LABDEX

AIR JACKETED CO2 INCUBATOR LX101AJI

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1. Safety Measures

- Before use, just make sure that the power supply has a voltage in compliance with the requirement of the Product.
- A separate power socket should be used and make sure the plug andsocket are properly grounded
- When theproduct is running, do not pull out and plug in the power plug randomly without turning **OFF** the power switch.
- Random extension or cutting of the product power cable is prohibited
- To take out the power plug, make sure not to pull directly the power cable
- The product should be located on a solid and hard surface to keep it in a horizontal mode
- Keep a distance around the equipment
- Each time after the product is used for the experiment, water content shall be dried out from the inner chamber to avoid any rust and corrosion that may affect the lifetime
- The product should be placed on the bench, with the case stand firmly fixedto avoid any movement that may damage the product and cause human injury
- Avoid opening or closing the box door heavily; otherwise doing so will causethe falling of the box door, damage to the product, and injury accident
- If the product is stored for a long time, regular heating shall be applied to eliminate humidity and avoid any damage to the parts.

2. Introduction

This equipment is designed with polished stainless-steel shelves and semicircular arcs at corners for easy cleaning and a microprocessor-based PID controller with a large LCD screen. Delivers a higher level of performance for a dependable in-vitro growth environment through an air jacket that provides true temperature uniformity and CO2 gas control. Equipped with a Hot Air sterilizing Circulation System and UV light system for periodic sterilization of the chamber (optional) which stands as the ultimate reason behind a successful incubation.

3. Features

- Microprocessor-based PID controller with a large LCD screen
- Standard sterilization method is 90° moist heat disinfection
- Stainless-steel chamber, shelves and semicircular arcs
- Microorganism filter at inlet provides 99% filtration of bacteria and dust as well as supplies pure CO2 into the incubator
- Auto-controller of fan speed to prevent sample damage
- Doors temperature controller prevents dewfall on the glass doors
- Separate temperature-limiting alarm system for safe usage
- Alarm function for temperature difference, over CO2 concentration, doors open time, UV working status, etc

4. Specifications

Model No.	**LX101AJI**
Chamber volume	155 L
Shelves	3 Pcs
Heating method	Air-jacketed, PID control
Temperature range	RT + 5 – 55 °C
Ambient temperature	RT + 5 – 30 °C
Temperature stability	± 0.**1**°C
CO2 Range	0 – 20 % V/V
CO2 Control resolution	± 0.1 % (IR sensor)
CO2 Recovery	(Door open 30s, recovery to 5 %) ≤ 3 min
Temperature recovery	Temperature Recovery (Door open 30s, recovery to 37 °C) ≤ 8 min
Humidity method	Natural vaporization > 95 %
Voltage	AC 220V / 50 Hz
Power consumption	750 W
Interior dimension	480 × 530 × 610 mm
Exterior dimension	670 × 767 × 880 mm
Packing dimension (W × D × H)	840 x 790 x 1070 mm
Gross weight	115 kg

5. Applications

Used in tissue culture, in vitro fertilization, Neuroscience, Cancer research, Stem cell research, Regenerative medicine, Mammalian cell research etc.

