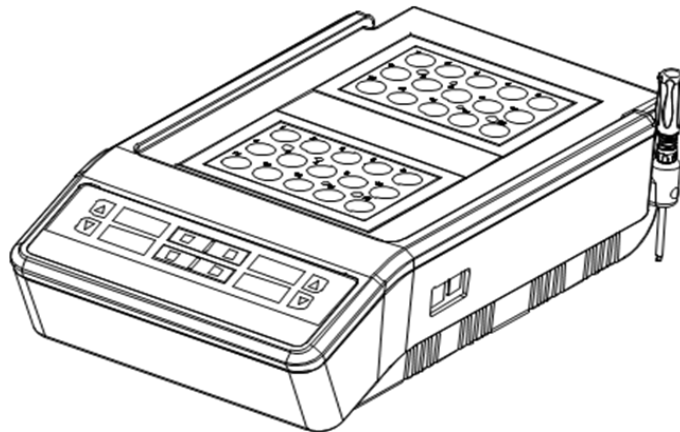




# Operation Manual

## INCUBATOR2 Dual Dry Block Incubator



**Hygiena USA**  
[info@hygiena.com](mailto:info@hygiena.com)  
805-388-8007 / 888-494-4362

**Hygiena International**  
[enquiries@hygiena.net](mailto:enquiries@hygiena.net)  
+44 0 1923 818821

# Foreword

Thank you for purchasing a digital dry bath incubator (INCUBATOR2). This manual contains function and operation information for INCUBATOR2. In order to use the instrument properly, please read this manual carefully before use.

## Opening Check

Please check the instrument and packing list when you first open the instrument packing case. If you find there is something wrong with the instrument, contact Hygiena.

# Safety Warnings and Guidelines

## 1. Important operation information:

Read this manual carefully before use of product.



Read the guidelines and directions below.

## 2. Safety:

The operation, maintenance and repair of the instrument should comply with the basic guidelines below. Failure to comply may have an effect on the life of the instrument and the protection provided.



This product is an indoor Instrument which conforms to Standard B style- I type- GB9706.1.



Before using the device, read the Manual carefully. These units are designed for use in laboratory environments. The device must be used by skilled personnel with the appropriate training.



The operator should not open or repair the Instrument by himself, which will result in loss of repair guarantee or may cause an accident. If there is something wrong with the Instrument, contact Hygiena.

A.C. power grounding should be reliable to safeguard against an electric shock. The 3-pin plug supplied with power cable is a safety device that should be matched with a suitable grounded socket.



Before turning on, guarantee the voltage matches the requirements. If the electric line is damaged, the user should replace it with the same type. The user should assure there's nothing on the electric line and the user should not put the electric line in the ambulatory place.

Hold the jack when the user pull out the electric line, and don't pull the electric line.



The instrument should be operated in an environment with low temperature, little dust, no water and no sun or strong lamp. What's more, the location should have good airflow, no corrosive gas or strong disturbing magnetic field, far away from central heating, camp stove and other hot resource. The vent on the Instrument is designed for aeration. In order to prevent overheating, don't cover the vent. If you use the more than one Instrument the same time, the distance between them should be more than 100cm.



Power off when not in use. Pull off the connector plug and cover with a cloth or plastic paper to prevent from dust during extended non-use.



Pull the connector plug from the jack at once in the following cases, and contact the vendor:

- There is some liquid flowing into the instrument.
- Fire damage.
- Abnormal operation: such as abnormal sound or smell.
- Dropped instrument or outer shell damaged.
- Any other major functionality change.

### **3. Maintenance**

The wells on the block should be regularly cleaned by a soft clean cloth dampened with a little alcohol, to ensure the tubes fully contact with wells, and has good thermal conductivity.



Power off when cleaning the Instrument.  
When cleaning wells, don't drop cleaning liquid in the well.  
Do not use corrosive cleaning liquid.

