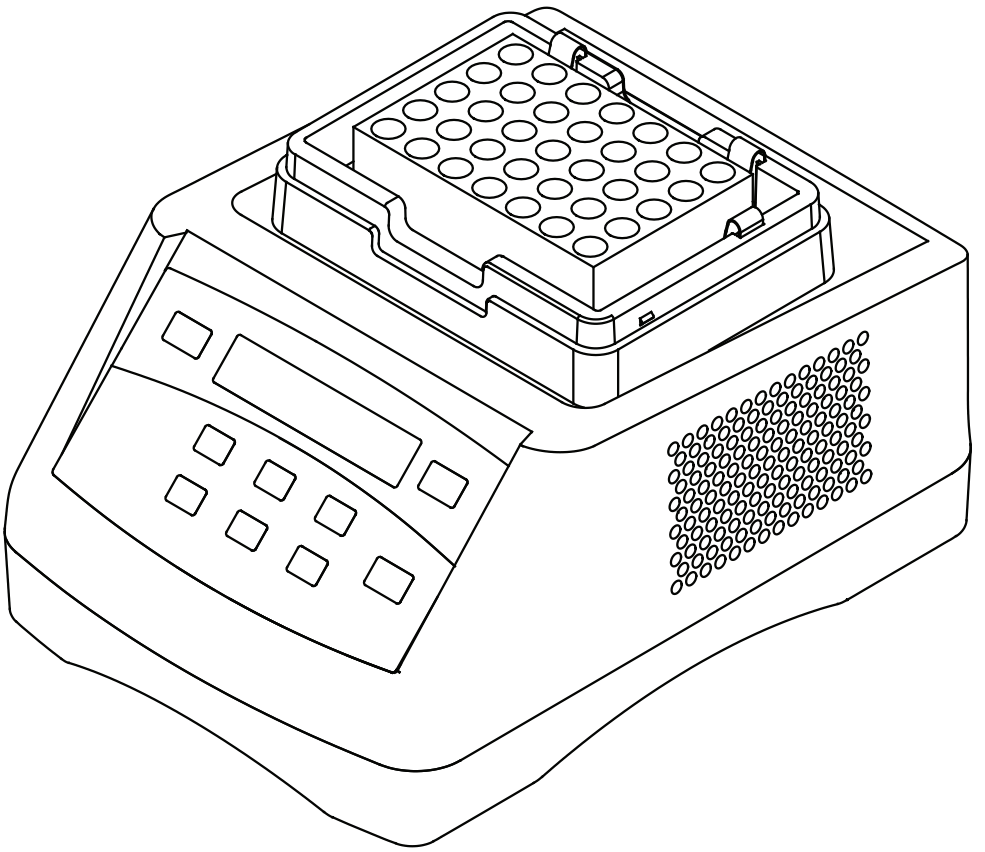
EZHEAT

USER GUIDE



PREFACE

Thanks for choosing **EZHEAT** machine. This operation manual describes function and operation of the device. In order to use the instrument properly, please read this manual carefully before operating the device.

OPENING CHECK

Please check the instrument and appendix with the packing list when you first open the packing case. If anything does not match with the packing list, please contact the vendor or the manufacturer.

CONTENTS

SAFETY WARNINGS AND GUIDELINES

1. Important operation information of security

Read this operating manual completely before using the device for the first time. If required, please also read the instructions of use for the accessories.
This operating manual is part of the product. Thus, it must always be easily accessible.
Enclose this operating manual when transferring the device to third parties.

Operation before reading the manual is forbidden. Read the guidelines and directions below and carry out the countermeasure according to them.

2. Safety

2.1 INTENDED USE

The product is intended for use in a molecular biology laboratory.
The product is intended exclusively for indoor use, conform to Standard
B style- I type- GB9706.1.

2.2 USER PROFILE

This device may only be operated by trained and skilled personnel.
Before using the device, read the operating manual carefully and familiarize yourself with the device's mode of operation.

2.3 INFORMATION ON PRODUCT LIABILITY

In the following cases, the designated protection of the device may be compromised. Liability for any resulting property damage or personal injury is then transferred to the operator:
The device is not used in accordance with the operating manual.
The device is used outside of its intended use.
The user makes unauthorized changes to the device.

2.4 WARNINGS FOR INTENDED USE

Read the operating manual and observe the following general safety instructions before using the shaker.

⚠ DANGER! Risk of explosion

- Do not operate the device in areas where work is completed with explosive substances.
- Do not use this device to process any explosive or highly reactive substances.
- Do not use this device to process any substances which could create an explosive atmosphere.

⚠ WARNING! Risk from incorrect supply voltage.

- Only connect the device to power supplies which correspond with the electrical requirements on the nameplate.
- Only use sockets with a protective earth conductor and suitable power cable

⚠ NOTICE! Damage from overheating.

- Do not place device close to sources of heat.
- Do not expose the device to direct sunlight.

⚠ WARNING! Contamination due to opening seals of consumables.

In the following cases, the seals of tubes can spring open. Sample material can escape.

- High vapor pressure of the content.
- Improperly sealed cover.
- Damaged sealing lip.
- Improperly fastened foil.
- Always check that consumables have been sealed tightly before use.

⚠ CAUTION! Crush hazard due to moving parts.

- Do not replace any consumables during the mixing process.
- Do not remove the block during the mixing process.
- Do not remove the lid during the mixing process.

⚠ NOTICE! Damage to electronic components due to condensation.

Condensation can form in the device after it has been moved from a cool environment to a warmer environment.

- Wait at least 3 hours after positioning the device. Plug the device only after this time has elapsed.

⚠ NOTICE! Caution! Strong vibration.

When mixing at high speeds, items located near the device may be moved by the vibrations of the work surface and, e.g., fall off the work table.

- Do not place easily movable items near the device or secure them adequately.

NOTICE! Damage from the use of aggressive chemicals.

• Do not use any aggressive chemicals on the device or its accessories, such as strong and weak bases, strong acids, acetone, formaldehyde, halogenated hydrocarbons or phenol.

• If the device becomes contaminated with aggressive chemicals, clean it immediately with a mild cleaning agent.

3. Device maintenance

The platform and clamp should be cleaned by a cloth stained with a little alcohol. If there are smudges on the Instrument, clean them using a soft cloth stained with cleaning cream.

Power off when cleaning the Instrument.
When cleaning the well, don't drop the cleaning liquid in the well.
Corrosive cleaning liquid is strongly prohibited.

Chapter 1: INTRODUCTION

1. Introduction

EZHEAT machine is a best designed product controlled by the micro-processer. It can be widely used for the preservation and reaction of the samples, **EZGEL** preparation, the amplification of DNA, the pre-denaturation of the electrophoresis, and blood serum coagulation.

FEATURES:

- Easy to set up and use.
- Wide time range from 1min to 99h59min.
- Different blocks are for your choice.
- OEM can be supplied to you.
- Multi points mode function and multi cycle times can be set.
- Automatic fault detection and buzzer alarm function.
- Automatic heating function.
- Automatic resume to run function.
- Automatic running function.
- Temp calibration.

2. Normal Operating Conditions

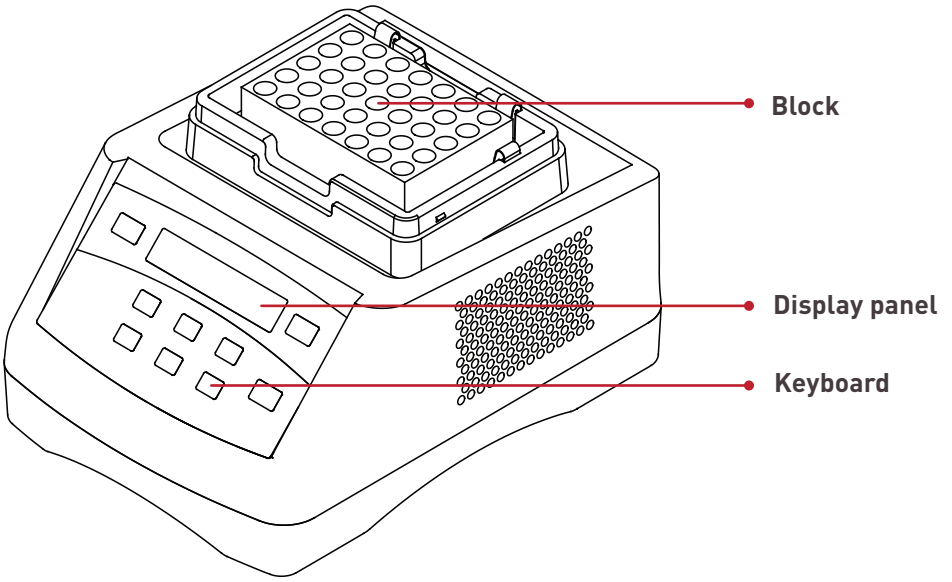
Ambient temperature：0°C ~ 35°C
Relative humidity：≤70%
Power supply：AC220V

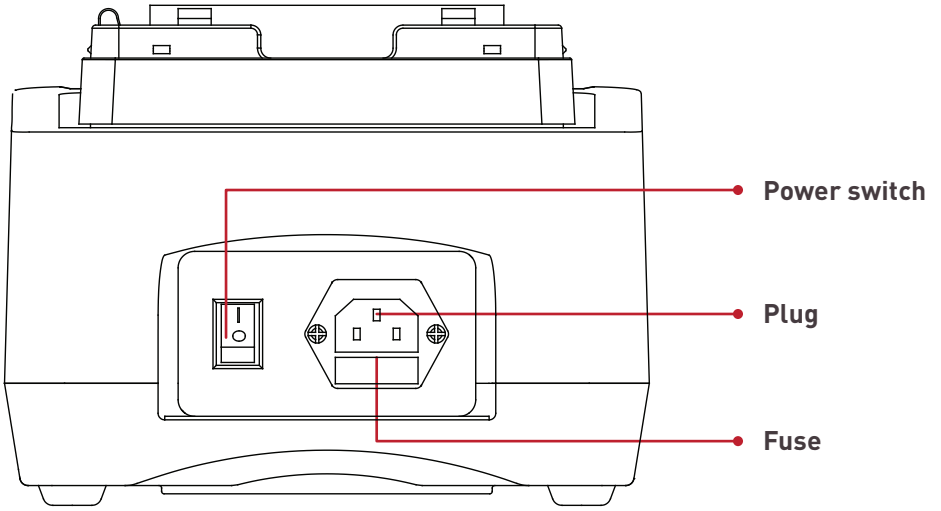
3. Parameters

Temp range	RT+5℃~100℃
Time range	1min ~ 99h59min/∞
Temp accuracy	⩽ ±0.3℃*
Display accuracy	0.1℃
Temp uniformity	⩽ ±0.3℃*
Heating time	⩽ 12min (From 25℃ to 100℃)*
Multi points running	Yes (Max 5 points)
Multi points running circularly	Yes (Max 99 times)
Automatic heating	Yes
Automatic running	Yes
Automatic resume to run	Yes
Capacity	See optional block
Power	150W
Power supply	AC220V
Fuse	250V 3A Φ 5 × 20
Size (mm)	260x195x150 mm
Weight	2.5Kg

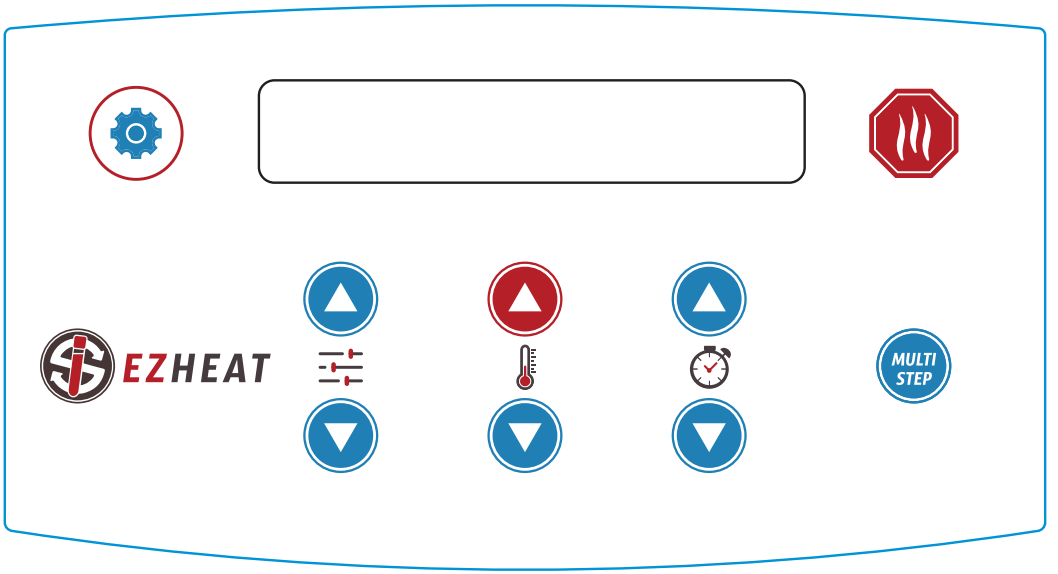
Chapter 2: DEVICE STRUCTURE

1. Structure description





2. Display panel and key function



KEY	FUNCTION
Option	Press this key to enter and exit system menu.
Start/Stop	Press momentary to start, Press continuously (2 seconds) to stop.
PGM ▲▼	Press this key to select procedure.
Temp ▲▼	Press this key to set temperature.
Time ▲▼	Press this key to set time.
Multi-Step	Press this key to enter and exit multi points mode.

Chapter 3: OPERATION GUIDE

1. Single point mode setting

1.1 PARAMETERS IN DISPLAY

PV	25.0°	STOP
S1	37.0°	01:30

" PV " this row displays current temperature and running status.
" S " this row displays procedure no., setting temp and time.

1.2 PROCEDURE SELECTING

In STOP status, you can press PGM's "▲"or "▼" to select procedure. In single point mode, five standalone procedures can be selected (S1-S5).

1.3 TEMP SETTING

In STOP status, please press Temp's "▲"or "▼" to set temperature, press continuously (2 seconds) to set temperature rapidly.
Note: Temp setting range: RT+5°C~100°C.
If room temp is higher than setting temp, instrument can not run normally.

1.4 TIME SETTING

In STOP status, please press Time's "▲"or "▼" to set time, press continuously (2 seconds) to set temperature rapidly.
If you want to keep setting temperature, please press Time's "▼" to "KEEP".
Note: "KEEP" means procedure will keep setting temperature, unless it is outage or you stop running.

1.5 START/STOP RUNNING

After finishing setting, please press Start/Stop, system will run automatically. Then status will display "WAIT", system will be heating or cooling to setting temperature.

PV	31.5°	WAIT
S1	37.0°	01:30

When temperature reaches, system will display your setting time and start to count down.

PV	37.0°	01:30
S1	37.0°	01:30

During running, press Start/Stop continuously (2 seconds) to stop running and system will be back to setting interface.

1.6 FINISHING RUNNING

When finished running, system will stop running automatically, and displays current temp.

------FINISHED------
TEMP: 33.2°

System will be back to setting interface with pressing any key.

Note: After running, heating plate will be very hot for a while, please be careful.

2. Multi points mode setting

2.1 PARAMETERS IN DISPLAY:

X/Y	A>C>D>E>F	STOP
M1	37.0°	00:30

" X/Y " X: cycle times Y: setting cycle times

" A>C>D>E>F " : Multi points running list

" stop"/" run ": System status

" m " this row displays procedure, setting temperature and time.

2.2 PROCEDURE SELECTING

In STOP status, please press PGM's "▲"or "▼" to select procedure. In multi points mode, at most five procedures can be selected (M1-M5).

2.3 TEMP SETTING

In STOP status, please press Temp's "▲"or "▼" to set temperature, press continuously (2 seconds) to set temperature rapidly.

2.4 TIME SETTING

In STOP status, you can press Temp's "▲"or "▼" to set temperature, press continuously (2 seconds) to set temperature rapidly.

Note: In multi points mode, please do not set Time to "KEEP".

2.5 ADD/REMOVE PROCEDURES IN RUNNING LIST

Press Temp key to "OFF", the setting temp is invalid, this procedure will remove from running list. Otherwise, procedure will add to running list.

E.g. the setting temp of M1 is 37°C, it will displays 1 in running list, if setting temp is OFF, it displays X , this procedure will remove from list.

02/02 1>2>3>x>x	STOP
M1 37.0°	00:30

02/02 x>2>3>x>x	STOP
M1 off	00:30

When start multi points, system will run according to M1,M2,M3,M4,M5.

2.6 START/STOP MULTI POINTS MODE

When finishing selecting procedures, please press Start/Stop key, system will run automatically. Then it will display RUN instead of STOP. Time displays wait, it means the device is heating or cooling to setting temp.

02/02 1>2>3>x>x	run
M1 30.8°	wait

When finishing running one procedure, device will run to next procedure. When the last procedure finishes running, it will stop running automatically.

During running, press Start/Stop continuously (2 seconds) to stop running and system will be back to setting interface.

Note: Before start multi points mode, please make sure the setting of temp and time for each procedure through PGM's "▲"or "▼".

3. System setting

Press Option key to enter system setting interface.
Press continuously (more than 2 seconds) to save parameter and exit.

3.1 BLOCK SELECTING

In order to ensure the temp accuracy, please set right block type when exchange block. Please press PGM's "▲"or "▼" in system setting interface, then it turns into block setting interface as follow.

----Option Menu----
Block: 0.2mL x 96

Press Temp's "▲"or "▼" to select right block type, make sure the type in display is the same as that in use.

Block: CUSTOM 01 02 03

Above three types are for customized blocks, in order to ensure temperature accuracy, please set type according to block list.

3.2 AUTOMATIC RUNNING FUNCTION (APF)

Press PGM's "▲"or "▼" in system setting interface, it turns into APF setting interface.

----Option Menu----
APF ENABLE

Starting (ENABLE) APF, the device will run the last procedure automatically when starting up.
Canceling (DISABLE) APF, users need to select a procedure to run manually when starting up.
Press Temp's "▲"or "▼" to start/stop APF.

3.3 AUTOMATIC CONSTANT TEMP FUNCTION (RTF)

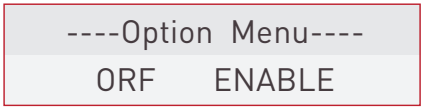
Press PGM's "▲"or "▼" in system setting interface, it turns into RTF setting interface.

----Option Menu----
RTF ENABLE

Starting (ENABLE) RTF, system will keep block's temperature after finishing running.
Canceling RTF, system will start cooling block's temperature after finishing running.
Press Temp's "▲"or "▼" to start/stop RTF.

3.4 AUTOMATIC RESUME TO RUN FUNCTION (ORF)

Press PGM's "▲"or "▼" in system setting interface, it turns into ORF setting interface.



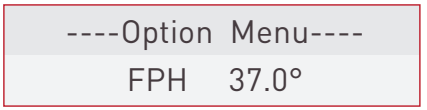
Starting (ENABLE) ORF, if power is outage during running, system will automatically run again after power is on.

Canceling (DISABLE) ORF, users need to select procedure to run by manual after power is on.

Press Temp's "▲"or "▼" to start/stop ORF.

3.5 AUTOMATIC HEATING FUNCTION (FPH)

Press PGM's "▲"or "▼" in system setting interface, it turns into FPH setting interface.



Starting (ENABLE) FPH, system will heat up to setting temperature when start up.

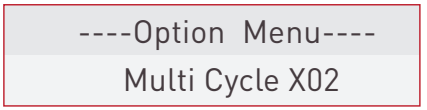
Canceling (DISABLE) FPH, system will not heat when startup. Press Temp's "▲"or "▼" to set temperature.

Press Temp's "▼" continuously to cancel FPH.

Starting FPH, system will keep setting temperature when stop running, please be careful in case of scald.

3.6 MULTI CYCLE SETTING(MULTI CYCLE)

Press PGM's "▲"or "▼" in system setting interface, it turns into Multi Cycle setting interface.



Press Temp's "▲"or "▼" to set multi cycle times.

Multi cycle times: Running times of multi points procedures.