6. Instrument Introduction

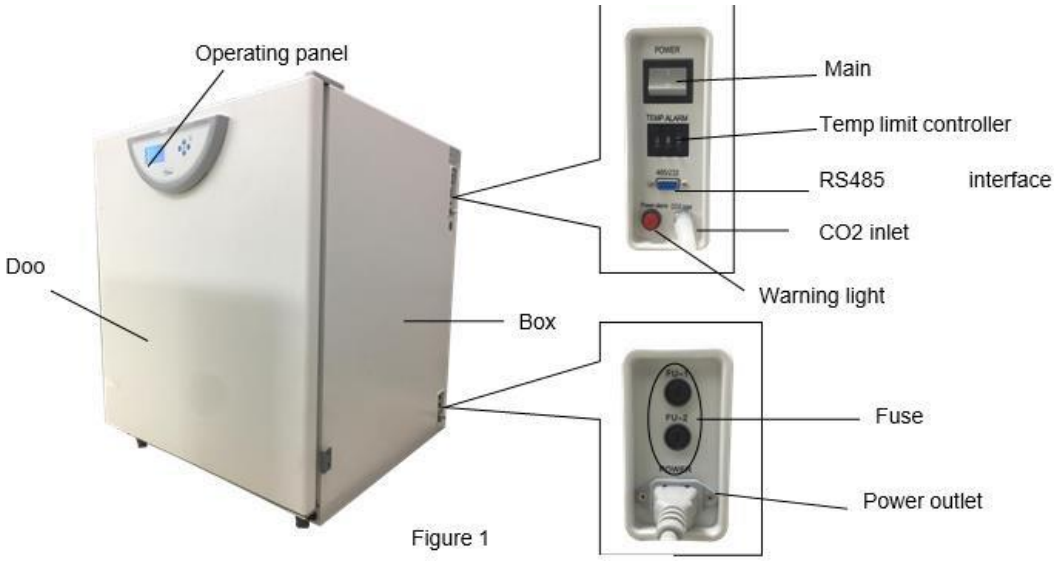


Figure.1

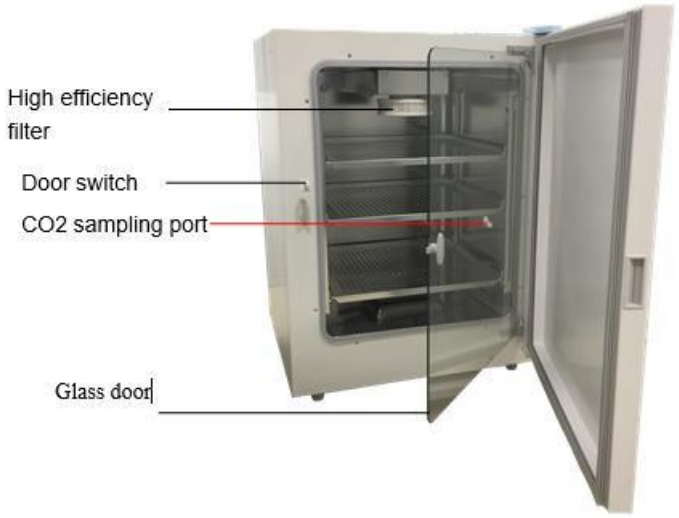


Figure.2

- **Symbols involved in the incubator**

: Protective earth terminal symbol

: Power "off" symbol

: Power “on” Symbol

7. Installation

7.1 Installation and connection of CO_2 steel cylinder

- The pressure release valve supplied with the unit is installed on the CO2 steel cylinder.
- No leakage is permissible at the joint and the steel cylinder is not opened for the time being. The output joint of the release valve is connected to the CO2 inlet joint behind the CO2 incubator with a silicone rubber hose and tightened with a packing washer against leakage

7.2 Cleaning and disinfection

- The work chamber of the CO2 incubator should be cleaned with alcohol and the door should be opened to put in the self-contained disinfector for disinfection
- Use 75% alcohol to clean the working room of the CO2 box. If it is equipped with a UV germicidal lamp, turn on the power switch of the UV lamp to disinfect the working

