



wallabies

WARM CARE

Warming System

Operation Manual



Pharmacale
Health Care inc.



Any person or organization will not allow to copy, amend, or translate any content of this operation manual without the permission of our company.

Statement:

We reserve the right to interpret the operation manual.

We can revise the content of this operation manual without prior notice.

We will be not responsible for any software and equipment which is not provided by us.

We confirm the information in this Operation Manual is correct and reliable but not guarantee the content of this Manual.

We will only be responsible for the safety, reliability, and performance in all the following case:

- Installation, test, upgrade, maintenance are all done by our personnel or authorized person by us.
- All the maintenance spare parts should be from us or accepted by us.
- Please follow the electrical appliance national standard and the instruction of the operation manual.
- Strictly follow the instruction of the operation manual.

Imprint

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Warranty and Maintenance Service

Thank you very much for using our Warming System (here in after referred to as "the device").

The warranty is 24 month for the device and accessories warranty is 6months, accessories is Power Cord, filter sponge.

If the warranty period is not the same as above mentioned, please contact us. If it is not confirmed with us, please contact to your supplier.

The warranty period starts from the date of the Invoice and it is the only proof to calculate the warranty period. For your sake, please inform us the qualified installation within 30days, or the warranty date will start from the date on the package over till 30days.

It will be free for after-sales service under warranty. It will be charged in the following case:

- Artificial damage
- Improperly operation
- Grid voltage is out of the ruled range.
- Irresistible natural disaster
- Maintained by personnel not authorized by our company.
- Use the spare parts which is not provided or confirmed by our company.
- Fault which is not caused by the device itself.

After warranty, the service will be charged. If service charge is rejected to pay or not paid on time, then we will have the right to stop servicing until the charge is paid.

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Precautions

Note:

This Operation Manual make a detailed introduction for the use, function, and operation instructions. Please read the manual completely prior to using this device. Please carry out inspection and maintenance to the device periodically according to the manual in order to avoid animal injury.

The manual is with the most complete function and features. Please pay attention to the relative model and the relative function and features. Any question, please contact us.

Please put the operation manual beside the device for easy reference.

Operator

The operation manual is only used by well-trained clinical nurse or doctors.

Illustration

All illustrations provided in this manual are for reference only. The settings or data in the illustrations may not be completely consistent with the actual display of the product due to different models and versions.

Agreement

- Italic: Indicates the quoted chapter.
- [Character]: Represent the character string in the software.
- □: Indicates the text description of the keys displayed on the key panel of the equipment or on the display of the equipment.
- →: Indicates the steps during operation.
- ✕ indicates the information displayed on the display, including alarm information, menu information, and setting information.

Chapter 1 Safety Precautions

1.1. Safety and warning

In this manual of warming system, according to the importance of the prompt information, it is divided into two categories: notice and warning. The meaning is as follows:

Notice:

Indicates that the information involves guiding suggestions, and failure to operate according to the caution information may affect the normal use of the product.

Warning:

Indicates that the information relates to safety and effectiveness. Failure to follow the warning information may cause injury.

Please read carefully the notices and warnings listed in this manual.

Warnings:

- (1) Only trained medical staff can operate the device. Before operating the device, the operator must be familiar with the operation of this device.
- (2) Reuse of single used disposable blankets is prohibited, and reuse disposable blankets must be cleaned and disinfected before they can be used again.
- (3) It is forbidden to use the air duct of the device lone to heat the patient. This behavior may cause burning to the patient. The air duct must be connected to the blanket for use.
- (4) When using the device, do not allow patient to lie on the air duct and air outlet, and do not allow patient's fur to directly contact the air duct, which may cause burns.
- (5) During long-term warming treatment, do not leave patient in a state of warming and unsupervised, which may cause burns.
- (6) It is forbidden to use the body surface blanket to transfer or move the patient, which may cause injury.
- (7) It is strictly forbidden to use voltages other than those specified on the nameplate of the device, otherwise it may cause damage or even fire.
- (8) In order to avoid the risk of electric shock, the device power supply system should have a protective ground. If there is no protective ground, please disconnect the device from the power supply.
- (9) If the user does not use the device in accordance with the requirements, steps, warnings, and precautions specified in the operation manual, it may cause abnormal heating, resulting in high or low temperatures, and even other potential risks.
- (10) When in use, please pay attention to keeping the ventilation pipeline unblocked. Bending and blocking the ventilation pipeline will cause false alarms and other possible accidents, such as: low temperature affects the treatment.
- (11) The device should be avoided when alarming. In the event of a malfunction, must immediately stop using the device and immediately evacuate the equipment from patient.

- (12) When the device fails, immediately turn off the equipment or disconnect the power supply, and wait for it cool down before performing corresponding treatment.
- (13) When operating or checking the alarm system of the device, the operating position is 20 cm directly in front of the device. Once an abnormality is found, stop using it as the first safety measure.
- (14) Except for our company provided blanket, it is forbidden to use it in conjunction with other products, and connect other brands of heating and temperature control systems or accessories, otherwise it will cause danger. It is forbidden to use the device on other equipment, nor is it allowed to use other equipment on the device.
- (15) It is forbidden to cover or block the ventilation slots. The operator is forbidden to touch the device and the patient at the same time.
- (16) Please avoid letting patient touch the main body of the warming system.
- (17) The device should not be used in a flammable or explosive environment to prevent fire or explosion.
- (18) The device can only be operated by trained professional medical, prevent the pet owner operating the device by himself.
- (19) Electromagnetic waves will affect the performance of the device, so the equipment used near the device must meet the corresponding EMC requirements. Mobile phones, X-rays, high-frequency surgical equipment, cardiac defibrillators, or MRI equipment are all possible sources of interference, so they all emit high-intensity electromagnetic radiation. Keep them away as much as possible when using them.
- (20) It is strictly forbidden to disassemble, modify, or upgrade the software without authorization. Do not open the shell of the device otherwise there may be a risk of electric shock. The maintenance and upgrade of the device must be carried out by professionals trained or authorized by the manufacturer. Otherwise, will be responsible
- (21) During the use of the device, please do not repair or maintain the device or any part of its accessories.
- (22) If the device is dropped, impacted or immersed in water, do not use it regardless of whether it seems to work normally or not. Please send it to maintenance personnel for inspection before use.

 **Notice:**

- (1) Try to avoid placing the device within the reach of the patient and other unrelated persons.
- (2) Before using the device, the user must check the device and its accessories to ensure that they can work normally and safely.
- (3) Avoid using high-pressure steam sterilized air to purify the blanket.
- (4) If the device cannot operate according to the actions specified in the manual and the cause is unknown, stop to use the device and feedback to the supplier or manufacturer's after-sales service of the supplier or manufacturer when the fault occurred.
- (5) When the device is in working, it is strictly forbidden to aim the air duct at people, patient, and flammable materials.
- (6) After an alarm occurs on the device, it can be restarted only after the fault has been eliminated after the detection by professionals.
- (7) If the device cannot respond autonomously, cannot communicate or feel the body temperature and skin reaction of the patient. Check the vital signs of the patient on a regular basis. If the vital signs of the treatment target are not reached, please adjust the set temperature or terminate the use. Please inform the doctor about the condition of the patient.
- (8) The device should be fixed on a firm trolley for use. Before use, please make sure that the device is installed stably and securely and will not tip over.
- (9) When the device is in using, it is recommended not to share the same socket with other electrical equipment, and use the dedicated power cord equipped with the heating blanket, and ensure that the grounding is good,

please do not touch the power plug with wet hands.

