

-86°C Freezer



BDF-86V28



BDF-86V58



BDF-86V65



BDF-86V108

Technical Parameters

Model	BDF-86V28	BDF-86V58	BDF-86V65	BDF-86V108
Capacity	28L	58L	65L	108L
Temp. Range	-40~-86°C			
Temp. Accuracy	0.1°C			
Temp. Uniformity	±3°C	±4°C		±3°C
Temp. Stability	≤6°C			
Recovery Time (Recover to -75°C in an ambient temp. of 25°C)	20min	25min	≤15min	20min
Cooling Time (Cool down to -80°C in an ambient temp. of 25°C)	120min	160min	≤240min	120min
Control System	Microprocessor control			
Display	LED			

Technical Parameters

Model	BDF-86V28	BDF-86V58	BDF-86V65	BDF-86V108
Alarm	High and low temperature alarm, sensor failure alarm	High and low temperature alarm, sensor fault alarm, power off alarm, door opening alarm, ring temperature alarm, condenser fault alarm, filter check alarm, abnormal voltage alarm, low battery power alarm	High and low temperature alarm, thermostat fault alarm, door switch alarm, power failure alarm (72h)	High and low temperature alarm, sensor failure alarm
Refrigeration Type	Direct-cooling			
Refrigerant	R404A/R23, 140g	R4001, 200g	R600a/R1150/R14, 150g	R404A/R23, 190g
Compressor	International famous brand compressor /1			
Condenser & Evaporator	Copper tube finned type; built-in coil type	Copper tube evaporator; finned condenser	Micro channel condenser; built-in coil type	Copper tube finned type; built-in coil type
Defrost	Manual defrost			
Construction	Polyurethane cyclopentane foam			
Material	Internal Material	304 stainless steel		
	External Material	Sprayed steel plate		
Door	Outer door: cyclopentane monomer foam outer door*1 Interior door: stainless steel door*1	Outer door: sprayed steel plate door*1 Interior door: stainless steel door*2	Outer door: cyclopentane monomer foam outer door*1 Interior door: cyclopentane monolithic foaming, stainless steel door*1	Outer door: cyclopentane monomer foam outer door*1 Interior door: stainless steel door*2
Consumption	400W	442W	540W Apparent power: 550VA	480W
Power Supply	AC 220V, 50Hz(Standard); 220V, 60Hz; 110V, 50/60Hz(Optional)		AC 220V, 50Hz (Standard); 110/220V, 60Hz(Optional)	AC 220V, 50Hz (Standard); 220V, 60Hz; 110V, 50/60Hz(Optional)
Casters	Yes			
Shelf	1			
Standard Accessory	Test hole	Remote alarm function interface, test hole, USB interface	Test hole	
Optional Accessory	Temperature recorder	Temperature recorder, RS485, liquid nitrogen backup system	USB interface, RS485, temperature recorder, liquid nitrogen backup system	Temperature recorder
Internal Size (W*D*H)	270*265*400mm	330*453*410mm	360*455*395mm	460*460*510mm
External Size (W*D*H)	505*520*1165mm	635*757*1212mm	660*715*1165mm	700*730*1260mm
Package Size (W*D*H)	535*575*1290mm	730*860*1420mm	765*825*1350mm	765*815*1395mm
Net Weight	71kg	112kg	92kg	107kg
Gross Weight	90kg	146kg	134kg	133kg

BIOBASE

**Ultra Low Freezer
BDF-86V108
User Manual**

BIOBASE GROUP

Version 2020.09

Preface

Thank you for choosing BIOBASE products. For your safety, ease of use and reasonable maintenance of this product, please read the instructions carefully before repair and keep it for inspection.

Damage to any instrument caused by the user's use of the Instrument Environment as stated in this manual, or injury caused by an individual's failure to operate in accordance with the Safety Tips, and is not responsible and liable for this.

Users in the use must do the following three points:

1. Always use protective equipment (including clothes, gloves, goggles, etc.);
2. Always use good health habits, in strict accordance with the product description to operate;
3. Everyone has an obligation to be responsible for his own safety.

Due to the faster update of the product, if the function described in this manual is different from the function of the product you purchased, please take the physical function.

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Chapter 1. Precautions for Safe Operation

The sign of “” means the place is dangerous to human bodies, or the use pattern is harmful to products, or alarm users should pay special attention to this.


: It is strictly prohibited to unpack the outer packing case for transportation.


The ultra low temperature freezer should be used under the environmental temperature of 10°C~30°C. It is suggested to use it under the environment with air conditioning.