7.3 Schematic diagram of high-efficiency filter installation

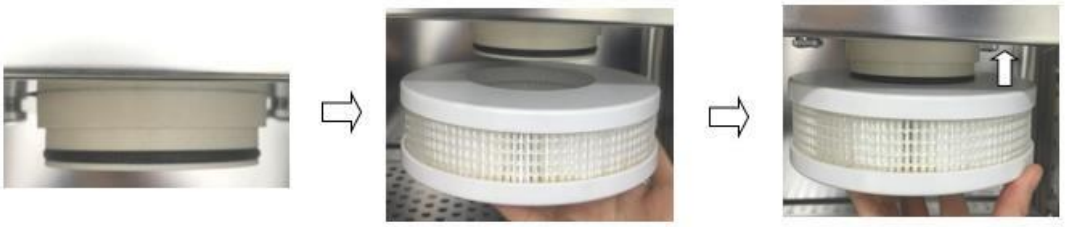


Figure.3

8. Operations

8.1 Operating panel

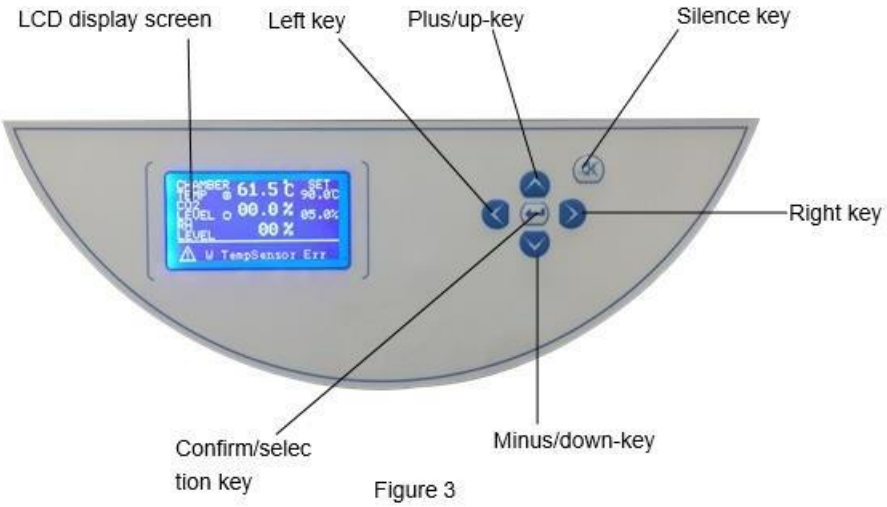


Figure 3

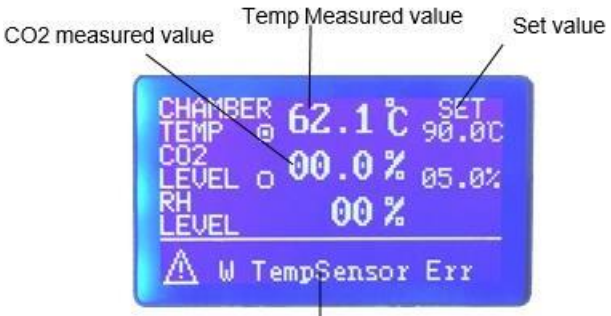


Figure 4

Figure 5

Figure. 4

8.2 Methods of operation

a) Sterilization

- High-temperature sterilization operation method: (Note: The high-efficiency filter device must be removed before high-temperature sterilization.

- In the power **ON** state, press confirm/select key, and the display shows the interface press minus/down key to “Disinfection”, and press
- And right key, the display shows the interface
- Use to add/ Move up key or minus/ move down key,

select “ON” or “OFF”, “ON” means turn **ON** high-temperature sterilization function, “**OFF**” means turn off high-temperature

- sterilization function & press the left key to return to the interface, and then press to return to the main site of the interface.

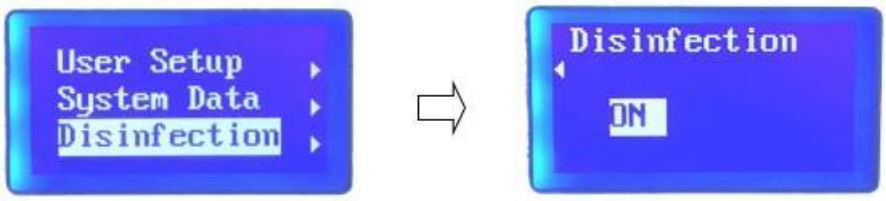


Figure.5

8.3 Start Up

- Unscrew the valve in the steel cylinder clockwise then open the CO2 steel cylinder. so that the CO2 pressure in the cylinder indicated by the inlet pressure gauge on the valve may reach ～5Mpa
- Turn the valve button slowly clockwise so that the output pressure may reach 0.05Mpa
- Switch the power to the “I” position and then LCD display screen will shine, showing such information as measured temperature, CO2 concentration, and system condition which means energization of the product and beginning of heating and gas supply
- About ten minutes later the LCD display screen shows respectively that the measured temperature in the incubator is equal to the set value (set at 37℃ upon delivery) and the measured CO2 concentration is equal to the set value.
- One hour after the temperature in the incubator becomes stable (for the set value upon delivery refer to blow fan speed change-time interface in the program chart（II）), the blower fan will switch to a lower speed operation automatically to reduce CO2 leakage
- At the end of the test switch POWER to the “O” position, and open the door to takeout the samples for cleaning up and drying
- With the valve on the CO2 steel cylinder closed, switch POWER to the “I” position again so that the CO2 incubator may work for 2 hours at a temperature of 50℃to dry up the work chamber before cutting off the main power and unplugging the unit

