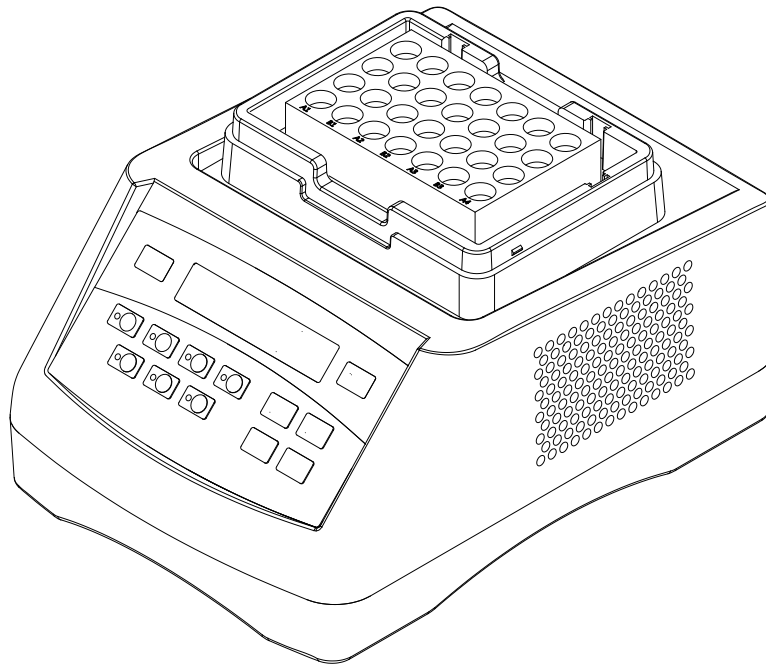


Operations Manual

Biological Indicator Incubator Bit1000



HANGZHOU R **RUICHENG** NT CO., LTD.

Foreword

Thank you for purchasing our products: Biological Indicator Incubator. This manual for users contains function and operation of the instrument. In order to use the instrument properly, please read the manual carefully before using the instrument. Keep it for later use when you meet with difficulties.

Opening Check:

Please check the instrument and appendix with the packing list when you first open the instrument packing case. If you find there is something wrong with instrument and appendix, do contact with the vendor or the producer.

Contents

SAFETY WARNINGS AND GUIDELINES.....	4
1. IMPORTANT OPERATION INFORMATION OF THE SECURITY	4
2. SAFETY.....	4
3. THE MAINTENANCE OF INSTRUMENT	5
CHAPTER1: INTRODUCTION	6
1. INTRODUCTION	6
2. NORMAL OPERATING CONDITIONS.....	6
3. PARAMETERS.....	7
4. OPTIONAL BLOCK.....	7
CHAPTER 2: STRUCTURE OF INSTRUMENT	8
1. STRUCTURE DESCRIPTION	8
2. DISPLAY PANEL AND KEY FUNCTION	9
CHAPTER 3: OPERATION GUIDE.....	10
1. CONFIGURATION MODE	10
2. SYSTEM SETTING	12
CHAPTER 4: TEMPERATURE CALIBRATION	14
CHAPTER 5: EXCHANGE OF BLOCK.....	16
CHAPTER 6: TROUBLESHOOTING.....	17
MEMO	18

Safety Warnings and Guidelines

1. Important operation information of the security

Before using the instrument, user need have a complete understanding how to operate it safety.

Before running the instrument, please read this manual carefully.



Forbid anyone to operate the instrument before reading the manual.

If operate not in accordance with the tips on the manual ,the heat generated by the instrument at runtime may cause severe burns, and electric shock accident. Please read the following safety tips and guidance, and implementation of all precautions.

2. Safety

when operation, maintenance and repair of this instrument, it must subject to the following basic safety precautions. if you don't abide by the warnings pointed in the manual , may affect the protection and intended use scope of the instrument.



The instrument is GB9706.1 standard I class B common devices. The instrument is for indoor use.



Before operating this equipment please read this manual carefully, otherwise it may cause personal injury.

Only in the aspect of how to use electrical equipment installation trained qualified inspection personnel to operate the equipment.



