

Operation Manual



BLAR-408

Laboratory Refrigerator

Statement:

Thank you for choosing and using the medical refrigerator. For your safe and convenient use and reasonable maintenance of the product, please read the operation instruction carefully and keep it properly for reference.

For damage of any instrument due to the fact that the user does not use the product according to the instrument operating environment declared in the handbook or injuries due to the fact that individual does not operate the product according to safety instructions, we has no obligations and responsibilities to be in charge of them.

The user must accomplish the following three points when using the product:

1. Always use protective devices correctly (including clothes, gloves, goggles, etc.);
2. Always adopt good health habits and operate strictly according to the product instruction;
3. Everyone is obliged to be in charge of one' own safety.
4. Not allowed direct contact with patients, use or affect the product and in the product storage items.
5. Products without sterilization.
6. The product is used only for storage, not during use with other materials, Organization and Technology in combination.
7. Products cannot be used to measure or analysis.
8. Life and storage life of the products is irrelevant.
9. Some models need to regularly add supplies, such as printer paper, test tubes, etc.
10. This product is non-explosion-proof products.
11. Non flash freeze equipment, is limited to keeping the temperature used.

Due to the fast product update, there may be differences between function of the product you bought and the function mentioned in the instruction, please in kind prevail.

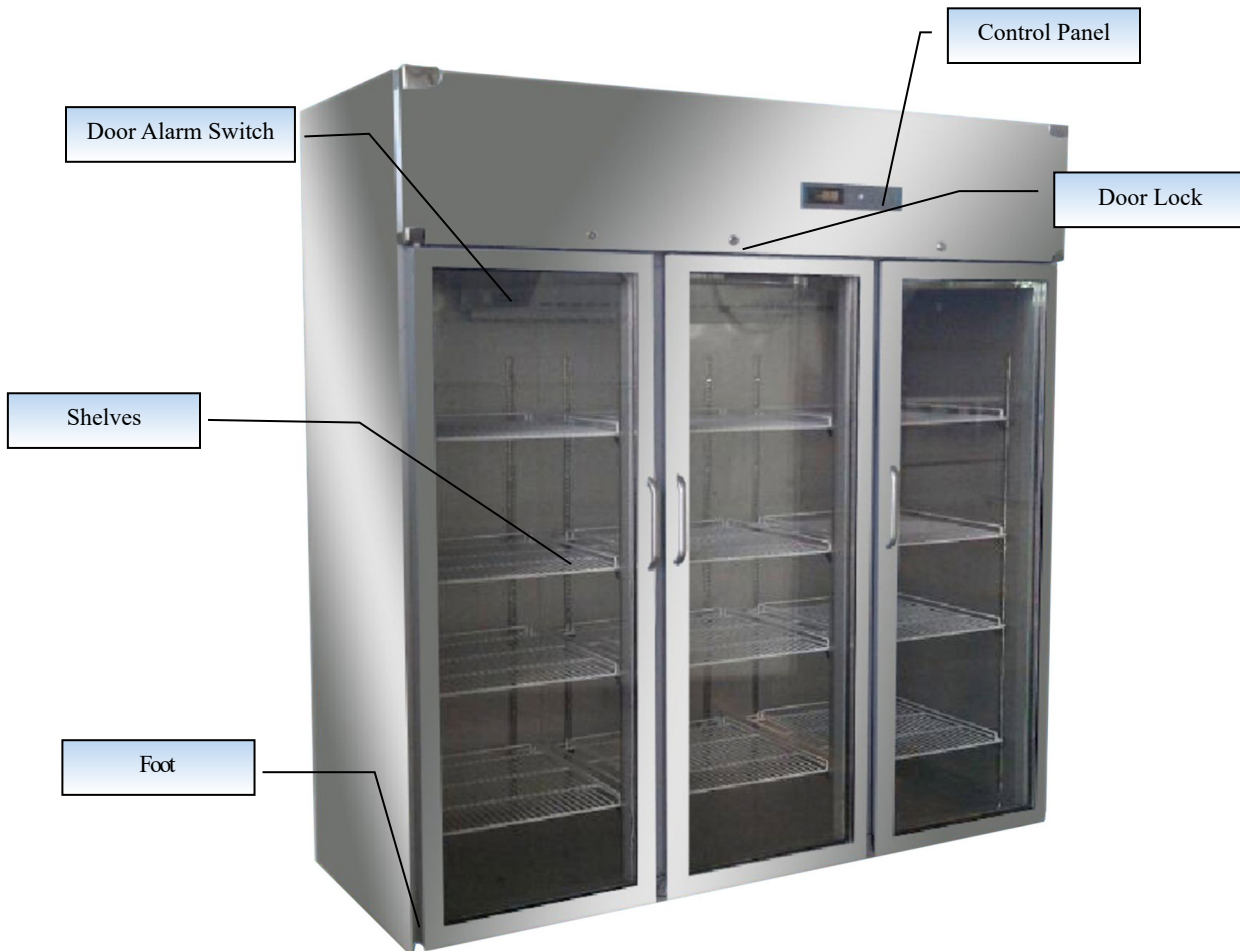
Safety Instruction:

- Please read the handbook carefully when using the machine for the first time.
- The medical refrigerator can only be operated by trained and authorized personnel.
- The maintenance of the equipment can only be accomplished by us or agents authorized by us.
- If operator runs into conditions not mentioned in the instruction, please contact us or agents authorized by us for inquiring correct processing method.
- Please use accessories provided by us, if user uses other accessories, we will not take charge of generated negative effects. However, the user can apply to us to test and verify that whether the accessories accord with the requirements.
- It is necessary to inspect and maintain the medical refrigerator at specified time intervals.
- The medical refrigerator is strictly prohibited to store living things or other goods which have strict temperature Requirement and are unsuited for storage at constant temperature.
- The medical refrigerator realizes refrigeration through the heat dissipation of the back surface (condenser). In order to ensure normal operation and ventilation and heat dissipation, the back and the left and right sides of the refrigerator body should be at least 30cm away from the wall and no barriers are allowed to block the air inlet and the air outlet.
- In case of machine fault or power failure, the temperature in the medical refrigerator will rise. If the machine cannot be repaired in short period, please take out the stored goods and transfer them to other place where accords with the storing temperature to avoid damage.

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01 Diagram and Introduction of Product



Structural Diagram

Due to the improvement and various models of products, the actual product may be different from the diagram, please in kind prevail!

Medical refrigerator series products are applied to places needing storage at constant temperature for commercial use, The storing temperature in the body can be regulated by the temperature button on the control panel. The application is convenient and the performance is reliable. Medical refrigerator series of products suitable for hospitals, epidemic prevention stations, research institutes and other refrigerated storage items.

02 Preparation and Attention before Use

- Transport: the refrigerator should be uplifted from the bottom when carried and put down lightly. The inclined plane should be no larger than 45 degrees.
- Do not hold the door or the frame as stressed point
- Dismantle all package components (including protection foam in the refrigerator body).
- Please check accessories and data according to the packing list.
- Please clean the product before use.
- Operating environment requirements:
 - a. For indoor use only;
 - b. The mounting surface must be fixed, horizontal and incombustible and be able to bear weight during the operation of the medical refrigerator;
 - c. To be placed away from direct glare of sunshine and heat and the environmental temperature should be not more than 32°C;
 - d. Space of above 30cm is required to be left around the medical refrigerator for ventilation and heat dissipation;
 - e. Not allowed to be placed in the environment under 0°C;
 - f. Not allowed to be placed at places with heavy moisture or easy-splashing water.
 - g. Ambient non corrosive, flammable, explosive gas, liquid or dust.
 - h. The surrounding environment must be kept well ventilated.
- On flat ground, the medical refrigerator can be directly pushed to move.

ⓘ Notes: please note that do not let the power line be damaged by trundles when pushing the medical refrigerator.

ⓘ Notes: be sure to take off the packaging pedestal on the bottom of the medical refrigerator.

ⓘ Notes: Do not put goods into the medical refrigerator which is just plugged in. Let the empty body run for a while (about 12 hours) and then put the goods to be refrigerated into the refrigerator.

• **Normal operating condition of the equipment:**

- a. Environmental temperature: 10°C~32°C;
- b. Relative humidity: ≤80%;
- c. There is no strong sharp pounding and corrosive gas around;
- d. There are no effects of direct radiation of sunshine and other cold and heat sources.

Working system of the medical refrigerator: intermittent running

Safety precautions

- Supply voltage: the equipment needs 220V/50Hz alternating current power supply. If the service voltage is lower than 187V or higher than 242V, it is necessary to add a proper automatic voltage regulator to be used cooperatively;

- When the medical refrigerator is used, the power supply is required to be equipped with a lower voltage air circuit breaker and a leakage protection device;
- It is necessary to use a dedicated independent socket which is grounded reliably. The length of the power line cannot be lengthened at randomly. If it really needs to be lengthened, be sure to use a cooper core conductor which is larger than 2.5mm². And the cross area of the copper core conductor which is in the wall and connected with the power socket must be above 4mm² ;
- Inflammable and explosive dangerous goods and goods of acid and alkali etc. with strong corrosiveness are not allowed to be put into the medical refrigerator;
- Keys should be kept properly to avoid accidents that will happen if children get the key to open the door;
- The zero line (N end) of the socket cannot be connected with the ground lead (E end). Otherwise, the housing of the medical refrigerator may be electrified and electric shock accidents may be caused;
- The power line cannot be bundled up, pressed under weight and next to heat sources of compressor, etc.

03 Instructions

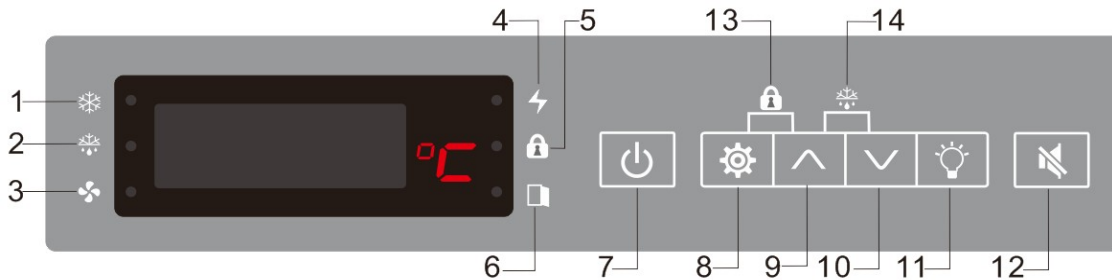
3.1 First use

- After being unpacked, the medical refrigerator should be placed well to according to the service environment requirement;
- Although the refrigerator has been cleaned inside when leaving factory, it is advised to scrub the medical refrigerator with warm water added with a little neutral detergent and then scrub it with clean water and wipe it up (electrical system cannot be cleaned but scrubbed with dry cloth);
- Set the temperature controller of the medical refrigerator at 4°C and turn on the power. After 3 minutes, the compressor is started. After 30 minutes, the temperature inside the medical refrigerator decreases obviously. It means the refrigerating system is operating smoothly and the machine test is finished;
- For first use, it is advised to put the goods to be stored in the refrigerator after the inside temperature falls to the operating temperature. If there are too much goods to be stored, it is advised to store separately for three times. When the inside temperature of the refrigerator falls to the set temperature after the storage of the last time, store the goods for the second time. Storing too much goods at one time may cause that the refrigerator cannot fall to the set temperature for a long time, thereby causing damages of goods;
- In order to save electrical energy, please try to reduce door-opening frequency and open time.