8.4 Parameter setting

a) Change of user "User setup" parameter

- With reference to the program chart (I) press ↵ key and the LCD screen will display the interface. When the user setup displays a black base frame press ▷key to enter the interface to set up temperature and CO2 concentration
- When TEMP Ctrl Point displays a black base frame, press the key ▷ to enter the interface of TEMP Ctrl Point. When the temperature value displays a black base frame, re-set up with △ and ▽ keys. At the end of the setup, press the key forconfirmation and then press a key to return to the interface.
- If CO2 Ctrl Point is selected at the interface press ▽ key. When the CO2 Ctrl pointdisplays a black base frame, press the key again to enter the interface of "CO2 Ctrl Point" When the CO2 value displays a black frame use the △; ▽ keys to reset. After setting, press the key ↵ and then press the key to return to the interface
- When an alarm sound is heard, it can disappear by pressing the silence

8.5 Over-Temperature Protector

a) The over-temperature protector is an independent protection system. When the controller fails and the temperature is out of control, when the temperature in the working room reaches the temperature limit set the value ofthe over-temperature dial, the over-temperature protector will automatically cut off the heating and sound an alarm

b) As shown in the right figure) When the temperature in the working room is lower than the limit value the protective system will be cancelled and the instrument resumes work. Such circulation will continue till the fault is removed.

c) The specific operation is done as follows:

- The set value of the temperature limit should be bigger or equal to SV+2℃
- The required limit that the temperature is set by the ＋ and — buttons on the over-temperature dial on the panel
- For example : SV=37℃,
- Then 39℃ should be set up.

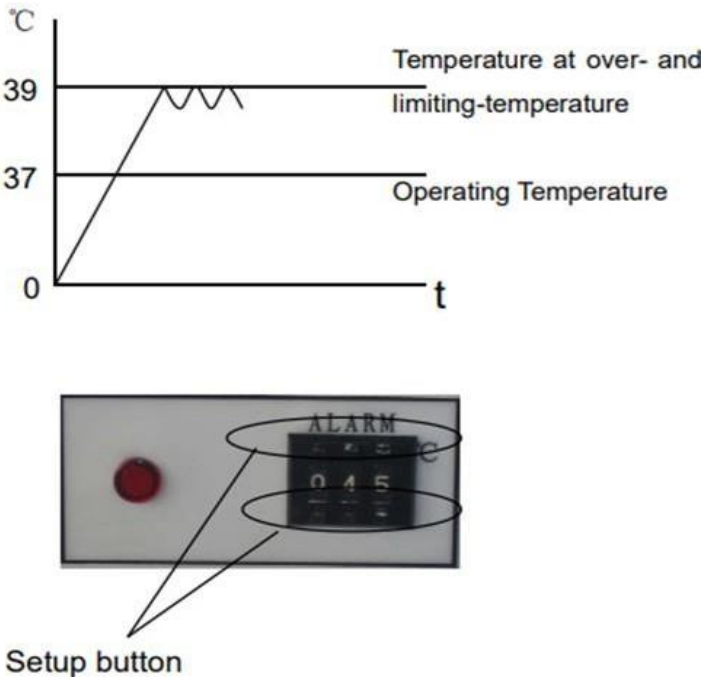


Figure.6

8.6 Attachments

a) Attachment 1: Pollution check

i. Two culture dishes with culture are prepared, one is for artificial pollution and the other is not polluted at all.

ii. You can breathe out to the surface of the first dish and then put it into the incubator for culture after covering; and the other half-opened dish without any pollution is also put in for culture.