- (10) The device cannot be used in places with strong light, hot and cold wind, and dust.
- (11) Do not touch the display screen or other parts of the body with sharp objects, otherwise it may cause damage.
- (12) The device should be checked daily. If it is not used for a long time, it must be confirmed that all functions are in good condition before reuse.
- (13) Please do not disassemble or modify this heating blanket without authorization.
- (14) If liquid flows into the AC power socket, a short circuit may occur. Please check whether the connection part is dry when connecting the cable. If liquid is spilled on the blanket, wipe it with a dry cloth and send it to maintenance personnel for inspection before use. When the device is connected to an external power source, even if the device switch is turned off, there are still live parts inside the device.
- (15) When disposing of packaging materials, the relevant local regulations or the hospital's waste disposal system must be observed. The packaging materials must be placed out of the reach of patient or kids.
- (16) If the heating blanket is found to be abnormal or some function(s) is lost during use, please stop using it and contact the manufacturer or supplier in time. Otherwise, the manufacturer or supplier shall not be responsible for any loss, damage or injury caused.

1.2. Symbol Description

List of Instruction Manual Symbols

| Symbol | Meaning | Symbol | Meaning |
|-------------|--|--------|---|
| | Notice! Check random files | | Warn |
| | Read the manual before use | | Recycle |
| | Startup or shutdown air cleaner | | Increase temperature |
| | No heating, only natural wind | | Reduce temperature |
| | Quickly set the temperature to 35°C/95.0°F | | Quickly set the temperature to 37°C/98.6°F |
| | Quickly set the temperature to 39°C/102.2°F | | Quickly set the temperature to 41°C/105.8°F |
| | Increase air volume | | Start running or stop running |
| | Reduce air volume | | Clear alarm status when alarming |
| | Enter the menu or return to the previous level | | No sound for 2 minutes |
| | Enter setting temperature or confirm | | Power Switch |
| | Purification is on | | Fan rotation icon |
| | Non-ionizing radiation | | BF type application part |
| | manufacturer | | Production Date |
| | up | | Fragile items, handle carefully |
| | Afraid of rain | | Afraid of sun |
| | Atmospheric pressure limit | | Temperature limit |
| | Humidity limit | | Stacking layer limit |
| IPX2 | Degree of protection against ingress of liquids IIX2 | | AC power indicator |

Chapter 2 Introduction

2.1 Scope of application

The Warming System is a kind of device suitable for low temperature and physical heating during operation or non-operation in medical institutions or to maintain the body temperature of the patient.

2.2 Components and functions

The device is composed of display screen, upper shell assembly, lower shell assembly, main control board, power supply board, heating device assembly, fan assembly, air duct assembly and blanket, etc. It contains the main control system of the circuit, Air volume temperature control system, detection device, alarm device, input output and display device.

The main components and functions of the device:

- Main control system: It is the core of the whole system. It can intelligently control and manage the whole system, and process the detection signal to alarm in time, stop the operation of heating and fan, so as to ensure the safety of animals.
- Air volume temperature control system: It is the main work content of the warming blanket, which controls the air volume of the fan and the power of the heater to achieve the effect of heating and temperature control.
- Detection device: It is mainly a temperature sensor, which detects the real-time temperature to achieve the effect of temperature control.
- Alarm device: It mainly includes sound, light and text information alarm, the purpose is to attract the attention of the operator and remind the operator to carry out the correct handling, so as not to cause harm to the small animals.
- Input, output, and display device: The input device is used to set the required parameters of the warming blanket, such as temperature and air volume. The display device is to display various parameters, warming blanket status and alarm information.

2.3 Product Specifications

2.3.1. Safety Specifications

Type of protection against electric shock: Class I;

Degree of protection against electric shock: Type BF, the part without defibrillation discharge effect ;

Protection against splashing fluid: IPX2;

Working mode: Continuous operation;

2.3.2 Environmental Specifications

Working temperature: +10°C ~ +40°C;

Working humidity: 20% ~ 90%, non-condensation;

Working atmospheric pressure: 70KPa ~ 106Kpa;

Storage and transportation temperature: -20°C ~ +55°C;

Storage and transportation humidity: 10 ~ 95%, non-condensation;

Storage and transportation atmospheric pressure: 50KPa ~ 106Kpa;

Storage and transportation conditions: no corrosive gas and well-ventilated indoor environment;

2.3.3 Power Specifications

Input voltage: A.C.220V or 110V

Frequency: 50Hz/60Hz;

Maximum power : 1200VA;

 **Notice:** Please connect to AC power strictly following the input voltage on the label.

2.3.4. Blanket specifications

The table below shows the specification of the single use blanket:

| SN | Name | Size | Model No. | Tube Port |
|----|---|-------------|-----------|-----------|
| 1 | Lower body blanket | 130cm×80cm | M13080 | 1 |
| 2 | Torso blanket | 100cm×80cm | M10080 | 1 |
| 3 | Pediatric blanket | 150cm×80cm | M15080 | 1 |
| 4 | Shoulder surgical blanket | 180cm×80cm | M18080 | 1 |
| 5 | Sleeve belly window blanket | 200cm×195cm | M200195 | 3 |
| 6 | Sleeveless belly window blanket | 200cm×90cm | M20090 | 1 |
| 7 | Upper body blanket | 205cm×80cm | M20580 | 2 |
| 8 | Whole body blanket | 200cm×100cm | M200100 | 1 |
| 9 | Adult blanket(mat type) | 195cm×80cm | W19580 | 1 |
| 10 | Lithotomy blanket(mat type) | 190cm×90cm | W19090 | 2 |
| 11 | Adult half-pack blanket(mat type) | 195cm×90cm | W19590 | 1 |
| 12 | All-road blanket(mat type) | 200cm×90cm | W20090 | 1 |
| 13 | Pediatric blanket(mat type) | 140cm×90cm | W14090 | 2 |
| 14 | Pediatric whole body window blanket(mat type) | 150cm×80cm | W15080 | 1 |
| 15 | Baby blanket(mat type) | 90cm×90cm | W9090 | 2 |
| 16 | Baby full body window blanket(mat type) | 90cm×80cm | W9080 | 1 |

Warnings:

- (1) It is forbidden to connect the blanket which is not provided by us, or any accident will be responsible by the operator.

2.3.5 Physical Specifications

Dimensions: 260mm×325mm×325mm ;

Weight: ≈6Kg;

Display type: LCD color display;

Display size: 3.5 inches;

2.3.6 Basic specification

The device mode: Self-heating air mode and temperature control mode;

Temperature unit: Celsius (°C), Fahrenheit (°F);

Preset temperature range: a. °Cunit: 32.0°C~41.0°C;

b. °Funit: 89.6°F~105.8°F;

Temperature setting step: a. °Cunit: step is 0.1°C;

b. °Funits: in steps of 0.1°F;

Operating time range: 00:00:00~99:59:59, real time display and becomes zero after power off.

Fast Temperature Setting: 35°C/95.0°F、37°C/98.6°F、39°C/102.2°F、41°C/105.8°F.

Temperature control accuracy: ±1°C or ±1.8°F;

Warm-up time: ≤4 minutes;

Air volume level: Level 1~8 adjustable, the interface displays the rate and level;

Level 1: 60m³/h ; level 2: 65m³/h ; level 3: 70m³/h ; level 4: 75m³/h ,

Level 5: 80m³/h ; Level 6: 85m³/h ; Level 7: 90m³/h ; Level 8: 95m³/h ;

Air volume accuracy: ±10m³/h ;

Volume: Button volume and alarm volume are adjustable in 8 level, and have a mute function, which can be muted for 2 minutes;

Over-temperature protection function: Over-temperature protection device, double protection of software and hardware, real-time monitoring of the temperature of the heater over 60°C, hardware forcible power-off protection, to prevent the temperature being too high;

Air Purification Function: Plasma air purification;

Machine self-check Function: real-time self-check during power-on self-check and warming blanket process;

Audio and Visual Alarm: High temperature alarm, low temperature alarm, heater failure alarm, fan failure alarm, temperature sensor failure, no operation alarm;

Language: Chinese and English optional;

Language: Chinese and English (language can be customized)

Heating prompt: When heating is started, there is a visual signal. When the temperature is lower than the preset temperature, the indicator light flashes. When it is detected that the temperature of the hose outlet reaches the preset temperature, the running indicator light is always on.