Operators do not attempt to open or repair equipment, doing so will make you lose the warranty qualification, also may be limited by electric shock. If you need repair, please contact our company. In order to avoid electric shock accident, the instrument input power cord must be reliable grounding. This instrument uses three core grounding plug, of which the third feet for grounding, which should be used with grounding type power socket.



Before connecting the power supply, ensure the power supply voltage and the instrument voltage required the same. And make sure that the power outlet rated load no less than the instrument requirements.

If the power cord damaged, replace it according to the same type and specifications. Don't press anything on the power cord when it be used, don't put the power cord in place where people often walk.

When insert the power cord plug, must hand-hold the plug and ensure that the plug is completely inserted into the socket, when pull out the plug, must hand-hold the plug as well and don't pull the power cord.



During operation, the temperature of metal module may become very high and have the possibility cause burns or the liquid boiling out, therefore, in the process of the whole operation, it is forbidden any part of the body contact, in order to avoid scald!



The instrument should be put in lower humidity and less dust and away from water and avoid direct sunshine and strong light, indoor should be well ventilated, no corrosive gas or strong magnetic field interference, away from heat, stoves and other heat sources. Don't take equipment in wet or dusty places.

In order to avoid temperature overheating ,do not block or cover the vent holes on the instrument. when several equipment be used at the same time, the more the distance between each instrument shall be not less than 30 cm.



Shutting off the power when stop working. unplugging the plug and using soft cloth or plastic cover to prevent dust from entering the instrument when long time no use.



When happened as following listed cases, it should be pulled the power socket immediately and contact the supplier or trained maintenance personnel:

- Liquid into instrument;
- Instrument damaged by rain or water;

3. The maintenance of Instrument

In order to make sure the test tube and the taper hole wall contact fully, good thermal conductivity and avoid pollution, the instrument cone hole on the modules should be cleaned regularly use a clean soft cloth with a small amount of anhydrous alcohol.



Cutting off power supply while cleaning the instruments.

Strictly prohibit dripping detergent into the taper hole when clean the modules.

Strictly prohibit using corrosive cleaning agent to clean instrument surface.

Chapter1: Introduction

1. Introduction

Bit1000/Bit1000-S is a sample incubation equipment based on film heating and PID automatic temperature control technology. Flexible independent timing and constant temperature function improve the efficiency of the laboratory work, which is the ideal equipment for biological indicators incubation.

Features:

- ◆ Easy to set up and use, all information real-time display and showing set up operation, convenient to observe equipment running status.
- ◆ High temperature control precision.
- ◆ Wide time range from 1min to 99h59min.
- ◆ Up to 7groups samples can be incubated. Each group countdowns independently at a time.
- ◆ Automatic running function.
- ◆ Temperature calibration function.
- ◆ Built-in software and hardware over-temperature protection device, will use more reliable.

2. Normal Operating Conditions

Ambient temperature: 0°C ~ 35°C

Relative humidity: ≤70%

Power supply: AC220V/50-60Hz

3. Parameters

Project	Parameters
Temp setting range	0°C~100°C
Temp control range	RT+5°C~100°C
Time range	1min ~ 99h59min/∞
Temp accuracy	≤±0.3°C*
Display accuracy	0.1°C
Temp uniformity	≤±0.3°C*
Heating time	≤12min(from 25°C to 100°C)*
Automatic running	Yes
Capacity	See optional block
Power	150W
Voltage	AC220V/50-60HZ
Fuse	250V 3A Φ5×20
Dimension(mm)	260x195x150
Weight(kg)	2.5

* **Test condition:** RT.25°C±2°C, block is RC02 044 001(35xΦ9mm), use mercurial thermometer, accuracy is ±0.1°C.