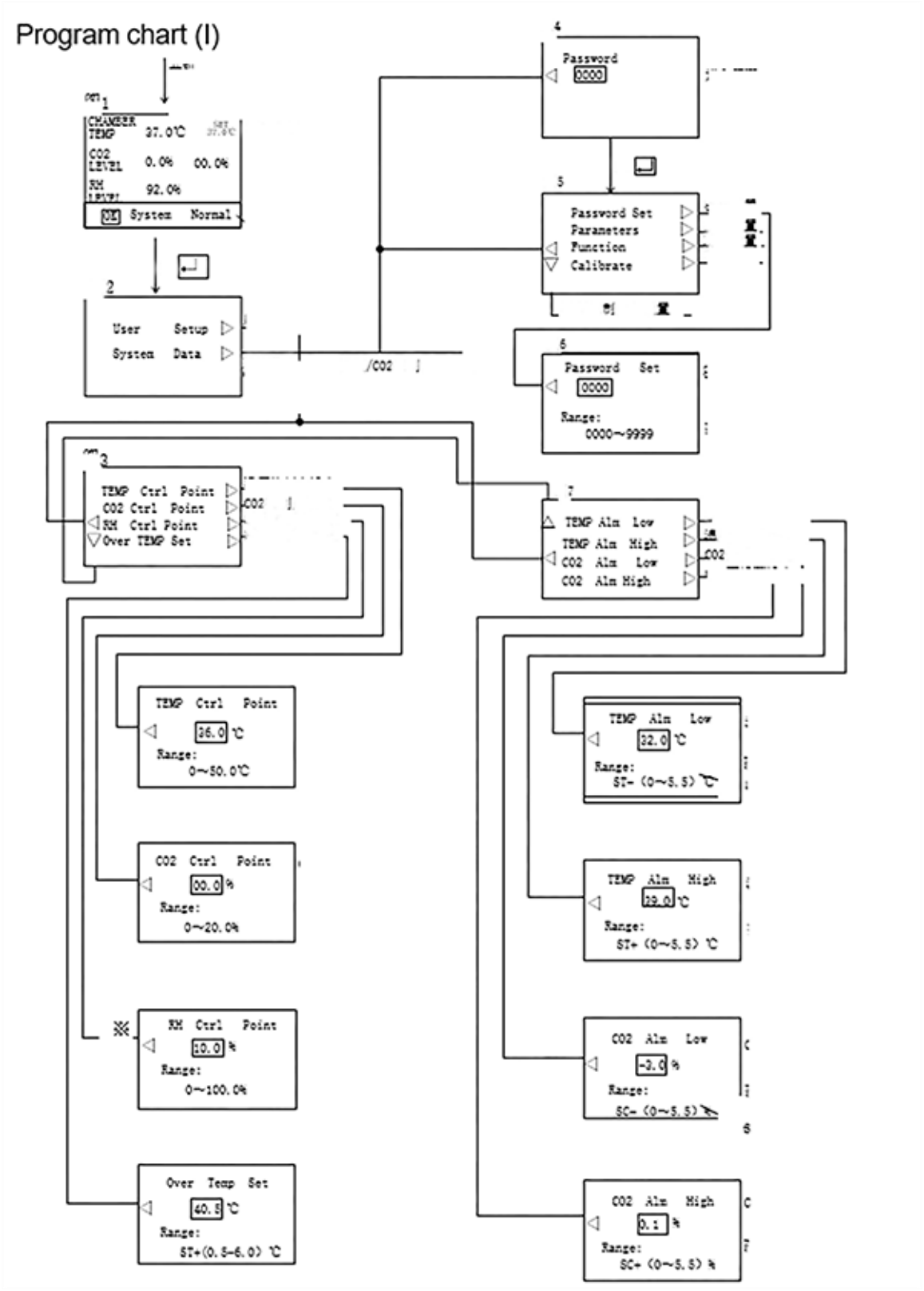
iii. If bacteria grow in the dish with artificial pollution, no bacterial should do inthe control, which shows the incubator is clean after disinfection