Noise: During normal operation, the noise is ≤ 70dB (A);

Temperature key lock: After starting the operation, the temperature cannot be changed;

Ambient temperature: real-time display of ambient temperature;

History record: can research the log

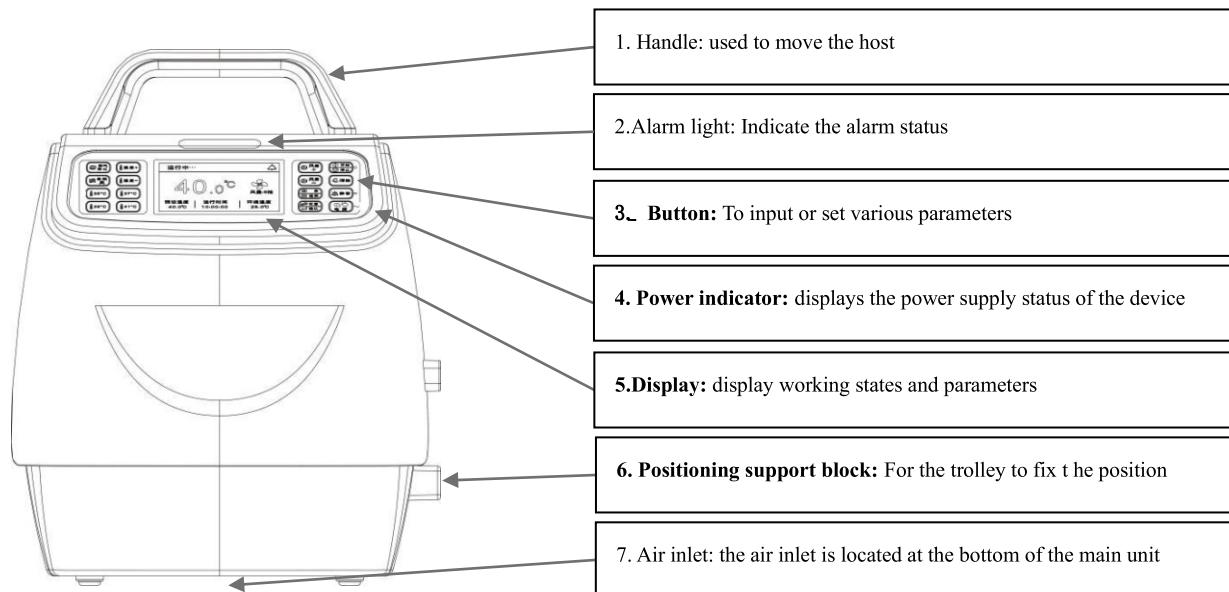
Filter grade: G4 (EN779) filter grade filter cotton

2.4. Function description of the device

The warming system has good sound and light alarm function and precise temperature control function of warming blanket, which is safe and reliable. It can alarm when the warming blanket complete high temperature, low temperature, heater, fan abnormality, etc.

