or burned
    - The instrument emits an abnormal sound or smell
    - The instrument is dropped or the outer shell damaged
    - The instrument functions abnormally.

MAINTENANCE

The well in the block should be cleaned with a cloth dampened with alcohol. If there are smudges on the instrument, clean it with a dry cloth.

Turn the power off before cleaning the instrument. Do not put cleaning fluid into the well of the block. Do not use corrosive cleaning fluid.

INTRODUCTION

The Dual Temperature Dry Bath Incubator has precise temperature control and is good for sample preparation. It has a microprocessor-controlled thermostat to replace traditional water bath devices. It can be used in the cultivation and preservation of samples, DNA amplification, the electrophoresis of denaturation and serum coagulation. Application sectors are pharmaceutical, chemical, food safety, environment, quality inspection, etc. It has a compact appearance and excellent performance.

KEY FEATURES

- Unique dual temperature control can individually control the temperature. It is a single instrument to meet the demand of many experiments.
- LED display, simple to use with dual time and temperature settings means simultaneous temperature and diminishing time display.
- Fast, uniform heating speed, accurate temperature control, high stability, low energy consumption with no noise.
- Built-in temperature calibration function, automatic fault detection and buzzer alarm function.
- Built-in over-heating protection device, safe and reliable, enhances the service life of the instrument.
- Compact, occupies little space.
- Various blocks for convenient replacement, easy to clean.
- High module sealed cartridge with cover can make 15 / 50ml high module totally enclosed with dry bath
- Heated model has option of external sensors to control temperature more accurately and directly.

NORMAL OPERATING CONDITIONS

Ambient temperature: 5 ° C ~30 ° C
Relative humidity: ≤ 70%
Power supply: AC 110V～ 50/60Hz

TECHNICAL SPECIFICATIONS

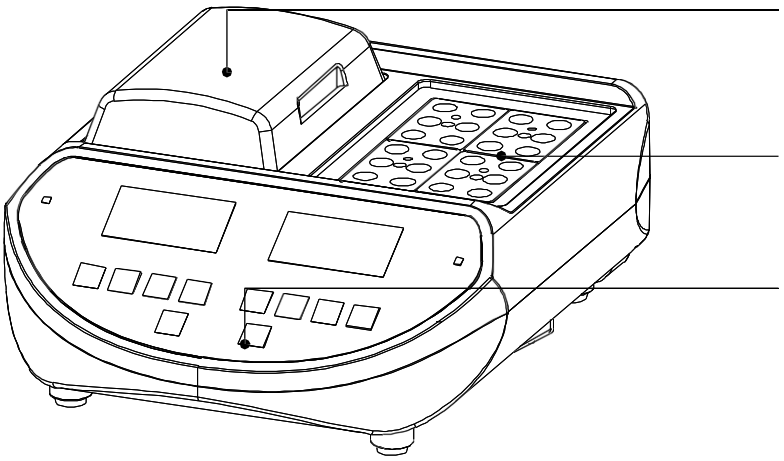
	BT1114 Dual Heating	BT1115 Dual Cooling	BT1116 Cooling Heating mixing type
Temp. Control Range	R.T.+5°C ~100°C	-10°C ~100°C	Heating：R.T.+5°C ~100°C Cooling：-10°C ~100°C
Temp. Stability@100°C	≤±0.5°C		
Max Temp. Difference@40°C	0.3°C		
Block Temp. Uniformity	≤±0.3°C		
Time Range	1min—99h59min		
Max Temperature	100° C		
Cooling Time	/	≤25min (R.T. decrease 20°C)@R.T.26°C	
Power	150W	200W	170W
Net Weight	2.6 kgs		
Dimension	W.240xD.260xH.168 mm		
Block Available	Refer to Exchangeable blocks		

