Operation Manual

Series 200

CO2 Incubator Air Jacketed

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

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01 Introduction

Application

BCAJ series 200 CO2 incubator is an advanced equipment for cell ,organ and bacterial culture ,it is necessary equipment for developing immunology ,oncology ,genetics and biotechnology .
Widely use in microbe ,medicine ,pharmaceutical ,environment protection , foodstuff and livestock and so on science research and manufacture .simulate natural environment for microbe ,cell ,bacterial and virus to grow. such as , control temperature ,humidity and gas ,main use in organ and special microbe culture .
Compare air-jacket with water-jacket , it heats faster and shorter temperature recovery time than water-jacket CO2 incubator , it is suitable for short time culture or the culture which need to open door frequently .

Performance

CO2 incubator is improved based on heating incubator, mainly increase co2 and humidity to meet required ambient for microbe culture

Carbon dioxide gas density be controlled by CO2 sensor .
CO2 density detected from CO2 sensor in the inner chamber ,transfers test result to control circuit and electric magnetic valve and so on components, if test CO2 density is lower ,then electric magnetic valve opens, CO2 will go into inner chamber until CO2 density reach setting density ,at this time ,electric magnetic valve is close , CO2 stop getting into inner chamber ,it is stable state .
This equipment is air-jacket heating with carbon fiber to heat inner wall , also six sides heating.

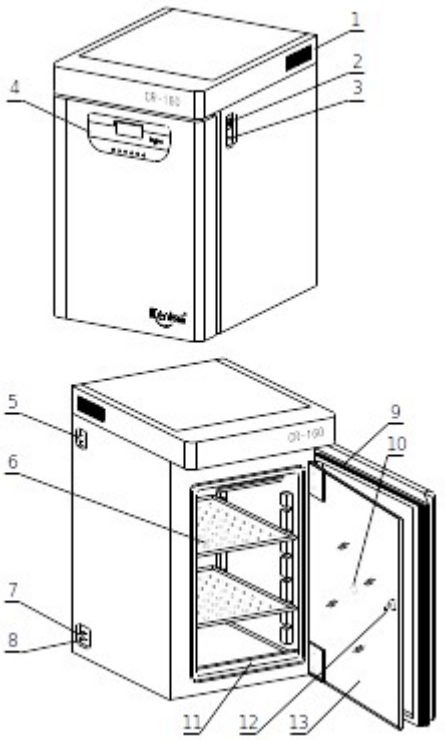
Technical Parameters

Model / Parameter	BCAJ-201	BCAJ-202
Temperature range	RT+5℃ ~ 55℃	
Temperature fluctuation	≤±0.5℃ (37℃)	

Temperature uniform	≤±0.8℃	
Temperature recovery time	after opening door 30 seconds ,When it reaches 37℃ ≤8min	
CO_2 control range	0～20%	
CO_2 density recovery time	after opening door 30 seconds ,When it reaches 37℃ ≤1.2min	
Working ambient	Temperature 10℃～30℃ humidity ≤70%RH	
Power supply	AC 220V 60Hz	
Input power (VA)	500	650
Internal size (mm)	500×400×400	650×460×540
External (mm)	855×550×547	905×610×687
Weight (kg)	45	65

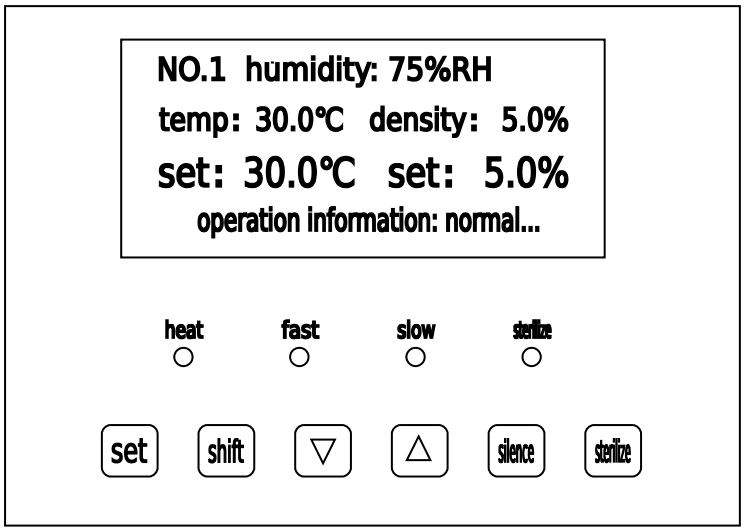
02 Structure

Parts



1.controller
2.power supply switch
3.RS-485
4.control panel
5.inlet water
6.shelf
7.outlet water
8.overflow water
9.magnetic gasket
10.test hole
11.anti-overflow rubber
12.glass door button
13.glass door