3.2 Temperature controller

3.2.1 Key function

The temperature controller is installed on the control panel of the medical refrigerator. When power is on, the digital display screen can display actual temperature inside the refrigerator. The control panel is illustrated by the following diagram:







- 1.Cooling status indicator
- 2.Defrost indicator
- 3.Fan status indicator
- 4.Power indicator
- 5.Keyboard lock indicator
- 6.Door open indicator
- 7.Power switch
- 8.Setting
- 9.Up
- 10.Down
- 11.Lamp switch
- 12.Mute
- 13.Keyboard lock (Combination)
- 14.Defrost (Combination)

Do not change the set temperature randomly during normal use. The product will not work when Press the power button for 10 seconds which will turn off the product's power supply. Press the power button for 10 seconds again and the product will continue to work normally. Press the keyboard lock key for 10s to lock the key. At this point, the keyboard lock indicator lights up and all keys become invalid. Press the keyboard lock for 10s again to unlock the key. You can press the mute button to cancel the alarm sound, but the alarm indicator light and the alarm code will be displayed until the alarm state is canceled. If there is any special need for adjustment, please call the after-sale service or be adjusted by professional maintenance personnel. If the set temperature is adjusted at randomly, it may cause the alarm of high temperature (AH) or low temperature (AL) of the product.

3.2.2 Parameter settings










The refrigerator would display the current inner temperature after power on, please follow the steps to change set temperature, for example change the set temperature from 5°C to 6°C :


Serial No.	Keys Operation	Display
1		Displays the inside temperature
2	Press the key Set  for 3 seconds	Displays the initial set data is 2°C and twinkles
3	Press the key Up-regulation 	Figure increases
4	Press the key Down-regulation 	Figure decreases
5		Figure is 5°C
6	Press the key Set  for 3 seconds	Saves the user settings and displays the inside temperature

Note : Please do not change the setting by yourself, contact after sale service engineer and dealer if you do have needs to change it.

3.2.3 Temperature query settings






Press to check the highest and lowest temperature and the occurred times, press over 5 s to display current temperature. Checking steps as following:









NO.	key operation	Display
1		Display cabinet temperature
2	press 	Display highest temperature 6.7°C
3	Press again 	Display HT date HD20
4	Press again 	Display HT hour HH09
5	Press again 	Display HT minute HE30
6	Press again 	Display lowest temperature 3.9
7	Press again 	Display LT date LD20
8	Press again 	Display LT hour LH14
9	Press again 	Display LT minute LE25
10	Press again 	Display highest temperature 6.7°C

Note : Press  for 5 seconds could delete the high and low temperature data in records, to check the high and low temperature at display with 00, time display code +00, such as HD00. Current temperature record interval is every 10 minutes, factory setting to clean the high/low temperature records at 17:35 every time.

3.2.4 Time query settings

When normal working, press  check time record, follow the steps to check.








NO.	key operation	Display
1		display cabinet temperature.
2	Press 	Year Y_17
3	press again 	Month N_03
4	press again 	Date D_15
5	press again 	Minute E_20
6	press again 	Sencon S_21

Note : Press  over 5s could adjust the current time. Normal display Press  for 5s , it would flash and display Y_17, you could press  or  to set current year, press  then it would display N_03, then press  or  to change the current month, repeat above steps to finish all time setting, press over 5S  to preserve time setting.

3.2.5 The first level parameter list (if available)

Code	Description	type	Min	Max	Unit	Default
tE	Temperature query entry	A	—	—	°C	—
SJ	Time parameter selection	A	—	—	-	—
DAG	Data storage interval	A	1	999	-	10
Pt	Print interval	A	1	999	Min	30

When the blood bank refrigerator is powered on, the display shows the current temperature value in the box. If you need to readjust the first layer of parameters, for example, the original data storage interval DAG is 10min, and now it needs to be adjusted to 15min, please follow the steps below:

NO.	Keys Operation	Display
1		Displays the inside temperature
2	Press the Set key  > 5 Seconds	PS1 is displayed and flashes
3	Press the Up-regulation key  Or Press the Down-regulation key 	Select the first layer parameter option that needs to be modified until DAG appears
4	Press the Set key 	Enter specific value adjustment
5	Press the Up-regulation key  Or Press the Down-regulation key 	Change the value from the original value from 10 to 15
6	Press the Set key  5 seconds	Save user settings, display the temperature inside the box

Note: After setting the parameters, it is best to perform the same operation to check whether the settings are accurate.