: The slant angle of the body of the ultra low temperature freezer should not be larger than 45° in transportation to avoid faults of the compressor or the system.


: After unpacked, the freezer should be placed on flat and firm ground near to the power socket.


 : Do not put it near the heat source and avoid the sunshine


 : The ultra low temperature freezer should be stored in a dry and drafty room without corrosive gas surrounding.


: If the ultra low temperature freezer has to be stopped for a long period, it should be cleaned inside and outside and then covered properly with a plastic housing.


: The power supply is 198V ~ 242V/50Hz. If the voltage is unstable, please equip a power regulator which is above 3000VA and please use it alone.


: It is necessary to provide individual one-phase three-hole socket and proper fuse for the ultra low temperature freezer.


: The ultra low temperature freezer must be provided with reliable independent ground wire. The ground wire cannot be connected with gas pipe, stem heating pipe and water pipe and the zero line of single-phase source should not be taken over as well.


: If the power connect wire has to be lengthened, the sectional area of the conductor is larger than or equals to 1.5mm. The conductor can be single-stranded or multi-stranded. It is strictly prohibited to use multipurpose socket for connection.


: The ultra low temperature freezer cannot lean against the wall. The space of at least 30cm should be left at the machine room for normal running of the system.


: No water is allowed to be splashed on the outside body of the ultra low temperature freezer. When scouring the ground, it is strictly prohibited to splash water into the control panel and the compressor room. It is also prohibited to use the product in the rain or under the environment with the relative humidity of larger than 85%. Otherwise, faults such as electric leakage etc. may be caused.

: With continuous operation system, the ultra low temperature freezer should be restarted after five minutes in case of power failure or machine halt to prevent the compressor or the system from being damaged.

: The key of the ultra low temperature freezer should be kept out of the reach of children to avoid accidents.

: Inflammable, explosive and volatile dangerous articles and acid and alkali etc. with strong corrosiveness are never allowed to be put in the ultra low temperature freezer.

: The ultra low temperature freezer cannot be used under inflammable and explosive gas environment. Be sure not to spray combustibles such as paint, coating etc. to avoid fires.

: The door should be closed tight. Otherwise, the normal operation and usage of the system may be affected.

△: The service environment pollution grade of the ultra low temperature freezer is grade 2.

Chapter 2.Installation

After unpacking, remove all outer packing material.

Checking standard accessories and data: check and compare the inside accessories and data with the packing list 【please see related pages of the directions】 .

Please place the ultra low temperature freezer at proper location 【please refer to relevant terms in Precautions】 .

It would be best to clean the freezer before use 【please refer to relevant terms in Maintenance】 .

Chapter 3.Start-up of appliance

Follow the procedures for the test and formal operations of the appliance:

Plug in the socket and switch on the power switch (located at the right side of the temperature controller on the front part of the body). Then the power supply indicator light is on. In order to ensure the normal running of the cryogenic freezer, be sure to use the three-hole socket which is above 16A.

The system will automatically start the compressor, and the refrigeration indicator light is on. The system goes into refrigerating cycle state.

After the power has been supplied for a period of time, the temperature inside the freezer decreases obviously, which indicates the refrigerating system is working normally.

Before storing articles, please keep the freezer running in empty state. When the freezer is running stably (it is best to keep it running in empty state for 5 hours above) and the inside is cooled completely, the cold store articles can be put in.

Chapter 4.Model and main technical parameters

Model	BDF-86V108
Type	Vertical type
Total effective volume (L)	108
Storage temperature	-40°C~-86°C
Rated voltage (v)	220~
Frequency (Hz)	50
Rated power(W)	450
Power consumption (kW.h/24h)(empty cabinet)	6.1
Electric-shock protection class	Class I Type B
Type of alarm	Sound-light alarm
Climate type	N
Refrigerating fluid	Fluoride-free mix
Net weight of machine (Kg)/ Gross weight (Kg)	107/133
Machine dimensions width×depth×height (mm)	700*730×1260

Notes: Technical parameters in this table are measured at the standard state. Please be subject to the nameplate of the goods freezer without prior notice in case of variation.

Chapter 5. Functions and basic operations of controllers

1). **Control panel structure:** computer control system is adopted by the ultra low temperature freezer



2). Description

The KLT111B is designed for heating and cooling applications. The probe temperature is displayed on the bright 3-digit display . The user is able to program different parameters including set point, hysteresis, alarms and probe adjustment using the silicone front keypad. The unit features error or alarm warning, internal buzzer

(optional), configurable digital input and password protection. The KLKey input allows an easy programming of the parameters. Select between temperature display in °C or °F , display color and 230V ac, 115V ac, 24V ac/dc or 12V ac/dc power supplies.