Control Panel



key and indicator light

“set” key : press this key to set temperature ,co2 density and relative parameters
“▽” key : in setting interface, press this key to decrease, long press this key to continuously decrease
“△” key : in setting interface, press this to increase, long press this key to continuously increase
“Shift “ key : in setting interface, press this key to shift modified setting value
“silence” key : if beeper beeping, press this key to mute
“Sterilize” key : sterilization indicator key
“heat” indicator light : it is on if there is heating output
“Fast” indicator light: If CO2 fast filling , this indicator is on
“slow “ indicator light : If CO2 slow filling, this indicator is on
“Sterilize” key: this indicator is on if sterilization light is on

03 Installation

1. Installation Place

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

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

• Avoid exposure to the sunlight.

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

• 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

• 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

• 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

• Avoid humid place

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

• 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.

Warning: Do not place this equipment outdoors. If it exposed in the rain, it may cause creepage and electric shock.

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

2. Preparation before operation

When equipment running in the first time, please operate as below:
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.the samples should not be crowded in the inner chamber
5.install co2 reducing valve on the co2 cylinder, connector can't be leaked . connect the output connector of reducing valve to co2 inlet and rubber hose with diameter 8 and pressure-resistant 0.2Mpa which provided by our company, then tighten it , leakage can't be allowed, and the co2 cylinder is closed.
6.finish above steps, this equipment can be use

04 Operation

1. Operation Introduction

1. Set temp. and CO2 density

After power is connected, 3 seconds later, it will access normal mode, press set key, it will access "user setting" mode, re-press set key to log out setting mode, the setting value will be saved automatically

User set value

name	value(fault)
temp.	(0.0 ~ 60.0) 30.0℃
density	(0.0 ~ 20.0) 5.0%

2. Set user parameters

Long press set key for 3 seconds, screen displays "input password", input 3. re-press set key, it displays "user set", then long press set key for 3 seconds to log out this mode.

Temperature deviation alarm
User parameters

parameters	function	Value (default)
Proportional	Adjust time proportion. quicken heating if decrease value, prevent over-adjustment if increase value	(0.3～20.0) 10.0
temp. deviation alarm	When measuring temp. >=setting temp.+ temp. deviation, stop heating and beeper beeps	(0.0～5.0) 1.0
Density deviation alarm	If density measuring value >=setting density+ density deviation value, disconnect fast filling and slow-filling input and beeper beeps	(0.0～3.0) 1.0
temp. deviation	Modify margins error of temperature sensor Temp.(deviation) value=actual temp. -measuring temp.	(-9.9～9.9) 0.0
Density(zero) deviation	Modify margins error of density sensor(zero) Density(deviation) =actual density-measuring density	(-3.0～0.0) 0.0
Density(full) deviation	Modify margins error of density sensor(setting) Full density(deviation)=1000*(actual density–measuring density)/ measuring density	(-999～999) 0
humidity deviation	Modify margins error of humidity sensor(zero) Humidity(deviation)=actual humidity-measuring humidity	(-30～30) 0.0
address	address number	(0～32) 1

3. Check chamber temp., door temp. and water temp.

Long press set key for 3 seconds, it displays “input password”, then input 9, re-press set key, then check temp. value, then long press set key for 3 seconds to log out.

4. Factory parameters setting

Press "set" key for 3 second, input password:18, press "set" key. Then you can modify parameters anyway. After finishing, re-press set key for 3 seconds to log out.