b) Attachment 2: Contrast of system information

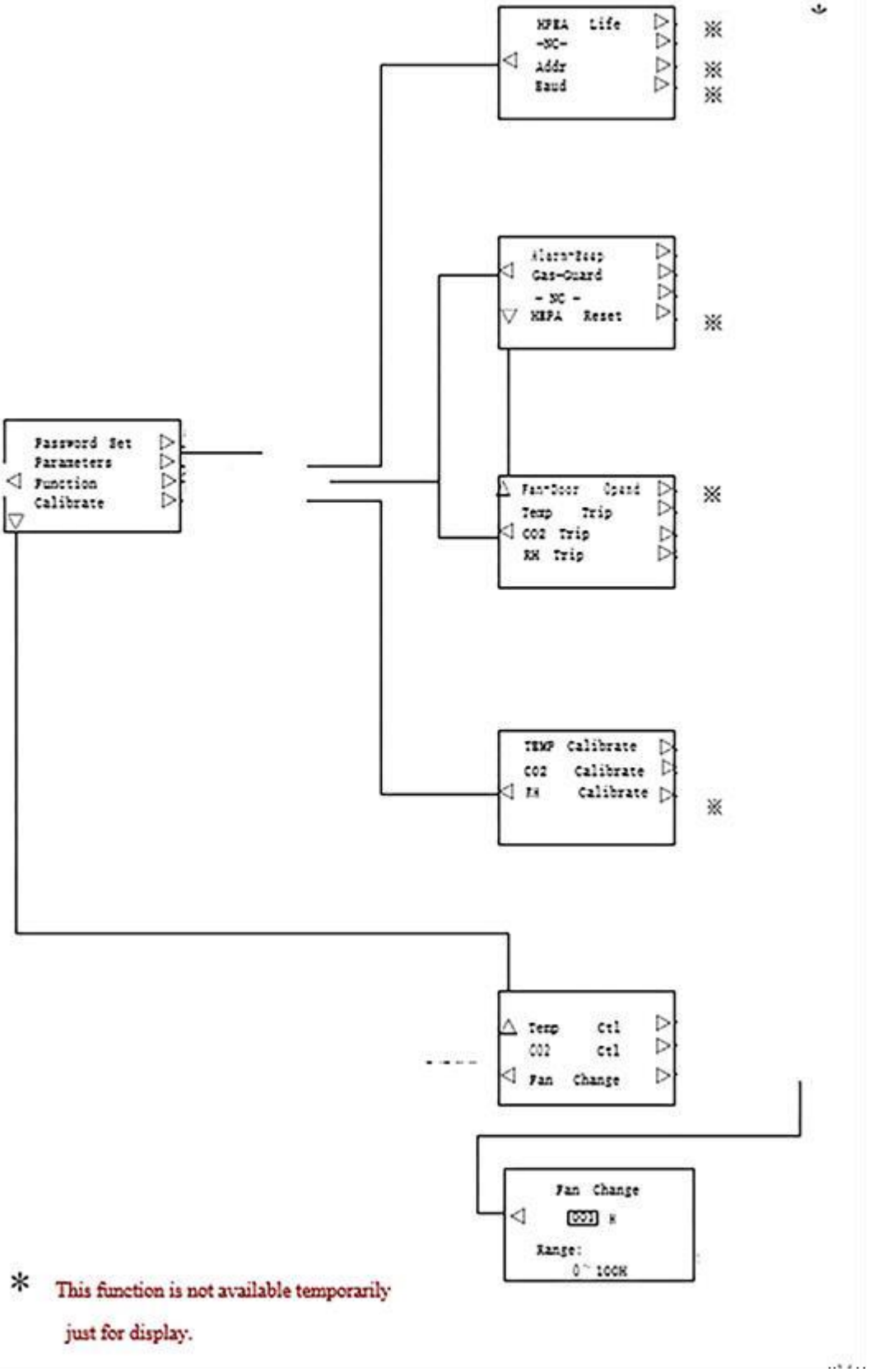
SYSTEM NORMAL	The system is normal.
X-Temp Sensor Err	The incubator temperature sensor fails
W-Temp Sensor Err	The door temperature sensor fails.
C-Temp Sensor Err	Over-temperature sensor fails
Heat Fail	Heater fails
Over-Temp	Over-temperature alarm
Temp High	High-temperature alarm
Temp Low	Low-temperature alarm
CO2 High	High CO2 concentration alarm
CO2 Low	Low CO2 concentration alarm
RH Low	Low humidity alarm

c) Attachment 3: Program charts

1. Program chart (I)
   - Such interfaces as “Operating Condition” of the CO2 incubator, “Password Set” “User Setup Temperature and CO2 Ctrl Point” and “Temperature andCO2 Alarm Point
2. Program chart (II) (III)
   - Such interfaces as C02 incubator “Parameters”, “Function” “Calibrates ”
3. Program chart (IV)
   - Such interfaces as C02 incubator “Temperature, C02 Ctrl Point Calibration

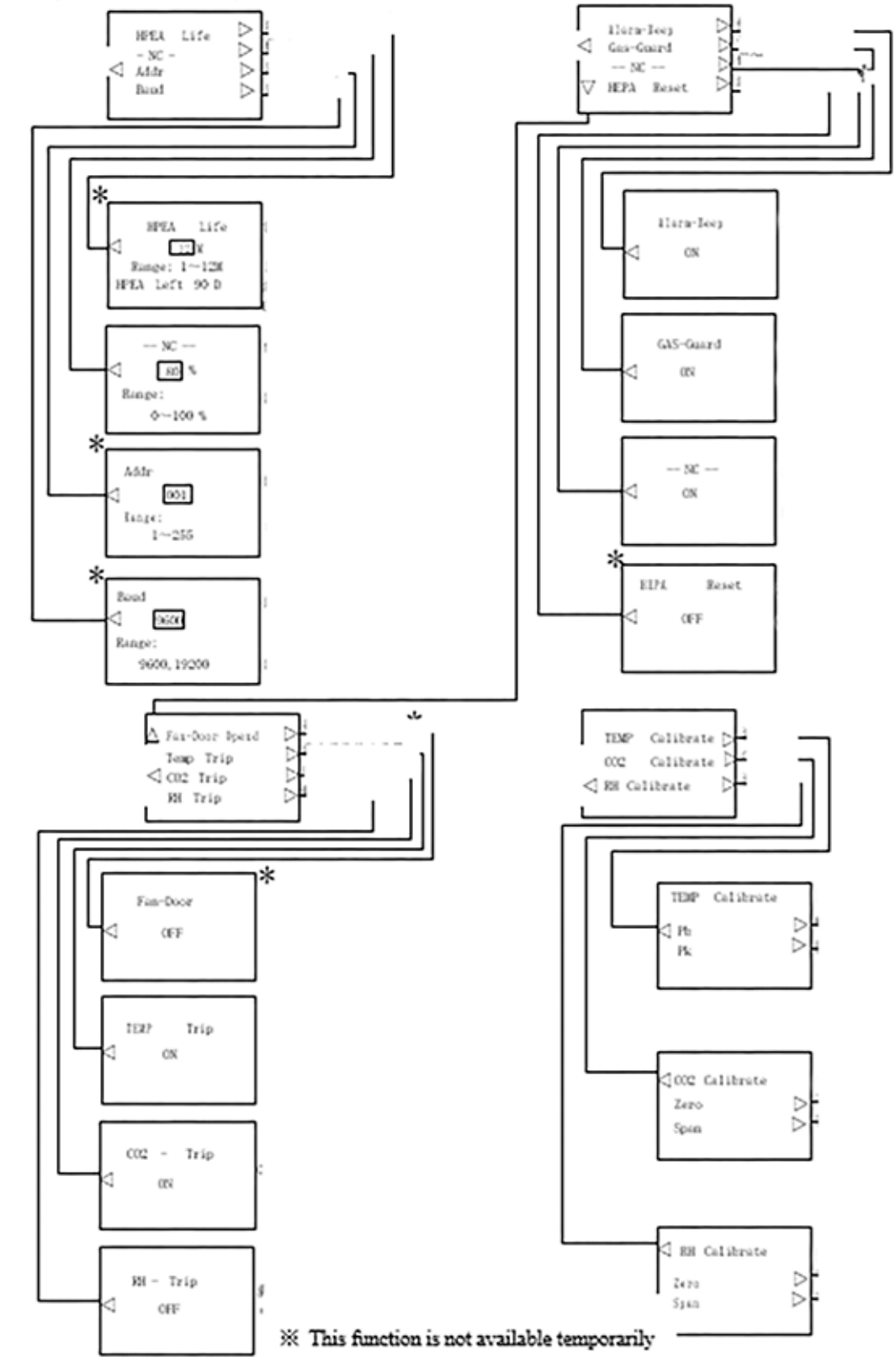

Program chart (I)
1
CHAMBER TEMP 37.0℃
CO2 LEVEL 0.0% 00.0%
RH LEVEL 92.0%
System Normal
2
User Setup
System Data
/CO2
3
TEMP Ctrl Point
CO2 Ctrl Point
RH Ctrl Point
Over TEMP Set
4
Password
0000
5
Password Set
Parameters
Function
Calibrate
6
Password Set
0000
Range:
0000~9999
7
TEMP Alm Low
TEMP Alm High
CO2 Alm Low
CO2 Alm High
TEMP Ctrl Point
26.0 ℃
Range:
0~50.0℃
CO2 Ctrl Point
00.0 %
Range:
0~20.0%
RH Ctrl Point
10.0 %
Range:
0~100.0%
Over Temp Set
40.5 ℃
Range:
ST+(0.5~6.0) ℃
TEMP Alm Low
32.0 ℃
Range:
ST- (0~5.5) ℃
TEMP Alm High
39.0 ℃
Range:
ST+ (0~5.5) ℃
CO2 Alm Low
-2.0 %
Range:
SC- (0~5.5)
CO2 Alm High
0.1 %
Range:
SC+ (0~5.5) %

Program chart (II)



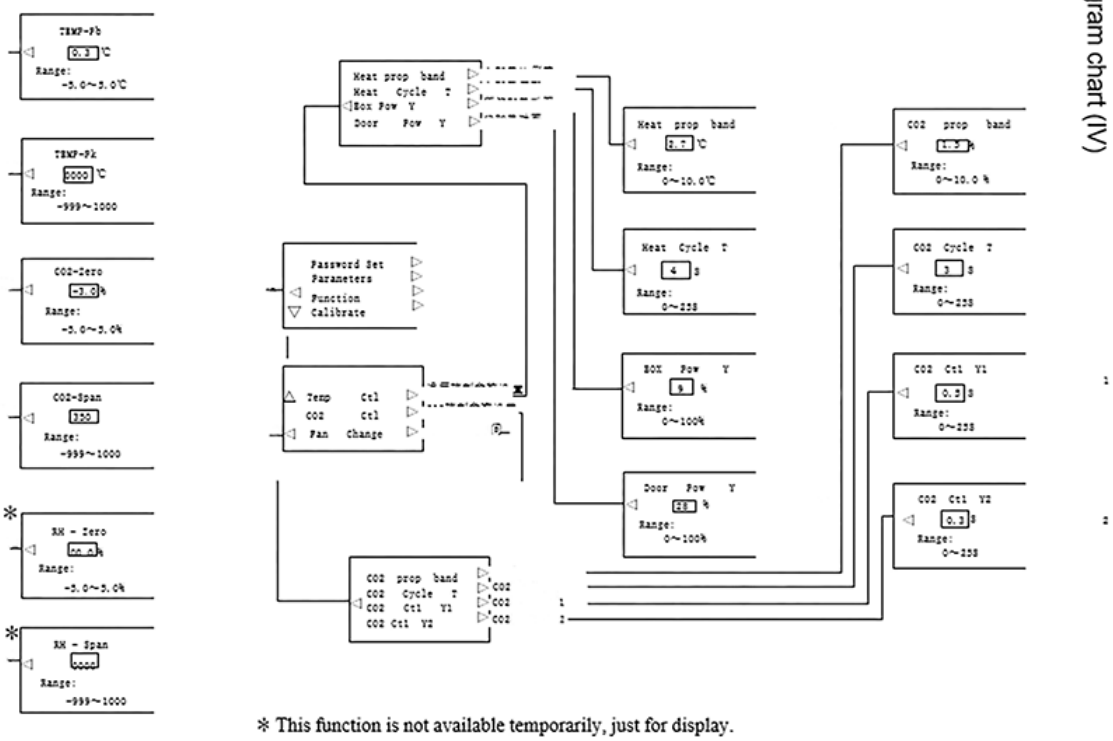
* This function is not available temporarily just for display.

Program chart (III)



※ This function is not available temporarily just for display.

Program chart (IV)



* This function is not available temporarily, just for display.

9. Troubleshooting

Sr.no	Symptoms	Cause	Solution
1.	No power after start-up	• The power socket is de-energized, and the display screen is notbright • CO2 incubator power lead-in notconnected properly • Main power switch not turned **ON** or out of order • Fuse broken	• Check the power socket and put itright • Place correctly after checking forpower lead-in andconnector • Switch the power to the 'I" position or replace it if any
2.	Low temp alarm	• The door switch is outof work • Controller isbroken • Heater disconnected or joint is loose	• The door switch is disconnected orout of order. • Adjust the gap of the door latching glass door not closed tightly • Control panel is replaced
3.	Low or high temp alarm	• Fan does not workor at slow speed • Over room temperature • Pt 100 poor control of contact	• Adjust speed or replace the fan • RT > 5 °C shouldbe lowered • Check for Pt100 wiring and replace it
4.	Over Temperature	• Parameters suchas proportion band are not set properly	• Set it again
5.	Sensor error	• Pt100 of XW/C isout of order or disconnected	• Replace it
6.	CO2 concentration notrising	• A CO2 steel cylinderhas under-pressure, filter burst, or pipeline leaks	• Replace the steel cylinder and rubber tube and adjust the bacteriafilter
7.	CO2 incubator leaks	• Fan axle office at each joint leaks ordoor seal leaks	• Put them right
8.	CO2 concentration deviates greatly	• Parameters suchas proportion band are not set properly	• Set again
9.	The press key is not working	• Touch screen outof order	• Replace

10. Accessories

10.1 Optional Accessories

- Humidity display
- RS485 connector
- CO2 pressure-releasing valve
- UV sterilization

11. Circuit Diagram