# Contents

CHAPTER 1 INTRODUCTION-----	1
CHAPTER 2 SPECIFICATIONS-----	2
1. NORMAL OPERATING CONDITION: -----	2
2. BASIC PARAMETERS AND CHARACTERISTICS-----	2
3. OPTIONAL BLOCK-----	3
CHAPTER 3 BASIC INSTRUCTIONS-----	4
1. STRUCTURE OVERVIEW -----	4
2. KEYPADS -----	5
3. DISPLAY-----	5
CHAPTER 4 OPERATION GUIDE-----	6
1. TEMPERATURE AND TIME SETTING-----	6
2. RUNNING/STOP-----	7
3. TEMPERATURE CALIBRATION-----	7
4. TEMPERATURE CONTROL BY EXTERNAL SENSOR -----	11
5. THE EXCHANGE OF METAL BLOCK -----	12
CHAPTER 5 FAILURE ANALYSIS AND TROUBLESHOOTING -----	14
APPENDIX: WIRING DIAGRAM-----	15

## Chapter 1 Introduction

**Features of this product are as follows:**

- Digital temperature and time displayed in LED;
- Interchangeable metal dry blocks;
- Easy replacement, cleaning and disinfection of blocks;
- Built-in overheating protection;
- Calibrating temperature discrepancy;
- Buzzer alarm at the end of temperature control duration.

## Chapter 2 Specifications

### 1. Normal operating conditions:

Ambient temperature: 5°C ~ 35°C

Relative humidity: ≤70%

Power supply: AC100-120V~ 50-60Hz

### 2. Basic parameters and characteristics

Basic parameters:

Parameter \ Type	INCUBATOR2
Temperature range	RT+5°C ~ 105°C
Timing time	Max. 99h59min.
Temperature control accuracy	≤ ±0.5 °C
Display accuracy	±0.1 °C
Temperature uniformity	≤ ±0.5 °C
Heating time (20-105°C)	≤20min
Block	2pcs (sold separately)
Power	240W
Fuse	250V 4A Φ5×20
Meas.(mm)(L×W×H)	365x210x150
Weight (kg)	4.5

### 3. Optional products

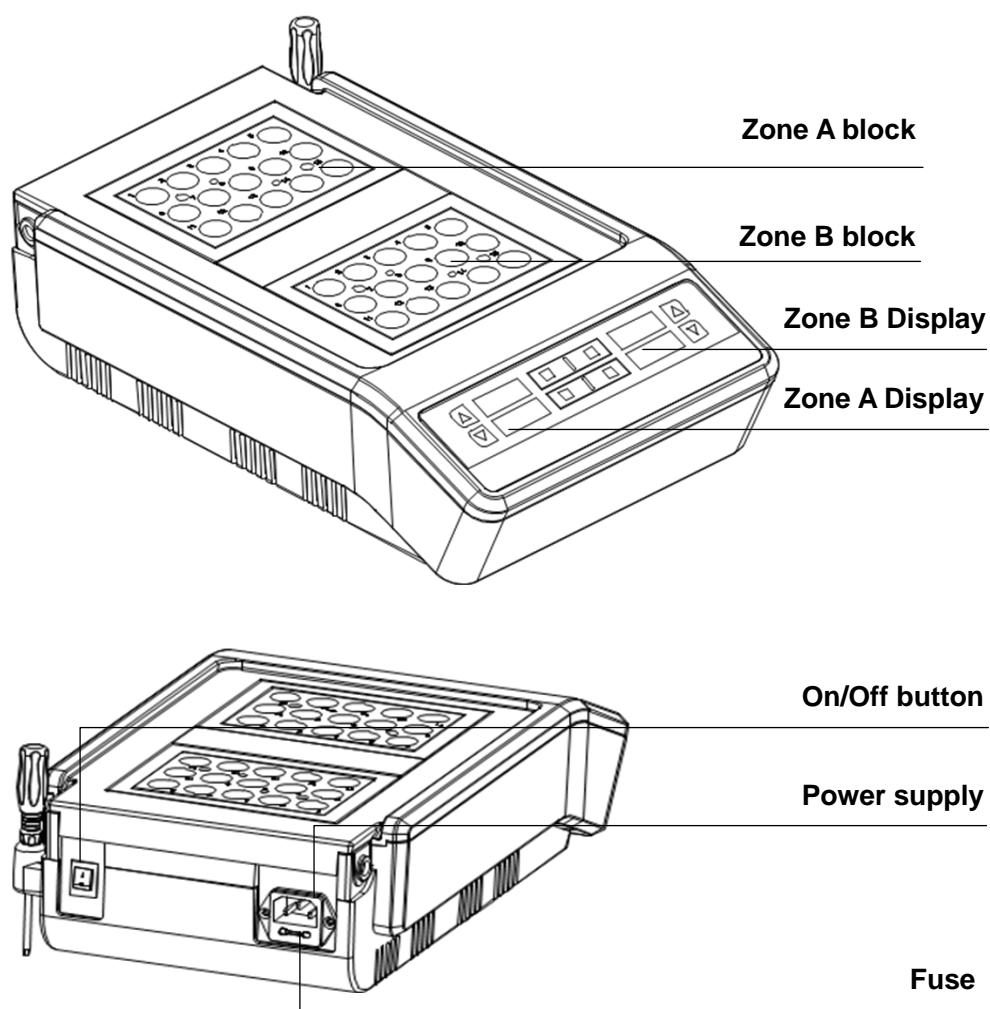
Item No.	Type	Capacity + Diameter	Meas.(mm)
AS90925000050	IB001	35*9.1mm	108X72X49 mm
AS90925000060	IB002	15*17mm	108X72X49 mm
AS-01181-27	External sensor	PT1000	
AS-01181-28	Lifter	M4	