Factory parameters setting (see below)

parameters Name	parameters function instruction	(Range) Factory parameters
Fast valve value	When “measuring CO_2 density< setting CO_2 density +fast-filling valve value”, Fast magnetic valve opens first, then the slow magnetic valve opens	(-3.0 ~ 0.0) -1.0
Door temp. deviation	Door setting temp.= setting temp. +deviation of door setting temp.	(-5.0 ~ 5.0) 1.0
Water temp. deviation	When water temperature .>=setting temperature +deviation of water temperature, disconnect water heating output	(0.0 ~ 10.0) 3.0
(Door) temp. correction	Modify the margins error of temperature sensor The correction value of temperature=actual temperature (door)-measuring temperature(door)	(-9.9 ~ 9.9) 0.0
Water temp. correction	Modify the margins error of temperature sensor The correction value of temperature= actual temperature (water)-measuring temperature (water)	(-9.9 ~ 9.9) 0.0

5. In the setting mode: Without pressing any key with in 30 seconds, it will log out setting mode automatically, the modified parameters aren’t saved.

6. Alarm information and handling:

Information	Handling
Running…	Controller works normally
System failure	Controller fails to work. Disconnect heating and gas-filling output, beeper beeping
Chamber temp. error	Incorrect measurement of chamber temp. Disconnect heating and gas-filling output, beeper beeping
Door temp. error	Incorrect measurement of door temperature. Disconnect heating and gas-filling output, beeper beeping
Water temp. error	Incorrect measurement of water temperature. Disconnect heating and gas-filling output, beeper beeping
Density error	Incorrect measurement of density . Disconnect heating and gas-filling output, beeper beeping
Water shortage	Stop heating, beeper beeping
over temp.	Stop heating, beeper beeping
over density	Stop filling gas, beeper beeping
Density shortage	Stop filling gas, beeper beeping

door opens	Stop heating and filling gas, stop fan working, but without beeping

Meaning of “density shortage ”

1. when “setting density≤8.0%”, if “measuring density＜setting density-0.5%” in continuous 15 minutes, the controller indicates : density shortage
2. when “ 8.0%＜setting density≤15.0%,if measuring density＜setting density-0.5% in continuous 30 minutes, the controller indicates : density shortage
3. when 15.0%＜setting density≤20.0%, if measuring density＜setting density -0.5%” in continuous 45 minutes, the controller indicates : density shortage

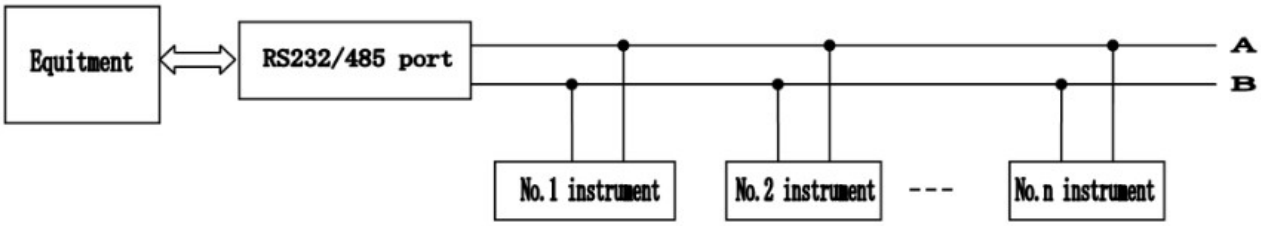
05 Alarm and Safety Functions

Temperature sensor failure alarm: screen displays:- - -, it means there is something wrong with the temperature or controller
When measuring temperature is far away 1 degree from setting temperature, heating stops, the alarm indicator is on and beeper beeping, just press any key to mute

06 Optional Usage

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)



Trouble shooting

• 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.