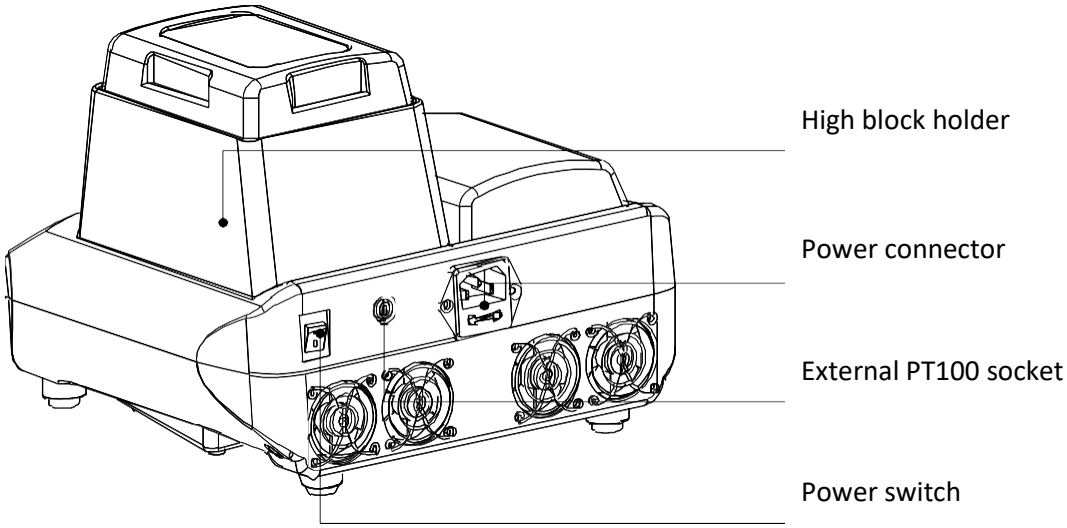
EXCHANGEABLE BLOCKS

Type	Tube Diameter	Tube Quantity	Max Capacity Each Well
BT1114 -A	0.2ml Centrifuge tube	24×0.2ml	4 pcs
BT1114 -B	0.5ml Centrifuge tube	12×0.5ml	4 pcs
BT1114-C	1.5ml Centrifuge tube	6×1.5ml	4 pcs
BT1114 -D	2.0ml Centrifuge tube	6×2.0ml	4 pcs
BT1114 -E	0.2ml Centrifuge tube	96X0.2ml	2 pcs standard PCR plates
BT1114 -F	15ml Centrifuge tube	6×15ml	2 pcs
BT1114 -G	50ml Centrifuge tube	3×50ml	2 pcs

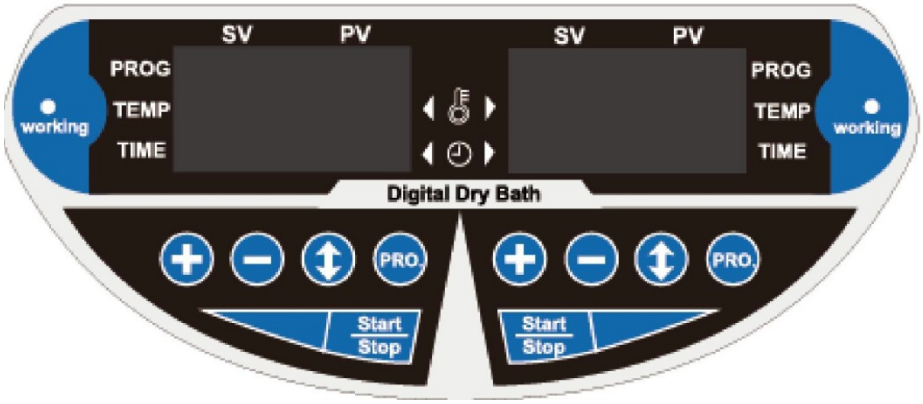
OVERVIEW

This section describes the instrument's mechanical structure, the keyboard and functions of each key, as well as preparation before turning the power on. Please learn this section well before operating the instrument for the first time.





KEYBOARD AND DISPLAY PANEL



KEY FUNCTIONS

+- To increase the setting value of time, temperature, segment.

To decrease the setting value of time, temperature, segment.

⬍ Key to shift cursor from time, temperature, segment.

PRO. Key for programming. Press “PROG” to select segment.

START/STOP Key to start or stop. Press Start/Stop key to start or stop the program. To stop the program in operation hold the start/stop key for 2 seconds.

OPERATION

Single Temperature and Time Setting

1. The LCD reads “System-Testing” when the instrument is powered on. The instrument enters into the initial state. After 3 seconds, the LCD displays the program, e.g. as S1-S5 which means program starts from S1 to S5. The current segment displays to the right. The target temperature displays. The reading on the right means the current temperature of block. Example 00 ： 30 means the target time set is 30 minutes, 00 ： 00 on the right means the time left. The program doesn't start since the current temperature is not up to the set temperature.

2. When pressing the ⬍ key, the last digit of the first row starts flickering. The parameter can be reset when the cursor stops. The pro key is the single program key. The segment changes from 1 to 5 when pressing the Pro key.

   Note: The current segment number cannot be over the highest one.

3. To change the parameter, first press  and switch the cursor to e.g. S5, press — to modify 5 to 3. Then press  to switch the cursor to e.g. 37.0. Press + to change the temperature to 90.0. Hold + continuously. The ones place increases. 2 seconds later, the ones place stops increasing. The tens place starts to increase. Release the key. Press the key one time to increase 0.1. The time set method is the same as above.

   Note: When the current time is 00：00, it means the working time is ∞ and the unit heats without stopping.

Start and Stop

1. After finishing temperature and time setting, click the Start/Stop key to start the instrument operation. The temperature rises. At this time, the window display shows the current temperature. When it rises, the dot "." flickers.

   When the temperature reaches the setting value, the dot "." stops flickering, and the colon " : " of the time value begins to flicker, meanwhile, the time is in countdown mode.