## Chapter 3 Basic Instructions

This chapter focuses on the introductions of the structure, keypads and key-functions of the instrument, as well as preparatory work before starting. Please read this chapter before starting when using this instrument for the first time.

### 1. Structure overview



## 2. Keypads



## 3. Display

### Set

Setting key: Used in conjunction with Down key or Up key to set the temperature and time.



Down key: decreasing number.



Up key: increasing number.

### Start Stop

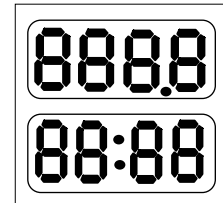
Start/Stop key. After temperature and time is set, press this key to start. Also, press this key to stop when running.

**Tip:** The keys in Zone A and Zone B will respectively control their own zones.

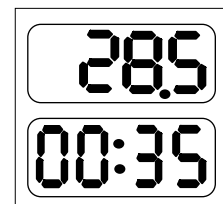
## Chapter 4 Operation Guide

### 1. Temperature and Time Setting

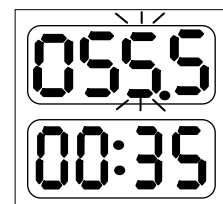
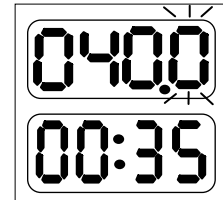
- a) Press the On/Off button; the display flashes 3 times, the instrument goes into the initial state with the sound of “beep”.



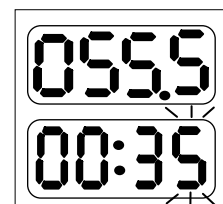
- b) After about 3 seconds, the temperature automatically goes up to the setting temperature. For example, in the diagram to the right: The 28.5 in display is the real-time temperature of the block (It indicates that the temperature now is 28.5°C). The 00:35 in display is the running time set previously. (It indicates that the running time is 35min).



- c) Press “Set” key, then release immediately. The displayed temperature is the value set at last use. For example, in the diagrams to the right: The flashing digit indicates that it can be modified. Press ▲ or ▼ to modify the temperature.



- d) Press “Set” key again, then release immediately. The displayed time is the value set at last use. For example, in the diagram to the right: 00:35(35min) decimal digits in rightmost position flash. The digit flashing indicates that it can be modified. Press ▲ or ▼ to modify the time.

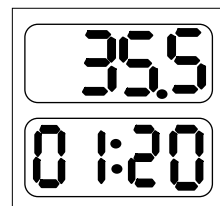


Press “Set” again. Wait 6 seconds to confirm the input temperature and tim. They flash simultaneously and disappear, then the temperature automatically goes up to the setting temperature.



## 2. Running/Stop

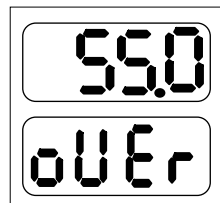
- a) After the temperature and time setting is complete, the instrument automatically goes up to the setting temperature. Press “Start” key and immediately release, then the thermostat countdown begins with the sound of "beep".



**Tips:** If the decimal point is regularly flashing, this indicates that the instrument still in the status of temperature control. The timing has not yet begun. A constant decimal point (no flashing), indicates the instrument is ready, timing begins.



When timing ends, running stops and the buzzer alarms. The temperature remains at the setting temperature, and display reads “over”, indicating the time is over.



- b) After running ends, the instrument will wait for further instruction at the ending interface. Then the user can reset the temperature and time. Press “Start/Stop” key directly. The program will run according to set temperature and time.
- c) Press “Start/Stop” key to stop running. Press the key again to start.

## 3. Temperature Calibration

The temperature of the instrument has been calibrated before it is sent out. But if there is deviation between the actual temperature and the displayed temperature due to

some reason, the user can do as follows to correct the error. There are 2 testing tools for this instrument to do temperature calibration: 1. By thermostat, 2. By External sensor. (*External sensor is an optional part which needs to be ordered separately.*)

**Caution:** the instrument uses double temperature adjustment to ensure its veracity. This means that it is linearly adjusted on two points. The temperature veracity will be within  $\pm 0.5$  after the double temperatures adjustment. Both the ambient temperature and the block temperature should be lower than 35.

### 3.1. Thermometer Calibration Instructions:

- a) After the startup of the instrument, make sure the temperature in display is below 35 °C. If the temperature is higher than 35 °C, wait until the temperature is below 35 °C.
- b) Inject olefin oil into one of the cone-shaped wells, and then put a thermometer into this well (make sure that the precision of the thermometer should be within 0.1 °C and the temperature ball should be absolutely submerged into the cone-shaped well). See Fig A.

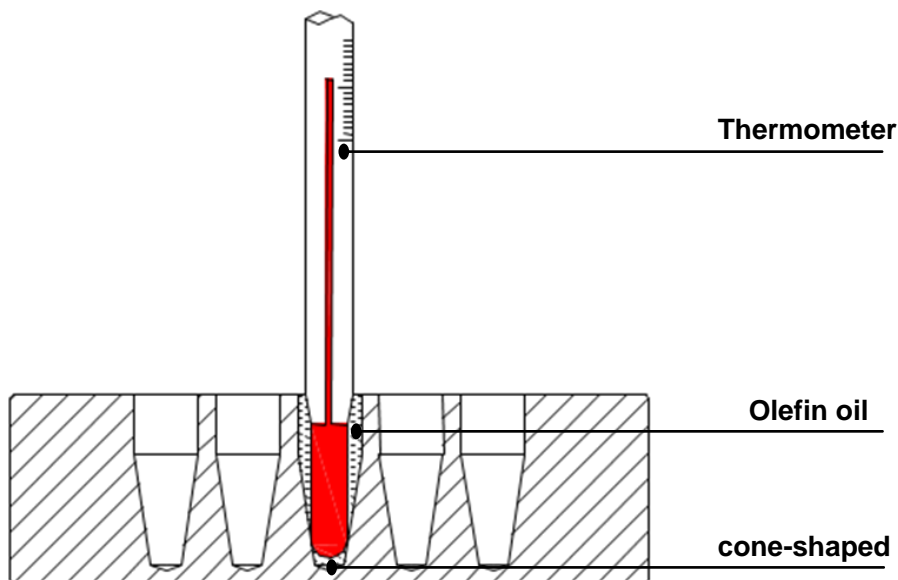
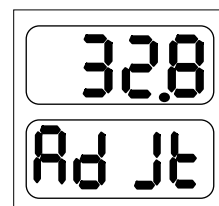


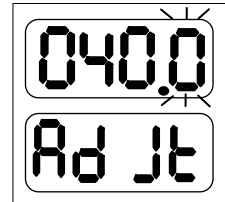
Fig a

- c) Press “Stop” key without releasing, then press ▼ key at the same time for 3 seconds. It will enter into temperature calibration interface, (see diagram to the right). At this point, “Ad Jt” is displayed.



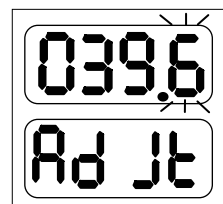
The temperature displayed is current temperature and begins to rise to 40.0°C automatically.

When the temperature reaches 40.0°C constant temperature, the decimal digit begins to flicker, waiting for the calibrated value of 40.0°C. Read out the actual value from the thermometer after 20 minutes.



**Notes:** Please read the actual value after 20 minutes' constant temperature to ensure the calibration accuracy.

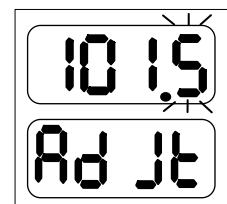
For example: If the actual read out of thermometer is 39.6°C, modify the temperature to 39.6 by pressing ▼ or ▲. Then press “Start/Stop” to confirm the input value.



d) Next the instrument will heat to 100°C automatically. Repeat above steps.

**Notes:** Please input the actual value after 20 minutes' constant temperature to ensure calibration accuracy.

For example: If the actual readout is 101.5°C, modify the temperature in display to 101.5 by pressing ▼ or ▲. Then press “Start/Stop” to confirm the input value.



Use the same method to calibrate the temperature deviation both zones.

**Notes:** Pressing “Set” and “▼” simultaneously during the temperature calibration will exit the temperature calibration program. The changed value will have no effect.

### 3.2. External Sensor Calibration Instructions:

a) After the startup of the instrument, make sure the temperature in display is below 35°C. If the temperature is higher than 35°C, wait until the temperature is below 35°C.

b) Put External sensor into a block well. See Fig b.

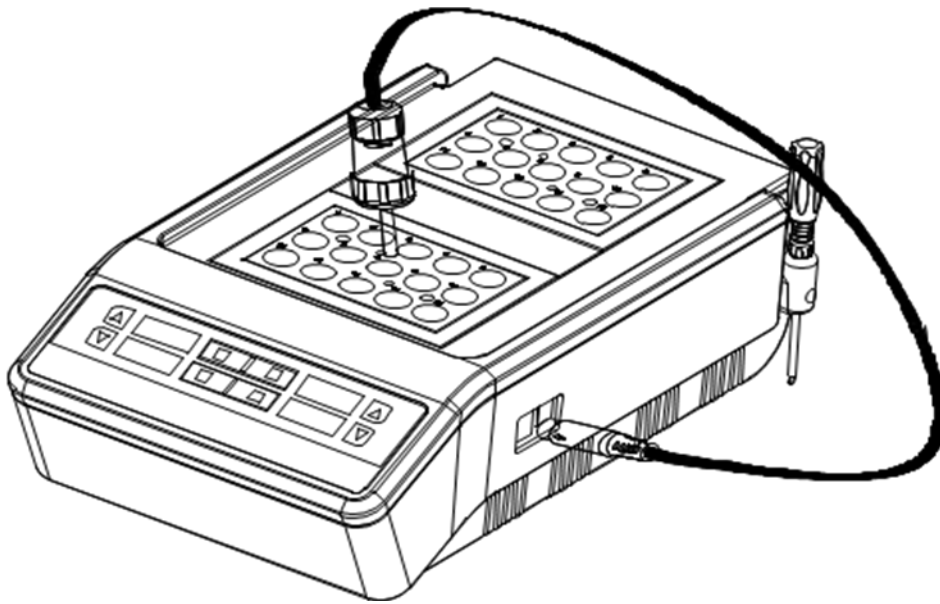


Fig b

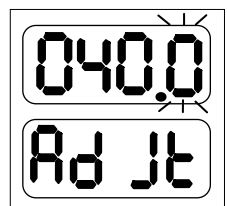
- c) Press “Set” key without releasing, then press “Start/Stop” key at the same time for 3 seconds. It will enter into temperature calibration interface, (see diagram to the right.) At this point, “EAdJ” is displayed, which indicates it is in external temperature calibration mode. The temperature displayed is the external sensor’s current temperature and it begins to rise to 40.0°C automatically.



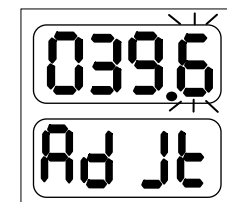
It will automatically display “AdJt” six seconds later. The upper displayed 32.0 is the current temperature of the External sensor.



When the temperature reaches to 40°C constant temperature, the decimal digit begins to flicker, waiting for the calibrated value of 40°C. After incubating 20mins, the user can make the calibration.

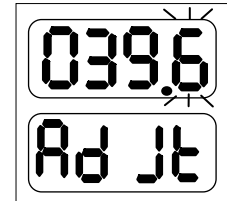


Notes: Please read the actual value after 20 minutes' constant temperature to ensure the calibration accuracy.



Press “Set” key to view the temperature value of External sensor, for example: 39.6 °C.

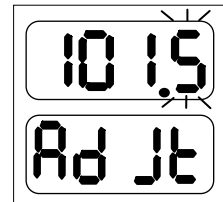
Press “Set” again, or wait for 6 seconds, then display “Ad Jt”, modify the displayed temperature to 39.6 by pressing ▼ or ▲. Then press ▲ to confirm the input value.



- d) Then the instrument will heat to 100 °C automatically. Wait until the instrument is at 100°C, and input temperature calibration value. After incubating 20mins, the user can make the calibration.

Notes: Please read the actual value after 20 minutes' constant temperature to ensure calibration accuracy.

If the actual readout of External sensor is 101.5°C, modify the temperature in display to 101.5 by pressing ▼ or ▲. Then press “▲” to confirm the input value.



Use the same method to calibrate the temperature deviation in both zones.

Notes: Pressing “Set” and “Start/Stop” simultaneously during the temperature calibration will exit the temperature calibration program. The changed value will have no effect.

#### 4. Temperature control by external sensor

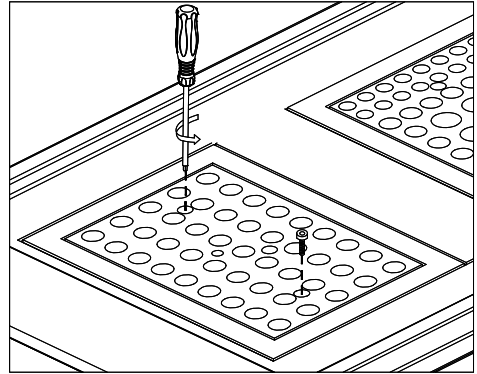
- a) Insert the external sensor into a fixed well.
- b) Press “Stop” without releasing, then simultaneously press “▲” at time for 3 seconds. The external indicator light goes on to indicate that it has entered into the temperature control mode of external Sensor.
- c) Press “Run”

Tips: After entering into the external temperature control mode, the user can simultaneously press “Stop” and “▲” on time to exit, while the external indicator light goes off.

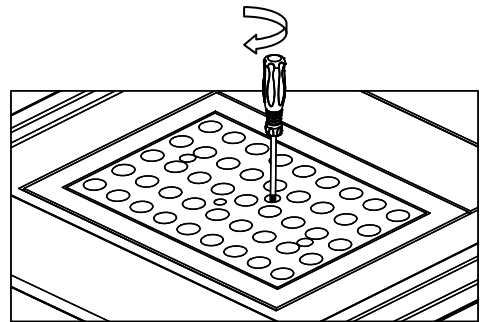


## 5. The exchange of metal block

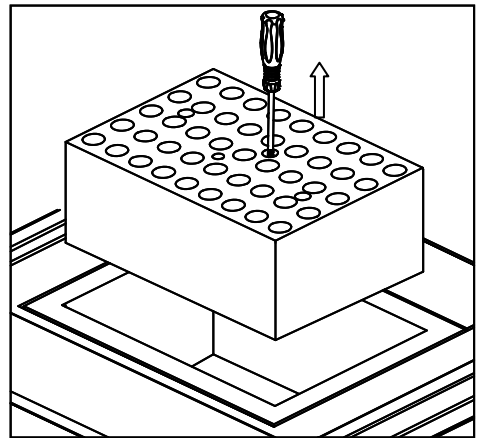
- a) Completely screw out the 2 screws which secure the metal blocks by turning wrench in an counterclockwise direction.



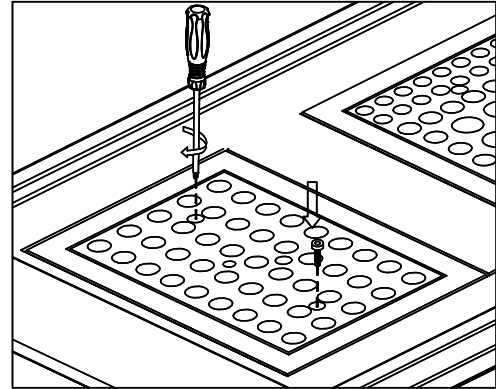
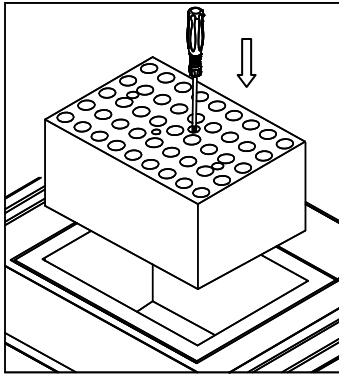
- b) Fix the wrench in the center well of the block.



- c) Pull out the wrench with the block.



- d) Screw the wrench out of the block, and fix it to another block. Then put it onto the instrument. Remove the wrench from the block, then secure the block with 2 screws.



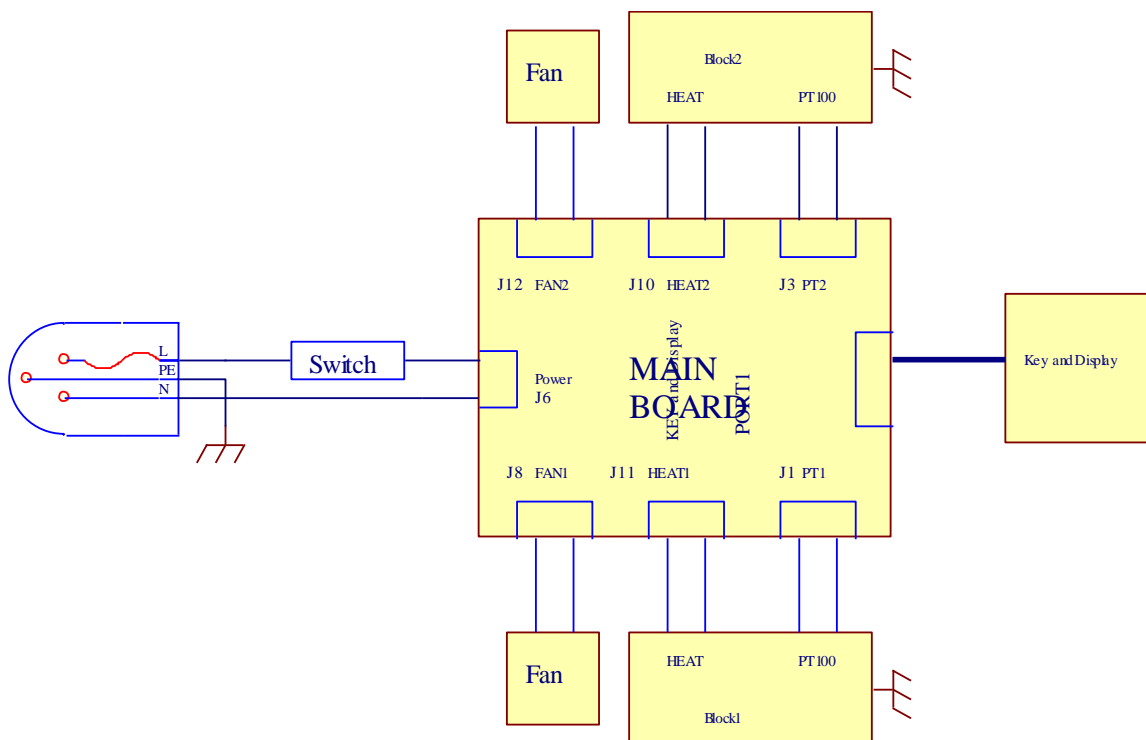
## Chapter 5 Failure Analysis and Troubleshooting

### Problems and actions

No.	Common problem	Possible cause	Action(s)
1	No display on the screen	No power on the main power plug	Check power supply and plug for damage, proper installation
		Faulty fuse	Change fuse
		On/Off button broken	Change button
		Others	Contact the supplier
2	The actual and displayed temperatures are quite different	Broken sensor or loose contact of the block	Ensure block is secured with screws
			Contact the supplier
3	“OPeN” displayed, alarming “beep”	Sensor disconnect	Contact the supplier
	“SHOr” displayed, alarming “beep”	Sensor short-circuit	
	“HHHH” displayed, alarming “beep”	Sensor broken, or block temperature is too high	
4	No heating	Sensor broken	Contact the supplier
		Heating tube broken	
5	Keys don’t work	Faulty key	Contact the supplier

## Appendix: Wiring Diagram

*(for reference only)*



**Memo**