3). Maintenance, cleaning and repair

After final installation of the unit, no routine main maintenance is required.

Clean the surface of the display controller with a soft and damp cloth. Never use abrasive detergents, petrol, alcohol or solvents.

All repairs must be made by authorised personnel.

4). List of parameters

	Description	Units	Range	Factory
SP	Set Point	Degrees	r1 to r2	-86
r0	Differential or hysteresis	Degrees	0.1 to 99.9	2.0
r1	Lower value for SP	Degrees	-200 to r2	-86
r2	Higher value for SP	Degrees	r1 to 600	-40
r4	Set Point variation	Degrees	0.1 to 200	3.0
d0	Cooling or heating control	Degrees	Co/Ht	Co
c0	Minimum stopping time	Seconds	0 to 999	0
c2	Output status with probe error	Option	On/OFF	ON
P1	Ambient probe adjustment	Degrees	-99.9 to 99.9	0.0
P4	Decimal point	Option	no/yes	yes
P5	3 wires Pt100	Option	no/yes	yes
E0	Digital input configuration	Option	OFF/AI/ES/HC	OFF
H5	Access code to parameters	Numeri c	0 to 255	0
A0	Alarm 1 hysteresis	Degrees	0.1 to 99.9	1.0
A1	Alarm 1 threshold	Degrees	0.0 to 999	0.0
A2	Alarm 1 exclusion time	Seconds	0 to 999	0
A3	Alarm 1 type	Option	OFF/Hi/LO	OFF

A4	Alarm 2 hysteresis	Degrees	0.1 to 99.9	1.0
A5	Alarm 2 threshold	Degrees	0.0 to 999	0.0
A6	Alarm 2 exclusion time	Seconds	0 to 999	0
A7	Alarm 2 type	Option	OFF/HI/LO	OFF
A8	Alarm verification time	Seconds	0 to 999	0

5).Parameter programming

- Set Point (SP) is the only parameter the user can access without code protection.
- Press SET . SP text will appear on the display .
- Press SET again. The real value is shown on the display.
- The value can be modified with the UP and DOWN arrows.
- Press SET to enter any new values.
- Press SET and DOWN at the same time to quit automatically exit programming mode.

6).Access to all code protected parameters

- Press SET for 8 seconds. The access code value 00 is shown on the display (unit comes with code set at 00 from factory).
- With the UP and DOWN arrows, code can be set to user needs.
- Press SET to enter the code. If the code is correct, the first parameter label is shown on the display (SP).
- Move to the desired parameter with the UP and DOWN Keys.
- Press SET to view the value on the display .
- The value can be modified with the UP and DOWN arrows.
- Press SET to enter the value and exit.
- Repeat until all necessary parameters are modified.
- Press SET and DOWN at the same time to quit programming or wait one minute and the display will automatically exit programming mode.

*The keyboard code can be reset to ZERO by turning off the controller and turning it on again while keeping the SET key depressed.

7).Led indication, buzzer and display messages

The led OUT indicates if the load is connected or not.

In normal operation, the probe temperature will be shown on the display .

