

TBG EZbead AutoExtraction System

EZbead System-32

Automated Magnetic Bead Purification System

Operational Manual



37001

CE

Nov. 2017 Rev. 2.0

Safety Precautions

Notice

To prevent electrical or fire hazards, please pay attention to the following:

- 1. Do not touch electrical outlets with wet hands.
- 2. The electricity must be off before moving the machine.
- 3. This machine requires room for ventilation.
- 4. Hold the plug when unplugging the machine; do not pull on the electrical cord.
- 5. Make sure that the electrical cord is not adjacent to heaters or other high-temperature objects.
- 6. Unplug the machine for storage and prolong period of inactivity.
- 7. Do not attempt to perform maintenance by yourself. Contact your regional distributor or the manufacturer for proper maintenance and services.

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1. Introduction

What is EZbead System-32?

EZbead system-32 is a platform that utilizes magnetic beads as reagents to purify nucleic acids. It is fully automatic, fast, and easy to operate. By using 96-well plates, it can extract nucleic acid from 1 to 32 specimens in one run. This system is ideal for institutions and diagnostic laboratories that have to process large volumes of specimens.

The fully automatic EZbead System-32 is a novel and advance method for DNA, total RNA, and protein extraction. In comparison to the complexity of manually operated methods, this system only requires 2 easy steps: addition of specimens and reagents to the 96-well plate and selection of the corresponding program for DNA, total RNA and protein extraction. Depending on the origin of the specimen-blood, tissue, plant, bacteria, or virus in serum or plasma-there is a magnetic bead kit for each type.

How does it work?

EZbead system-32 utilizes magnetic bars with mixing rods that can transfer magnetic beads (bound with nucleic acid or protein) to different columns of the reaction plate and mix with different reagents until a homogeneous mixture is obtained. The different reagents will allow the mixture to undergo cell lysis, nucleic acid or protein binding, washing and elution of purified nucleic acids or proteins.

Full English / Chinese Operating Platform

User-friendly English / Chinese (option) Operating Platform

Self-Cleaning Function

Equipped with ultraviolet sterilization function

Computer Independent operation

By incorporating a built-in controller, this system will eliminate the need for an external connection to a computer. This feature will not only save space and energy, but also increase the stability of an automatic control system.

1.1 Product Exterior

Front View



Operations Panel



Temperature Control Gauge



Back View



Power Switch and Electrical Plug: (Voltage: 110-250V, Fuse: 8A/250V)



Notice: This instrument uses AC power. For the appropriate voltage, refer to the Product Specifications section. Do not use DC power for this instrument.

1.2 Interior



- (A) Magnetic bars
- (B) Frame for positioning the disposable mixing rods
- (C) Frame for positioning the 96 well plate
- (D) Heating strips
- (E) Mixing rod
- (F) 96 well plate

1.3 Control Panel:

Starting screen (touch the screen to access the Main Menu)



Notice: After the starting screen has been loaded for 1 minute, the system will automatically go into screen saver mode. Touch the screen to resume.

Main menu



2. Operation

2.1 Temperature Setting:

Touch the "Temp" icon to enter the Temperature Control Page.



(a) Automatic Control for Temperature Control:



If heating is necessary during the program, enter the Temperature Control Page to make the necessary changes. Touch the appropriate icons to indicate which temperature control is needed. The heating strips are located at column 6 and 12 and as a serial from T1 to T4 from left to right. Make sure that the heating blocks are in place prior to starting the program. Refer to page 16 for instructions.



(b) Manually operating temperature function

To test whether or not the temperature control is operating normally, they may be heated individually. Once they are turned "ON", the temperature control gauge will show the actual temperature of the heating strips. The actual temperature of the liquid inside the 96 well plate may be tested with a thermometer.

Notice: Reset to "OFF" after use.



(c) Manually operating the "Fan" function

The fan control icon is located on the bottom left corner of the temperature control page. This fan will not interact with the air inside the machine, and there is no chance for contamination.

Notice: Reset to "OFF" after use.

When the programs are operating automatically, the fans will automatically turn on to lower the temperature of the heating strips and does not need manual control.

(d) Buzzer Control:



Show the status of the alarm at the end of an extraction run as ON/OFF.



(e) Warm On:

Show the status of the chamber heating function as ON/OFF.