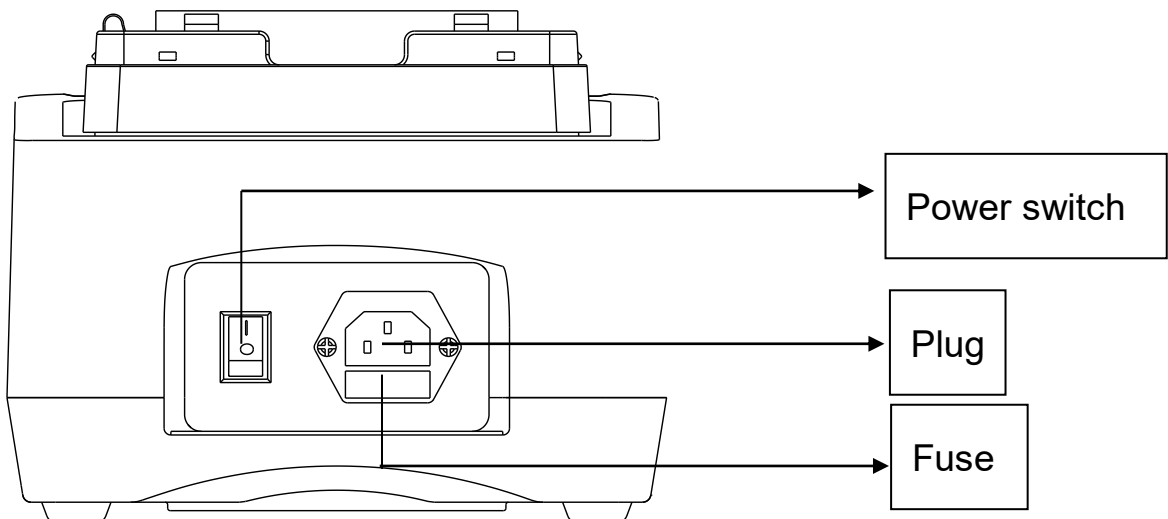
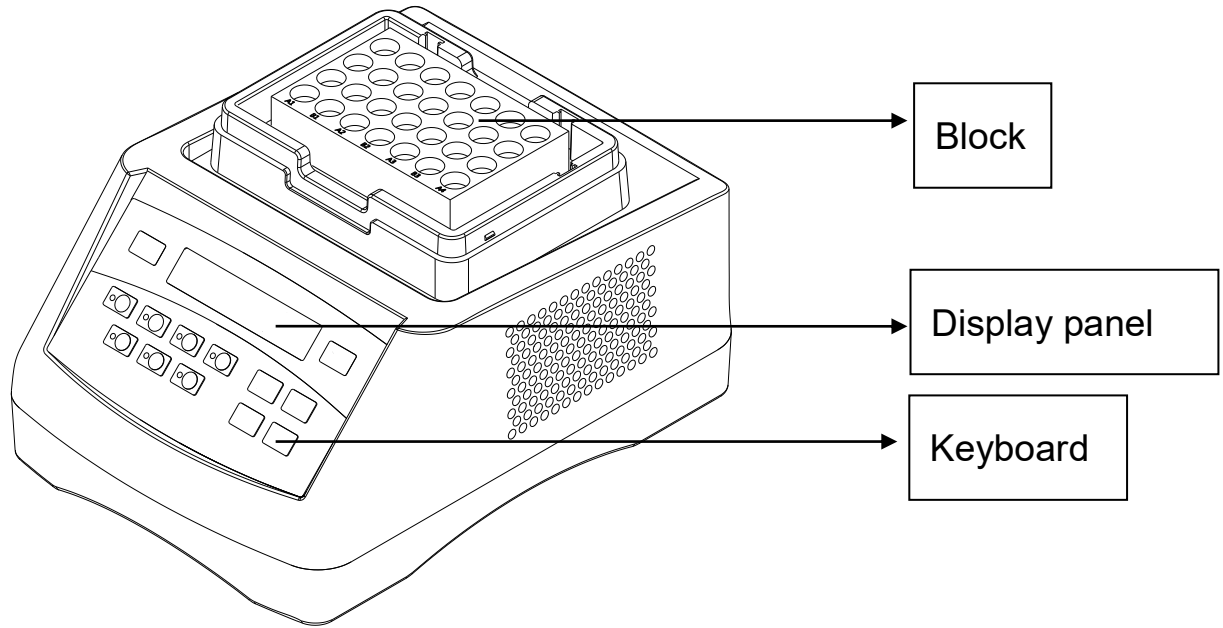
4. Optional block

Type	Capacity	Remark
RC02 044 001	35xΦ9mm	Only for Bit1000
RC02 044 002	35xΦ10mm	Only for Bit1000
RC02 044 003	28xΦ12mm	Only for Bit1000-S