3.7 RESET FUNCTION SETTING (RESET)

Press PGM's "▲"or "▼" in system setting interface, it turns into Reset All setting interface.

----Option Menu----
Reset All Disable

Press Temp's "▲"or "▼" to start or cancel Reset function.

Press Start/Stop key continuously (2 seconds) to reset all setting then system will reboot.

Press Option key to cancel current setting then exit.

Note: After reset, please recalibrate device because all calibration data and settings will be reset.

3.8 TEMP CALIBRATION (CALIBRATION)

Press PGM's "▲"or "▼" in system setting interface, it turns into Calibration setting interface.

----Option Menu----
Calibration Disable

Press Temp's "▲"or "▼" to start(ENABLE) or cancel (DISABLE Calibration function.

Press Start/Stop key continuously (2 seconds) to start temperature calibration.

Press Option key to cancel current setting then exit.

Temp calibration instruction, please refer to Chapter 4.

Note:

1. ORF, APF, RTF, FPH has been pre-calibrated.

2.The setting of Multi Cycle is X1.

3.Both ORF, APF and FPH are opened, ORF is highest priority.

4.FPH is only started in single point mode and stop status.

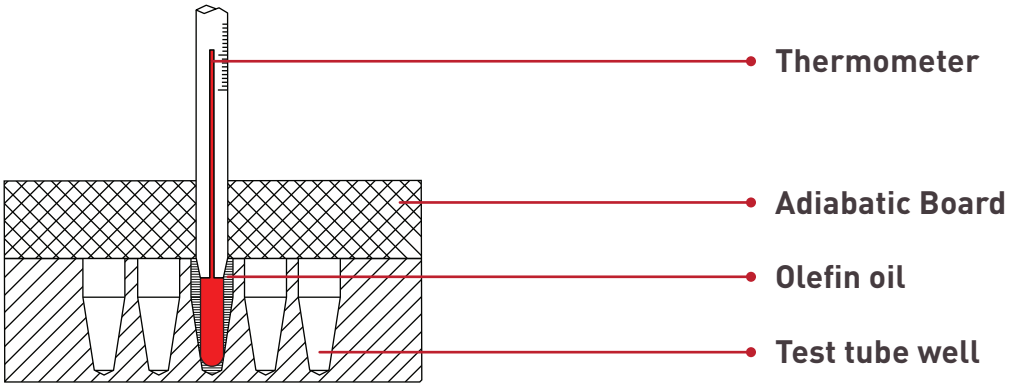
Chapter 4: TEMPERATURE CALIBRATION

The temperature of the instrument has been calibrated. But if there is deviation between the actual temperature and the displayed temperature due to some reasons, you can do as follow to correct the error.

Please make sure the block type is the same as that in the display.
Both the circumstances and the block temperature should be lower than 35°C

ADJUSTMENT METHODS AS FOLLOW:

1. Inject olefin oil into one of the cone-shaped wells and then put a thermometer into this well (Make sure the precision of the thermometer should be within 0.1°C and the temperature ball should be absolutely immersed into the cone-shaped well). Heat insulation material is needed on the block to separate it from the circumstance. Seeing from chart a.



2. Press PGM's "▲"or "▼" in system setting interface, it will turn to Calibration, start calibration function. Then press Start/Stop key continuously, system will heat up to 40.0°C.

3. When the temperature reaches 40.0°C, the decimal place will flicker and display "USER", the thermometer shows actual temperature.

Calibration mode
T1 40.0 USER

4. If the actual temperature of thermometer is 39.8°C. Press Temp's"▲"or "▼" key, amend temperature to reach 39.8°C, then press Start/Stop key to confirm.
Note: In order to insure temperature accuracy, please amend it when temperature reaches after 25 min..

Calibration mode
T1 39.8 USER

5. Then system will automatically heat up to next calibration. Users need to repeat above steps and input data at each calibration. After calibration, screen shows succeed and remind users to reboot system.

Cali Succeed!!
Reboot System

Note: If users want to exit calibration, please power off then restart instrument.
If power off or power outage during calibration, so the calibration is invalid.


A PRODUCT OF
COSMOFRANCE