Once the function has been switched on, the chamber maintains a heating temperature of 25° C ~ 30° C. Activated heat regulation

function can maintain optimal DNA extraction temperature within the sample chamber. The heating function must be activated 30 minutes prior to use. Once the function is activated an indicator light will turn on and the metal surface inside the chamber may reach 45~50°C. Be careful to avoid burns from the heated surface. The heating function is connected to the main power switch. When the machine is powered down, the heating function will also be switched off. Every time the machine is restarted, make sure to turn the heating regulation function back on.

(f) Temperature Control

Temperature Settings



★ Do not set the temperature to over 75 °C

★ Take careful note of the temperature control setting and heating adaptor positions



!!Notice!! DO NOT touch the heating strips when it is in use to avoid burning.

(g) How to use the heating adaptor:

Heating adaptor (two sets are provided with the machine):



Diagram for positioning the heating adaptor under the 96-well plate:

1	1	2	3	4	5	6	7	8	9	10	11	12
۸												0
в												0
с												
D												
E												0
F												
G												0
н											_	6
1						-						

- Insert the heating adaptor underneath the 96-well plate.
 The chipped side of the 96-well plate should face outward
- Note the temperature when removing the heating adaptor. Only remove the heating adaptor when the temperature is under 40°C to avoid burning.
- Wash your hands in cold running water if they are burnt, and seek medical assistance ASAP.

2.2 Running the Program:

Touch the "Run" button to enter the Program protocol page.



(a) Re-calling existing Programs

Touch "Program" to enter the Program Selection Page. If you see the program that you would like to use, touch the number indicating the program that is to be used. To go to another protocol page, touch the page number box and enter the correct protocol number, and select the protocol of interest.



Touch the "Run" button to run the selected program.

◎Before running the program, make sure that:

- 1). The chip on the 96-well plate is facing outward, and the well is properly inserted.
- ②.The mixing rods are pushed all the way.
- ③.If heating is needed, turn on the Auto-temperature control switch..
- ④.The heating adaptor is inserted.

(b) Pausing the program

- i. During the program, touching the "Pause" button will pause the program, and the magnetic bars and mixing rod will reset to the highest position. At this point, no other input will be registered.
- ii. Touch the "Run" button and the program will continue.

(c) Stop the program

- i. During the program, touching the "Stop" button will terminate the program and stop the magnetic bars and mixing rod from moving.
- ii. The "Stop" button also serves as an emergency button. After the situation has been resolved, the "Home" button should be pressed so that the magnetic bars and mixing rod will reset to their starting position.

(d) Terminating the program

During the program, touch the "Prog. End" button will terminate the program, and the magnetic bars and mixing rod will reset to their starting position.

(e) BZ Stop

i. Pressing the "BZ ON/OFF" button will stop the alarm from sounding. When the program is complete, the alarm will automatically ring for ten times and then stop.

ii. If the "Pause" function is used during the program, the alarm will keep beeping until the "BZ ON/OFF" button is pressed.

2.3 Program Editing:

Touch the "Edit" button to enter the Program Edit Page.

(a) Password:



- i. If a password was previously selected, enter the password at this time and select "confirm".
- ii. Just select "confirm" if a password was not setup before.



(b) Program Select

- i. Touch the number to choose the program desired, then press "Edit" to enter the Editing Page.
- ii. To enter new programs or to change the name of an existing program, touch the name column to the right of the number column, and follow the directions.

(c) Program Editing



- i. Touch the program column that is to be edited, and a number or alphabet screen will appear.
- ii. Touch "Clear" to clear the original settings; input directly when it is 0.
- iii. Enter numbers or alphabets.
- iv. Touch "Enter" to finalize the input.
- v. Touch "Exit" to leave the number or alphabet screen.

(d) Program Editing Definitions :

Columns :

Each program may use 6 sets of columns at the maximum. Refer to the 96-well plate diagram. Column #1 to #6 belongs to one set, column #7 to #12 belongs to another set.

Mixing Time (m):

Amount of time set for mixing the solutions. The minimum amount of time is 1 minute.

Magnetic binding time (s) :

Amount of time set for using the magnetic bars to bind protein or DNA. The minimum amount of time is 1 second.



Notice: The magnetic bars need at least 30 seconds to reach the lowest point in the wells, therefore, the magnetic attraction time may not be lower than 30 seconds.

Heating time (m):

Amount of time the sample spends on the heating strips before the elution step. It was also the waiting time for the alcohol evaporating. The minimum amount of time is 1 minute.

Notice: We suggest the user to set the wait time for alcohol evaporation for no less than 5 minutes.

Magnetic Bars ON/OFF :

ON : The magnetic bars will lower to attract the magnetic beads.

OFF : The magnetic bars do not operate

Mixing speed :

Control the mixing speed of the magnetic bars. There are four different speeds to choose from. By touching the "Speed" button repeatedly, you can toggle between fast(F), medium(M), slow(S), and very slow(V).

Volume (µl):

Input the volume of liquid necessary for this column. The mixing rod will lower to the depth corresponding to this volume.

Example : tissue/cell DNA isolation

Column	Reagent	Volume		
1/7	Lysate	500 µl		
2/8	Magnetic Beads / Wash Buffer ?	1 50µl / 800 µl		
	(WB1)			
3/9	Wash Buffer 2 (WB2) 800 µl			
4/10	Wash Buffer 3 (WB3) 800 µl			
6/12	Elution Buffer (EB)	100-200 µl		

Pause:

When this function is ON, the machine will reposition the magnetic bars and mixing rod, and the alarm will sound. Press the "Run" button to continue running the program.

Exit:

Touch the "Exit" button after program editing has been completed. The screen will display the following options to save the program.

Prog 1: BL-DNA	
💡 Save Program	1
YES ON	CANCEL

YES: Save the program.

NO: Do not save the program.

CANCEL: Cancel and return to the editing page

(e) Deletion of program

- i. Touch the number to choose the program desired, press "Del" to delete the program.
- ii. Select "Delete" to erase the program from the computer's memory.



(f) Copy of program and Password setup

- i. Select the program number desired and press "Copy".
- ii. To copy the programs, enter the program number that needs to be overwritten.



ADD Password setup protocol

2.4 Ultraviolet light

IBG Texas BioGene Inc.	UV Lamp Timer hour:min O : O
Temp. Run Edit UV Lamp	Manual Auto Main

UV Lamp Timer hour:min O : O Manual Time Set hour:min O : 30 Main							
<u>UV Lamp</u>	Min: Max:	0			30	our:min : O	
<u> .</u>			CLR	CAN	ICEL		
	7	8	9	BS		our:min	
				Concernance of the	CONTRACTOR OF STREET,		
	4	5	6	DEL		30	
	4	5	6 3	DEL +	EN	13.0	



- (a) Touch the "UV Lamp" button before closing the door. If the door is opened, the ultraviolet light will be turned off automatically. Only when the door is closed will the ultraviolet light be on.
- (b) The ultraviolet light must be shut down manually. No other functions may be used when the ultraviolet light is still on. The alarm serves as a reminder to shut down the ultraviolet light.

!! Notice!! The clear plastic cover is able to filter the ultraviolet, however DO NOT look directly at the ultraviolet light.

3. Maintenance

Internal operation area is made of stainless steel, aluminum, and paint material. Please wipe the operation area with 75% ethanol.

Slightly wipe the magnetic bars and magnetic bar holders with clean water.

Problem	Suggestions
No screen display	Is the switch on the ON position? Is the electrical cord plugged in ? Test the voltage of the electrical outlet.
Unusual noises	Check to see if the Mixing rods are in place. Check to see if the 96-well plate is correctly positioned. Contact the distributor.
Magnetic bars neither move up nor down	Touch the "Stop" button to terminate the program. Touch the "Reset" button to reposition the magnetic bars. Do not insert the 96-well plate and run the NA1_BWE program. Are the magnetic bars moving correctly? Contact the Distributor.
The heating function is on, but the temperature is not rising	Check the temperature page. Is the temperature control function on? Contact the Distributor.
The ultraviolet light is not on	Change the lamp. Contact the Distributor.

4. Troubleshooting

The magnetic bars are dirty	Make sure the Mixing rods are inserted each time the instrument is used.
	Use a wet clean cotton/cloth to wipe the magnetic bars.
	Do not wipe the magnetic bars with solvents or alcohol.
The magnetic bars have broken off	Contact the distributor

5. Product Specifications

Model Number	EZbead system-32
Width (cm)	40
Height (cm)	45
Depth (cm)	40
Weight (Kg)	27
Voltage(V)	100 ~ 250 V
Ampere(A)	0.54~1.95
Temperature when in operation	0~40 °C
Temperature when storage and transportation	0~40 °C
Humidity when in operation	<80%
Humidity when storage and transportation	<80%

6. Symbols used

Symbol	Definition
SN	Serial number
\sim	Date of manufacture
Ĩ	See package insert
EC REP	Authorized representative in the European Community
CE	CE mark
	Manufacturer

EC REP

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