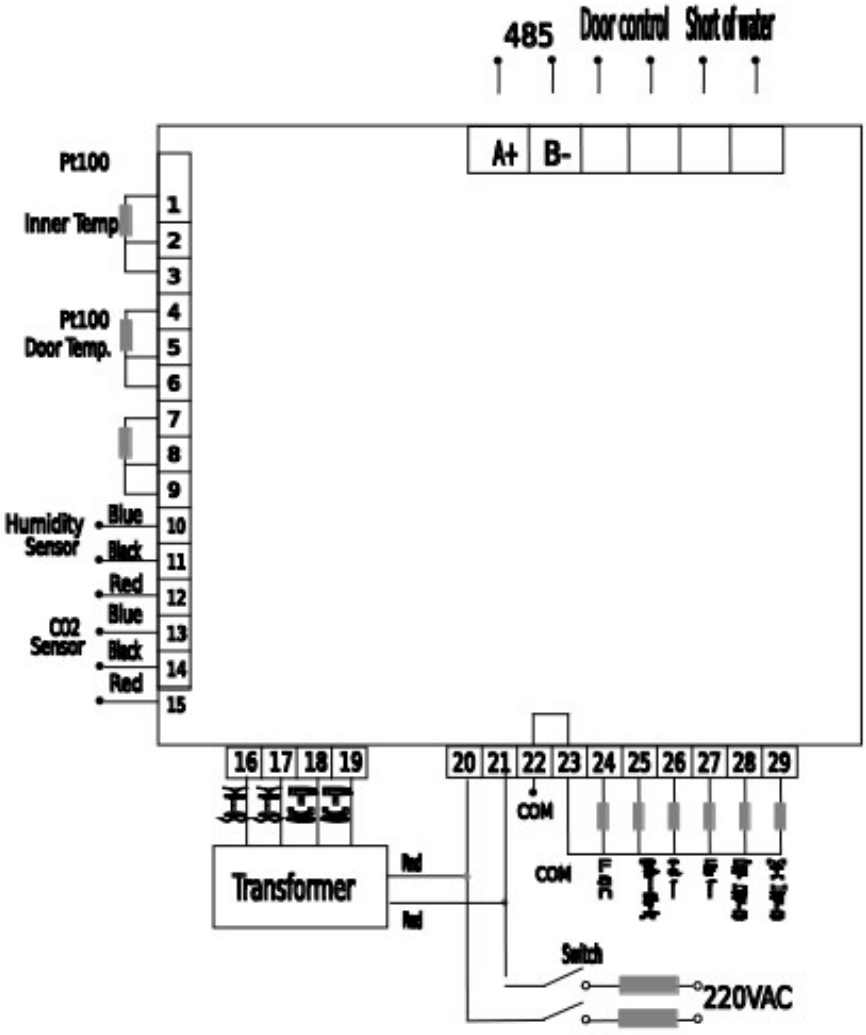
• Data is missing or incorrect

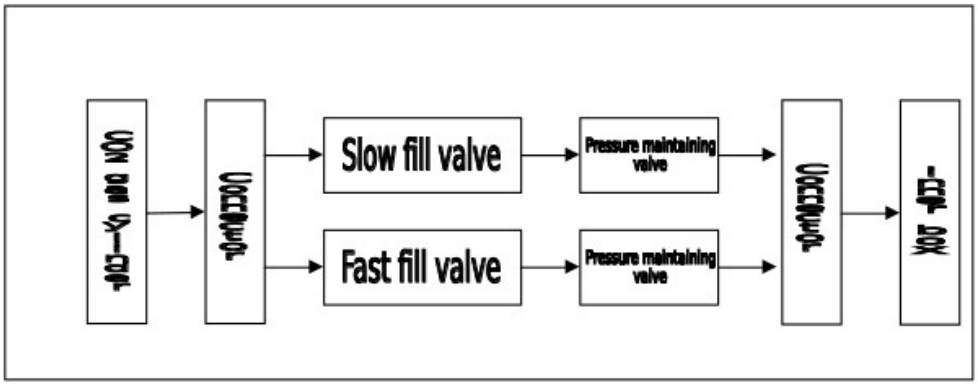
Please check if data communication equipment rate and format is accordance.

07 Troubleshooting

Trouble removal	Check/resolve
Sensor failure It displays:- - -	·something wrong with temperature sensor , check whether is undamaged (model:PT100)
Temp. can't reach setting value	Check the heating indicator whether it is on, if yes, there must be something wrong with heating wire, controller or circuit
Temperature rising slowly	.Check whether door is closed .Check whether fan is running, if not, please check connection by wiring layout
CO_2 density can't reach setting value	.Check whether the air valve of CO_2 cylinder is open; Check if the pressure of CO_2 cylinder is normal (more than 3KG) Something wrong with air inlet valve, check the failure according to wiring layout
Screen display nothing	.Please check whether socket is 220V .Please check whether power is open .Please check whether power switch is tripping operation, please check according to wring layout.

08 Wiring Layout





CO2 Incubator

Packing List

No.	Name	Quantity	Note
1	Finish product	1	
2	instructional manual	1	
5	Shelf	2(80L);3(160L)	

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