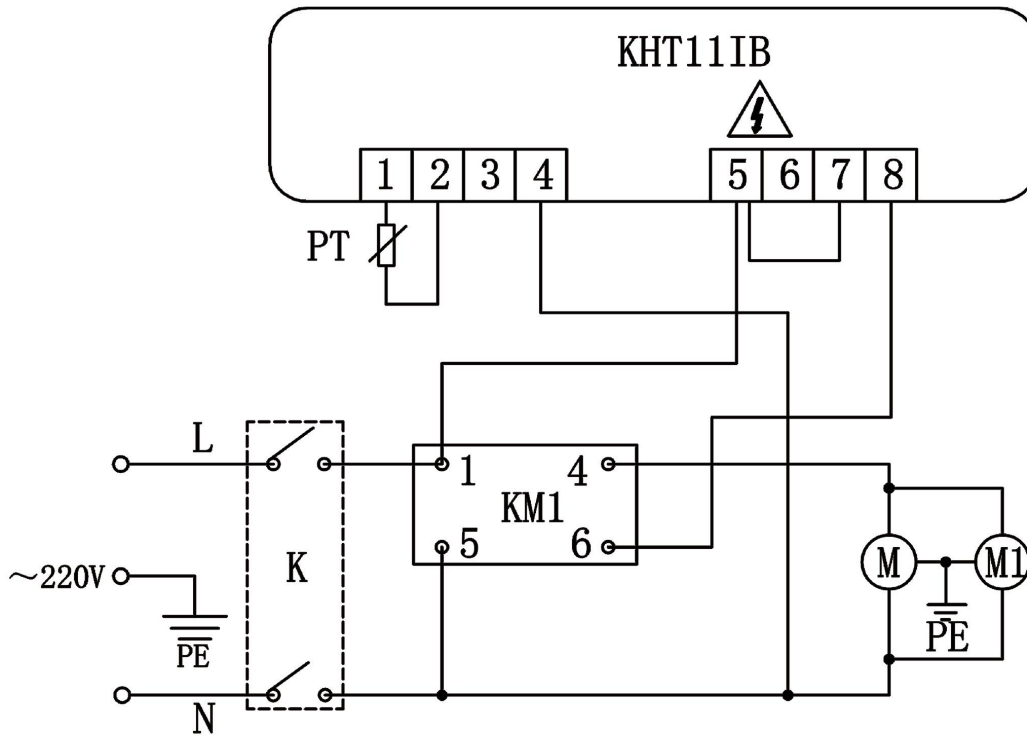
In case of alarm or error , the following messages can be shown (the alarm led is ON and buzzer sounds):

- Err = Memory Error.
- ooo = Open Probe Error.
- --- =Short-circuit Probe Error .
- A1H = High temperature alarm 1.
- A1L= Low temperature alarm 1.
- A2H= High temperature alarm 2.
- A2L= Low temperature alarm 2.
- ALE = External alarm.

8).Alarm validation

In case of alarm the internal buzzer and alarm led is activated. The display shown the corresponding message. The buzzer and display message can be silenced pressing the SET and DOWN arrows at the same time. If alarm continues after A8 it is signalling again.

Chapter 6.Schematic circuit diagram



K Power switch L Live Line N Neutral Line PE Grounding KM1 Relay
 M Condensate Fan M1 Compressors PT Temperature Probe

Chapter 7.Storage essentials

- Before storing articles, please keep the freezer running in empty state. When the freezer is running stably (it is best to keep it running in empty state for 9 hours above) and the inside is cooled completely, the cold store articles can be put in.
- Articles or other products put in the freezer in one time shouldn't be too much. Proper clearance should be left to help the circulation of the inside cold air.
- The refrigerating system of the ultra low temperature freezer is a device used for maintaining low temperature rather than a quick freezing device. If you want to store high capacity (high water-bearing material), precool them in other quick-freezing plant and then store them in the freezer to avoid long-time running without stop of the refrigerating system.
- When the initial storage capacity is large, a method of gradually lowering the temperature set should be adopted. The temperature is lowered by 10°C in every step and then maintained for 1-2 hours until the storage temperature is reached.
- When storing plastic bag products, please note that do not get them close to metal edges to avoid scratch of plastic bag.

Chapter 8.Maintenance

- **Body cleaning:** please use non-corrosive neutral cleaning agent to clean the inside and outside surfaces of the ultra low temperature freezer and then use dry cloth to wipe it up.
- **△Notes:** it is strictly prohibited to use water to directly wash the inside and outside surfaces of the freezer so as not to affect the insulating property of electrical equipment. Boiling water, cleaner, acid, alkali, gasoline, alcohol, benzene, corrosive cleaning agent and scrub-bush are forbidden in cleaning.
- Clean dusts on the condenser frequently by banister brush or vacuum cleaner to maintain good condensing effect.
- Regularly wipe a little talcum powder on the door seal to extend the service life of the sealing strip.
- If the ultra low temperature freezer has been running for a long time, frost may be easily accumulated on the door seal, the opening part of the freezer and the side wall inside the freezer. If the frost layer is too thick, the sealing property and the refrigerating property may be affected. Therefore, please defrost regularly and wipe it clean with dry cloth.
- Please use non-corrosive neutral cleaning agent to clean the inside and outside surfaces of the freezer and then use dry cloth to wipe it up.

Machine halt: when stop using the freezer, unplug the power plug, clean it according to the above method, cover it with a plastic bag after natural drying and put it on a ventilated and clean place.

Chapter 9.Non-fault phenomenon

- Sound of running water can be heard in the ultra low temperature freezer: this is the sound of refrigerating fluid running in the pipeline.
- Compressor is hot: when the compressor is running, the surface temperature can reach to 70°C~90°C.
- You may feel a little hot on the two sides of the body (close to the door body) when the freezer is running. That is because the leak proof tube equipped in the freezer.
- There is condensation on the door seal: in rainy and moist season or under the environment with higher relative humidity, there may be condensation on the outer surface of the freezer and the door seal. Then rub dry.

Chapter 10. General fault analysis and removal

1. The ultra low temperature freezer does not work and there is no display on the controller General fault analysis and removal

- If the power plug wire is properly connected and the main power supply is plugged in
- If the power switch is turned on
- If the power socket is in good condition
- If the fuse has been burned out
- If the controller is broken or line is damaged: it is necessary to contact the nearby maintenance department for overhaul

2. The compressor is running without stop, but the temperature inside the freezer does not decrease

- The door is opened too often for too long: try to reduce the door-opening time
- The storage capacity is too much: take some out or distribute evenly to keep the air inside the freezer flow
- The condenser is dirty and the heat dissipation is not good: clean the condenser (operate according to relevant terms in Maintenance)
- Refrigerant leaks or pipeline is blocked: it is necessary to contact the nearby maintenance department for overhaul
- The condensate fan in the machine room is broken: it is necessary to contact the nearby maintenance department for overhaul

3. Large noise

- If the outer packing has been all removed
- If the freezer is placed smoothly
- If the back part of the freezer body contacts with the wall: please operate according to relevant items in Precautions.
- The compressor is in abnormal operation only with drone: if the power voltage is within the defined limits, and please operate according to relevant terms in Precautions.
- The fan in the machine room makes a lot of noise: the fan is broken or contacts with something. It is necessary to contact nearby maintenance department for overhaul

△Notes: if the ultra low temperature freezer still cannot work normally after being inspected and handled according to the above methods, please contact the maintenance department of our company in time.

Chapter 11. After-sale service and commitment

In order to provide satisfactory after-sale service to consumers using our company's products and maintain the legal rights of the consumers, our company will strictly follow the "Law of PRC on Protection of Consumers' Rights and Interests" and relevant provisions in "Regulations on Repair, Change and Return Responsibilities of Partial Goods" formulated by the State Bureau of Technical Supervision and the Bureau of Finance and provide you with following services basing on the warranty card and the invoice:

The main spare parts (compressor, condenser, controller) is guaranteed for twelve months since the purchase date (subject to the invoice).

The whole machine can enjoy life service. And we will charge for repairing in case of one of the following conditions:

Products with expired guarantee period and products without warranty card and invoice

Damages due to user's improper transportation and storage or damages caused by the fact that the user does not operate according to the requirements in the instruction book

Damages caused by the supply voltage exceeding the prescribed limit (198V~242V) or products repaired by a maintenance station which is not authorized by our company

Inconformity or alteration of the product warranty card and the purchase invoice

Damages caused by irresistibility

Price-cut parts of products which are sold by retailers at a cut price

Packing Accessories

Instruction Book	Lock	Keys
1	1	2

Chapter 12.Warranty

- 1.User can enjoy one-year free warranty for the whole equipment since the purchasing date which bases on the date of the effective receipt.
- 2.The warranty depends on the certificate and the purchase effective receipt. And during the warranty, the certificate and the purchase effective receipt should be shown simultaneously (customers who are out of the region and need maintenance service should send the certificate and the purchase effective receipt together to BIOBASE).
- 3.The following conditions are not covered under warranty. For these conditions, we only offer maintenance service and charge labor cost and normal fees.
 - (1) All damages caused by human factors, including operation under improper working environment, damages caused by use not according to the instruction book and malfunction, etc.
 - (2) Disassembly, maintenance and modification without permission, maintenance made by unit having no certificate of incumbency of BIOBASE and lack of warranty card and effective receipt.
 - (3) Damage caused by poor transport of oneself or other irresistible factors (such as flood, fire, lighting stroke and earthquake, etc.) after the purchase.

JINAN BIOBASE BIOTECH CO., LTD.

ADDRESS: North Side Of Jiwang Road, Mingshui Development Zone, Zhangqiu, Shandong, China

Tel: +86-531-81307661

Inquiry: export@biobase.com

Complaints: customer_support@biobase.cc

After-sales service: service_sd@biobase.cc; service_ivd@biobase.cc

Web: www.biobase.cc/www.meihuatrade.com/www.biobase.com

