Kalstein®

Infant Radiant Warmer

Series Model YR02189

# Instruction Manual

Thank you very much for purchasing our Infant Radiant Warmer Series Model YR02189.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

 Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

**Notes:**

- Before operation on this equipment, be sure to read this manual carefully.
- Choose and read only the instructions on your product model contained in this manual.
- It is essential to inspect and maintain this equipment regularly and clean and disinfect itfrom time to time.

**Information on electromagnetic compatibility:**

- This equipment is of Class A, Group I under GB4824 with respect to EMR.
- During operation of this equipment, pay close attention to use of any other equipmentwhich may have effect on normal operation of this equipment, such as portable or mobile RF communication equipment. For related parameters refer to the sections below.
- This equipment is in compliance with EMC requirements under YY0505-2012. User should install and operate this equipment based on related EMC information providedin this manual.

# Contents

Section Page

Dear user,

Thanks for your selection of our product! Your care and support will give us confidence and capacity to lead the industry and obtain advantage over the competitors, which will be representedin our corporation with users, and in our thoughtful services!

As product quality is decided absolutely by technological capacity and commitment and accountability, we expect each customer to gain benefits from our professional dedication andproducts! We hope that you will make success in use of our product!

This manual is presented as a document attached to the product for your reference at any time. Forany question or problem, do not hesitate to contact us!

This manual contains operating instructions and technical specifications, and describes in detailsproduct applicability, features, performance indexes, operations, maintenance and related considerations.

This product is intended for infants. Before operating this equipment, be sure to read this manualcarefully. Only trained and certified personnel can operate this product.

We provide charge-free repair service or replacement of parts for any malfunction of the equipmentwithin one year following the date of purchase on condition that this equipment is stored and operated in accordance with related instructions required.

This manual contains operating instructions and technical specifications, which must be readcarefully and understood prior to operation of the equipment.

## 1. Description of Signs

 Caution! Refer to the document attached

 Protective earthing

 High temperature

 High voltage

 Equipment of BF type, Class I

 AC power

 Manual indicator lamp

 Automatic indicator lamp

## 2. Warn

 Indicates what you must understand and pay attention to.

- Warranty for this product is valid for one year starting from the date of purchase except in any of thefollowing cases:
  a) improper operations.
  b) damage caused by user due to failure to obey the cleaning/maintenance instructions herein.
  c) failure or damage resulted from replacement with spare part other than specified by us.
  d) change in safety performance, operation performance or parameter of the product due to connection ofany unacceptable apparatus/accessory to the equipment.
  e) force majeure (e. g. natural calamity).
- This manual contains operating instructions and technical specifications, which must be read carefully and understood prior to operation of the equipment.
- This manual shall be kept properly and unchanged. Change to the manual may result in undesirableconsequence.
- Service life of the equipment is five years. Upon expiry of its service life, the equipment shall be disposed inaccordance with related laws and regulations.
- This warmer shall be located and operated in environment free of strong EMI.
- This warmer is furnished with an internal battery (U12) in model of: 6F22/6V, and its service life is 2 years. The battery shall be mounted inside the equipment during operation, and shall be replaced only by professionals with much care for the polarity.
- The waste battery shall be disposed in accordance with related laws and regulations! When applying manual control, you should pay attention to the operation duration. When finishing manual control, you shouldswitch it to skin temperature control mode, as manual control shall not be used for lengthy heat preservation for baby.
- The temperature control device in the equipment can perform independent monitoring of baby temperature, but shall not be left unattended during operation.
- The distance between baby bed and heater is fixed in design and shall not be changed, and any unauthorized change may affect temperature.

- For more details on alarm and general tests, refer to Sections 4 and 6.
- The sensor applied in this equipment is of BF type and electrically meet related national standards.
- To prevent injury to baby, the bed fence shall not be opened when any conduit is still connected the baby or the bed is inclined. During the baby is being cared in the bed, the bed fence shall not be opened completely. All bed fences shall be secured firmly to prevent any of them from being opened accidentally.
- Warmer fences shall be attached to the framework with fasteners provided, or otherwise the baby may fall down when the warmer gets inclined or is moved, especially when the fence is opened. In case that any bed fence or fastener gets loose or malfunction, immediately stop using it and contact the service personnel for repair.
- The maximum bearing capacity of the infusion bracket is 10N. The maximum bearing capacity of the tray is 20N. The maximum bearing capacity of the baby bed is 10Kg.
- In skin temperature control mode, sensitive part of the skin temperature sensor must be in direct contact with baby's skin to provide accurate data on skin surface temperature. If the sensitive part falls off the baby's skin, it may cause temperature error and thereby overcooling or overheating of the baby! Close attention must be paid to baby's condition to ensure the sensor is in good contact and prevent baby's skin from getting too cold or hot.
- During the warmer is maintaining constant temperature for baby, if any light therapy equipment is used alongwith it, the mechanism how the light therapy equipment deals with baby and how temperature variation is caused by it shall be taken into consideration and close attention shall be paid to the baby's situations! Any heat therapy equipment shall not be located near the warmer, which may affect temperatures of the bed and baby!
- Operation of this equipment in location exposed to narcotic or other inflammable material is prohibited.
- For baby temperature control method and its principle, refer to Section 4. 6 - Baby Temperature Control Mode.
- Use skin temperature sensor properly, and do not use it on baby's back or in the anus as a thermometer!
- In skin temperature control mode, the sensor is attached to baby's rectus abdominis or other part as required clinically, while in other control mode, the sensor shall be placed in the slot in bed baffle plate.
- Close attention shall be paid to baby's temperature condition as this equipment does not distinguish low skin temperature and internal high body temperature (fever) and low temperature of both body and skin (hypothermy).
- Do not place the warmer in location exposed to direct sun or other heat source or strong air flow.
- Radiation source component in heater shall be replaced every 3 years to prevent heating performancedeterioration.
- The warmer shall be operated only under the guidance of any trained qualified medical worker who isfamiliar with use of the equipment and understands the risks and advantages of it.
- Attention shall be paid to loss of internal water in baby's body when the equipment is used to maintain baby'stemperature for a long time.
- For technical conditions for combination of equipment, refer to Sections 1, 3, 4, 5 and 6 herein.
- For related parameters, data, display values and measurement range, precision and accuracy, refer to Sections4 and 6 herein.
- When the warmer is left idle, it shall be stored in room in temperature of -40~55℃ and relative humidity nothigher than 80%, and with good ventilation and free of corrosive gas and vibration.

- Before it is operated after being idle for six months or longer, the equipment shall be inspected in accordancewith Section 6 - Pre-Operation Inspection.
- This equipment shall be preheated one hour before it is used to maintain baby's temperature. Do not put baby in the warmer before constant temperature mode is started following preheating.
- The warmer shall be perpendicular to the floor surface during operation. The temperature will not be affectedas long as the bed is inclined within the allowable angle. However the medical staff must pay attention to baby's position to prevent it from falling down and injury caused thereby.
- This equipment shall not be operated in location exposed to any narcotic gas or any other inflammable material (e. g. cleaning fluid).
- The ruler on bed fence and the scale on X-ray container drawer are for reference only.
- For replacement of any part, spare parts supplied by us shall be used, or otherwise any result caused will be user's responsibility.
- As use of any accessory not meeting safety requirements of the warmer will deteriorate its safety performance, the following points shall be taken into consideration in selecting related auxiliary devices:

  a) Any auxiliary device which is not approved or certified shall not be used.

  b) Auxiliary equipment to be used shall be certified through related safety test.

  c) Where any auxiliary device is used, related safety requirements and operation instructions shall be observed.
- Use of any auxiliary device in the equipment may cause change of air flow as well as consistency and variability of temperature in it.
- In case of power outage/over-temperature/temperature deviation/sensor failure alarm which cannot be removed, stop operating this equipment immediately! Related repair and maintenance operations shall be performed by professionals.
- During baby is being cared in the warmer, do not put any clothing or blanket beside it, which may cause variation of temperature around the bed and thereby injury to the baby.
- During the warmer is being operated, the caster wheels shall be locked to prevent unexpected movement.
- To prevent any accident during movement, the operations shall be performed by at least two persons, and the power cable shall be first unplugged. This equipment shall not be moved when baby is in the warmer!
- Damaged bed cushion shall be replaced.
- Sensors used in this equipment have been tested by a third-party organization with biological compatibility. For replacement of any sensor, contact our service center. Use of any sensor not approved may cause hazard.
- Power supply to the equipment shall meet the requirements as set out on the label on the equipment. The power cable must be connected to a single-phase three-line power grid properly earthed. In case of any doubt on the earth connection, stop using this equipment.
- Due to risk of electric shock, any repair and maintenance operations must be performed only by professionals.
- The three-pin power plug provided for the equipment shall not be replaced with a two-pin plug, and the plug must be connected by holding the plug itself.
- Before any cleaning or maintenance operation is performed, the power plug must be disconnected.
- For cleaning of the warmer, refer to related instructions in Section 7 - Routine Maintenance.
- This equipment may be subject to risk of life expiration and will deteriorate over time.
- Note: Parameters related to the equipment have been set properly before factory delivery! For details on

parameters setting/change, contact our technical service.