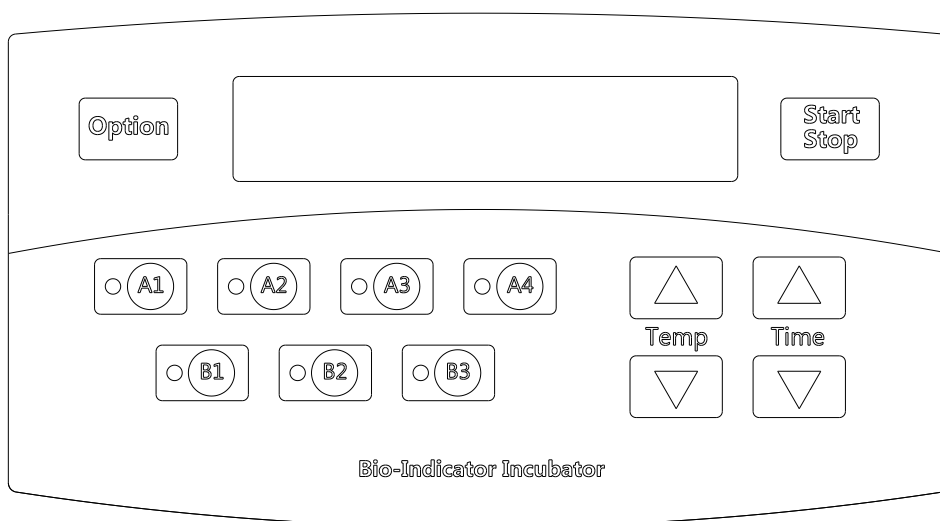
***If you have special requirements on block, please contact supplier to customize blocks.**

Chapter 2: Structure of instrument

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.
Temp ▲ ▼	Press this key to set temperature.
Time ▲ ▼	Press this key to set time.
A1~A4	Partition timing control key & indicator light
B1~B3	Partition timing control key & indicator light

Chapter 3: Operation Guide

1. Configuration mode

1.1 Contents in display when power on



When turn on the instrument, the screen displays this interface as above fig. Then it will enter into system parameters setting mode automatically.

1.2 Parameters setting



After turning on the instrument, it enters into system parameters setting mode as above fig. In this interface, the user can adjust target temperature value and the same timing value for all samples.

1.3 Temp setting

In the parameter setting mode, short press **Temp's** “▲▼” to set temperature, press continuously (2 seconds) to set temperature rapidly.

Note: If room temp is higher than setting temp, instrument cannot run normally.

1.4 Time setting

In the parameter setting mode, short press **Time's** “▲▼” to set timing value, press continuously (2 seconds) to set timing value rapidly.

1.5 Start/Stop

In the parameter setting mode, after finishing parameters setting, the user short press **Start/Stop**, system will run automatically. The status in the screen shows “**WAIT**” as below fig. It means that the instrument is heating up to the target temperature value.

SYSTEM heating	
PV: 34.5	WAIT

PV shows the current temperature value of the block.

1.6 Temperature constant and timing startup

When the temperature reaches to the setting temperature, the system will display as below interface.

PV: 56.0	48:00
TUBE: NO TUBE	

PV shows the current temperature value. **48:00** means incubation time for each sample tube(H:M). **TUBE: NO TUBE** means independent timing of sample tube hasn't been started.

When the temperature is constant, the user can put sample tubes into the certain partition, then short press **partition timing control key** to open the timing function of corresponding code. In that time, the **indicator light** for corresponding code will be on. It means that the constant incubation timing for this group's sample tubes is starting.

For example: In A2 group, put one group sample tubes, then short A2 key, the indicator light beside A2 will be on. The screen will show status for sample tubes which are starting the timing function, as follows.

PV: 56.0	48:00
TUBE: A2 ----	47:59

TUBE:A2---- 47: 59 means the user put samples tubes into A2 group, and open the timing function, the remaining time is 47h59min.

If there are several groups under incubation timing, the user can press Time▲▼ to see the remaining time for each group.

1.7 Finish timing

When one group finishes timing, the indicator light will flicker to remind the

user that the timing is finished. Short press partition timing control key of corresponding sample tubes group, the indicator light will be off.

PV: 56.0	48:00
TUBE: A2	FINISHED

TUBE: A2 FINISHED means sample tubes in A2 group finish 48h timing, the user can take out the tubes.



During running, press **Start/Stop** continuously(≥ 2 seconds), the system will stop running and return to parameters setting interface, and the block will be cooling.

2. System setting

Short press **Option** key to enter into system setting interface.

Short press **Option** key again to exit system setting interface, and cancel current modification.

2.1 Automatic running function (APF)

Press **Temp's** “▲▼” in system setting interface, it turns into APF setting interface as below.

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

Starting (ENABLE) **APF**, instrument will run last procedure automatically when start up.

Canceling (DISABLE) **APF**, users need select procedure to run by manual when start up.

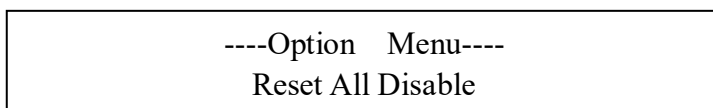
Press **Time's** “▲▼” to start/stop APF.

The factory setting for automatic running function(APF) is DISABLE.

2.2 Reset function setting (Reset)

Press **Temp's** “▲▼” in system setting interface, it turns into Reset All setting

interface.



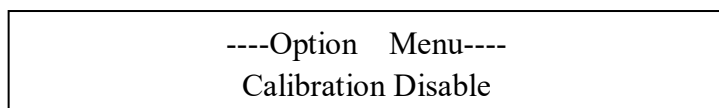
Short press **Time's** “▲▼” to start/stop **Reset**.

Long press Start/Stop key(≥2seconds) to reset all setting then system will reboot.

Short press **Option** key to exit system setting interface and cancel current modification.

2.3 Temp calibration (Calibration)

Short press **Temp's** “▲▼” in system setting interface, it turns into **Calibration** setting interface.



Short press **Time's** “▲▼” to start/stop **Calibration**.

Long press Start/Stop key(≥2seconds) to start temperature calibration.

Short press **Option** key to exit system setting interface and cancel current modification.

Temp calibration instruction, please refer to the temperature calibration section.

Chapter 4: Temperature Calibration

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



Both the circumstances and the block temperature should be lower than 35°C

Adjustment methods as follows:

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. See chart a.

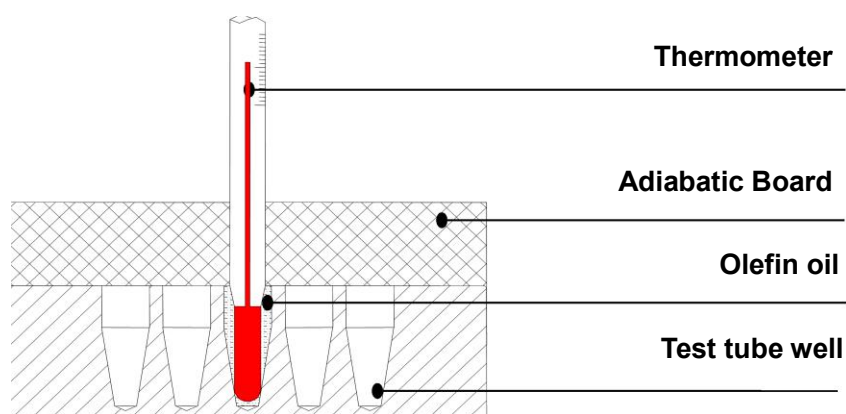
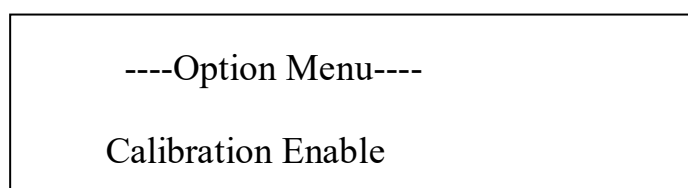


Chart
a

2. Press **Temp's** “▲▼” in system menu, it will turn to Calibration interface. Then short press **Time's** “▲▼” to start **Calibration** mode. The instrument will be heating up to 37.0°C automatically.



3. When the temperature reaches 37.0°C and is constant. The screen shows **USER**. In this time, read the actual temperature of thermometer.