3.2.6 Alarm code

No	Alarm Code	Alarm Description
1	AH	High temperature alarm
2	AL	Low temperature alarm
3	AUF	Power failure alarm
4	ADO	Door open alarm
5	AD1S	Display sensor malfunction
6	AD1B	Display sensor cut off
7	AS1S	Controller sensor malfunction
8	AS1B	Controller sensor cut off

- Back up battery would support the controller to work after power failure happens. The “AUF” and current temp would flash interval after stop for 1 minute, and repeat. Even the controller could display inner temperature when power failure happens, please take measures to avoid lost.
- Advice: Please power off when the temperature sensor is suspected to be broken, check the contact is loosen or not first, then contact after sale service engineer to deal with it.
- **⚠** Reminder: Please wait for 1 minute to operate when controller shows parameter code, till the current temperature shows again , to avoid malfunction caused by control parameter changes.
- In case of power failure or other faults, the refrigerator would stop work, and the temperature will rise. If the power couldn't be back in a short time, please take out the stored items and transfer to other refrigerator for storage, so as to avoid damage and loss of the stored items.
- Before placing the articles in the refrigerator, it should be confirmed in advance whether they are suitable for the temperature conditions you set for storage, so as to avoid damage and loss caused by the unsuitable temperature of the equipment.
- Due to refrigeration inertia, the refrigerator can not keep a constant temperature, the temperature in the box and the set temperature has a certain up and down deviation, with the use of the environment and the set temperature is different, this is a normal phenomenon.

04 Routine Maintenance

In routine maintenance, in order to prevent electric shock or personnel injuries, be sure to cut off the power before repairing or maintaining the equipment and do not inhale drugs or particulate matters surrounding the equipment when maintaining the equipment. It is necessary to have dry gloves to protect your hands. Otherwise, your hands may be cut by edges or corners of the refrigerator body.

4.1 Clean of Refrigerator

- The medical refrigerator should be cleaned for once every month. Regular cleaning may keep the appearance of the refrigerator new;
- Use dry cloth to wipe off a small amount of dust on the surface, the interior and all accessories of the medical refrigerator. If the medical refrigerator is very dirty, it is advised to use neutral detergent for cleaning;
- After cleaning, use cloth which has been soaked in clean water to wipe off the detergent;
- Do not pour water on the surface or inside of the medical refrigerator. Otherwise, the electrical insulation may be damaged, thereby causing malfunction.
- During the rainy season, vapors may be easily condensed on the surface of the glass door of the refrigerator, water may drip in bad condition. Please use dry cloth to wipe it at the proper time. Normal use will not be affected.

4.2 Defrost

The medical refrigerator belongs to air cooling frost-less refrigerator. In summer with high environmental humidity, condensation may appear on the buccal frame of the medical refrigerator. This is normal. It is advised to wipe it with dry cloth.

4.3 Care and Maintenance

- Don't put heavy stuff on the door or top cap in order to avoid deformation of stress.
 - The medical refrigerator should be cleaned and maintained at set intervals.
 - Use warm wet soft cloth to wipe the inner and outer surfaces of the medical refrigerator.
 - If especially dirty, use neutral detergent for washing tableware to wipe and then use cleaned soft cloth to wipe out the water spots.
 - Once starting the medical refrigerator, you'd better keep it running continuously.
- ⓘ Notes: Never splash water directly onto the storage refrigerator as this may cause electric shock or short circuit. Never use hot water and corrosive detergent or organic solvent to clean. Never clean the medical refrigerator with scrubbing brush and wire brush. Keep children away from the equipment. Don't put heavy stuff on the door or top cap in order to avoid deformation of stress.