## 2.1. EMC Description

- Specification of power cable used for this equipment is 250V/2.5m/1m2. The power cable and cable of skin sensor are made of OD: 3.5mm nontoxic flexible PVC/65A in length of 2 meters. Other extension cables are listed in the table below. Use of any cable of other than the specifications as stated above may cause increase of emission or reduction of interference immunity of the equipment or system. No using by user!

Cable Example Table

| SN | Name | Cable Length (m) | Shielded | Remark |
|---|---|---|---|---|
| 1 | POWER CABLE | 2.5 | NO | For connection of grid power supply |
| 2 | PATIENT CABLE (OF SKIN SENSOR) | 2 | YES | From signal output to patient |

- This equipment uses RF energy only for its internal functions, so it generates very low RF emission andunlikely to cause any interference with electronic equipment nearby.
- This equipment shall not be operated near or onto any other equipment unless it is verified that it can operatenormally in its existing configuration.
- This equipment is intended to operate in the following EMI environments, and its purchaser or user shallensure to operate it in these EMI environments.

| Guide and Manufacturer Statement - EMI | | |
|---|---|---|
| This equipment is intended to operate in the following EMI environments, and its purchaser or user shall ensure to operate it in these EMI environments. | | |
| Emission Test | Compliance | EM Environment - Guide |
| Radio Emission GB 4824 | Group 1 | This equipment uses RF energy only for its internal functions, so it generates very low RF emission and unlikely to cause any interference with electronic equipment nearby. |
| Radio Emission GB 4824 | Class A | This equipment is applicable to any facility not directly connected to non-domestic and resident-shared public LVpower grid. |
| Harmonic Emission GB 17625.1 | NA | |
| Voltage Fluctuation/Flash Emission GB 17625.2 | NA | |

| Guide and Manufacturer Statement - EMI | | | |
|---|---|---|---|
| This equipment is intended to operate in the following EMI environments, and its purchaser or user shall ensure to operate it in these EMI environments. | | | |
| EMI Test | IEC 60601 Test Level | Compliance Level | EM Environment - Guide |
| Electrostatic Discharge (ESD) GB/T17626.2 | ±6kV contact discharge<br>±8kV air discharge | ±6kV contact discharge<br>±8kV air discharge | The floor shall be constructed of wood or concrete or tiled. In case of floor coveredwith composite material, the relative humidity shall be at least 30%. |
| EFT GB/T17626.4 | ±2kV to power cable<br>±1kV to input/output cable | ±2kV to power cable<br>±1kV to input/output cable | The grid power shall be applicable for typical commercial or medical environment. |
| Surging GB/T17626.5 | ±1KV cable to cable<br>±2KV cable to cable | ±1KV cable to cable<br>±2KV cable to cable | The grid power shall be applicable for typical commercial or medical environment. |
| Voltage dip, short interruption and voltage variation in power input line GB/T17626.11 | <5% UT, continuous for 0.5 cycle (voltage dip > 95% inUT)<br>40% UT, continuous for 5 cycles (voltage dip of 60% in UT)<br>70% UT, continuous for 25 cycles (voltage dip of 30% in UT)<br><5% UT, continuous for 5s (voltage dip > 95% in UT) | <5% UT, continuous for 0.5 cycle (voltage dip > 95% inUT)<br>40% UT, continuous for 5 cycles (voltage dip of 60% in UT)<br>70% UT, continuous for 25 cycles (voltage dip of 30% inUT)<br><5% UT, continuous for 5s (voltage dip > 95% in UT) | The grid power shall be applicable for typical commercial or medical environment.In case the equipment is operated consecutively during power outage, it is recommended to use UPS or battery as power supply. |
| Power frequency magnetic field (50/60Hz) GB/T17626.8 | 3A/m | 3A/m | Power frequency magnetic field shall be ofthe horizontal characteristics as in typical commercial or medical environment. |
| Note: UT means AC grid voltage before test voltage is applied. | | | |

- This equipment is intended to be operated in the electromagnetic environment as specified below, which shallbe ensured by the purchaser or user.

□

<table>
<tr><td colspan="4">Guide and Manufacturer Statement - EMI</td></tr>
<tr><td colspan="4">This equipment is intended to operate in the following EMI environments, and its purchaser or user shall ensure to operate it in these EMI environments.</td></tr>
<tr><td>EMI Test</td><td>IEC 60601 Test Level</td><td>Compliance Level</td><td>EM Environment - Guide</td></tr>
<tr><td>Radio frequency transmission GB/T 17626. 6</td><td>3V (effective value)<br>150kHz~80MHz<br>（except ISM bands）<br>10V (effective value)<br>150kHz~80MHz<br>（ISM bands）</td><td>3V (effective value)<br><br>10V/m (effective value)</td><td rowspan="2">Any portable or mobile radio frequency communication equipment shall not be used in a distance closer to any partof this equipment (including cable) than as recommended. Calculation of such distance shall be based on the formula specific for the transmitter frequency.<br>Recommended Separation Distance:<br>$d=1.2\sqrt{P}$<br>$d=1.2\sqrt{P}$ 80MHz~800MHz<br>$d=2.3\sqrt{P}$ 800MHz~2.5GHz<br>P means the maximum rated output power in watt (W)provided by transmitter manufacturer. D is the recommended distance in meter (m).<br>The field strength of fixed radio frequency transmitter is determined based on the survey at EMI location C, and eachfrequency range should be lower than Compliance Level D. Interference may occurs near the equipment attached with  the following signs.</td></tr>
<tr><td>Radio frequency radiation GB/T 17626. 3</td><td>10V/m<br>80MHz~2.5GHz<br>10V/m<br>26MHz~1GHz</td><td>10V/m<br><br>10V/m</td></tr>
<tr><td colspan="4">Note: 1. For frequency of 80MHz and 800MHz, a formula related to high frequency should be applied.<br>2. As EM transmission is affected by absorption and reflection of buildings, objects and human bodies, these guidelines may not be applicable to all circumstances.</td></tr>
<tr><td colspan="4">a) ISM bands between 150kHz and 80MHz are 6.765MHz ~ 6.795MHz, 13.553MHz ~ 13.567MHz, 26.957 MHz ~ 27.283 MHz and 40.66 MHz ~ 40.70 MHz.<br>b) ISM bands between 150 kHz and 80 MHz and compliance levels between 80 MHz and 2.5 GHz are used to reduce the possibility of interference resulted from mobile/portable communication devices which are accidentally taken into patient's location. For this reason, additional factor 10/3 is used for calculation of recommended distance specific to these frequency ranges of transmitter.<br>c) Field strength of fixed transmitter, such as wireless telephone (cellular or cordless) and ground mobile radio base station, amateur radio, FM/AM radio broadcasting and TV broadcasting, is unpredictable in theory. Evaluation of EMI environment of fixed radio frequency transmitter should take into consideration survey at EM location. If the field strength measured at the location where this equipment is installed is higher than the RF allowable level, this equipment shall be monitored to verify its normal operation. If any performance defect is detected, necessary remedial measure shall be taken, such as re-orientation or re-locating of this equipment.</td></tr>
</table>

➢ Recommended Separation Distance between Portable/Mobile RF Communication Equipment and thisEquipment.

| Recommended Separation Distance between Portable/Mobile RF Communication Equipment and thisEquipment. | | | | |
|---|---|---|---|---|
| This equipment is intended for use in EM environment with controlled RF interference. Based on the maximum output of communication equipment, purchaser or user of this equipment shall maintain the minimum distance between portable/mobile RF communication equipment (transmitter) and this equipment so as to prevent EMI. | | | | |
| | Distance (m) for Transmitters of Various Frequencies | | | |
| Maximum rated output power of transmitter /W | 150kHz~80MHz （except ISM bands） d=3. 5 $\sqrt{P}$ | 150kHz~80MHz （ISM bands） d=12 $\sqrt{P}$ | 80 MHz~2. 5 GHz d=2. 3 $\sqrt{P}$ | 800 MHz~2. 5 GHz d=2. 3 $\sqrt{P}$ |
| 0.01 | 0.3[illegible] | 1.2 | 0.12 | 0.23 |
| 0.1 | 1.1 | 3.8 | 0.38 | 0.73 |
| 1 | 3.5 | 12 | 1.2 | 2.3 |
| 10 | 11 | 38 | 3.8 | 7.3 |
| 100 | 35 | 120 | 12 | 23 |
| For any maximum rated output power which is not listed in the table above, the recommended separation distance d (in meter) can be determined based on the formula in the corresponding volume of transmitter frequency, where p is the maximum rated output power in (Watt) of transmitter provided by its manufacturer.<br>Note:<br>1. For frequency of 80MHz and 800MHz, a formula in respect of high frequency should be used.<br>2. ISM bands between 150kHz and 80MHz are 6.765MHz ~ 6.795MHz, 13.553MHz ~ 13.567MHz, 26.957MHz ~ 27.283MHz and 40.66MHz ~ 40.70MHz.<br>3. Additional factor 10/3 is used for calculation of recommended distance to the transmitter within frequency ranges of 150kHz ~ 80MHz and 800MHz ~ 2.5GHz, so as to reduce the possibility of interference resulted from mobile/portable communication devices which are accidentally taken into patient's location.<br>4. As EM transmission is affected by absorption and reflection of buildings, objects and human bodies, these guidelines may not be applicable to all circumstances. | | | | |

➢ Apart from the energy converter and cables supplied as spare parts by the equipment manufacturer, use of any other accessory, converter or cable may cause increase of EMI generated by the equipment or reduction of interference immunity.

➢ This equipment shall not be operated near or onto any other equipment unless it is verified that it can operate normally in its existing configuration.

⚠ **Parameters related to the equipment have been set properly before factory delivery! For details onparameters setting/change, contact our technical service.**

## 3. Definitions of Terms, Signs and Marks

(1) Infant radiant warmer:

An electric device with heat radiation source, which operates to maintain heat balance for infant patient byusing direct radiation within electromagnetic IR spectrum.

(2) Applied part:

The part of the equipment which is applied normally

- the part which must be in contact with patient's body for execution of equipment function; or
- the part which can be contacted by the patient; or
- the part which the patient is required to contact.

(3) Type BF applied part:

Applied part of this product is skin temperature sensor, which is in compliance with related national standards. Type BF applied part is of a class higher than Type B applied part in terms of electric shockprotection.

(4) Skin temperature sensor:

A signal sensor device with connection to the equipment, which is used to detect infant's skin temperature.

(5) Test device:

A secure and dim disk in dark color, which is used a receiver for reproduction of radiation energy duringequipment testing. (as shown in Figure 3-1）

(6) Test load:

A group of five testing devices arranged in a specified pattern (as shown in Figure 3-2) and used forequipment performance test.

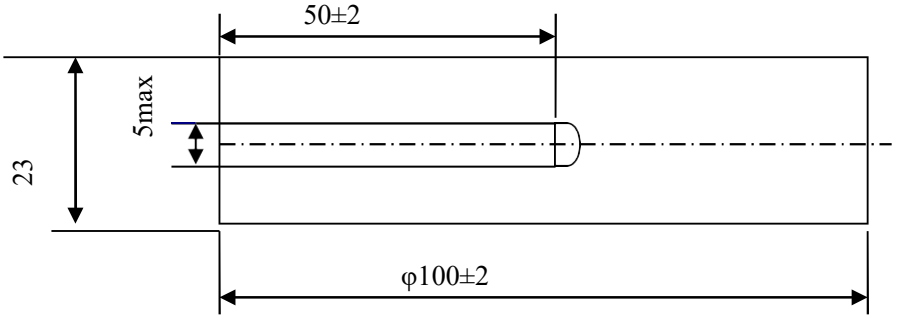



Figure 3-1 Test Devices

Note: 1. Surface coat: non-reflected coat in black color.

2. Mass of disk: 500±10 g.

3. Material of disk: aluminum in specific weight between 2. 6g/cm$^3$~2. 9g/cm$^3$

4. Unit: mm.

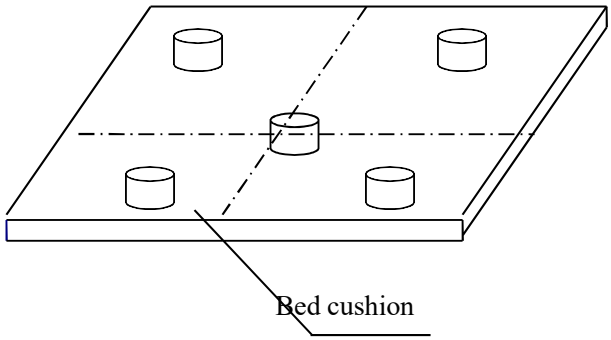



Figure 3-2 Arrangement of Test Devices

(7) Steady temperature status:

A condition where variation in temperature of the center of the bed cushion per hour as measured is nothigher than 1. 0°C.

(8) Average temperature of test devices ($T_1$, $T_2$, $T_3$, $T_4$ or $T_M$):

The average of temperature values measured at the center of the test devices at a certain interval in steadytemperature condition.

(9) Average temperature ($T_M$) of middle point:

The average temperature set in the test devices at the middle point. (as shown in Figure 3-2）

(10) Control temperature:

The temperature set in temperature controller.

(11) Manual mode:

An operation mode handled by the operator, where the heater output heat energy on a basis of fixed or themaximum energy level.

(12) Baby temperature controlled mode:

An operation mode which makes the actual temperature close to the value as set by the operator, whereoutput power varies with change of baby's temperature.

## 4. Overview

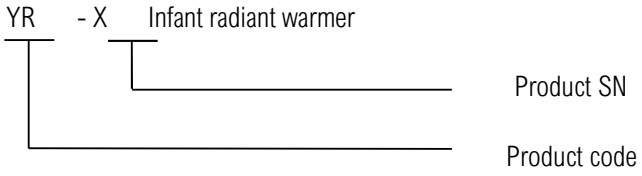
### 4.1. Purpose and Applicability

This equipment is intended to make radiation on the bed by using far IR radiant heating tube so as to keep babywarm. In addition, to facilitate medical staff's operations on patient, this equipment is furnished with preheating mode, automatic/manual temperature control, bed elevating/falling/inclining and APGAR timing functions.

This product is applicable to warming, emergency treatment and intensive caring of newborn, sick/weak/ preterminfant.

### 4.2. Model Number Composition and Meaning

Model Composition




Classification: See Table 4-1

Table 4-1 Models of Infant Radiant Warmer

| Main Functions \ Model | YR02189 | YR02190 | YR02182 | YR02191 |
|---|---|---|---|---|
| Infant temperature control | ▲ | ▲ | ▲ | ▲ |
| Manual temperature control | ▲ | ▲ | ▲ | ▲ |
| APGAR time counting & display | | ▲ | ▲ | ▲ |
| Lighting | ▲ | ▲ | ▲ | ▲ |
| Bed elevating/falling | | | ▲ | |

**Choose and read only the instructions on your product model contained in this manual.**

### 4.3. Technical Parameters

Operating Environment

- ✧ Supply voltage: ~220V50Hz
- ✧ Ambient temperature: 20~30℃, with control temperature at least 3℃ higher than the ambient temperature
- ✧ Relative humidity: 30%~75%
- ✧ Atmospheric Pressure: 70~106KPa
- ✧ Ambient air velocity: ＜0. 3m/s,

- ✧ Located in place with relatively still air flow, free of direct sun and heat source.
- ✧ Power consumption: ≺800VA

**This equipment will operate normally only under the aforementioned conditions, or otherwise thedata in it may get unstable and cause serious risk to patient.**

Equipment Classification and Features

Based on GB/T 9706. 1-2007 - Medical Electrical Equipment, Part 1: General Safety Requirements, thisequipment is classified as below:

- ✧ Classification by electric shock protection: Class I
- ✧ Classification by hazardous input liquid protection: IPX0 for common devices; IPX4 for foot switch
- ✧ Operating pattern: Continuous operation
- ✧ This equipment shall not to be used in presence of inflammable narcotic gas mixed with air or oxygen/nitricoxide.
- ✧ This equipment is in compliance with the EMC requirements under Class B, Group I in GB4824.

Performance Indicators

a. Errors within 1, 5 and 10 minutes as timed in APGAR timer will not be larger than ±4 seconds.

b. Audible and visual time reporting by APGAR should be controlled in synchronization with the display from50s to 1 min, 4min 50s to 5 min and 9min 50s to 10 min. The time counter should be reset manually at any time accumulated.

c. Central illumination of lighting lamp on bed surface: ≥100lx

d. Constant temperature duration: Not shorter than 2 hours.

e. Temperature control uniformity: difference between mid-point temperature and temperature at other pointsnot higher than 2°C (as shown in Figure 3-2)

f. Temperature-control mode:

Baby temperature controlled mode: Temperature deviation alarm in case of deviation of ±1. 0°C followingconstant temperature.

Manual temperature control mode: Heater output power is output and displayed at a fixed level between 0and 100%.

g. Maximum bearing capacity of baby bed: 10kg

h. Maximum bearing capacity of infusion bracket: 10N

i. Skin temperature measuring range: 25. 0℃-42℃

j. Skin temperature setting range: ≥33℃-37. 0℃

k. Temperature display accuracy: 0. 1℃

l. Manual temperature control operation duration:

When output power for manual control is higher than 50%, the power falls to 50% automatically in five minutes, and the audible and visual alarm will operate from the fifth minute after operation and is triggered once every five minutes.

When output power for manual control is lower than 49%, the audible and visual alarm will operate from the fifth minute after operation and is triggered once every five minutes.

### 4.4. Structure Overview

Structural Diagram

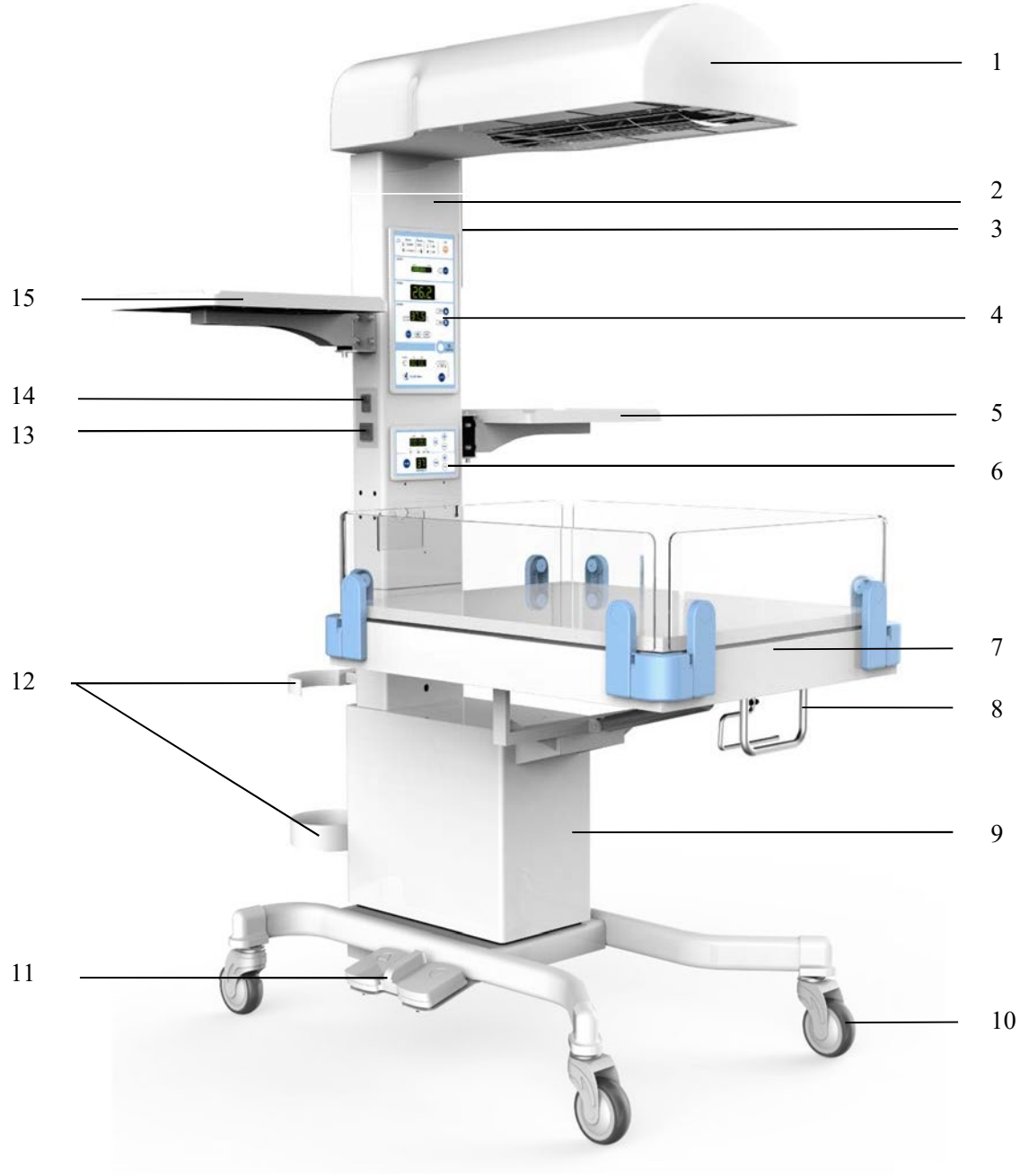



Figure 4-1 Structural Diagram

(Depending on the model, the diagram may be different from outline of the actual equipment and is used for referenceonly)

1. Radiation head 2. Upper pillar assembly 3. Infusion bracket 4. Temperature control panel 5. Tray #1 6. Time counting controller 7. Infant bed

8. Bed inclining mechanism 9. Base frame 10. Caster 11. Elevating/falling pedal 12. Oxygen cylinder bracket

13. Power switch 14. Lighting switch 15. Tray #2

Radiation head

Consists of head housing, isolating screen, heating source component (located in the housing) and lighting lamp, and operates to radiate and keep infant warm.

The radiation head can rotate as required clinically. To rotate it, pull up the head locating bolt (at the upper rear side of upper pillar), and then turn the head to the desired position and then release the bolt aligning with the notch.Recover the head to the original position by repeating the same operations as stated above.

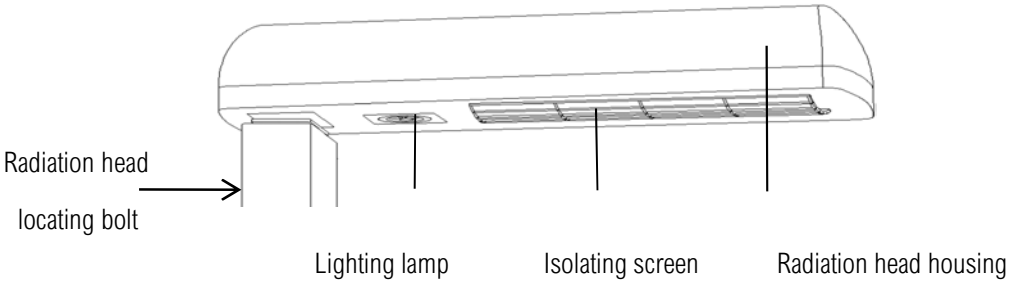



**Figure 4-2 Radiation** Head

**Figure 4-2-1** Locating Bolt

⚠

**1. During operation of the equipment, do not contact the isolating screen!**

**2. Do not touch the electrical heater, which has a high surface temperature during operation.**

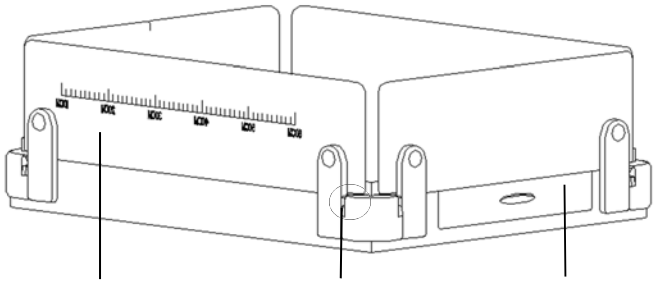
**3. It shall be located at this position during normal operation!**

**4. Do not pull/draw the radiation head or place any article on it.**

Infant bed

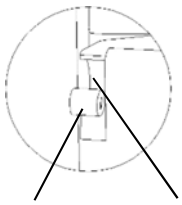
It is the location where weak/sick/preterm infant is nursed and cared. Put infant on the bed and lock thelatch on bed barrier. The bed barrier can be mounted or dismantled by handling the latch.

The film drawer is used to store X-ray films. (Position of the drawer may vary depending on equipmentmodel)



Infant bed barrier Barrier latch slot Film drawer

**Figure 4-3** Infant Bed



Hinge pin Pin notch

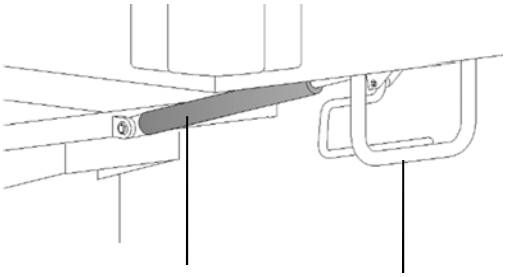
**Figure 4-3-1** Latch Notch

**The bed barrier is fragile, so must be operated with care, and shall not be cleaned with any organicsolvent. Regularly check hinge of latch on the barrier for any damage, and stop using it in case of any damage!**

Bed inclining mechanism

This mechanism is used to regulate bed inclining angle. The mechanism is classified into two types: rocking lever type and Lockable air spring type, whichever is applied depending on the specific equipment model.

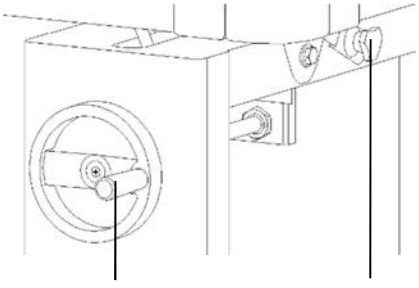
In case of rocking lever type, the fixing valve knob (as shown in Figure 4-5) should be tightened after bedinclination angle has been regulated.



Air spring

Rocker arm handle Fixing valve knob

**Figure 4-4** Lockable Air Spring



Air spring control handle

**Figure 4-5** Rocking Lever Type

Tray and Infusion Bracket

The tray and infusion bracket provided can be mounted or removed by user, or regulated as required in use.

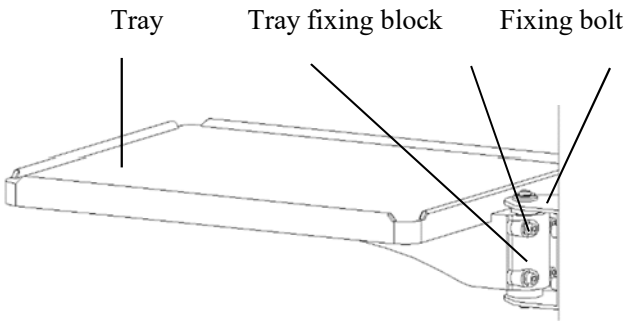



Figure 4-6 Tray

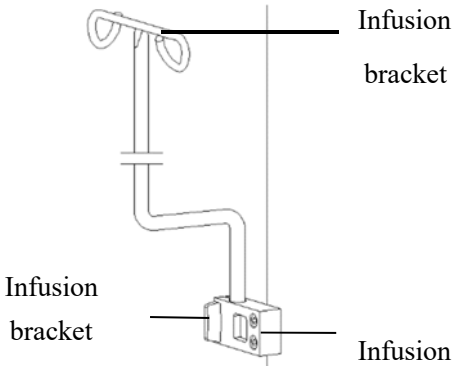



Figure 4-7 Infusion Bracket

**Load on the tray shall not be larger than its maximum bearing capacity 20N (including dead weightof the container). Regularly check the clamping screw for any damage!**

Base frame

The base frame is classified into two types: elevating type and non-elevating type, whichever is applied dependingon the specific equipment model.

The elevating type base frame allows elevation regulation with the elevating pedal and facilitate medical staff's operations. The elevation ranges between 80cm and 100cm, and controlled with an automatic position stop.

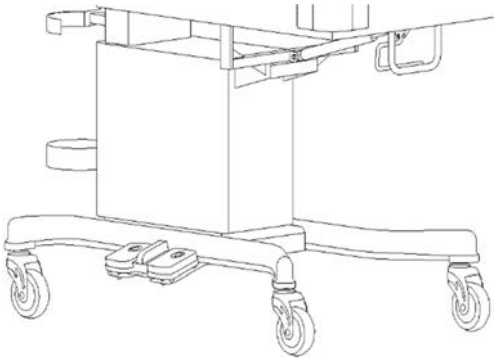


Figure 4-8 Elevating Type Base Frame

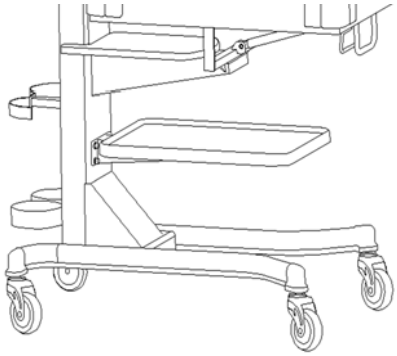


Figure 4-9 Non-Elevating Type Base Frame

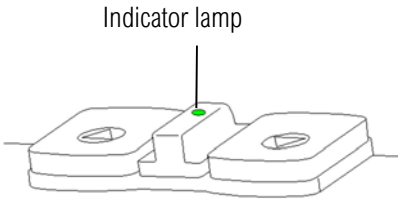



**Figure 4-10** Lifting Pedal

Caster

The caster wheels are used to facilitate movement. The braking device (wheel stopper) must be locked duringparking to ensure safety; and be unlocked during movement.

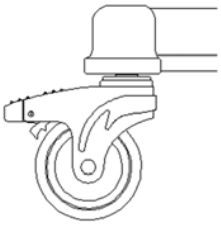


**Figure 4-11** Caster (in motion)

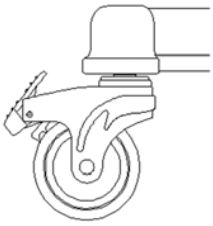


**Figure 4-12** Caster (braked)

**During operation of the equipment the two wheels with brake shall be locked to prevent unexpectedmovement of it. The equipment shall be located at a flat floor surface inclined not larger than 5°.**

### 4.5. Temperature controller

The temperature controller uses an electrical heater as the heat source, and transmit temperature signals from thesensor to the control system for intelligent temperature control in cycle. Temperature controller is classified intotwo types: with or without APGAR time counter and display.

APGAR time counter and display acts as an electronic clock which is designed in accordance with medical requirements. It gives audible indication in 5, 10 and 15 minutes so that the medical staff can assess the infant inaccordance with medical requirements.

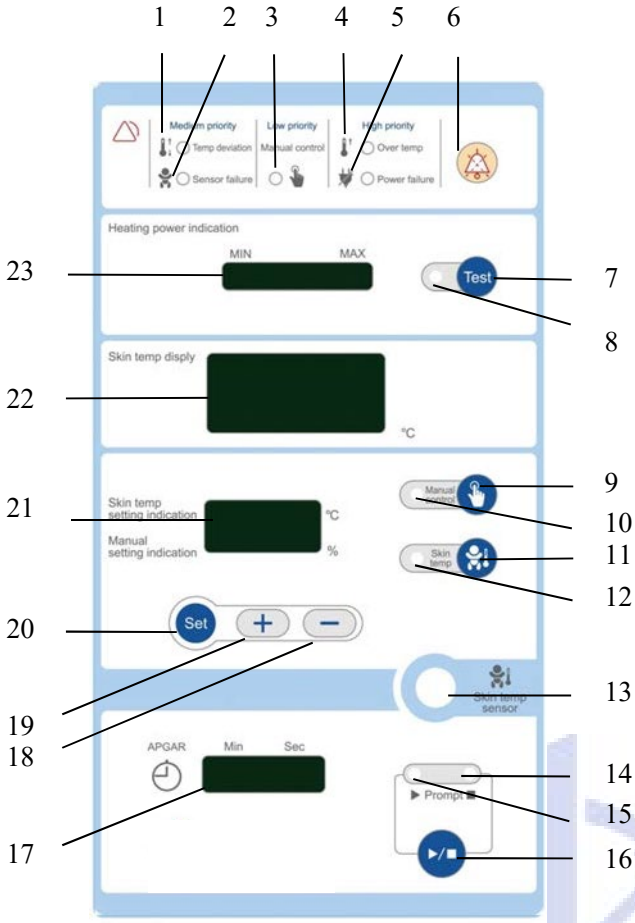



Figure 4-13 Temp. Controller with Timer & Display

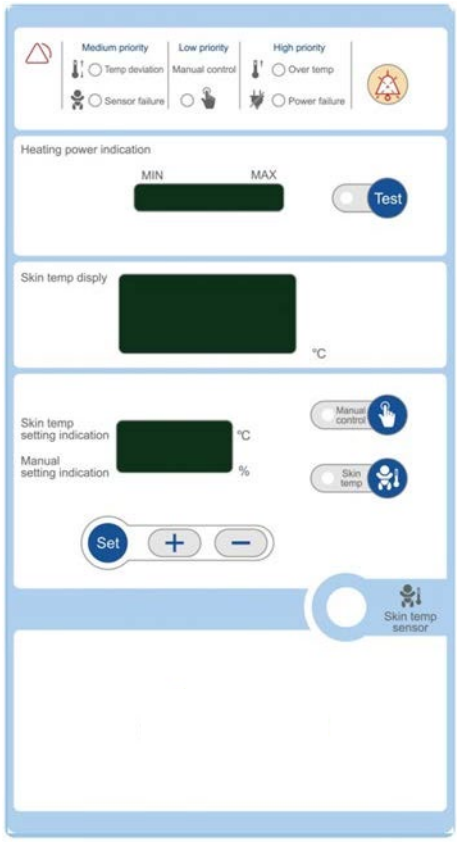



Figure 4-14 Temp. Controller without Timer & Display

1.Temperature deviation alarm indicator 2. Sensor alarm indicator 3. Manual alarm indicator 4. Over-temperature alarm indicator

5. Power outage alarm indicator 6. Mute key 7. Test key 8. Test key indicator 9. Manual control key 10. Manual control indicator

11.Skin temperature control key 12. Skin temperature control indicator 13. Skin temperature sensor socket

14. Time counting stop indicator 15. Time counting operation indicator

16. Time counting start/stop/zero key 17. Time counting display window 18. Minus key 19. Plus key 20. Setting key

21. Temperature setting display window 22. Temperature display window 23. Power display window

⚠ **1. Handle the temperature sensor with care, and do not impact or pull it with much force.**

**2. Damage or improper time counting of the electronic clock may cause improper identification ofinfant's health, so it shall be calibrated regularly.**

- **Temperature controller fault alarm/ audible and visual alarm description**

**1) Power outage alarm (high priority)**

In case of power failure, the power outage alarm indicator will turn on in red color within 1 second and keepbeeping.

If the power outage alarm indicator fails to turn on and keep beeping, the battery may need to be replaced.

**2) Skin temperature sensor fault alarm (medium priority)**

In case of open circuit or short circuit in skin temperature sensor in skin temperature control mode, the sensorfault alarm indicator will turn on in yellow color within 3 seconds and keep beeping.

In case the skin temperature sensor is not located at the recommended position in skin temperature control mode, it will decrease power to 30%~40% in four minutes. If the sensor is always located at an improper position, the alarm will keep flashing in yellow and beeping at an interval.

**3) Over-temperature alarm (high priority)**

In skin temperature control mode, when temperature as detected by the sensor is higher than 37°C but lower than 38°C, the first over-temperature alarm will be activated - the alarm indicator keeps flashing in red color within 1 second and beeping at an interval.

In skin temperature control mode, when temperature as detected by the sensor is higher than 38°C but lower than 39°C, the second over-temperature alarm will be activated - the alarm indicator will keep flashing in red color within 1 second and beeping at an interval.

**4) Temperature deviation alarm (medium priority)**

In case that skin temperature as displayed is 1. 0°C lower than the set value during operation, the alarm will be activated in delay time of 1 second, and the indicator will keep flashing in yellow and beeping at an interval.

In case that skin temperature as displayed is 1. 0°C higher than the set value during operation, the alarm will be activated in delay time of 1 second, and the indicator will keep flashing in yellow and beeping at an interval, and power supply to the internal heater will be switched off.

***** When the equipment is started or reset, the radiation temperature does no reach the set control temperature, and temperature deviation alarm will not be triggered.

* When the equipment is started or reset, if Skin temperature sensor is not located at the recommended position within the radiation range, the equipment will stop full-power heating after the heater has operated for 4 minutes, but output heating power of only 30%.

**5) Manual reminder alarm (low priority)**

* When output power for manual control is less than 49%, the audible and visual alarm will operate from the fifth minute after operation - the indicator will turn on constantly in blue color and keep beeping at an interval of five minutes.

* When output power for manual control is higher than 50%, the audible and visual alarm will operate from the fifth minute after operation - the indicator will turn on constantly in blue color and the power will be increased to 50% in five minutes, and then will keep beeping at an interval of five minutes.

**6) Alarm mute key**

Except power outage and over-temperature alarms, any alarm can be muted with the mute key, but the related failure will not be removed thereby. In case that the fault has not been removed, audible alarm will be re-activatedin 3 minutes.

**7) APGAR timer**

Audible and visual alarm will be activated when APGAR timer is started and time elapse between 50s to 1 min, 4min 50s to 5 min and 9min 50s to 10 min. The timer can be reset manually within any time accumulated.

**8) Volume of audible alarm signal and message indication**

A-weighted noise level of audible alarm generated 3 meters ahead of the equipment is not lower than 65dB.A-weighted noise level of audible alarm generated 5 cm above bed cushion center is not higher than 80dB.

Except for manual control output power higher than 50%, volume for middle priority is lower than that for higherpriority but higher than that for low priority.

4. 5. 1 Features of Alarm Indicator (as shown below)

Features of Alarm Indicator

| Alarm Type | Indicator Color | Flashing Frequency | Duty Cycle |
|---|---|---|---|
| High priority (power outage/over-temperature) | Red | 2HZ | 50% |
| Medium priority (sensor failure, temperature deviation) | Yellow | 0. 6HZ | 50% |
| Low priority (manual reminder/APGAR) | Blue | Constant on | 100% |

4. 5. 2 Features of Pulse Group of Audible Alarm Signals (as shown below)

Features of Pulse Group of Audible Alarm Signals

| Feature | High-Priority Alarm Signal | Medium-Priority Alarm Signal | Low-Priority Alarm Signal |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Number of Pulses in Pulse Group | 10 | 3 | 2 |
| Pulse Spacing (ts) | 125ms | 125ms | 200ms |
| Between the 3rd and 4th Pulses | 400ms | NA | NA |
| Pulse Group Cycle (tb) | 4s | 5s | 20s |
| Amplitude Variance of Any Two Pulses | Max. 10dB | | |
| Power outage alarm pulse generates continuous beeps. | | | |

### 4.6. Button Function Description

**Manual Control Mode**

It is a mode where the environment temperature is controlled by the operator based on clinical needs. In this modethe temperature control system output heat energy based on the power energy level set by operator, so as to make the bed surface temperature close to the value set by the operator.

When output power for manual control is less than 49%, the audible and visual alarm will operate from the fifth minute after operation and is triggered once every five minutes.

When output power for manual control is higher than 50%, the Audible and visual alarm will operated from the fifth minute after operation and is triggered once every five minutes and the power will be switched to 50%.

⚠ **This mode is used only for care and rescue, rather than for lengthy temperature preservation!Infant temperature control mode**

In this mode temperature inside warmer is controlled based on the infant's skin temperature set by the operator based on clinical needs and features of infant temperature. In operations, the skin temperature sensor is located against infant's body surface. Sampling signals and variation collected by the sensor are transferred to the temperature control system in warmer for analysis and determination and thereby adjustment or control, so as to maintain the infant's temperature as required.

⚠ **The principle for this control mode is to change heat output based on infant's temperature, which isthe basic temperature control mode and method for this equipment.**

### Preheating mode

It is started following start-up of infant temperature control mode. In this mode the skin temperature controlIndicator lamp keeps flashing continuously.

Upon end of preheating, the indicator lamp turns on constantly and steady temperature status is started.

**Do not put the infant into the warmer until preheating is finished.**

### APGAR timer

a. Maximum timing range: 99 minutes and 59 seconds

b. Reminder durations: 50 seconds ~ 1 minute; 4 minutes 50 seconds ~ 5 minutes9 minutes 50 seconds ~10 minutes. The audible reminder will last for 10 seconds.

c. Press Start/Stop/zero key to start timing, and press it again to stop timing.

d. Press down and hold Start/Stop/zero key for 2 seconds to zero the timer.

