Infusion Pump
Model：SK-600III
Instruction Manual

CE 0197

Please read the manual before using the product;
Please keep the manual for reference!

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Implementation Standard No.: YZB/Yue 0453-2009
Production License No.: Yue FDA (approved) 20040977

Version：V1.0

Content

1. Product Introduction

1.1 Product Structure and Component

SK-600Ⅲ is made of main system, inner rechargeable battery, etc.

1.2 Application Scope

It is used in hospital where patients need to be given steady and continuous intravenous infusion or precise medication.

1.3 System Structure

SK-600Ⅲ Infusion Pump contains the following components:

1. The microcomputer: The “brain” of the whole system, giving intellectualized control and management over the whole system and processing the detected signals. It uses two single-chip Micyoco (SCM) systems for mutual backup copying and supervision. When something is wrong with an SCM, the other one can give timely warning and cut the power of the host computer, which will then stop running completely, so that the patient’s safety can be ensured.

2. The pump device: The (heart) of the whole system and the main driving force of the infusion. It drives the peristaltic pump with stepper motor.

3. The inspection device: Ultrasonic sensor (detecting air bubble in the infusion pipe), pressure sensor (detecting the pressure of the infusion pipe), Hall sensor (detecting the motor control). They can give corresponding signals, and after magnifying them, send them over to computer for processing, and then operate correspondingly with the control instruction educed.

4. The alarm device: After the signal induced by the sensor is processed by the microcomputer, an alarm signal will be educed, which will be responded by the alarm device to arouse people’s attention for right treatment. There are mainly two kinds of alarms, photoelectric alarm (LBD) and sound alarm (loudspeaker and buzzer).

5. The input and display part: The input part is in charge of setting various infusion parameters, such as infusion volume and infusion rate, etc. The display part is in charge of displaying various parameters and showing the current operation progress on the color LCD.

6. Inner rechargeable battery component: This component supplies electric energy for the infusion pump under “AC Power-Free” condition for continuous using.

2. Safety Precaution

Warning

- The device must be operated by professional medical staff, such as doctors, nurses and medical electric experts, etc.
- During infusion process, keep watching the amount of the left liquid in the infusion bag or infusion bottle. Don't reply on the alarm function of the infusion pump only.
- Avoid using this pump in combination with MRI (Nuclear Magnetic Resonance Image) or medical equipments analogous to this instrument, otherwise the electromagnetic interference will cause system failure or system collapse.
- When using this pump, do not use equipments which produce electromagnetic field such as mobile phone near this pump, otherwise the electromagnetic interference will cause system failure or system collapse.
- Avoid using this infusion pump in the flammable atmosphere.
- In the high pressure atmosphere, the occlusion inspection may not correctly work.
- Before infusion, make sure the blood vessels have been protected.
- In the infusion line, the occlusion caused by pipe knot and filter coagulation or intubation would cause the rise of inner pressure of the infusion pipe. At this moment, excluding the cause of the occlusion can cause too much liquid to be injected to the patient's body. Proper measures should be taken to prevent too much liquid to be injected into the patient's body. For example, before eliminating the occlusion cause, squeeze the infusion pipe.
- Use the infusion pump 120 CM above or below the patient's heart.
- Avoid using the infusion pump when there are alarms.
- If another set of infusion system or accessories is connected to the infusion pump to realize the balance, the operation may be different from the specifications of the infusion pump.
- Avoiding repeatedly using disposable infusion components or repeatedly sterilizing the used components. After finishing using the components; dispose them in according to the proper instructions.
- Only the components, connectors and disposable products which comply with the National Standards can be used in the infusion of the system. Please consult the distributor who sells the product to you about the related information.

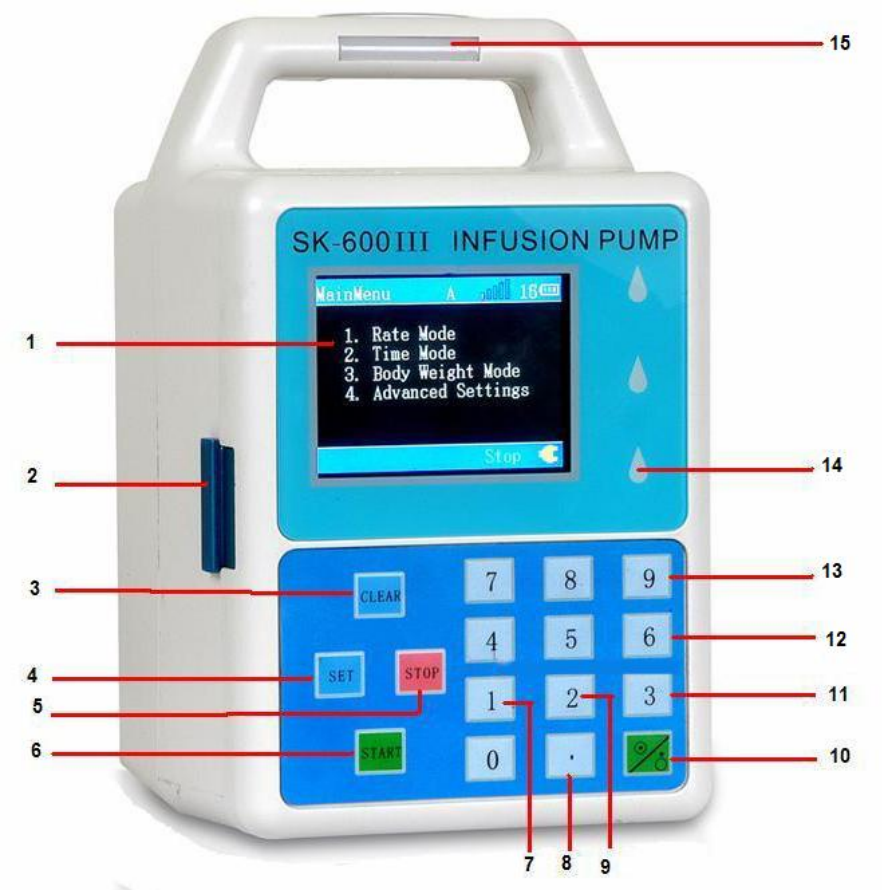
Attention:

- When infusion lasts over 24 hours, use the new infusion IV set to replace the used ones.
- Please use your fingers to press the button of the panel. Sharp tool would damage the surface of the panel.
- Avoid the direct sun shine, abnormal high temperature or humidity.
- Use a piece of wet soft cloth with warm water to wipe the surface of the infusion pump when any liquid drops on it.
- Avoid conducting autoclaving to the infusion pump or exposing it in chemical substance.
- Before using the inner battery, check the inner battery to make sure it has sufficient power. When necessary, recharge the battery.

- When using AC power, use the power cord included in the packing carton.
- If the infusion pump does not work according to the instruction manual, and the cause is not clear, stop the infusion pump and report the error (including the information of the infusion components, infusion amount, infusion rate, machine No., the type of the infused liquid, etc.) to the distributor or manufacturer who sells the product to you.
- If inner error is inspected, the self-diagnosing function of the system will stop the work of the equipment and give alarm.
- If the infusion set in use has not been tested, the accuracy of it can not be maintained. The biggest error would reach 40% or above.
- Please take your hand away from the door after turning it above 90°to avoid your finger be clipped once the door rebound.
- The ID No. of the pump has been set in the factory, users are not allowed to change it during operation.

3. External Features

3.1 Panel Instruction

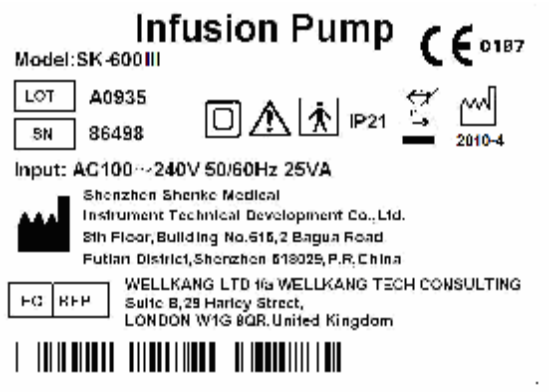


No.	Description	Function
1	LCD	Display infusion information.
2	Button	Press the button downwards to open the door.
3	CLEAR key	1.Clear accumulated volume to 0 in infusion mode setting interface. 2. Clear the parameter value when setting parameters.
4	SET key	1.In any infusion mode setting interface, press this key to save the value newly set and quit the parameter setting interface. 2.In infusion mode setting interface, press the key return to main menu interface. 3. In checking interface of sensors' parameter, press the key to return to mode setting interface. 4. In main menu, press this key to enter the advance setting interface of parameters.

5	STOP / Silence Alarm key	1.In working condition, press the key to stop infusion. 2.When alarm sounds, press the key to silence the alarm (except extremely low sound) 3. During parameter setting in any infusion mode, press the key to quit the setting value and exit parameter setting interface. 4. In checking interface of sensors' parameter, press the key to return to mode setting interface.
6	START/BOLUS key	1. Press the key to start infusion under STOP condition. 2. Keep pressing the key during infusion and bolus function will be activated. (Bolus function can only be started with flow rate≤1000ml/h), after removing your finger from the key, it will return to the original infusion rate.
7	Numerical key 1	In the main menu, press this key to enter into Rate Mode.
8	Radix point	Press this key then press numerical key, the input numerical value will be fractional part.
9	Numerical key 2	In the main menu, press this key to enter into Time Mode
10	POWER key	Turn on the pump: Press this key for 3～5 seconds; Turn off the pump: Press this key for about 3～5 seconds.
11	Numerical key 3	In the main menu, press this key to enter into Body Weight Mode.
12	Numerical Keys	1. Choose the parameter which needs to be set. 2. During setting the parameter, put in the numerical value directly.
13	Numerical key 9	1. In any infusion mode setting interface, press the key to check value of sensors. 2. In checking interface of sensors' parameter, press the key to return to mode setting interface.
14	Running Indicator light	Operation indicator lights flash alternately from up to down during infusion.
15	1.Alarm indicator light 2.IV set installation situation indicator light 3.AC power indicator light	1. When there is alarm, the alarm indicator light flashes in red. 2. When there is no alarm, if the installation of IV set is correct, the light is on in green. When there is no IV set or the installation of IV set is incorrect, the light is off. 3. When the machine shuts down while the AC Power is still connected, the light is on in orange.

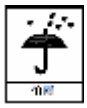
3.2 Packing

1）. Product label（pasted on the back shell of the pump）



2）. Label Marks and Signification

Marks	Description
LOT	Production Batch No.
SN	Machine Serial No.
	Attention! Checking the Instruction Manual!
	Type II equipment
	Type BF applied part
IP21	Keep equipment away from dropping water
	Pollution-Free Treatment
	Date of Production
	Manufacturer
CE 0197	Device complies with the requirements of the EC Directive 93/42/EEC. Registered with the CE Mark.

	EU representative
	Caution Against Wet
	Fragile product, handle with care
	Keep upright during transportation
	Stacking 5 layers at most for the same packaging

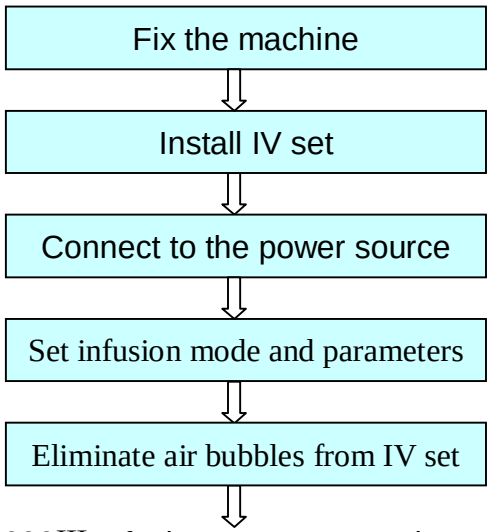
3）. List of Accessories:

①infusion pump 1unit
②AC power cord 1set
③instruction manual 1set
④certificate of approval 1set
⑤maintenance card 1set

Notice: If any accessory is missing in the box, please contact our distributor in your local place.

4. Operation Guide

4.1 Operation Flow Chart



Fix the infusion pump on the IV stand.

Install IV set.

Press the "POWER" key for 1~3 seconds.

In the main menu, press numerical key "1", "2","3", then input parameters by pressing Number keys.

Press "START" key to infuse and eliminate the air bubbles from IV set, then press "STOP" key.

Clear accumulated volume	Press “CLEAR” key.
Infusion accessories insert into patients	Connect Infusion accessories to patients.
Start infusion	Press “START” key.
Infusion completion	Press “STOP” key.
Turn off the power source	Press “POWER” key for 3~5 seconds.

4.2 Basic Operation Steps

Step 1: Fix the infusion pump

1. Rotate the knob of the pole clamp anticlockwise, and leave enough room for fixing.

2. Fix the infusion pump on the IV stand, and rotate the knob of pole clamp clockwise to get the pump fixed on the IV stand.

Attention:
- Put the machine in the vertical position.
- Please check the stability of IV stand before fixing the infusion pump.

Step 2: Install IV set

Open the pump door, install the IV set correctly and then close it. Operation methods are as followings:

1. Open the pump door

Attention:
- Please take your hand away from the door after turning it above 90°to avoid your finger being clipped once the door rebound.

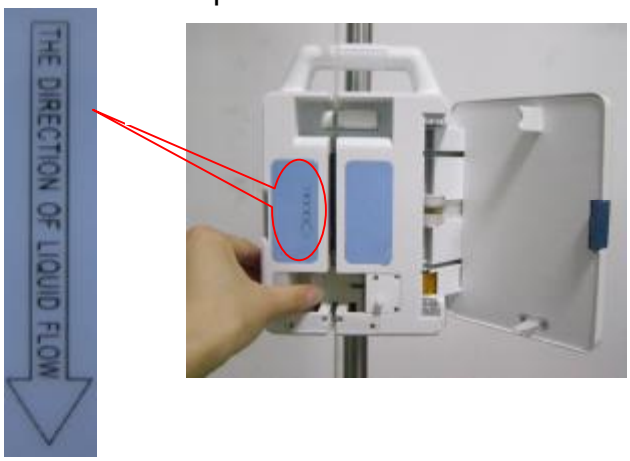
2. Open anti-free flow clip

3. Install IV set

Attention:

- The infusion pipe must reach the bottom of the groove.

4. Close anti-free flow clip



5. Close the pump door and start operation

Press this key to turn on the machine

Attention:

- Please make sure the door close tightly otherwise it will give alarm and can't start infusion.

Step 3: Connect to the power

Connect AC power cord to infusion pump.

Attention:

- Applicable voltage range is AC100V ~ 240V, 50Hz/60Hz.

Step 4: Set Infusion Mode and Parameters

(1).Turn on the machine entering main menu setting interface.

Press POWER key for 1 ~ 3 seconds to turn on the machine, entering main menu interface as shown in **Diagram 1**.

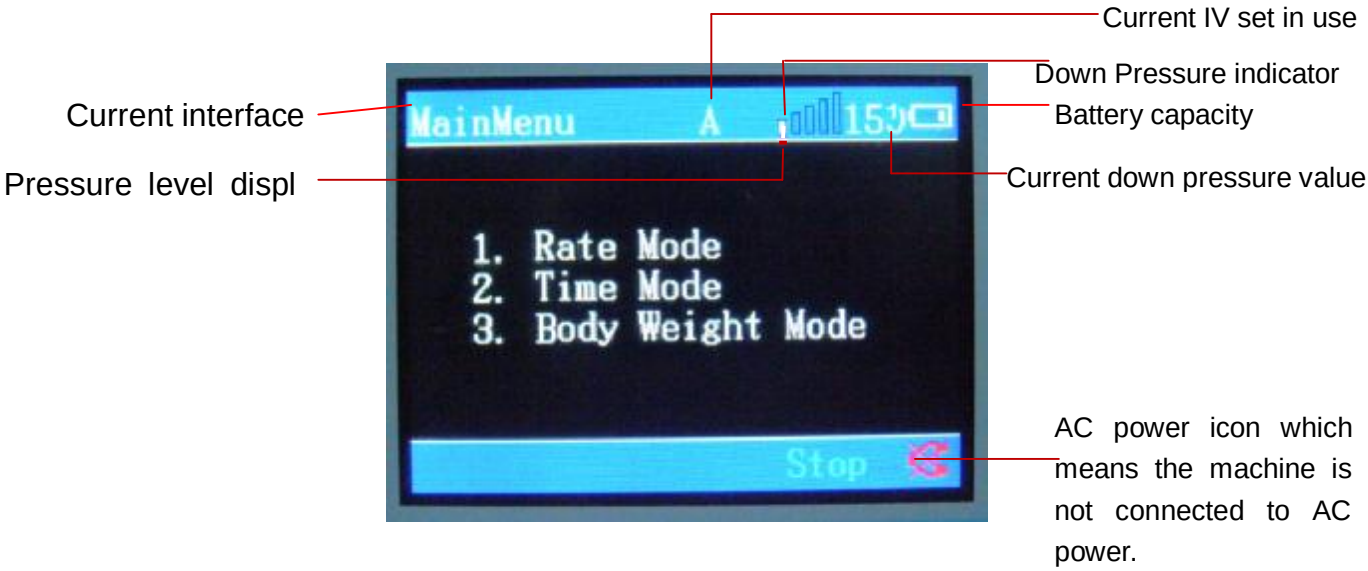


Diagram 1

(2). Set infusion mode

! User has to choose certain infusion mode before start infusion,
Press numerical keys（Rate Mode—press key 1; Time Mode—press key 2; Body Weight Mode—press key 3, entering corresponding infusion mode.
Three infusion modes interface as shown in 『**Diagram** 2』『**Diagram** 3』『**Diagram** 4』:

① Rate mode setting interface as shown in **Diagram** 2

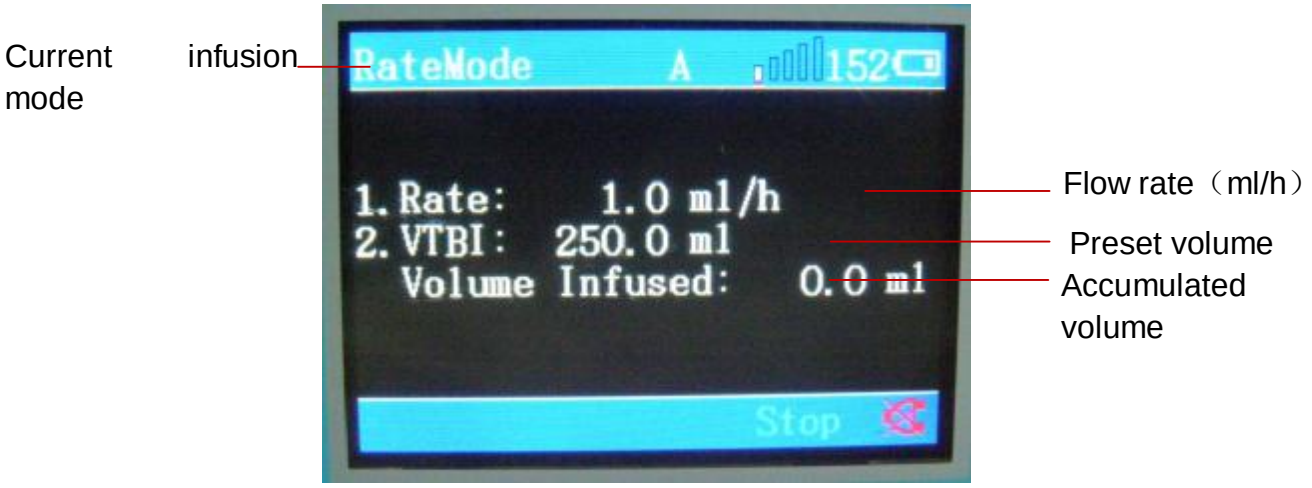


Diagram 2

② Time mode setting interface as shown in **Diagram 3**

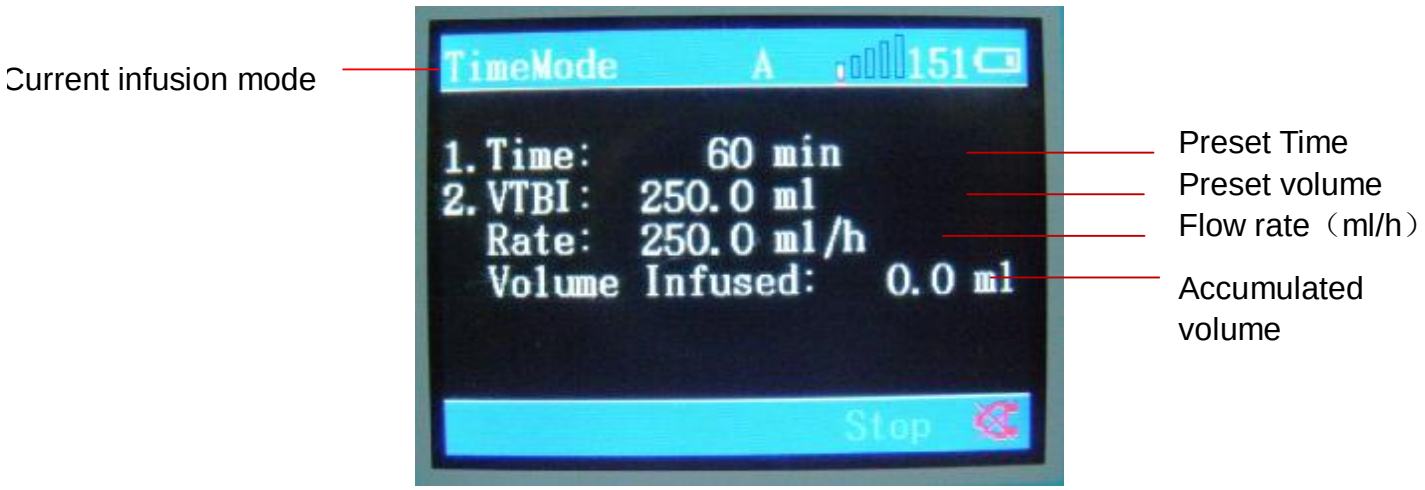


Diagram 3

③ Body Weight mode setting interface as shown in **Diagram 4**

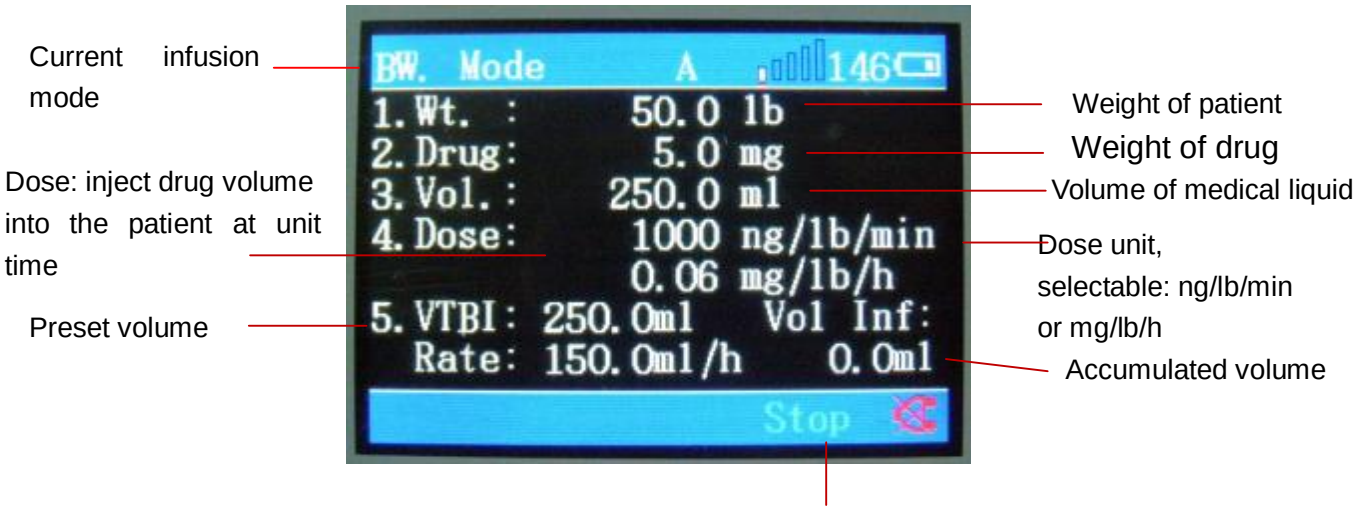


Diagram 4

Parameters should be set according to the below table:

Required Parameters		Parameters Range
Rate mode	Flow rate	1.0～2000.0ml/h
	VTBI	0.0～9999.9ml
Time mode	Time	1～2000min
	VTBI	1.0～9999.9ml
Body Weight mode	Weight	0.1～300.0kg
	Drug	1.0～999.9mg
	Volume	1.0～999.9ml
	Dose	When the unit is ng/lb/min, the dose range is 1～4294967290. When the unit is mg/lb/h, the dose range is 1～333300000000
	VTBI	0.0～9999.9ml

When finishing setting all the parameters, press SET key to return to main menu.

(3). Setting the other parameters

Before starting infusion, please choose type of IV set, setting KVO rate, bed No., air bubble alarm level threshold, accuracy value. If don't change into the other brand of IV set, user only needs to check bed No., KVO rate, installation of IV set. There is no need for user to set ID No.

In main menu interface, press "SET" Key for about 3~5 seconds to enter advance setting interface of the other parameters (as shown in diagram 5)

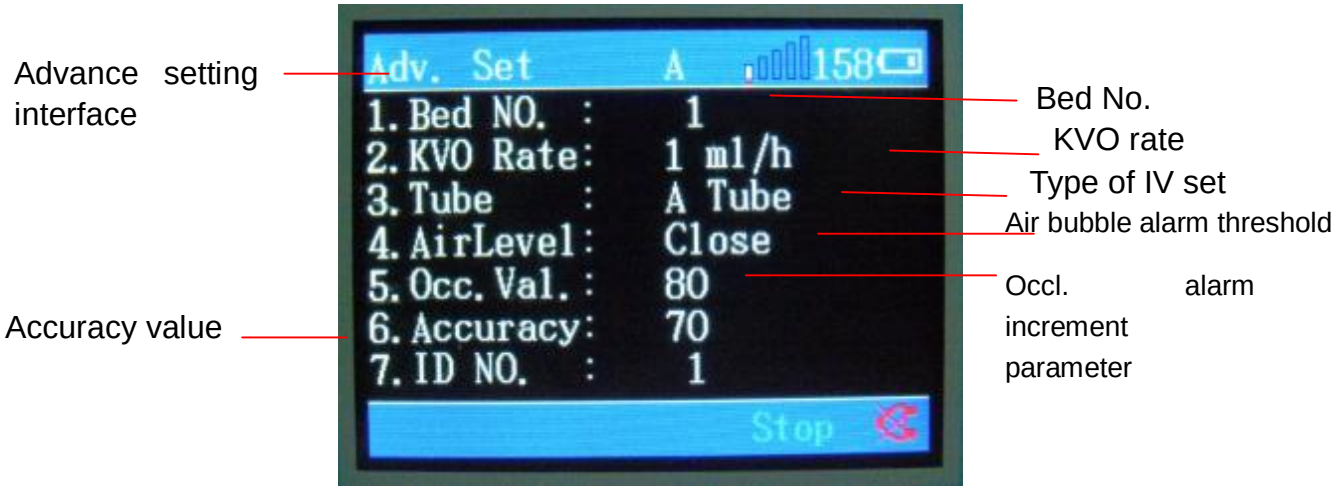


Diagram 5

The parameters could be set as the following Diagram:

Required Parameters	**Parameters Range**
Bed No.	1～1000
KVO rate	1 ml/h～5ml/h
IV set	Type A, Type B, Type C
Air Level	Close, level1, level2, level3
Occl.	10～100
Accuracy	30～108
ID No.	1～9999

When finishing setting all the parameters, press "SET" key to return to main menu.

(4). Setting parameters: use keyboard to input numerical value

① Observe the initial numerical value of the line of parameter which needs to be set;

② Press corresponding numerical key in the keyboard. For example, if the observed value is "1", press numerical key "1" to choose it. Its background will appear a yellow input box as shown in Diagram 6.

③ Input the valued by pressing numerical keys.

④ If the input value is correct, press "SET" key to save it; if the input value is incorrect, press "CLEAR" key then be able to input a new value; if there is no need to save the input value, press "STOP" key to back to the original one.

⑤ Put in values with a radix point: put in the integer part + Press "radix point" key + put in fractional part.

Diagram 6

(5). Technical parameters instruction:

（1）Rate: Infusion rate.
（2）VTBI: The volume to be infused. Preset rate under time mode can not be used.
（3）Time: Infusion time to be set.
（4）VTBI: volume to be infused, automatically calculate the infusion rate together with time.
（5）Weight: The patient's body weight
（6）Drug: The drug weight for infusion
（7）Volume: Infusion liquid volume, automatically figure out the solution concentration together with drugs.
（8）Dose: when its unit as ng/lb/min, which means in one minute, how much drug (ng) enters into 1 lb of patient. When its unit is mg/lb/h, which means in one hour, how much drug (mg) enters into 1 lb of patient.
（9）Bed No.: The bed No. of patients.（it is used with infusion supervision system）
（10）KVO rate: KVO function will be activated after occlusion occurs, and runs at KVO flow rate. The KVO symbol will be shown on the LCD screen.
（11）IV set: Type A, Type B, Type C are optional.
（12）Air level: For air bubble alarm level.
（13）Occl.: For the occlusion alarm.
（14）Accuracy: Influence infusion accuracy directly.
（15）ID No.: Infusion pump ID No., it's been set in factory, there is no need to set by the user.

(6). Check pressure sensor value

In the mode interface, press numerical keys 9 to view the sensors and battery capacity as shown in Diagram 7. Press the numerical keys 9 or SET or STOP key to return to the mode interface.

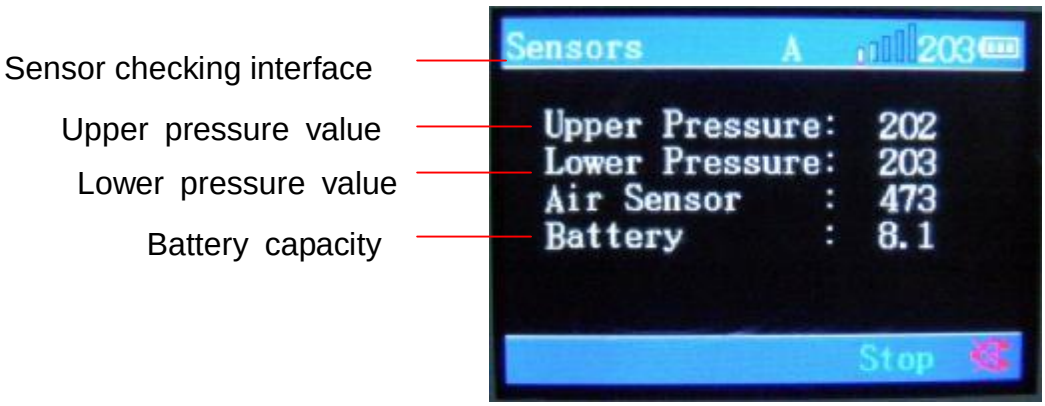


Diagram 7

Step 5: Exhaust air from IV set

Start infusion by pressing “START” key. Exhaust air from IV set till liquid drops out of the needle.

Attention： Make sure the IV set is not connected to patients before air is exhausted completely.

Step 6: Eliminate the accumulated volume

In mode setting interface, press “CLEAR” key, the accumulated volume will return to 0.

Attention： During the infusion process, the accumulated volume can only be observed. Only in stop condition, accumulated volume can be cleared.

Step 7: Insert the intravenous needle into patients

Attention： Insert the intravenous needle while the infusion pump stops infusion.

Step 8: Start infusion

Setting the corresponding parameters in rate mode/time mode/body weight mode interface, press “START” key to start infusion. The pump will enter corresponding infusion mode.

The indicator lights flash by turns. Rate Mode interface as shown in Diagram 8

Diagram 8

Time Mode interface as shown in Diagram 9

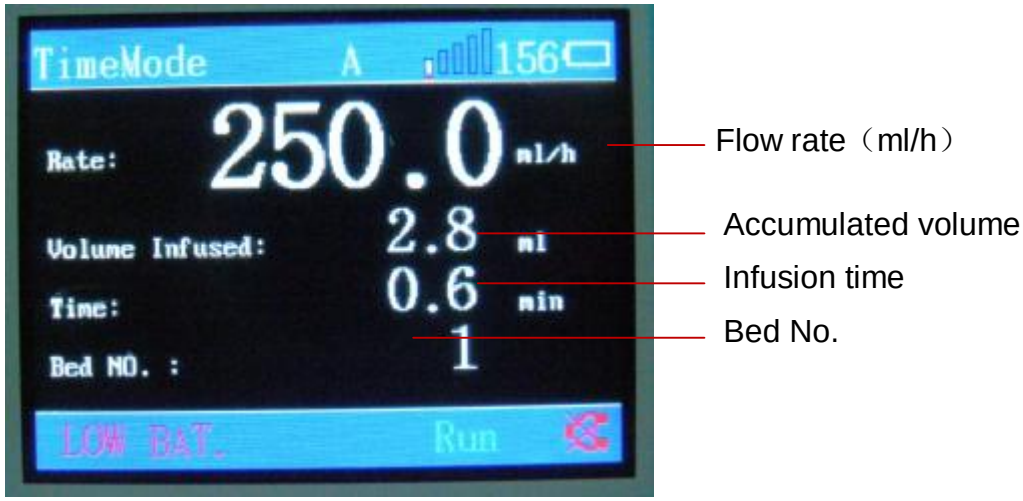


Diagram 9

Body Weight Mode interface as shown in Diagram 10

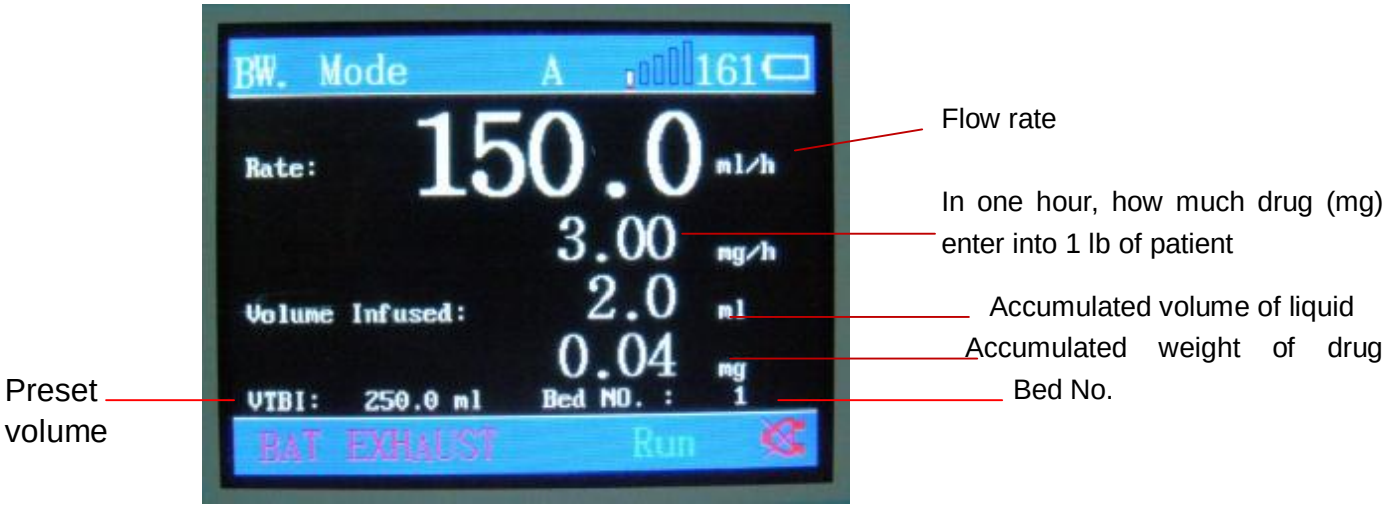


Diagram10

The flow rate can be calculated automatically after setting weight of patient, weight of drug, volume of medicine and dose.

Attention： Only in Mode Parameter Setting interface can we start infusion by pressing “START” key.

Step 9: Infusion completion

When the accumulated volume meets the volume limit, the LCD displays “OVER” and sends an audible and visible alarm to remind the user that the infusion is finished. Press “STOP” key to stop infusion. Then the machine returns to corresponding setting interface.

Step 10: Turn off AC Power Supply

Press “POWER” key for 3-5 seconds, then release it, the power of the pump is turned off.

4.3 Start Bolus function

In the process of infusion, if the on-going rate is lower than 1000ml/h and yet you need a moment’s fast-rate infusion, you may press “BOLUS” key by keeping finger on it for a while. The pump shall infuse at 1000ml/h as long as you keep your finger on “BOLUS” key. After removing your finger from the key, it will run at the original infusion rate.

Attention：

- If the on-going rate is higher than1000ml/h，pressing “BOLUS” key will not start Bolus function.
- Bolus function will not affect any alarm functions.

4.4 Replace IV set supplier

We test and set the parameters under the brand of “dragon heart”. If you use other brands of IV set, please reset the parameters as following steps:

Step One：Prepare a new brand of IV set.
Step Two：The infusion pump is turned off.
Step Three: Install the IV set by regular operation steps.
Step Four: Turn on the power key of the infusion pump, enter into main menu interface.
Step Five: In main menu, press “SET” key for about 3~5 seconds to enter the advance setting interface of parameters., then set the parameters of the IV set.

4.4.1. Choose IV set

Infusion pump can save three kinds of IV set parameters. On advance setting interface, press “Numerical Key “3” to select the infusion settings, then input “1,” “2,” “3,” to choose “Type A”, “Type B”, “Type C” IV set correspondingly, after choosing the IV set, press “SET” key to confirm. There are 3 kinds of parameters which need to be set for each type mentioned above: air bubble level, occlusion value, accuracy value.

4.4.2. Set the air bubble level for alarm

On advance setting interface, press “Numerical Key 4” to select air bubble level, input a proper air bubble level for alarm, then press “SET” key to save it.

Attention:

The machine is setted with level 1 in the factory. The higher the level, the less sensitive the air bubble alarm.

4.4.3 Set the occlusion value for alarm

On advance setting interface, press “Numerical Key 5” to select the occlusion settings, inputting a proper occlusion increment parameter for alarm, then press SET key to confirm.

Attention：

We suggest the occlusion increment parameter as 100.
The lower the increment parameter, the more sensitive for occlusion alarm shall be.

4.4.4 Set Accuracy Value

① Select rate mode as the infusion mode, set the infusion rate at 150ml/h，volume limit at 10ml，pressing “START” key to start infusion after installing the new brand of IV set properly. Use the measuring cup to measure the liquid volume flowed from the new IV set.

② If the liquid flowed into the measuring cup is more than 10ml, add 2 to the accuracy value for 1ml extra liquid. If the liquid flowed into the measuring cup is less than 10ml, reduce 2 from the accuracy value for 1ml lacking liquid. If the liquid flowed into the measuring cup is the same as preset volume 10ml, no need to adjust the accuracy.

On the advance setting interface, press Numerical Key 6 to choose accuracy. Input an appropriate value, then pressing the “SET” key to save it.

Example 1: The actual liquid flowed into the measuring cup is 11ml, and the initial accuracy value is 50, we should adjust the accuracy to 52.

Example 2: The actual liquid flowed into the measuring cup is 8ml, and the initial accuracy value is 50, we should adjust the accuracy to 46.

③Repeat step 1 and step 2 until the accuracy value is accurate enough. (That means the actual liquid volume flowed into the measuring cup is the same as volume limit.)

Attention: The accuracy of infusion is ±5%.

4.5 Battery Charge

1. After the pump is connected to the AC power and turned on the machine, the AC indicator light is on and the battery begins to charge automatically. Press “9” key on mode setting interface, the value of battery as shown in Diagram 11. The value should be about 8.2 when the battery is fully charged. The AC power will stop charging automatically then the value is about 8.2. And when the value is less than 8.2,the AC power will charge automatically.

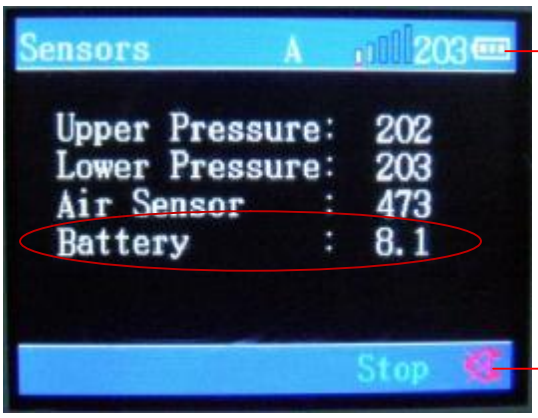


Diagram 11

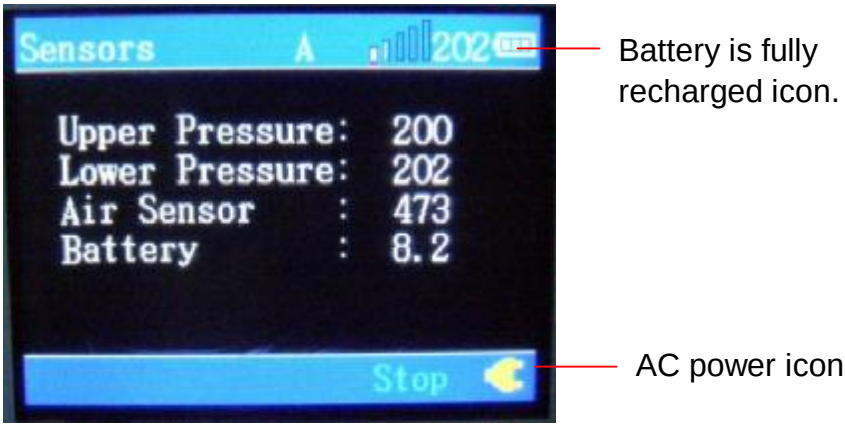


Diagram 12

2. After disconnecting the power cord, the infusion pump will display the battery supply icon, which means the infusion pump is charged by the battery, the lattice inside the icon stands for the capacity. When battery power shortage (battery capacity less than 7.4), the infusion pump will issue a warning sound to alert the user to charge the battery.

3. If there is no AC power connection after battery shortage alarm, the pump will give battery empty alarm with battery indicator light flashes (battery capacity less than 7). At the same time, the pump can not work. The infusion pump will switch off in about 5 minutes.

Attention: It needs 8～14 hours to charge the battery fully after its power is used up.

5. Alarms and Solutions for Alarms

When the infusion pump alarms, the red indicator will flash with alarming sound. At the same time, the displayer will show the alarm information.

Alarm	Causes	Solutions
Air Bubble	1. Air bubble in the IV set 2. IV set installation error 3. Malfunction with the sensors	**Solution for No.1:** Press “STOP” key to stop infusion and silence the alarm, remove the air bubble in the IV set, and then press “START” key to restart infusion. **Solution for No.2:** Reinstall IV set properly **Solution for No.3:** Contact manufacturer or agent for

		maintenance.
Completion	Preset infusion volume completion	Press “STOP” key to stop infusion and silence the alarm. Then press “CLEAR” key to eliminate the accumulated volume. After that, press “START” key to start infusion.
UP OCCL.	1. Infusion loop occlusion 2. Malfunction with the sensors	**Solution for No.1:** Press “STOP” key to stop infusion and silence the alarm. Eliminating the infusion loop occlusion and then press “START” key to restart infusion. **Solution for No.2** Contact manufacturer or agent for maintenance.
DOWN OCCL.	1. Infusion loop occlusion 2. The occlusion value is much too sensitive. 3. Malfunction with the sensors	**Solution for No.1:** Press “STOP” key to stop infusion and silence the alarm. Eliminating the infusion loop occlusion and then press “START” key to restart infusion. **Solution for No.2:** Refer to this instruction manual to adjust the infusion pump parameters and set the occlusion value for alarm. **Solution for No.3:** Contact manufacturer or agent for maintenance.
Door Open	1. Door of the infusion pump is open. 2. Malfunction with the sensors	**Solution for No.1:** Tightly close the door of the infusion pump. **Solution for No.2:** Contact manufacturer or agent for maintenance.
IV Set error	1. IV set installation error. 2. Malfunction with the sensors	**Solution for No.1:** Reinstall IV set properly. **Solution for No.2:** Contact manufacturer for maintenance.
Low voltage/ Low battery	1. Too low battery 2. Battery aging or malfunction with the battery charge circuit.	**Solution for No.1:** Connect to AC power supply to fully charge the battery. **Solution for No.2:** Contact manufacturer or agent for maintenance.
Abnormal 1	CPU data communication error	Contact manufacturer of agent for maintenance.

Abnormal 2	Something wrong with the motor	Press “STOP” key to stop infusion and silence the alarm. Then press “START” key to restart infusion. If such alarm sounds again, please contact manufacturer or agent for maintenance.

6. