Operation Manual

Series 300

Climatic Chamber

Thank you for Choosing Biolab products. Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation.

Notices

- In order to ensure safety, please read this manual carefully
- Make sure put this manual in convenient place for later use
- Our company doesn't provide a safe guarantee if do not follow the instruction manual
- This manual only for user and authorized technician,it should be kept properly
- No notice if any changes because of product improvements

Index

01 Safety notices and warning

- "Warning" symbol

It will cause serious harm or fatal accident if not comply with warning

- "Attention" symbol

It will cause injury ,equipment damage and the loss of relative property if not comply with attention

- The meaning of symbols

prohibiting

must follow

- Symbols on equipment

AC

protective conductor thermal

power is connected

power is disconnected

warning, attention, caution and danger

02 Safety operation and preventive action

Warning :

Do not place this equipment outdoors. if it exposed in the rain, it may cause short circuit and electric shock.

Only professional person have qualification to install this equipment. If not, it may cause electric shock or fire.

Should place this equipment on the firm ground in case of tumble. If not, it may cause injury because it capsizes.

Do not place equipment in humid environment or a place with dripping water. Otherwise it may cause short circuit or electric shock

Do not place equipment near flammable materials and volatile substance. Otherwise it may cause explosion or fire.

Do not place equipment in the area where surrounded by acidic or corrosive gas, Otherwise it may cause short circuit or electric shock

Please use power supply socket with protective conductor terminal in case electric shock. If power socket without protective conductor terminal, it is necessary to install it by licensed technician.

Do not connect protective conductor terminal through gas, water pipe, telephone line or lighting arrester which will cause electric shock.

Please use specified power supply. If not, it may cause electric shock or fire.

Do not put volatile and inflammable substances in the inner chamber of equipment if it cannot be sealed, or it may cause explosion or fire.

Do not insert nail or wire and similar metal objects into any inlet or outlet of equipment, or it may cause electric shock or injury

Please operate this equipment in safe area if it stores any toxic ,harmful and radioactive substances, or it may do harm to human and environment.

Make sure to cut off power supply before maintaining equipment in case it causes electric shock or injury.

Safety operation and preventive action

Warning :

Do not touch any electric components or switch with wet hand, or it may cause electric shock

Make sure wear mask when maintaining the equipment to prevent any harmful drug substance and airborne particle.

Do not splash water onto the equipment, or it may cause electric shock or short circuit .

Do not place container which is filled of water on the top of equipment, or it may cause short circuit or electric shock.

Do not drag, twine or bind power cord. Do not damage power plug, or it may cause electric shock or fire hazard.

Do not use loose power plug, or it may cause fire or electric shock

Do not dismantle, repair or refit equipment without authorization and guidance from our company.It may cause fire or injury due to the improper handling.

Please unplug the power if equipment is malfunctioning. It may cause fire or electric shock if it continues.

Press power plug instead of pulling the power cord when you want to unplug the power from power socket, or it may cause electric shock or fire hazard because of short circuit.

Should unplug the power before moving equipment. Do not damage power cord. Damaged cord may cause electric shock or fire.

Should unplug power plug if it's not used for long period, or it may lead to electric shock, leakage or fire because of wear and tear of insulator.

Keep out of reach of children and the door unsealed if the equipment is not supervised or not used for a long period.

Should inform authorized technician when you dispose the equipment. Should dismount the equipment door to prevent suffocation and such accident.

Keep out of reach of children with the wrapping plastic.

Safety operation and Preventive measure

Attention :

- Please clean the dust on the power plug and then insert it into power socket properly, or it may cause over-heating or strike sparks
- Check temperature, humidity, segment and timing and other setting value when reboot the equipment after been short circuited or cut off by power supply. Otherwise may cause damage lost of products stored inside.

Please place equipment in ventilated place and dry place if not used for long period after purchase, or it may lead to equipment malfunctioning when use.

- Should arrange proper carrying-tools or qualified person when moving equipment.

Prevent tumbling when moving equipment, it may cause damage of equipment or human injury.

- Ensure enough space when moving equipment. If you need to carry it to the second or higher floors, make sure the elevator has enough space for the equipment and working personal.
- Do not put acidic, alkaline or corrosive substance in the inner chamber if the container is not sealed. Otherwise it will cause corrosion or damage to the components of equipment.

Attention

03 Instruction(application ,performance, technical parameters)

Application :

BCCL Climate Chamber is thermostatic equipment with heating, cooling,humidification and lighting function, highly precise and advanced.
Widely used in plant cultivation, breeding test, bacteria, mould, microbial cultivation & preservation, BOD determination and so on. Which is also used in biological genetic engineering, medical treatment, health and epidemic prevention, medical test, agriculture and animal husbandry, aquatic and other scientific research institutions.

Performance :

BCCL series Climate Chamber transfers actual temperature and humidity detected from temp. sensor and humidity sensor into signal. Through microcomputer control to heater towards required temperature and humidity.

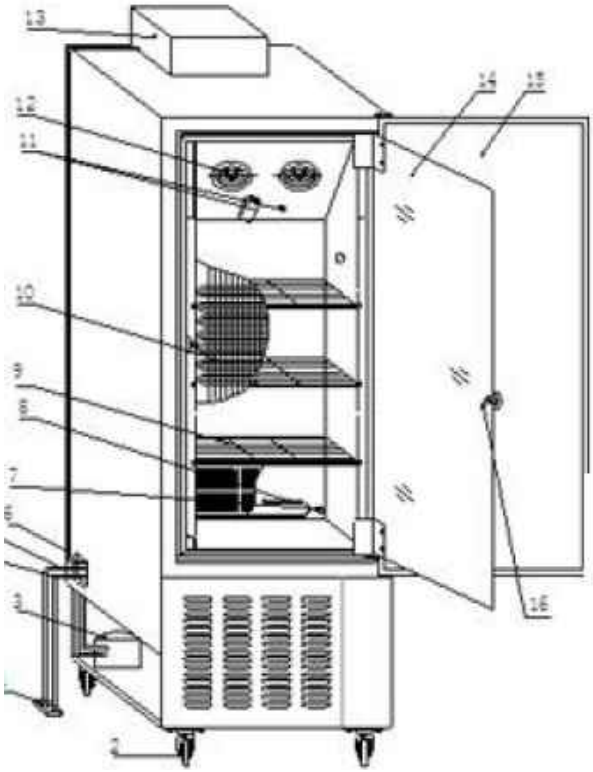
Technical parameters:

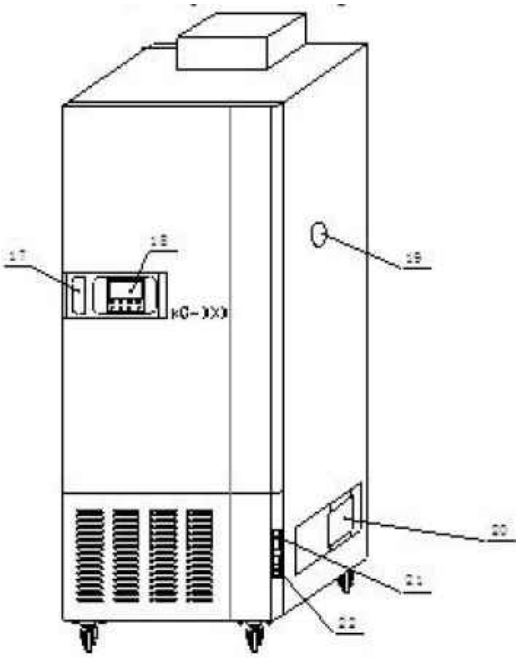
1. Volume: 150L.250L.400L;
2. Temp range : 0～65C;(with lighting10～50C, without lighting and with humidity5～50C);
3. Temp fluctuation range: ±0.5C(10C～40C);
4. Temp uniform range: ±1C(10C～40C);
5. Humidity range: 40-95%RH(10C～40C);
6. Humidity fluctuation: ±2%;
7. Illuminanation: 15000LX(5 levels)
8. Power voltage: 220V/50Hz;
9. Input power: 1080W(150L) 1100W(250L) 1350W(400L);
10. Working ambient : ambient temp 10~30C relative humidity70% below ;
11. refrigeration: R134;
12. Equipment class: class I

Notice : this equipment has low temperature auto-defrost function, it is normal that if there is fluctuation when low temperature auto-defrost

04 Structure

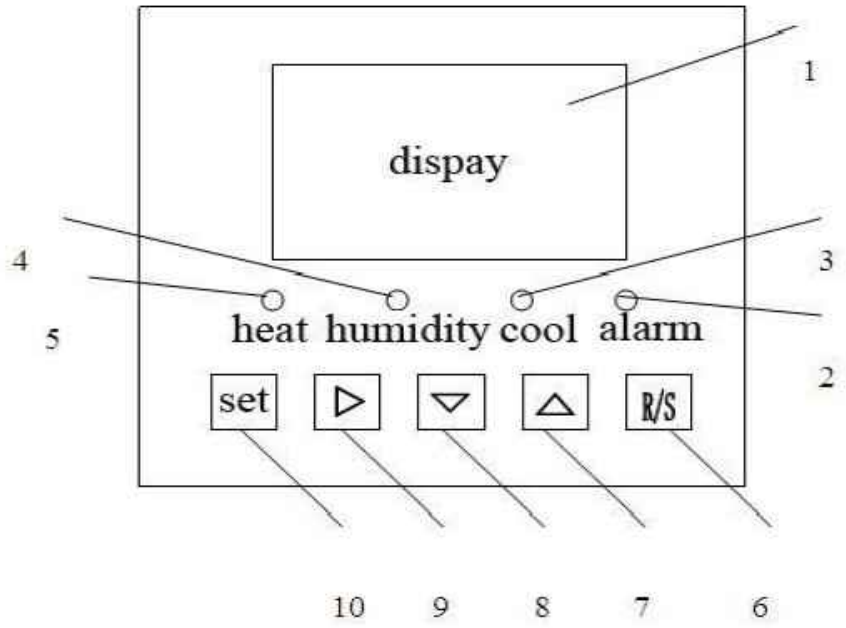
Parts :





1. storage water tank
2. wheel
3. compressor part
4. outlet pipe
5. overflow pipe
6. inlet pipe
7. water switch
8. humidifier
9. mesh board
10. evaporator
11. temperature and humidity sensor
12. axial fan
13. water tank
14. glass door
15. outer door
16. lamp on outer door
17. internal door button
18. door handle
19. controller
20. lamp on side door
21. side door button
22. control panel
23. power supply switch
24. cool switch

Control Panel :



1)LCD display ;
2)alarm indicator, it is on when equipment running abnormally
3)refrigeration indicator is on when compressor running normally
4)humidity indicator is on when humidifier running normally
5)heat indicator is on when heater running normally key
6) R/S key, long press this key for two seconds to start or stop
7) △ key ,in the main interface, press this key then backlight; in setting mode, press this key to increase value or shift parameter, or turn over the above page
8) ▽ key, in the main interface ,press this key then light,long press manual defrost; in setting mode, press this key to decrease value or shift parameter, or turn over the below page
9) ▷ key, decrease key, in setting mode, press the key to decrease setting value ;
10) set key, in the main interface ,press this key to shift display measured value between the value of running ;long press this key to access setting mode. In setting mode ,press to shift value, long press to log out setting mode;

⚠ **Notice:** When beeper beeping, press any key to mute

Equipment installation

In order to make sure the equipment can run normally, please place equipment as following:

 Attention: ambient temperature 10~30°C; relative humidity less than 70%

1. Avoid exposure to the sunlight.

Do not place it in direct sunlight, or it won't reach predicted performance

2. An efficient ventilative place

If you operate this equipment in a narrow and concealed room, it may lead to over-heating and malfunctioning. Minimum safe distance between equipment and wall is 10CM

d) Keep away from heat source

Don't install the equipment near heating source. External excess heat will affect performance of the equipment and may cause malfunctioning

e) Flat and firm ground

Make sure to install it in flat and firm ground. Uneven surface or leaning installation may damage equipment or injure people. Proper installation can avoid shaking and noise

f) Avoid humid place

Install the equipment in a place where humidity is less than 70%. Otherwise it may cause creepage or electric shock.

 **Warning**

Do not place this equipment outdoors. If it exposed in the rain, it may cause short circuit and electric shock. Do not place equipment in humid environment or a place with dripping water. Otherwise it may cause creepage or electric shock

13. Avoid place with flammable or corrosive gas.

Do not place equipment near flammable materials and volatile substance. Otherwise it may cause explosion or fire. Do not place equipment in the place where has acidic and corrosive gas, or corrosion will cause creepage, electric shock or equipment damage.

05 Installation

1. Unpacking

Remove packing materials ,open the door for ventilation . Please use neutral detergent to clean if the shell and panel is dirty. then wipe with wet cloth and at last with dry and clean cloth

2. level equipment

Fix equipment with the front brake-wheel after installation in case equipment moves

3 Earthing

Warning

Please use power socket that has protective conductor terminal in case of electric shock. If it is not connected, has to install protective conductor terminal by licensed technician. Do not connect protective conductor terminal through gas, water pipe, telephone line or lighting arrester which will cause electric shock.

4. Idle equipment

Before setting equipment aside , empty water in the humidifier and remove internal, moisture thoroughly. Be sure the inner chamber is dry and cool before closing the door .

5. Move equipment

Before moving equipment ,empty water in the humidifier .or it will cause creepage or electric shock because of overflow water or splashed water

Preparation before operation

When equipment running in the first time, please operate as belows:

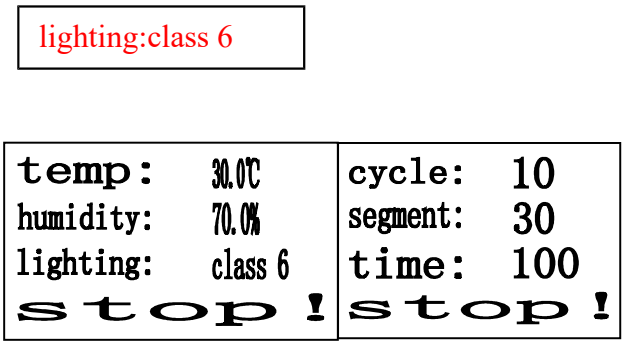
1. Take out the shelves or other accessories
2. Clean the inner wall with gauze which is soaked by alcohol and then use dry cloth to wipe-dry
3. Put the shelves into inner chamber according to your experiment of requirement
4. Put water tank on the top of equipment before using ,please connect water pipe with water inlet and overflow outlet which in the left of equipment (refer to component picture) ,and put storage water tank under the overflow pipe and water outlet for spare use
5. Pour enough pure water into water tank

Notice : Don't use NaCl or other Halide solution to clean equipment ,or it will cause rust

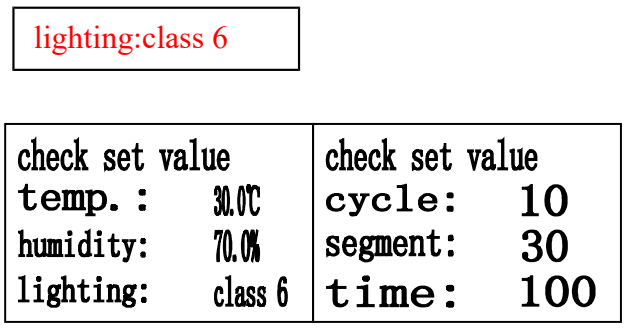
06 Operation

Display :

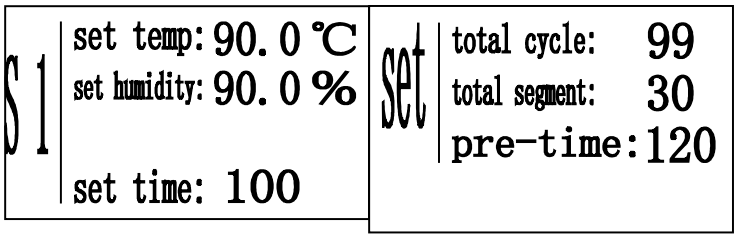
1. In the general mode, screen displays main interface;



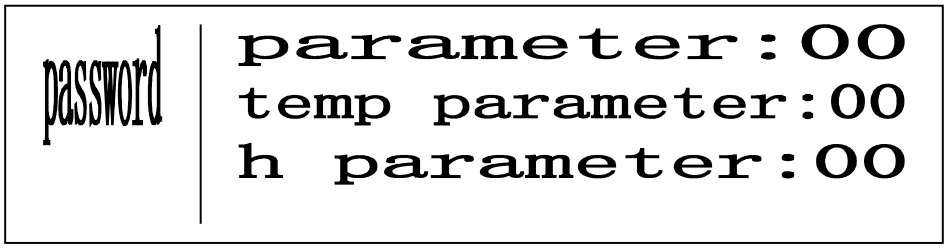
2. In master interface, press ▷ key to check interface,after 60 seconds , it will return master interface automatically;



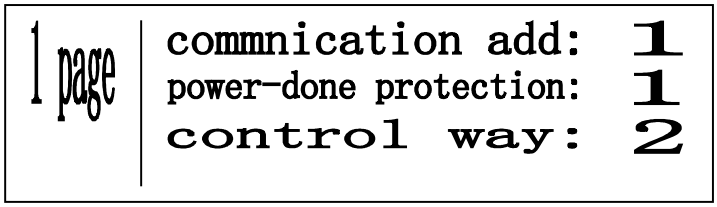
3. In master interface, long pressing key 4 seconds ,get into setting interface,long pressing key 4 seconds ,it will return master interface and save setting value; after 60 seconds without press any key, it will return master interface automatically ,but the setting value is not saved;



4. In master interface ,long press key 4 seconds ⊳ to access parameter password interface ; different parameter have different password , input correct password, press set to access relative parameter interface; if password is incorrect, press set key ,it will return main interface



5. In parameter password interface , input correct password ,press set key, enter relative parameter interface ; in this interface ,long press for 4 seconds ,it will return main interface ,and save set value; after 60 seconds without pressing any key, it will return main interface automatically ,but the setting value is not saved;



6. In main interface press ▽ and set key for 4 seconds , to internal parameter password interface ,input correct password, press set key to relative parameter interface; if password is incorrect, press set key ,it will return main interface

Operation Method

Operation steps

For example: after power is connected , the equipment will start working 120 minutes later. Set 10 cycles, two segments each cycle. in the first segment, it needs to work for 720 minutes, the temperature controlled is at 30 C, light intensity is class 6 ,humidity controlled is at 60% RH; in the second segment , it need to work for 1200 minutes, the temperature controlled is at 10 C, light intensity is class 4, humidity controlled is at 50% RH.

a) Press set key for 4 seconds to enter the setting interface;
b).press the ⊳ key, switch the cursor to the value of the total cycle, press Δ and ∇ key , modify the total cycle to 10; re-press set key, the cursor stays at the value of total segments, and modify the total segments to 2 ; re-press set key, the cursor stays at the value of appointment time, modify the appointment time to 120 minutes ;
c)Then press the set key to access the setting interface of the first segment, the cursor stays at the value of temperature , modify the temperature to 30 °C; re-press set the cursor stays at the value of humidity, modify the humidity to 60% RH; then re-press set key to modify light intensity to 6 class ; re-press set key to modify time to 720 minutes.

d) Re-press set to setting interface of the second segment, modify the temperature, humidity, light intensity and time to 10°C, 50%RH, class4 and 120 0minutes according to above steps; re-press set key for 4 seconds, then log out setting interface , turn back to main interface, setting is finished.
e) Long press the key R/S for 2 seconds , the controller will start timing according to appointment time, when running, it displays : timing……, after 120 minutes, the program will proceed with the first segment
f) After the program enters the first segment, if the timing way is 0 , it will start timing, and it will display : timing…..:; if the timing way 1, it displays : running ….., when temperature reaches to setting value, start timing; if the timing way is 2, it will start timing after temperature and humidity reach setting value
g) It will enter the second segment after the first segment is over, then it will enter the first segment of the second cycle after the second segment of the first cycle is over , then go next and so on; running stops after the second segment of the tenth cycle is over
h) Notice : when humidity is 0, no humidification and dehumidification function, this equipment can be used as biochemical incubator

Parameters :

a)user parameters: Password 3

Parameter name	Parameter Function	Range (factory default)
Address	Connected to the computer, the mailing address of this equipment, if several equipments connect to the computer, mailing address should not be same;	1 ~ 16(1)
Power failure protection	1 Turn off the power failure protection; 2 Turn on power failure protection, after power is back, the program will proceed with running in accordance with the power cycle, the number of segments and time before power disconnect	0 ~ 1(0)
Control mode	1.The system will tell compressor whether is normally open or disconnection according to normally open temperature +ambient temperature , normally open humidity ; When in disconnection mode, open and closing point will be calculated automatically according to ambient temperature 2. The system will tell compressor whether is normally open or disconnection according to normally open temperature ; When in disconnection mode, start and closing point will be calculated automatically according to ambient temperature 3.when in disconnection mode, the compressor will proceed with cooling according to the setting value of start and close refrigerant ; Proceed with dehumidifying according to the setting value of start and close dehumidification	0 ~ 3 (1)

b) Temperature parameters: Password4

Parameter name	Parameter Instruction	Range (factory default)
Over-temperature alarm	When measuring temperature> setting temperature + over-temperature alarming, alarm indicator is on, disconnect heating protective relay, start cooking , beeper beeps	5.0 ~ 50.0 (20.0) C
Zero adjustment	Zero adjustment = mercury thermometer reading - Display temperature;	-99.9 ~ 99.9(0) C
Full-scale adjustment	Modify the error margins of actual temperature ,full-scale adjustment = 1000 * (mercury thermometer reading - Display temperature) / display temperature;	-999 ~ 999(0)
Proportional	Time proportional adjustment.	0.0 ~ 90.0(15.0)
Integration time	Integral acting in regulating.	(1 ~ 9999S) 600
Derivative time	Differential acting in regulating.	(0 ~ 9999S)200
Cycle time	Heating control cycle.	0 ~ 60 (5)
Disconnect heating	When measuring temperature> = setting temperature + disconnect heating temperature, turn off the heating output;	-50.0 ~ 50.0(2.0) C
Normally open temperature	When the control mode of compressor is 0, if the setting temperature> =ambient temperature + normally open temperature, the compressor is automatically switched to disconnection mode and calculate start and closing points according to the ambient temperature When the control mode of compressor is 1, if the setting temperature> = normally open temperature, the compressor is automatically switched to disconnection mode and calculate start and closing points according to ambient temperature	-50.0 ~ 50.0 (50.0) C
Start refrigerating	When the control mode of compressor is 2, the start point of refrigerant is: measuring	-20.0 ~ 20.0(0.5) C

	temperature> =setting temperature + start refrigerant	
Close refrigerating	When control mode of compressor is 2, the closing point of cooling is measuring temperature <= setting temperature + Close refrigeration; (the closing point of refrigeration should be less than start refrigeration point)	-20.0 ~ 20.0(0.2) C
Refrigerating delay	Compressor delay protection time, the interval time between last stoped and reboot > = delay time;	0 ~ 60(3)Min

c) humidity parameters: Password5

Parameter name	Parameter Instruction	Range (factory default)
Over humidity alarm	When the the measuring humidity> = set the humidity + over humidity alarming, disconnected the humidification protective relay	0.0 ~ 50.0 (20.0) %RH
Humidity zero	Zero adjustment = hygrometer reading - display humidity;	-99.9 ~ 99.9(0)%RH
Humidity full scale	Modify the error margins of actual humidity ,full-scale adjustment = 1000 * (hygrometer reading-display humidity) / humidity;	-999 ~ 999 (0)
Proportional band	Time proportional adjustment.	0.0 ~ 90.0(15.0)%RH
Integration time	Integral acting in regulating.	(1 ~ 9999)200S
Derivative time	Differential acting in regulating.	(0 ~ 9999)30S
cycle time	Humidification control cycle.	0 ~ 60 (5)S
Off humidification	When measuring humidity> = setting humidity + temperature of closing humidification, disconnect humidification output	-50.0 ~ 50.0(-2.0) %RH
Normally open Humidity	When the control mode of compressor is 0, if the setting humidity <= normally open humidity, the compressor is automatically switched to disconnection mode	00.0 ~ 90.0 (10.0) %RH
Start	When the control mode of compressor is 2, the	-20.0 ~ 20.0(5) %RH

dehumidifying	dehumidification of start point: measuring humidity> = to setting humidity + start dehumidification;	
Close dehumidifying	when the control mode of compressor is 2, dehumidification: measuring humidity <= setting humidity + disconnect dehumidification; (the closing point of dehumidification should be less than the start point of dehumidification)	-20.0 ~ 20.0(2) %RH
Low temperature protection	when the measured temperature is lower than the low temperature protection, disconnect humidification and dehumidification, the alarm indicator is on	-20.0 ~ 60.0(5.0) C

d) Defrost parameters: Password9'

Parameter name	Parameter Instruction	Range (factory default)
Defrost mode	0: solenoid valve defrost mode; when defrosting, solenoid valve is on, the fan stops; 1: heating defrost mode; when defrosting, the solenoid valve is on, there is heating output, the fan stops, the compressor stops;	0 ~ 1(0) C
Interval NO1	The interval time of defrost between 0.0-9.0 C, in hour	0 ~ 200(3)H
Interval NO2	The interval time of defrost between 9.1-15.0 C, in hour	0 ~ 200(3)H
Interval NO3	The interval time of defrost when higher than 15.0 C , in hour	0 ~ 200(6)H
Defrost NO1	The output time of defrost between 0.0-9.0 C , in second	0 ~ 300(60)S
Defrost NO2	The output time of defrost between 9.1-15.0 C , in when higher than 15.0 C	0 ~ 300(60)S
Defrost NO3	The output time of defrost when higher than 15.0 C , in when higher than 15.0 C	0 ~ 300(60)S

e) Internal parameters: password 101

Parameter name	Parameter instruction	Range (factory default)
The upper limit of temperature	The upper limit value of setting temperature	0.0 ~ 90.0 (60.0) C
The lower limit of temperature	The lower limit value of setting temperature	-40.0 ~ 0.0(0.0)C
Controller type	0: artificial climate chamber; 1: constant temperature and humidity chamber; 2: light incubator	0 ~ 2(0) C
Display Language	0: Chinese; 1: English	0 ~ 1(0)
Timing way	0: 0 ~ 9999min;1: 0 ~ 99h: 0 ~ 59min	0 ~ 1(0)
Timing judgment	0: start timing once equipment works 1:start timing when temperature reaches setting value 2:start timing when temperature and humidity reach setting value	0 ~ 2(0)
High Temperature Control	Setting temperature> high temperature control, the compressor starts only when over-temperature alarming	0.0 ~ 99.9(5.0)
Humidity deviation	Reservation parameters	0.0 ~ 99.9 (2.0)

07 Alarm and safety function

● Temperature sensor failure alarm: screen displays: compressor stops working and heating stops. The alarm will stop beeping after 10 times beeps

●Humidity sensor failure alarm: screen display: compressor stops working and heating stops, The alarm will stop beeping after 10 times beeps

●Temperature limit alarm: Measured temperature exceeds the set temperature of 4 degrees, heating stops, The alarm will stop beeping after 10 times beeps

●Humidity limit alarm: The measured humidity exceeds the set temperature of 5% RH, humidifying stops working, The alarm will stop beeping after 10 times beeps

● Low water level prompts: The water level is lower than the low water level, control switch bit transhumance screen display:

08 Routine using and maintenance

Please keep upright when moving this equipment. Do not frequently modify the set values during process, to avoid overload because compressor starts frequently , or it will affect life of use

The equipment is equipped with power switch and circuit breaker ,if there is something wrong with this equipment during process, please cut off the power and check the control circuit , and then check the other parts. (See wiring diagram)

Be sure to shut the inner door, and then close the outer door. If the inner door is not fully closed, even if the outer door is closed, the device may not be able to reach maximum performance. Please close the door carefully to avoid damaging silicone door seal.

Do not use corrosive solution to wipe the exterior surfaces in order to maintain the appearance of the equipment, keep the chamber clean, use a dry cloth or alcohol to wipe.

If set the equipment aside, keep the chamber dry, and cut off the power supply.

In order to ensure uniform temperature, you should often check the axial fan. During

experiment, for good circulation, samples should not be crowded. Do not touch temperature probe, in case of temperature is out of control.

Make sure the shelf is fixed, or it could damage the cultures.

Do not lean against or press the glass in case injury person.

Do not lean against the doors, in case injury person or damage door or damage equipment.

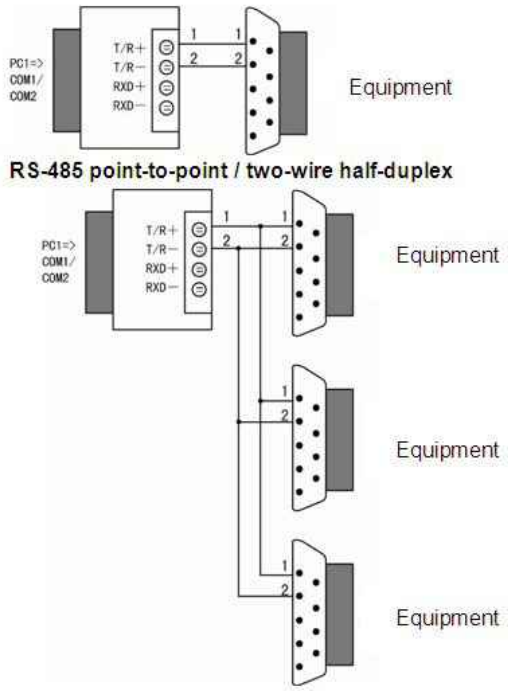
When equipment fails to work, please ask professional technician or the factory sales department for help. Please don't do anything by yourself.

09 Optional using

RS-232/RS-485 instructions for use of the converter

- In order to proceed with data communication between the different standard serial interface to the computer, an external device or smart instrument, must provide conversion of standard serial interface. The converter is compatible with RS-232, RS-485 standard, capable of converting single-ended RS-232 signal to a balanced differential RS-485 signals.(it can connect 16 controller of this series together at the same time)

RS-485 point-to-point / two-wire half-duplex



- **Data communication failure**

(1)Check if RS-232 port inside connection is correct.
(2)Check if RS-485 port inside connection is correct.
(3)Check if port is connected.

- **Data is missing or incorrect**

Please check if data communication equipment rate and format is accordance

10 Trouble Shooting

(1)Trouble shooting

Trouble	handling
Sensor failure warning	·Heating sensor abnormal, please check heating sensor (model:PT100) ·Humidity sensor abnormal, please check humidity sensor
Temp. can't reach setting value	·Please check heating tube
Humidity can't reach setting value	·Please check water level, water level should cover half of the heating tube. ·Please check humidity heating tube.
Screen displays nothing	·Please check if socket is 220V ·Please check if power is connected ·Please check if power switch, if it is tripping operation, please check wring layout.

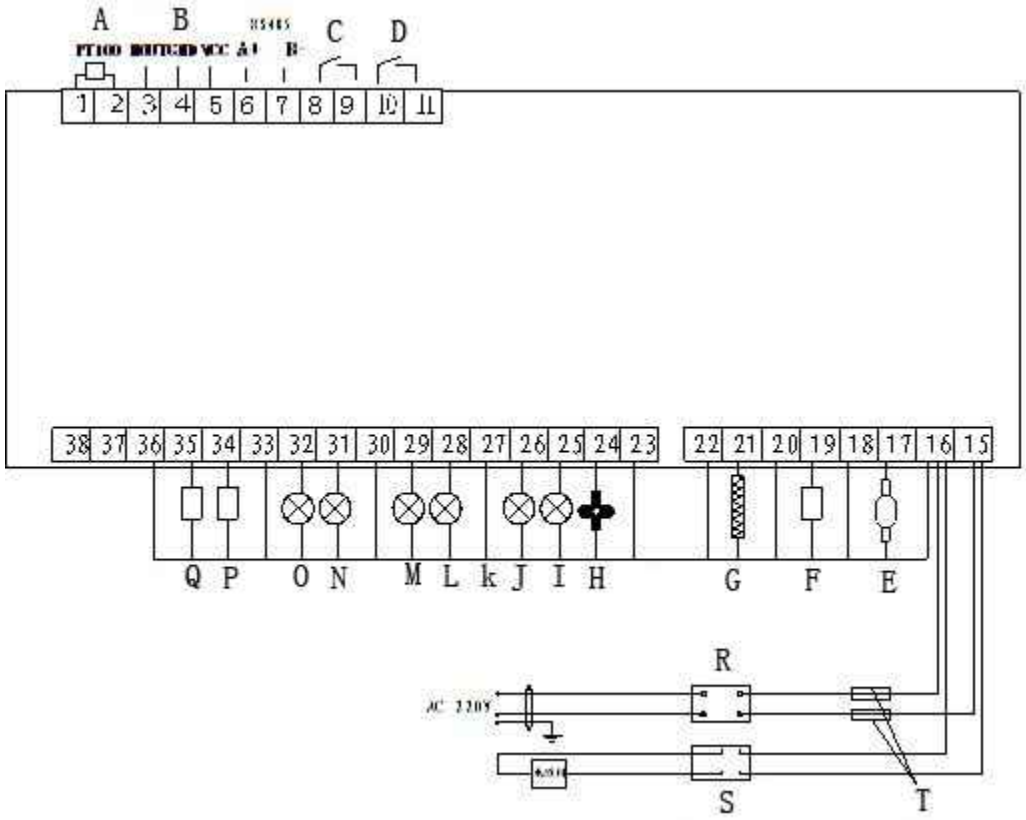
1.when temp. sensor is abnormally, it displays: Temp. abnormal. PLS replace temp. sensor
2.when humidity sensor is abnormally, it displays :99% or 0%, PLS replace Humidity sensor.
3.Water level signal has been open circuit in 5 minute, prompt system of adding water failure, screen displays: no water, please add water. Please check water system.

11 Specification

Name	BCCL 300 Series-Lighting incubator		
Model	BCCL-301	BCCL-302	BCCL-303
Exterior Dimension	710×775×1780	770×815×1780	783×905×1828
Interior Dimension	480×480×1100	540×520×1100	554×610×1148
Effective volume	244L	298L	377L
Shell	Cold-roll steel sheets with powder coat treatment		
Inner shell	SUS304 mirror stainless steel		
Door	With heating preservation design		
inner door	Tempered glass (5mm)		
Shelf	Carbon steel with chromeplate		
Heating preservation system	Polystyrene foam		
Cooling system	R134a(without fluorine), Green, environmental protection, energy saving		
Heating system	Use electrical heating tube		
Fan	Axial flow fan		
Humidity System	Use electric heating to control humidify stable		
Temp. sensor	Sumsung Temp. sensor PT100		
Humidity sensor	Cybersen humidity sensor		
Displayer	LCD(Liquid Crystal Display),China/English Display		
Warning system	Temp. & humidity upper limit warning with screen prompt; Temp. & humidity sensor fault warning with screen prompt		
Weight	162kg	183kg	194kg
Optional Accessories	Switch port ,Portable printer,		

Note: Biolab may change product design and specification without notice.

12 Wiring Layout



A:/temp. B:/humidity sensor C:/door controller D:/water level
E:/compressor F:/humidity G:/heat H:/fan I:/NO.1 lighting
J:/NO.2 lighting K:/COM L:/NO.3 lighting M:/NO.4 lighting
N:/NO.5 lighting O:/NO.6 lighting P:/defrost
Q:/add water R/circuit breaker S:/refrigeration switch T:/fuse

Packing List

No.	Name	Quantity	Note
1	Finish product	1	
2	instruction manual	1	
3	shelf	4(250L) 4(300L) 4(400L)	
4	storage water tank	1	
5	water tank	1	
6	Inlet pipe	1	
7	outlet pipe	1	

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