## 5. Equipment Installation

1) Unpack the equipment and check the accessories against the packing list.

2) Mount the upper pillar to the base frame (as shown in Figure 4-1), and connect power socket for elevatingbracket.

3) Tighten four M8 screws on both sides of and two M4 screws on the back of the bracket.4)Mount the tray in accordance with Figure 4-6.

5)Mount Infusion bracket in accordance with Figure 4-7. 6)Mount infant bed barrier in accordance with Figure 4-3-1.

7)Upon completion of mounting, connect the power supply and start the equipment for inspection.

## 6. Equipment Operation

### 6.1. Pre-Operation Inspection

⚠ 1. Pre-operation inspection shall be performed prior to initial use and each cleaning or maintenanceactivity.

2. During inspection infant shall not be placed in the warmer.

3. The warmer shall not be used in case that the following inspection procedure fails to be completedor any foreseeable damage message has been found.

Related repair and maintenance operations shall be performed by professionals.

Check power cable for any damage. Replace the power cable in case of any damage.Check the whole of the equipment for damage or missing of any part in it.

Check whether casters are in solid contact with floor and the equipment is stable. Lock caster brake and check whether they can fix the equipment in place. Release caster brake and check whether the casters can move smoothly.

Connect power cable and switch on the lighting lamp to check whether it operates normally.Inspection on rechargeable battery and speaker

- Disconnect the power cable and switch on power supply, the buzzer should beep in long tone and power outagealarm should turn on, which indicates that battery and speaker operate normally.
- Or otherwise, contact service personnel for repair and replacement of the speaker or battery.Connect AC power cable to the equipment and check power outage alarm function

⚠ Make sure that the power supply is in accordance with the specifications as specified in the label onequipment. Be sure to connect power cable to a three-phase power socket to make the equipment grounded reliably. Do not use any changed cable.

Inspection on infant bed

✓ Inspect infant bed barrier: Lift bed barrier up slowly while holding it, and inspect operations on the bed sideboards. The side boards should be located firmly at upright position, and the bed should be horizontal.

⚠ This inspection shall be performed prior to initial use and each cleaning or maintenance activity.Before inspection, make sure all accessories installed have been removed to avoid interference to the shield.

- ✓ Inspect infant bed cushion: The cushion should be kept dry and free of damage. Replace it immediately if itbecomes damp or wet!
- ✓ Inspect bed inclining mechanism: During operation of the inclining mechanism, the bed should operatesmoothly without blockage or damage.

a) When rotating the rocker arm, the bed head should be lifted up/lowered down easily. The bedshould be able to be fixed by tightening the control valve to stay at the desired inclination angle.

b) The bed head should be lifted up/lowered down when air spring handle is manipulated. The bedshould stay inclined at an angle when the handle is released.

⚠ **The control valve must be tightened after the bed is at a desired inclination angle. In case of any damage, replace the knob immediately.**

Inspection on skin temperature sensor Check

the sensor for any external damage.

⚠ **It the sensitive part of the sensor, and shall be kept dry, and not pulled with force.**

Inspection on infusion bracket

Check whether the infusion bracket is attached firmly to the clamp.

⚠ **1. Load on the bracket shall not be larger than its maximum bearing capacity 10N (including deadweight of infusion bottle).**

**2. Regularly check the clamping screw for any damage!**

Inspection on lifting mechanism

Check whether the lifting pedal operates to manipulate the equipment up and down. When the equipment is lifted or lowered within the full range, the indicator lamp should be always kept on. Check whether the mechanism operates properly during operation. The equipment should be kept in place at the desired elevation.

Pre-operation inspection on temperature controller

Before the initial operation or after the equipment has been left idle for a long time, alarms should be checked by using the following methods:

- Testing conditions: In ambient temperature of 21℃~24℃

⚠ **If the aforesaid inspection fails to be completed smoothly, stop operating this equipment and contactprofessionals for maintenance.**

**1) Power outage alarm**

Power outage alarm should be activated when the power supply is switched off during operation of the equipment.

⚠ **Power outage alarm will not change alarm setting.**

**2) Test on skin temperature sensor failure alarm**

Audible alarm should be activated when the sensor is disconnected after the equipment operates normally and stays at constant temperature of 34°C as set.

**3) Over-temperature alarm**

Test on the first over-temperature alarm: Audible alarm should be activated when the temperature as detected by sensor is lower than 38°C after the sensor is in stimulated heating to 38°C and the equipment operates normally and stays at constant temperature of 36°C as set.

Test on the second over-temperature alarm: Audible alarm should be activated as stated under 5. 2. 2 c) when the temperature as detected by sensor is lower than 39°C after the sensor is in stimulated heating to 39°C and the equipment operates normally and stays at constant temperature of 36°C as set (note: it may be ignored when temperature reaches 38°C).

The equipment must be restarted to operate normally after over-temperature alarm is activated.

**4) Temperature deviation alarm**

Test on upper deviation alarm: Audible alarm should be activated and power supply to heater should be switched off when the temperature as detected by sensor is lower than 36°C after the sensor is in stimulated heating to 35°Cand the equipment operates normally and stays at constant temperature of 34°C as set.

Test on lower deviation alarm: Audible alarm should be activated when the temperature as detected by sensor is lower than 33°C after the equipment operates normally and stays at constant temperature of 34°C as set.

**5) Test on Manual reminder alarm**

The test shall be performed in the same procedure as stated under 4. 6 5) above.

## 6.2. Equipment Operation Instructions

Start-up of equipment

Close the power switch on the side of upper radiation head, temperature controller starts self-checking and all indicators go on. After self-checking process is finished, temperature controller is ready for setting of temperature control mode.

Operations on Temperature Controller

### 1) Operations on manual control:

Select manual control key and press Up/Down key to adjust heating power as displayed on the window.

When output power for manual control is less than 49%, the audible and visual alarm will operate from the fifth minute after operation and is triggered once every five minutes.

When output power for manual control is higher than 50%, the Audible and visual alarm will operated from the fifth minute after operation and is triggered once every five minutes and the power will be switched to 50%.

⚠ 1. In manual control mode, the operator shall pay close attention to the patient as excessively high orlow temperature may cause damage to the patient. It is recommended not to remove Skin temperature sensor, so that the operator can keep monitoring it.

2. Pay special attention to change of skin temperature as displayed on the screen #2.

3. In manual control mode, the operator shall stay beside the patient to prevent any hazard to thepatient.

4. During normal operation of the equipment, the medical staff should stand at either side or rightfront of the bed, and keep observing the temperature variation to prevent any fault.

### 2) Operations on infant temperature control:

Select skin temperature control key and press Up/Down key to adjust heating power as displayed on the window. Press setting key to confirm and finish setting. The setting key must be pressed after temperature value is changed to make it applied.

In case the skin temperature sensor is not located at the recommended position in skin temperature control mode, it will decrease power to 30%~40% in four minutes. If the sensor is always located at an improper position, the alarm will keep flashing in yellow and beeping at an interval.

⚠ 1. In automatic temperature control mode, control temperature shall be set in accordance with the clinic physician's instructions.

**2. In automatic temperature control mode, the temperature displayed on screen #3 will be kept at the constant temperature as set.**

**3. Skin temperature would not be monitored properly if the sensor is located improperly or falls off skin, so special attention shall be paid in automatic temperature control mode to prevent infant from being burnt.**

**3) Operations on APGAR time counting:**

Operations on time counting: Press start key to start time counting, and the time is displayed on the screen and the counting on-going indicator goes on.

Stop operation: During time counting, press start key to cease counting, and the current accumulative time is displayed on the screen, and counting stop indicator goes on.

Operations on zeroing: Press and hold start key for 2 second to zero the time counter, as displayed on the screen.

**4) Alarm Mute**

In case of any fault alarm, press mute key to keep it mute for 3 minutes. In case that no alarm is activated, key 1 is unavailable.

Operations on lifting mechanism

Connect power cable and switch on the power supply, and then step on the left pedal to elevate the equipment. Step on the right pedal to lower the equipment (as shown in Figure 14). Release the pedal to keep it at current elevation.

Operations on inclining mechanism

The bed head should be lifted up/lowered down when air spring handle is manipulated and infant bed foot is pressed down/lifted up slowly. The bed should stay inclined at an angle when the handle is released.

Operations on X-ray photographing

1) Switch off the main supply.