2.5. Product structure and function

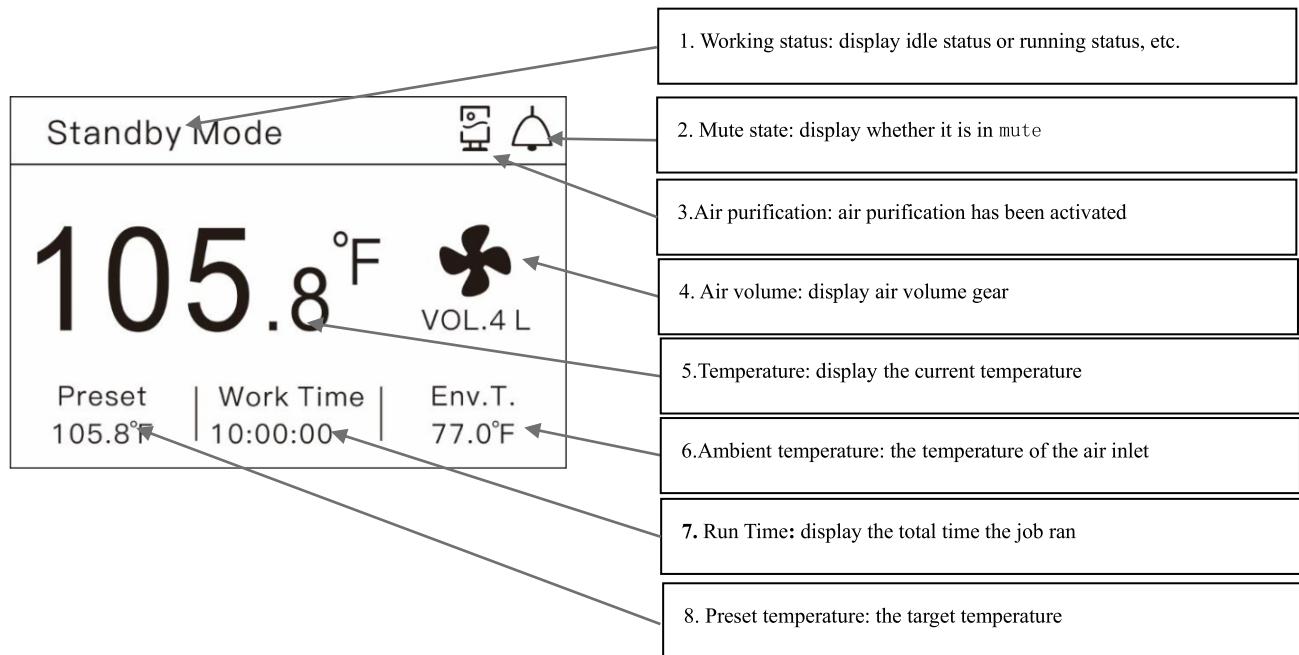
2.5.1. Front shell components



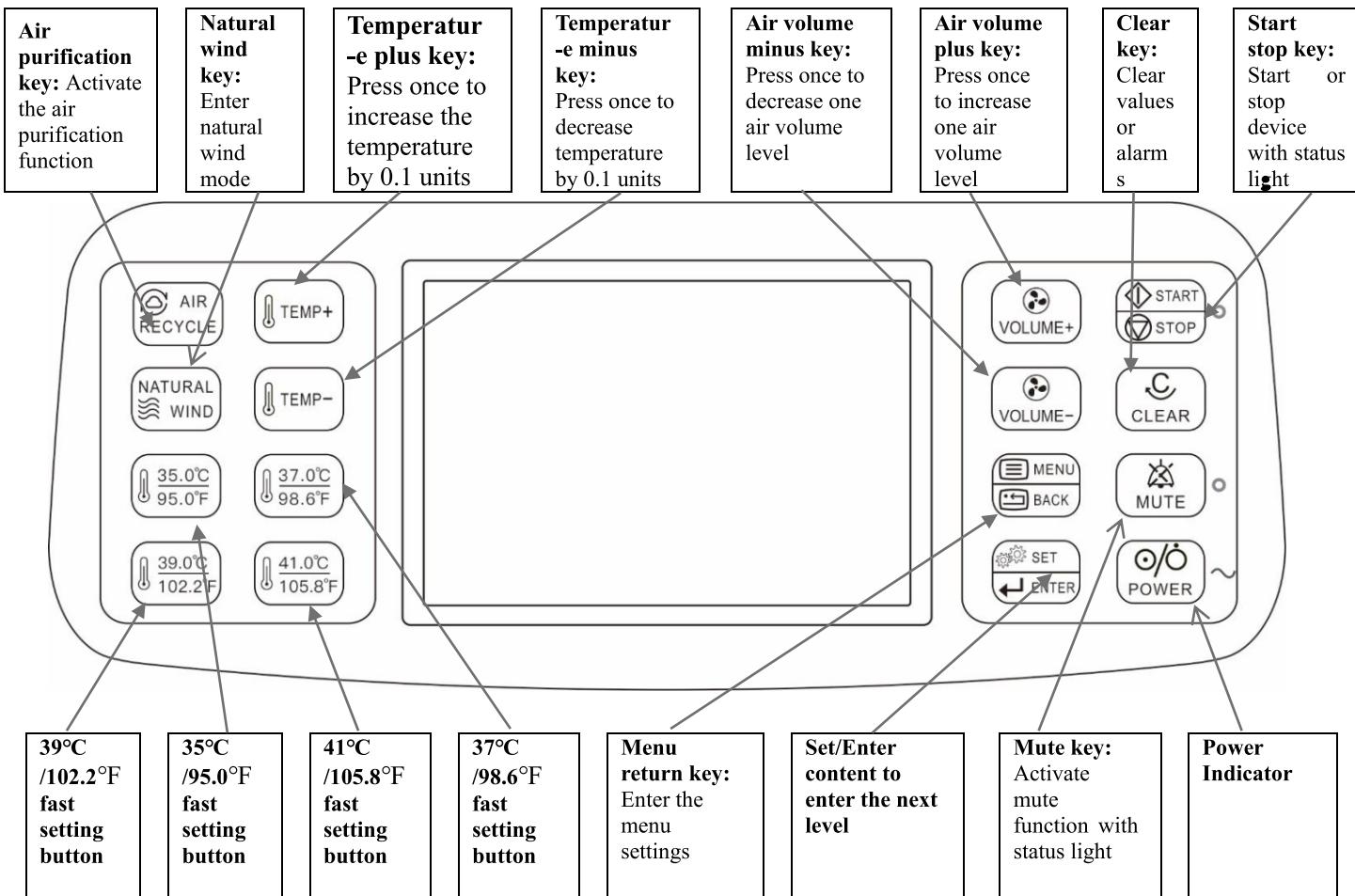
⚠ Warnings:

- (1) The air inlet must be kept always unblocked, and cannot be blocked by any other object, otherwise it will cause high temperature alarm, fan failure and other reasons, and the heating blanket cannot be used.