05 Troubleshooting

Some abnormal conditions of the Refrigerator are caused by misuse. Please check with the following table before asking for maintenance.

Problems	Reasons and Solving Measures
Not working	<ul style="list-style-type: none"> ·Whether the power socket has electricity? ·Whether the power socket is plugged or loosened? ·Whether the power fuse is disconnected? ·Whether the supply voltage is too low or too high?
Compressor breaks down	<ul style="list-style-type: none"> ·Whether the temperature setting is right?
Temperature goes on decreasing after reaching to the set value	<ul style="list-style-type: none"> ·Whether the temperature setting is right?
Temperature cannot reach the set value	<ul style="list-style-type: none"> ·Whether the fan stops running? ·Whether the door is not closed tight or opened too frequently? ·Whether too many goods are put in at one time and Whether the air channel is blocked off? ·Whether the environment temperature is too high?
Too much noise	<ul style="list-style-type: none"> ·Whether the refrigerator placed at the flat ground? ·Whether the refrigerator touches the wall? ·Whether the refrigerator immediately enters operating state after being started?

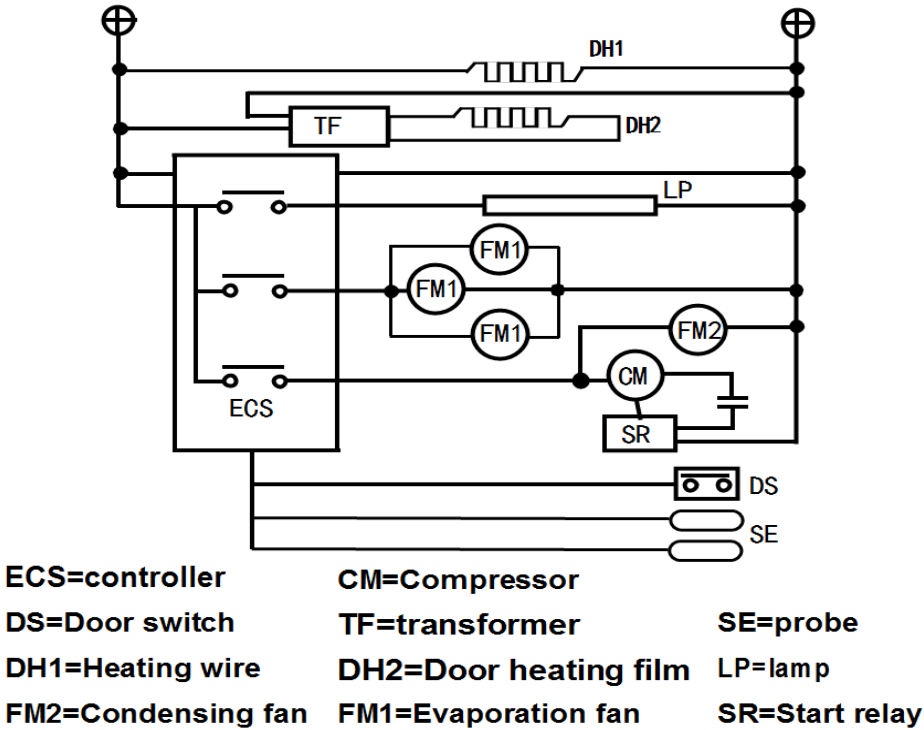
If you cannot confirm the fault reason or debug, please contact the after sale service center and tell them your name, address, phone number, refrigerator model, purchase time, fault phenomenon, etc. Professional engineer will offer warmhearted service to you.

06 Main Performance Index

6.1 Main technical parameters

Model	Temp	Volume	Power supply	Refrigerant	Dimension
BLAR-408	2~8°C	1500L	220V, 50Hz	R134a	1800×775×1965

6.2 Electrical schematic diagram



07 Packing List

Model	Manual	Key	Shelf	Price list	Buckle
BLAR-408	1	6	12	12	48



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