2) Pull out radiation housing locating bolt backward and turn the housing to a proper position.

3) Put a proper film into the film drawer.

4) Move the mobile X-ray machine to a proper position and start X-ray photographing procedure.

5) Upon completion, move the X-ray machine out and turn radiation head to the original position and lock itwith the locating bolt.

⚠ **1. Requirements for x-ray machine and related operating procedure must be observed strictly.**

2. This equipment is equipped with no X-ray machine, but an infant bed for X-ray photographingfor convenience of your operations.

## 7. Routine Maintenance

⚠ Instructions on cleaning and maintenance are provided in this section.

- ✧ This warmer has not been disinfected upon delivery. It is recommended to clean and disinfect the warmer at least once every week during the course of operation. The best approach is to dismantle the equipment, and then clean and disinfect the components as required in related sections, and then re-assemble them.
- ✧ Prior to any cleaning or maintenance operation, power supply and all connections of the equipment must be disconnected.
- ✧ Before it is used for another baby, the warmer must be cleaned and disinfected. This equipment must be cleaned and disinfected before it is used for the first time.
- ✧ The cleaned and re-assembled equipment can be used only after inspection is performed and approved in accordance with Section 6.

### 7. 1 Dismantling before Cleaning

a) Switch off power supply, disconnect power cable and sensor.

b) Lift bed barrier up to detach the hinge pin off the slot and turn them down, and then remove the bedcushion and put off the covering.

⚠ For routine cleaning operation, not all components need be disassembled and the unit frame need not be detached from the bed.

### 7. 2 Cleaning after Dismantling

Cleaning operations can be carried out only after dismantling set out above and by using neutral detergent/disinfectant in accordance with related national standards. Any detergent/disinfectant shall be used in compliance with related operation guide. Any components shall be cleaned in accordance with the following instructions and kept clean till be re-assembled.

a) Clean surface of skin temperature sensor with disinfectant and then dry it with disinfected cloth or napkin. Do not soak the sensor plug into the disinfectant fluid to avoid penetration of liquid into it.

⚠ As some chemical detergent may be conductive or cause accumulation of conductive dust or dirt.

**Keep any detergent off any electric component, and avoid any disinfectant from being sprayed/splashedonto the surface of any electric component.**

b) Thoroughly clean all surfaces of the bed and all contactable barrier boards of it. Make sure that all holesand depressed positions are cleaned, and then dry them with clean cloth or napkin.

⚠ **Alcohol may make a mark on organic glass. Do not clean bed barrier board with any organic solventsuch as alcohol.**

c) Clean all surfaces of bed cushion and barrier boards and dry them with clean cloth or napkin.

⚠ **Do not lubricate the bed supporting stand with any lubricant or other inflammable material.**

d) Clean bed covering with detergent and then rinse it with clean water and dry it with high heat.

e) Clean bed cushion with detergent and then rinse it with clean water and dry it in air.

## 8. Troubleshooting

General troubles and failures in the warmer potentially occurring during operation within the service life are listedbelow. Repair operations shall be performed only by properly trained qualified service personnel. In case that any fault cannot be removed by referring to the table provided, contact our service center for repair service.

| Phenomenon | Possible Reason | Solution |
|---|---|---|
| No display nor alarm is given | Power supply is not switched on | Switch power supply on |
| Power outage alarm lamp turns on and audible alarm is triggered | Power failure | Switch off power supply |
| | Power cable is disconnected | Connect power cable |
| | Fuse tube is damaged | Replace the fuse tube |
| Skin temperature sensor alarm is triggered | 1. Skin temperature sensor is disconnected | Connect skin temperature sensor |
| | 2. The skin temperature sensor plug is disconnected, or in poor contact, or damaged | Contact the service personnel for repair. |
| | 3. Skin temperature sensor is damaged | Replace skin temperature sensor |
| over-temperature alarm | 1. The temperature control system is out of control. | Contact the service personnel for repair. |
| | 2. Independent over-temperature sensor is damaged | Contact the service personnel for repair. |
| Skin temperature deviation alarm | 1. Ambient temperature varies significantly | Control the ambient temperature |

| | | |
|---|---|---|
| is triggered | 2. skin temperature sensor is in poor contact with baby | Pay close attention |
| | 3. Skin temperature sensor is damaged | Contact the service personnel for repair. |
| Operating key on panel fail | 1. Plug-ins on panel is in poor contact | Contact the service personnel for repair. |
| | 2. The key is damaged | Contact the service personnel for repair. |
| The main board fails | Contact the service personnel for repair. | |
| Heating | Contact the service personnel for repair. | |

## 9. Transport & Storage

9. 1 Transport

After packaged properly, the equipment can be transported with common vehicle, but free of rain/snow andmechanical impact.

9. 2 Storage

After packaged properly, the equipment shall be stored under the following conditions: ambient temperature: -20~ +55℃; relative humidity ≤ 90%, atmospheric pressure: 50~106kPa,and in room free of vibration or corrosivegas and with good ventilation.

## 10. Miscellaneous

10.1 Commitment

We provide charge-free repair service or replacement of parts for any malfunction of the equipment within one year following the date of purchase on condition that this equipment is stored and operated inaccordance with related instructions required, and paid repair service or replace of parts for any malfunction of the equipment occurring after expiry of the warranty period. Proper fee shall be paid for repair service in case of any damage caused by improper use or personal negligence.[ The warranty is not applicable to the following materials: expendables (e.g. fuse, battery) and consumables.

Warranty for this product shall be valid for one year starting from the date of purchase except in any of the following cases:

a) improper operation due to user's neglect of any instructions herein.

b) damage caused by user due to failure to obey the cleaning/maintenance instructions herein.

c) failure resulting from unauthorized change to the equipment or use of unapproved part, or accident causedby repair by any unauthorized personnel.

d) change in safety performance, operation performance or parameter of the product due to connection of anyunacceptable apparatus/accessory to the equipment.

e) force majeure (e.g. natural calamity, fire, over-voltage).

f) wearing or consumption of expendables (e.g. fuse, battery) and consumables over time.

Table 10-1 List of Consumables and Replaceable Parts

| SN | Code/Name | Model | Remark |
|---|---|---|---|
| 1 | Fuse | φ5×20F5AL250V | |
| 2 | Battery | U12 6F22/6V | |

**⚠ Replace heating tube in accordance with the specifications as specified by us. In removing upper boardof tube housing, pay attention to high temperature and strong electric shock.**

**Customer's failure to replace any component/part in accordance with related instructions may causeserious damage to the equipment and thereby hazard to patient.**

g) failure or damage resulting from non-compliance of any operating condition (including electrical andmounting conditions) with the requirements herein.

This manual shall be kept as a document attached to the equipment, and can be copied and used byprofessional medical nurse as an operation guide.

10.2 Statement

In case of any fault during operation of the equipment, directly contact our service center immediately to obtain our technical support as soon as possible, instead of dismantling the equipment for any repair, or otherwise the warranty will become invalid.

Please complete the Warranty Card as attached to the equipment and affix your official seal to it, and then deliver it to our service center, so that we can develop a service file for you and provide post-sale service for you more thoughtfully.

## Appendix 1: Packing List

Packing List

| SN | Name | Unit | Quantity | Remark |
|---|---|---|---|---|
| 1 | Overall Unit | Set | 1 | |
| 2 | Skin temperature sensor | Set | 1 | In the file pocket |
| 3 | Power Cable | Piece | 1 | In the file pocket |
| 4 | Bed bushing | Piece | 1 | On infant bed |
| 5 | Infant bed cushion | Piece | 1 | In infant bed covering |
| 6 | Technical and Operation Manual | Copy | 1 | In the file pocket |
| 7 | Warranty Card | Copy | 1 | In the file pocket |
| 8 | Warranty | Copy | 1 | In the file pocket |
| 9 | Certificate of Approval | Copy | 1 | In the file pocket |
| 10 | Fuse φ5×20 F5AL20V | Piece | 2 | In the file pocket |
| 11 | Fuse 5×20 F1AL250V | Piece | 2 | In the file pocket |
| 12 | Suction tube in internal diameter of φ6 | Piece | 2 meters | In infusion tank. |
| 13 | Air filter in filter rating of 0. 4um | Piece | 2 | In infusion tank. |
| Note: Configuration of components and parts shall be selected in accordance with specifications and the sale contract. | | | | |

Note: Packing list of each model may be subject to change without notice, and the actual delivery shall prevail.

Appendix 2: Circuit Diagram