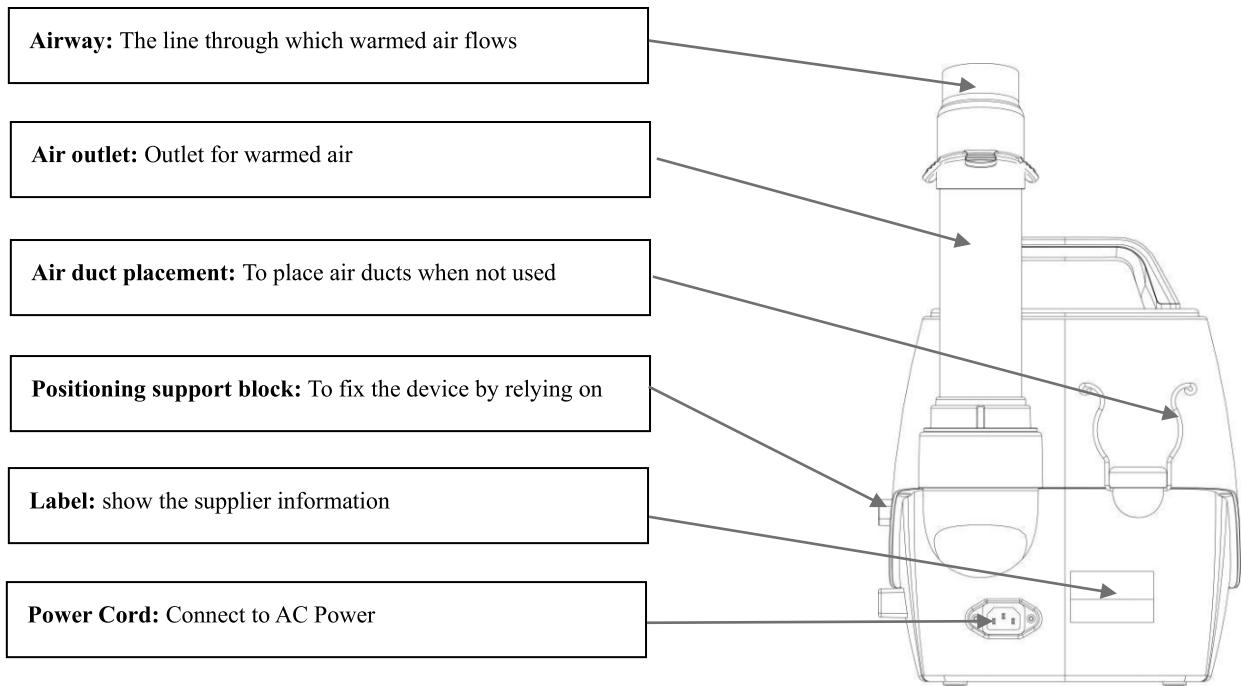
2.5.2. Display Information



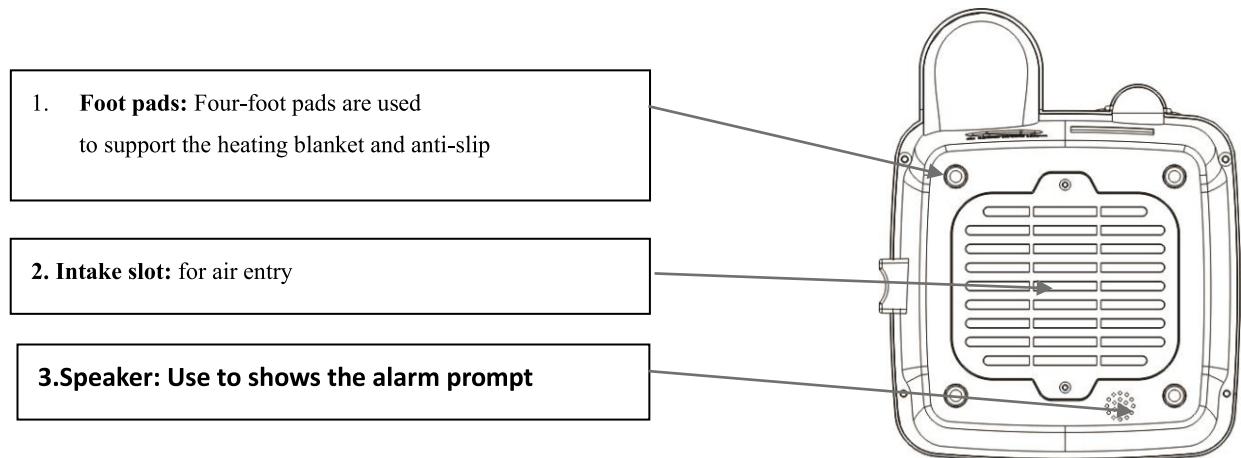
2.5.3. Button Information



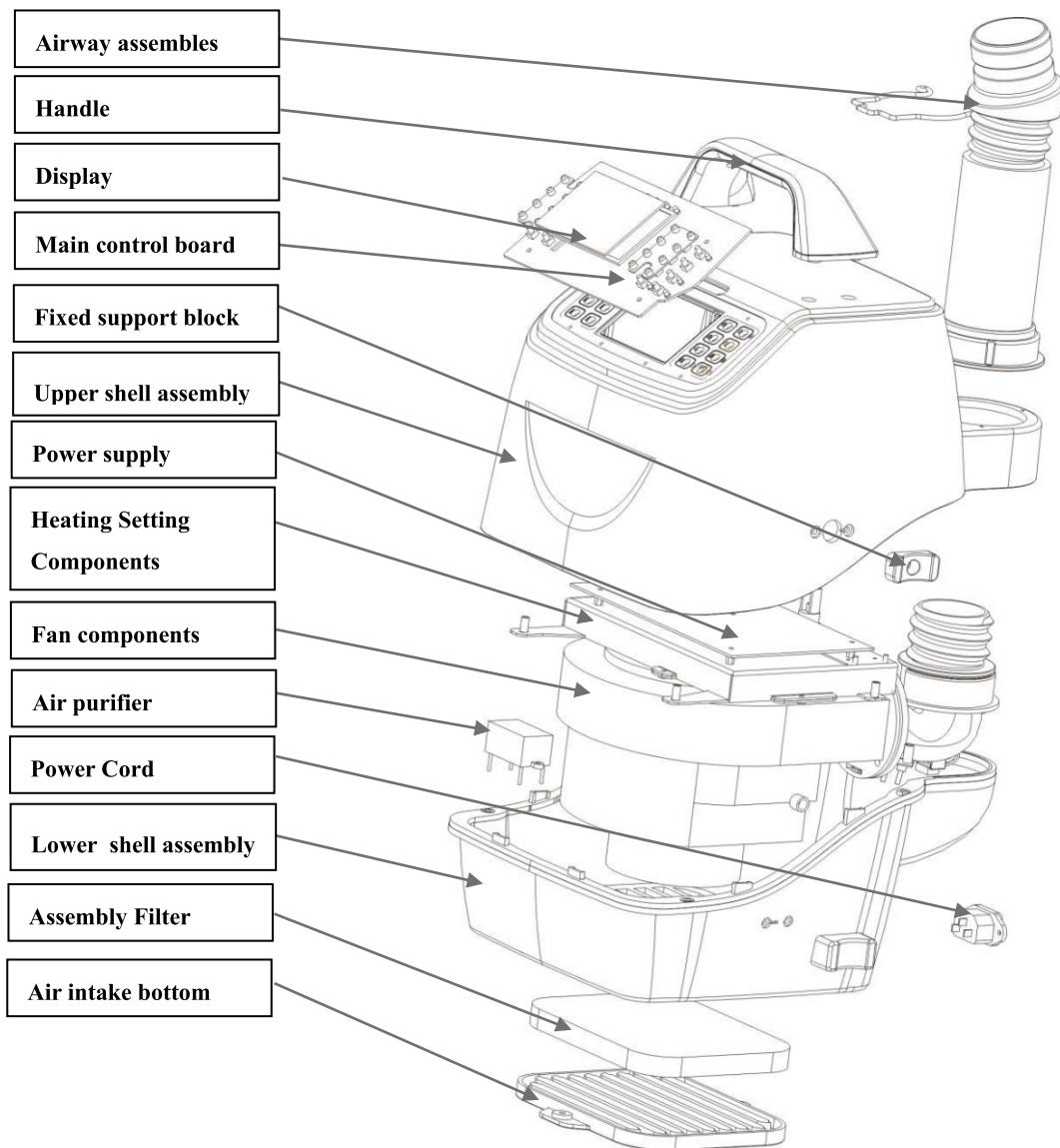
2.5.4. Back shell components



2.5.5 Bottom functional components



2.5.6. Structure diagram



Chapter 3. Packing List and Operation Process

3.1. Packing List

When unpacking, please check the following contents:

- (1) Warming system.....1 pc
- (2) Power cord 1 pc
- (3) Operation manual 1pc
- (4) Blanket.....1 pc
- (5) Certificate of Qualification..... 1pc
- (6) Packing List1 pc

3.2. Operation process of warming system

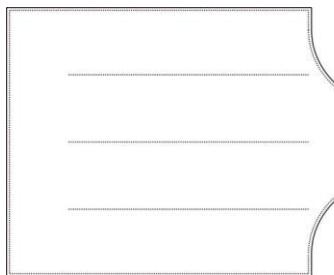
3.2.1. Fixed device host

Please place the device safely on a fixed or level, hard dry surface (such as a table, floor) on the trolley. Do not place it on a soft, uneven, damp surface (such as a bed) or a dusty surface, otherwise it will block the air inlet of the device and cause the device to overheat.

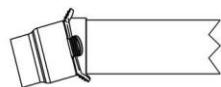
3.2.2. Blanket installation

Blanket including disposable single used blankets or reusable blankets, which have various sizes, all warming blankets are consistent with Figure 1 and can be closely matched with the outlet of the airway (Figure 2). Please check the blanket before use to make sure the packaging is intact and there are no visible leaks on the surface

Please pinch the outlet of the airway tube in Figure 2, and extend it into the interface of the blanket in Figure 1;

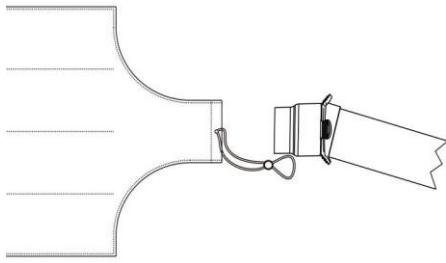


3.2.2. Figure 1

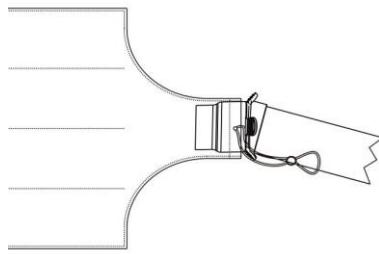


3.2.2. Figure 2

Fasten the air outlet (Figure 4) with the bandaged (Figure 3) and the connection is ready.



3.2.2. Figure 3



3.2.2. Figure 4

3.2.3 Connect to AC power

Insert the power cord into the socket on the back of the device, and insert the other end into the AC power socket, the indicator light \sim on the button panel is on.

Notice:

- (1) Applicable voltage range of AC power supply is 220V, frequency: 50/60Hz.
- (2) The power cord should be firmly inserted in place. After the power cord is connected to the AC power, it should be placed in an orderly manner to prevent people from being entangled by the power cord when walking.

Warning.

- (1) The power cord required by our company must be used, otherwise it may cause serious damage to the warming blanket or even fire.
- (2) When installing the power cord, check whether the power cord is damaged. If the skin is damaged and the plug and socket are in poor contact, please replace it in time.

3.2.4. Start the device

Before starting the device, it is necessary to analyze the working mode according to the actual situation, that is, whether heating or natural wind is required, what is the temperature of the heating mode, and the choice of air volume, etc. Normally, if the operation time is long and the body temperature of the patients drops greatly, the heating temperature should be appropriately increased. If the patient is much taller or much heavier, increase the air volume appropriately to avoid the blanket on the body surface being compressed and not ventilated. The increase in air volume is also accompanied by an increase in the noise of the airflow, so it should be selected according to the situation.

‘1) Power On

Press the Power button to turn on the device, the device enters the standby mode, and the buzzer and speaker will emit a boot-up prompt sound and start-up music. The default temperature and air volume at power-on are the states before the last power-off.

‘2) Select the required temperature

Press Set/Enter key to enter the temperature setting stage, press the corresponding buttons (temperature+, temperature-, natural wind, 35°C、37°C、39°C and 41°C) to set the temperature, and then press Start/Stop after setting the fan and heater (the natural wind level heater will not work), the indicator of Start/Stop button will be flashing during the working process, and the fan icon on the interface will rotate at the same time.

③ Change the required air volume

To adjust the air volume, you can press the air volume  or  key or to enter the air volume adjustment and select the required air volume. It will work automatically after the air volume adjustment setting is completed.