   When the time is up, the operation stops with a buzzer alarm. LCD displays current block temperature and time displayed is "OVER" which means the operation is complete.

2. When the operation completes, the instrument goes to waiting interface. Press any key to reset the temperature and time. Press "Start/Stop" without any change of the setting to restart the operation.
3. Hold "Start/Stop" for 2 seconds during the operation to stop running. Press "Start/Stop" again to continue the operation.

TEMPERATURE CALIBRATION

The temperature of the instrument has been adjusted before it is sold. If there is deviation between the actual temperature and the displayed temperature, you can do as follows to calibrate it.

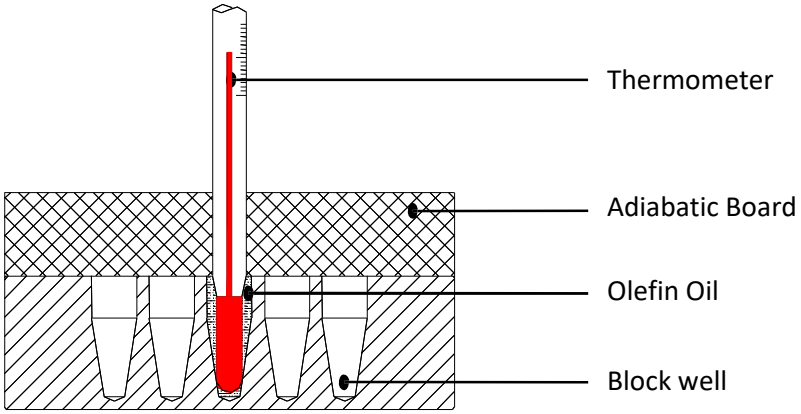
NOTICE:

1. The instrument uses two temperature adjustments to ensure its accuracy. It is linearly adjusted on 40 ° C, and 100 ° C.
2. The cooling instrument has 3 calibration temperature points to ensure its accuracy. It is linearly adjusted on 10° C , 40° C and 100° C.
3. The temperature accuracy will be within ±0.5 ° C after the temperature calibration. Both the environmental and the block temperature should be lower than 35 ° C when calibrated.

Adjustment Methods

1. Start up the instrument, it enters waiting interface. Make sure the current temperature in display is below 35 ° C. If the temperature is higher than 35 ° C please wait until it is below 35 ° C.

2. Inject olefin oil into one of the block wells. Put a thermometer into this well (the precision of the thermometer should be 0.1. The temperature ball should be immersed into the block well). Adiabatic material is needed on the block to separate it from the oil. Refer to the figure below.



NOTICE: To ensure the calibration precision, read the actual temperature and allow 20 minutes for the temperature to reach calibration point.

3. Press ⬍ to enter the temperature calibration interface. The time LED displays "ADJT", the temperature displays the current temperature and the program auto controls the temperature to 40° C.

   When the temperature reaches to 40° C, the decimal digit begins to flicker. Wait for at least 20 minutes, read the actual temperature of the thermometer.

   NOTICE: To ensure the calibration precision, read the actual temperature value after the temperature reaches calibration point for at least 20 minutes.

   If the actual temperature is e.g. 39.6° C, press ⬍ of temperature to amend the temperature value to 39.6, Press "Start/Stop" to confirm.

4. When the temperature reaches to 100° C, input the temperature calibration value. Wait for at least 20 minutes, read the actual temperature of thermometer.

   NOTICE: To ensure the calibration precision, read the actual temperature value after the temperature reaches calibration point for at least 20 minutes.

   Press "+" or "—" to amend the temperature value in the LCD display to the current thermometer reading. Press "Start/Stop" to confirm.

   NOTICE: Press ⬍ to cancel the calibration. The system keeps the current calibration.

Exchange of Block

1. Pull out the four screws which fix the block to the heating board with the screw driver.
2. Pull out the block from the main machine.
3. Place another block
4. Fix the block with the screws

TROUBLE SHOOTING

Issue	Possible Causes	Solution
Display window doesn't respond after instrument is powered-on	No power	Check the connection of power
	Bad Fuse	Exchange fuse
	Switch Failure	Exchange the switch
	Other	Contact BT Lab Systems
The actual and displayed temperatures are different.	Broken sensor or loose contact of the module	Contact BT Lab Systems
"ERR" in the temperature display with alarm	Broken sensor or temperature is below 0°C	Contact BT Lab Systems
Block doesn't heat	Broken sensor	Contact BT Lab Systems
	Broken relay	
	Broken heating pipe	
Button doesn't work	Keyboard failure	Contact BT Lab Systems

WARRANTY

The instrument is warranted against defects in materials and workmanship for 1 year. If any defects occur in the instrument or accessories during this warranty period, BT Lab Systems will repair or replace the defective parts at its discretion without charge.

For any inquiry or request for repair service, contact your local BT Lab Systems office. Inform BT Lab Systems of the model and serial number of your instrument.

TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following:

E-Mail: info@BTLabSystems.com