Calibration
PV: 37.0 USER

4. If the actual temperature of thermometer is 36.8°C, press **Temp's "▲▼"** key to amend temperature in the screen to reach 36.8°C. Then long press **Start/Stop** key to confirm input value.

Note: The temperature can be corrected only after the instrument reaches the setting temperature for 25minutes to ensure the precise of the temperature.

Calibration
PV: 37.0 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** to remind users to reboot system.

Cali Succeed!!
Reboot System

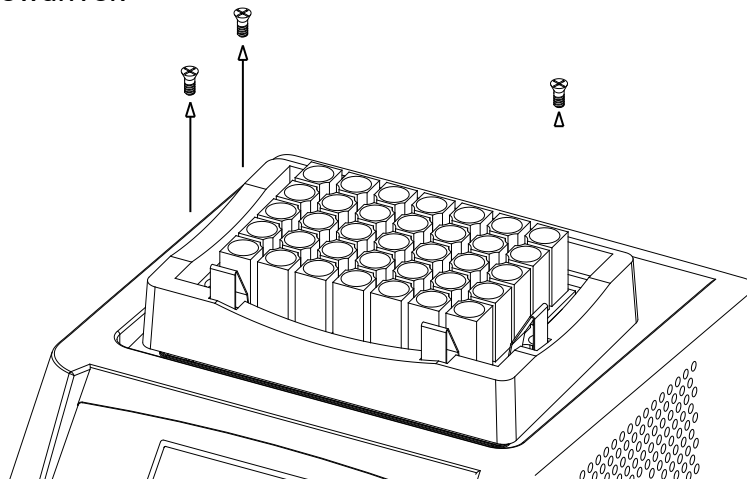
Note: If users want to exit calibration, please turn off the power, then restart instrument.

Note: If power off or turn off the instrument during calibration, this calibration is invalid.

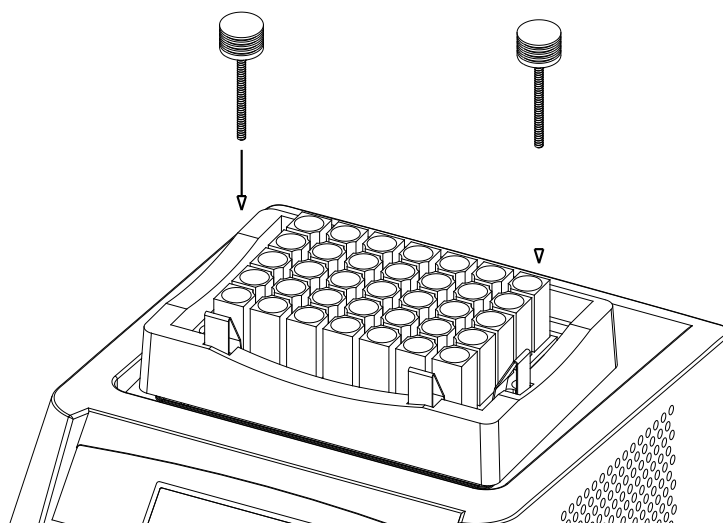
Chapter 5: Exchange of block

Note: Below procedures are only used for Bit1000.

1) Pull out the three screws by counterclockwise which fix the block with the cross screwdriver.



2) Put M4 to threaded hole by clockwise and screw up, you can pull out block.



Note: Use screw fittings provided by manufacturer to fix block, if lost, please contact with supplier.

Chapter 6: Troubleshooting

Phenomenon	Processing Procedure
No response after power-on	No connection of power(a)
	Broken fuse(b)
	Broken switch(c)
The actual and displayed temperatures are quite different	Broken sensor(c)
No heating/cooling	Broken temp control system(c)
Key invalid	Keyboard failure(c)
System: ERROR TEMP HIGH!	Over temperature(c)
System: ERROR ADC DAT!	Error of sensor data(c)
System: ERROR ADC INT!	Sensor initialize failure(c)
System: Error unknown	Unknown failure(c)

a) Check connection of power.

b) Exchange fuse, then reboot instrument, if this problem persists, please contact with supplier.

c) Reboot instrument, if this problem persists, please contact with supplier.



High voltage in product, please do not detach it.

MEMO

A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for the user to write their memo.