3.2.5. Stop working

Press the Start/Stop button to enter the standby state, and the light indicator will turn off. Fans and heaters will stop working. If no need to use the device again, please turn off the switch of the device and disconnect the power plug in time

Notice:

- Reboot after shutdown, all parameters of the device except the accumulated time reset will keep the settings before the last shutdown of the device.
- When the ambient temperature is too low, it will enter a preheating state of up to 1.5mins at the initial stage of heating to ensure that the device quickly reaches the set temperature. In the preheating state, the buttons do not respond, and the wind is strong. After the warming-up status is over, it will automatically enter the normal operation state without any operation.

Chapter 4. Operation Guide

4.1 Preparation

4.1.1 Unpacking inspection

Before unpacking, check the box carefully to make sure the product has not been damaged in transit. If any damage is found, please contact the carrier or supplier immediately.

If the package is intact, please unpack it in the correct way, take out the warming blanket and other accessories, and check according to the packing list to check whether the items are complete or whether the product has any mechanical damage. If in doubt, please contact the supplier immediately.

Notice:

- Packaging materials should be kept out of the reach of children. When disposing of packaging materials, local regulations or the hospital's waste disposal system should be followed.
- Please keep the packaging and packing materials for future transportation or storage.

4.1.2. Environmental Requirements

The environment for using this device should avoid noise, vibration, dust, corrosive or flammable, explosive and other substances that affect the safety function of the equipment. To achieve good heat dissipation, leave at least a 5cm gap around the device to ensure air circulation.

When the device is transferred from one environment to another, the device may condense due to the difference in temperature. At this time, the device can only be started after the condensation disappears.

Mobile phones, X-rays, high-frequency surgical equipment or MRI equipment all emit high-intensity electromagnetic radiation, so you should stay away from these devices when using them to prevent electromagnetic radiation from having an immeasurable impact on this device.

4.1.3 Power Requirements

The power supply used by this device must meet the requirements on the device label.

Warnings:

- (1) The appropriate power supply must be selected according to the setting of the power supply voltage of the device. Or it may cause serious damage to the device or even fire.
- (2) Fuse specification of power supply: 3.6*10mm glass tube fuse, model: 3T, 3.15A, 250V.

4.2. Installation and Setup

4.2.1. Installation and start up

1. Fasten the device on the trolley to keep the device and the trolley stable. Connect the power cord and the power indicator \sim lights up, it means the AC power supply is plugged in.
2. Press the power button for more than 2 seconds to turn on the machine. During the startup process, the machine have a self-checks. The self-check includes if the fan and the heater are normal, whether the functions of the machine are normal, etc. If there is any abnormality, an error message will be displayed (such as: fan failure and other alarm information).

Notices:

- (1)It is recommended to install the blanket and then power off to set the parameter
- (2)Before you install the blanket and start using it, you must check that the device is fixedly installed on the trolley to ensure that the device will not fall from the trolley, otherwise the device may be broken or unpredictable damage to small animals may be caused.

4.2.2. Install the blanket

- a. Open the interface of the blanket.
- b. Insert the airway outlet into the interface of the blanket.
- c. Tie with the bandage of the blanket to ensure a tight fit.

See chapter ---3.2.2 for details

4.2.3. Device parameter and start heating

- a. In the standby interface after power on.
- b. Press the Set/Enter button to enter the temperature setting, and set the required temperature for temperature+, temperature-, 35°C/95.0°F、37°C/98.6.0°F、39°C/102.2°F or 41°C/105.8°F.
- c. Press the Set/Enter key again, after setting the temperature, press the air volume + or air volume - to set the air volume, and then press Start/Stop to start the device to start heating.
- d. During the operation of the device, the air volume can be changed at any time.

See chapter ---3.2.4 for details

⚠️Notice:

The running time is only regarded as a single accumulation, and the running time will be automatically cleared after the device is restarted.

- When using the device, the medical staff must regularly observe the use of the device, and cannot completely rely on the alarm function of the device.
- Single used disposable blankets cannot be reused many times, and reusable blankets can be reused after disinfection.

4.2.4. Finish

- a. After the treatment, press the  button to stop the working of the device.
- b. Take off the AC plug and take away the warming blanket.

⚠️Notice:

After shutting down and restarting, except after the "running time" is cleared, other parameters will keep the parameters in record.

4.3. System Setting

4.3.1. Volume setting

Set the volume level

Level: 1-8

⚠️Notice:

- (1) Defaulted volume: 4.
- (2) The higher level , the higher level
- (3) Alarm standard: GB/YY0709

4.3.2. Language Setting

Language can be switched , after press Set/Enter.

4.3.3. Unit Setting

The temperature range can be set Celsius or Fahrenheit. After selecting and press Set/Enter the temperature will be automatically converted.

4.3.4. History Log

The device have the function to search the operation information of the heating blanket, such as parameter information and alarm records.

4.3.5. Version Information

Display the current version information

4.4. Other operation

4.4.1. Mute

When the device emits an alarm sound, you can press the mute button to mute the sound, and the mute indicator will light up. The mute function only lasts for two minutes.

 **Notice:**

- (1) Mute only temporarily turns off the alarm sound, and the alarm fault is not cleared.

4.4.2. Modify the air volume without stopping

After starting the device, the air volume of the device can be changed without stop. Modify the parameter on the device panel.

4.5. Replacing the filter

Take out 2pcs M4*8 Phillips screws with a Phillips screwdriver as shown in the figure, then remove the bottom air intake bottom cover, take out the filter screen, replace the filter screen, and reinstall the air intake

1. Take out 2 screws
2. Remove the intake bottom cover
3. Take out the filter
4. Install again



4.5.Figure

⚠️ Notice:

- (1) The filter sponge must use the G4 (EN779) filter grade provided by the manufacturer, Or there may be danger.
- (2) It is necessary to clean the filter regularly to keep the air flow of the filter unobstructed. Otherwise, the device may fail to work due to the poor airflow of the filter. It is recommended to replace the filter with the same specifications and parameters every 3-6 months.

Chapter 5. Alarm and Troubleshooting

5.1. Alarm Description

Alarm means during the working of the device, it cannot be carried out smoothly due to the abnormality such as the change of the heater or the fan or the failure of the device itself, the device can't work normally. The device will remind the personnel with alarm, light, message. Requirements are as follows:

- a. The audible alarm sound of the device should be able to be at 1m, the lowest gear should be greater than 45db, and the highest gear should be greater than 65db;
- b. The silence period of the device sound alarm is the set pause time, the default is 2 minutes;
- c. The light alarm should continue to work during the silent period of the audible alarm;
- d. The fault alarm should use the device.

5.2 Alarm priority and method

5.2.1. Alarm priority

The alarm level of this device is divided into two types: high-level alarm and low-level alarm. The contents are as follows:

| | | |
|----------------|-----------------|--|
| Alarm priority | Advanced Alarm | High temperature alarm, low temperature alarm, heater failure alarm, fan failure alarm, temperature sensor failure, air purification equipment failure |
| | low level alarm | No operation alarm |

5.2.2. Alarm Way

Light alarm, sound alarm, text and symbol alarm, when an alarm occurs, the device will use visual and audible alarm methods to prompt the operator. Among them, the light alarm, sound alarm, text and symbol alarm distinguish the type of alarm in different ways.. The requirements are as follows

| Alarm priority | Warning light color | The flashing frequency of the warning light | Duty cycle | Alarm sound signal cycle | Alarm sound |
|----------------|---------------------|---|------------|--------------------------|--|
| High | Red | 2.0±0.6Hz | 20%~60% on | 2~15seconds | 3 meter away from the device, no less than 65 decibels |
| Low | Yellow | Alarm light is always on | 100% on | >15seconds | 3 meter away from the device, no less than 65 decibels |

| Alarm type | Sound | luminous signal | | | User confirmation |
|------------------|-------|-----------------|--------------|-------------------------------|--|
| | | Red light | Yellow light | Text | |
| High level Alarm | YES | Flashing | off | Fan failure and other alarms | Press the mute key; the clear key confirms the alarm |
| Low level alarm | YES | OFF | flashing | No operation and other alarms | Press the mute key; the clear key confirms the alarm |

5.2.3. Alarm response measures

When an alarm occurs, the condition of the patient should be checked first.

- a. Check the condition of patient;
- b. Confirm the parameter or type of alarm;
- c. Identify the cause of the alarm;
- d. Remove the cause of the alarm;
- e. Check if the alarm is cleared.

5.2.4. Alarm fault description and response

| Alarm information prompt | Cause | Solution |
|--------------------------|--|---|
| No operation | The device is turned on, and there is no operation within 2 minutes in the standby status | 1. Press the clear key to clear the alarm 2. If the parameters are confirmed to be set, press the start key 3. If no need to use it, press the power button to turn off the machine |
| High temperature alarm | The air outlet temperature detects exceeding 2°C | 1. Press the clear key to clear the alarm 2. Check whether the air outlet is blocked 3. Check whether the ambient temperature is too high 4. Please contact the manufacturer or dealer for maintenance |
| Low temperature alarm | The air outlet temperature detects 3±1°C lower than the preset temperature for more than 4±2mins | 1. Press the clear key to clear the alarm 2. Whether the ambient temperature is lower than the range of use 3. Please contact the manufacturer or dealer for maintenance |
| Heater failure alarm | In the heating mode, the temperature does not rise or abnormal. | 1. Press the clear key to clear the alarm 2. Whether the heater is faulty 3. Please contact the manufacturer or dealer for maintenance |
| Fan failure alarm | In the working state, the power output of the fan cannot be detected after a certain period | 1. Press the clear key to clear the alarm 2. The fan wire is in poor contact, check the fan connection wire 3. Please contact the manufacturer or dealer for maintenance |
| Temperature sensor alarm | The temperature remains the same or shows abnormality | 1. Press the clear key to clear the alarm 2. The sensor signal line is not connected well, and the signal line is broken 3. Please contact the manufacturer or dealer for maintenance |

⚠️ Warnings:

- (1) After the alarm occurs, the operator should deal with it as soon as possible to prevent the effect of stopping the device to the patient.
- (2) Affected by the test conditions when testing a single fault, the response time of different environmental alarm safety systems may not be able to maintain the specified accuracy.
- (3) Medical staff must regularly observe the use of the device, and cannot rely entirely on the alarm function of the heating blanket to prevent equipment errors.

5.3. Other error

Before contacting the supplier, please check the following:

| Phenomenon | Checking point | Troubleshoot |
|--------------------------------|---|---|
| Can't power on | Is the AC power connected correctly? | Connect the AC power correctly |
| Temperature error is too large | Choose the right blanket matching the device? | Choose the right blanket matching the device. |
| Air volume error is too large | Are there any objects inside the fan? | Cleaning the objects inside the fan |

Chapter 6 Product Maintenance Methods Storage and Transportation

Conditions

If the user needs to repair the specified device parts, the company can provide device related circuit diagrams, component lists, legends, calibration details, or other necessary to help the user's qualified technicians repair the repairable device parts designated by the manufacturer. material. The materials and methods listed in this section are used for cleaning or air purifying device, and the company does not provide any warranty for damage or accidents caused by the use of other materials or methods. The chemicals or methods listed by the company are used only as a means to control infection and assume no responsibility for their effectiveness.

Consult your hospital's infection prevention department or epidemiologist for ways to control infection.

6.1. Daily maintenance

6.1.1. Maintenance of the device shell

Wipe the shell with a soft cotton cloth dampened in a diluted neutral detergent and wrung out, then allow to dry well.

6.1.2. Maintenance of display screen and key panel

Gently wipe the display, key panel with a damp cotton cloth, then allow it to dry sufficiently

⚠️Notice:

- (1) Do not allow liquid to enter the periphery of the key panel.
- (2) Avoid cleaning with organic liquids such as diluent and alcohol.

6.1.3. Maintenance of the device airway

Gently wipe the airway of the device with a damp cotton cloth, then allow it to dry sufficiently

⚠️Warning .

- Before cleaning the device, you must turn off the power and disconnect the power cord from the socket;
- Do not immerse the device in liquid; do not pour liquid on the device or accessories; do not allow liquid to enter the device;
- Do not use abrasive materials (such as steel balls or silver polish) and solvents like xylene and acetone to clean, so as to avoid damage to the casing;
- If you accidentally pour liquid on the device or accessories and cause the device to fail to work properly, please suspend use and contact the manufacturer or distributor.

6.2. Regular maintenance

The device should be regularly maintained according to the actual situation of each hospital and the manufacturer's recommendations.

6.2.1. Maintenance plan

In order to ensure safe use and delay the use cycle, please carry out regular maintenance inspections, and the inspection schedule is shown in the maintenance schedule in the following table:

| Maintenance Item | Frequency | Maintenance method |
|--------------------------|-----------------|--------------------|
| Check the appearance | before each use | Refer to 6.2.2 |
| Check the power cord | before each use | Refer to 6.2.3 |
| Check the alarm function | every half year | Refer to 6.2.4 |

6.2.2 Check the appearance

Visual inspection: no cracks or damage.

Button operation: The buttons are smooth and effective.

Sealing parts of the device: the phenomenon of airway rupture.

Thorough cleaning of device surfaces is required before or after prolonged storage.

6.2.3. Check the power cord

Check the appearance of the power cord. If the skin is damaged or the plug and socket are not in good contact, please replace it with the manufacturer or the manufacturer's authorized dealer in time.

If the AC power is connected, the power indicator of the device does not light up and the device cannot be turned on. Please contact the manufacturer or the manufacturer's authorized dealer for maintenance.

6.2.4 Check the alarm function

Startup self-test alarm system: When the device is turned on, the alarm system will be self-tested to ensure that each sensor and its main components are normal and to determine whether the alarm system is working normally. If there is any abnormality, please stop using the device and contact the manufacturer or the manufacturer's authorized dealer for maintenance.

Alarm light: The red light is always on for 2s when the machine is turned on. After the boot is completed, if there is a low-level alarm, the yellow light is always on, and the high-level alarm red light flashes.

Buzzer: When the machine is turned on, it will beep for 1s for a long time.

Horn: Low-level alarm (1 "beep"), high-level alarm (10 "beep-beep-beep-beep-beep-beep-beep-beep-beep").

Alarm function: Check one by one according to 5.2.4. Alarm fault description and response.

6.3 Regular replacement of parts

This device is equipped with special accessories: the filter sponge can be used for regular replacement, and the duration depends on the actual use condition.

6.4 Transportation and storage

After cleaning according to the previous instructions, transport and store the device in the following environment:

Ambient temperature: -20°C~ +55°C; Relative humidity: 10%~ 95%; Atmospheric pressure: 50KPa~ 106KPa.

Do not store in the following environments:

- Places exposed to direct sunlight/strong light.
- Places that are directly blown by cold and humid (hot) air such as fans, air conditioners, electric furnaces, heaters, and humidifiers.
- Chemical warehouses or places with harmful gases.
- Locations where there is water seepage, splashing, too much dust, too much vibration and uneven floors.
- The stacking level cannot exceed 5 levels.

6.5. Pollution-free treatment and recycling

The normal service life of the device is about 5 years. Device that has exceeded its service life should be scrapped.

Please contact the manufacturer or dealer for more information.

You can proceed as follows:

- a. Device that has been scrapped can be sent back to the manufacturer or dealer for proper recycling.
- b. Waste device can be disposed of according to the corresponding regulations and disposed of by yourself.

Notice .

- Disposal of waste device must follow local laws and regulations.

Appendix Electromagnetic Compatibility

⚠️ Notice:

- (1) Users should install and use it according to the electromagnetic compatibility information provided in the accompanying documents.
- (2) Portable and mobile RF communication equipment may affect the performance of the device. Avoid strong electromagnetic interference when using it, such as close to mobile phones, microwave ovens, etc.
- (3) Guidelines and manufacturer's declaration are detailed in the appendix.

⚠️ Warnings:

- (1) The device should not be used close to or stacked with other equipment. If it must be used close to or stacked, it should be observed and verified that it can operate normally in the configuration it is used in.
- (2) This equipment is not intended for use in a residential environment where it does not provide adequate protection for radio reception.
- (3) Except for cables sold by the manufacturer of the device as spare parts for internal components, the use of unspecified accessories and cables may result in an increase in the emission of the device or a decrease in immunity.

| Serial number | Item | Cable length ('m') | Whether to block | Remark |
|---------------|-------------|--------------------|------------------|--------|
| 1 | Power cable | 3.0 | No | / |

Appendix:

User Guide and Manufacturer's Declaration– Electromagnetic Emissions

The purchaser or user should ensure that it is used in this electromagnetic environment.

| Emission test | Compliance | Electromagnetic Environment Guidelines |
|--------------------------------------|-------------|--|
| RF emission | Group 1 | The radio frequency energy of this device acts only inside the machine. As a result, its RF leakage is low and the potential for interference to nearby electronic equipment is low. |
| RF emission | Class A | This equipment is suitable for use in all installations that are not domestic and not directly connected to the public low-voltage supply network of domestic dwellings. |
| Harmonic emission | Not applied | |
| Voltage fluctuation/flicker emission | Not applied | |

| User Guide and Manufacturer's Declaration— Electromagnetic Emissions | | | |
|--|--|--|--|
| The purchaser or user should ensure that it is used in this electromagnetic environment. | | | |
| Immunity test | IEC 60601 test level | Match level | Electromagnetic Environment Guidelines |
| Electrostatic discharge (ESD) | ±6 kV contact discharge ±8 kV air discharge | ±6 kV contact discharge ±8 kV air discharge | Floors should be wood, concrete or tile, and if covered with synthetic materials, the relative humidity should be at least 30%. |
| electrical fast transient burst | ±2kV to power line ±1kV on input/output lines | ±2kV to power line | Mains power should be of the quality used in a typical commercial or hospital environment. |
| Surge | ±1 kV differential mode voltage ±2 kV common mode voltage | ±1 kV differential mode voltage ±2 kV common mode voltage | Mains power should be of the quality used in a typical commercial or hospital environment. |
| Voltage dips, short interruptions, and voltage variations on power input lines | <5 % UT for 0.5 weeks (on UT, >95% dip) 40 % UT for 5 weeks (On UT, 60% dip) 70 % UT for 25 weeks (on UT, 30% dip) <5 % UT for 5s (on UT, >95% dip) | <5 % UT for 0.5 weeks (on UT, >95% dip) 40 % UT for 5 weeks (On UT, 60% dip) 70 % UT for 25 weeks (on UT, 30% dip) <5 % UT for 5s (on UT, >95% dip) | Mains power should be of the quality used in a typical commercial or hospital environment. If the user of the device requires continuous operation during power interruptions, it is recommended that device be powered by an uninterruptible power supply or battery. |
| Power frequency magnetic field (50/60Hz) GB/T 17626.8 | 3A/m | 3A/m | The power frequency magnetic field shall have the characteristics of the power frequency magnetic field level of a typical location in a typical commercial or hospital environment. |

Note: UT refers to the AC network voltage before applying the test voltage

User's Guide and Manufacturer's Declaration – Electromagnetic Immunity

The purchaser or user should ensure that it is used in this electromagnetic environment.

| Immunity test | IEC 60601 TEST LEVEL | Match level | Electromagnetic Environment Guidelines |
|---|-----------------------------|-------------|--|
| RF Emmision GB/T 17625.6 | 3 Vrms 150 kHz to 80 MHz | 3 Vrms | Portable and mobile RF communications equipment should not be used closer than the recommended isolation distance to any part of the device, including cables. This distance should be calculated by a formula corresponding to the frequency of the transmitter. Recommended isolation distance $d = 1.2\sqrt{P}$ |
| RF Emmison GB/T 17626.3 | 3 V/m 80 MHz to 2.5 GHz | 3 V/m | $d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer, and d is the recommended separation distance in meters (m). b Field strengths from fixed RF transmitters are determined by surveying the electromagnetic site a and should be lower than the compliance level in each frequency range b. Interference may occur near equipment marked with the following symbols. °  |
| Note 1: At 80MHz and 800MHz, the formula for the higher frequency band is used. | | | |
| NOTE 2 These guidelines may not be suitable for all situations, and electromagnetic propagation is affected by absorption and reflection from buildings, objects and people. | | | |
| a Field strengths of fixed transmitters, such as base stations for wireless (cellular/cordless) telephones and land mobile radios, amateur radios, AM (amplitude modulation) and FM (frequency modulation) radio broadcasts, and television broadcasts, are not theoretically capable of Accurate prediction. To assess the electromagnetic environment of fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength at the location where the device is located is higher than the RF compliance level for the above application, the device should be observed to verify that it operates normally. If abnormal performance is observed, supplemental measures may be necessary, such as reorienting or repositioning the device . b In the entire frequency range of 150KHz ~ 80MHz, the field strength should be less than 3 V/m. | | | |

Recommended Isolation Distances Between Portable and Mobile RF Communication Equipment and the device

The device is intended for use in electromagnetic environments where radiated RF disturbances are controlled. Depending on the maximum output power of the communication equipment, the purchaser or user of the device can prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communication equipment (transmitters) and the device as recommended below.

| Transmitter rated maximum output power/W | Isolation distance corresponding to different frequencies of the transmitter/m | | |
|--|--|---------------------------------------|--|
| | 150 kHz ~ 80 MHz $d = 1.2\sqrt{P}$ | 80 MHz ~ 800 MHz $d = 1.2\sqrt{P}$ | 800 MHz ~ 2.5 GHz $d = 2.3\sqrt{P}$ |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

For transmitter rated maximum output power not listed in the table above, the recommended isolation distance d, in meters (m), can be determined using the formula in the corresponding transmitter frequency column, where P is provided by the transmitter manufacturer Transmitter maximum output power rating in watts (W).

NOTE 1 At 80 MHz and 800 MHz, the formula for the higher frequency range applies.

NOTE 2 .These guidelines may not be suitable for all situations, and electromagnetic propagation is affected by absorption and reflection from buildings, objects and people.

Appendix Units and Terms

| Abbreviation | English | Chinese |
|--------------|-----------------------|---------|
| Min | Minute | 分钟 |
| H | Hour | 小时 |
| Hz | Hertz | 赫兹 |
| Mg | Milligrams | 毫克 |
| G | Gram | 克 |
| Kg | Kilogram | 千克 |
| kPa | Kilopascal | 千帕 |
| ml | Milliliter | 毫升 |
| m³/h | Cubic meters per hour | 立方米每小时 |
| °C | Celsius degree | 摄氏温度 |
| °F | Fahrenheit degree | 华氏温度 |

Terms

| abbreviation | English information | Chinese |
|--------------|--|-------------------|
| MRI | Magnatic resonance imaging | 核磁共振成像 |
| AC | Altenating current | 交流电 |
| DC | Dirct current | 直流电 |
| EMC | Electromagnetic compatibility | 电磁兼容性 |
| IEC | International Electrotechnical Commission | 国际电工技术委员会 |
| ISO | International organization for Standardization | 国际标准化组织 |
| LED | Light emitting diode | 发光二极管 |
| CPU | Central processing unit | 中央处理器 |
| RAM | Random access memory | 随机存取存储器 |
| ROM | Read-only memory | 只读存储器 |
| Eto | C2H4O | 环氧乙烷 |
| BOLUS | Bolus | 短时间内输送液体的离散量（即快进） |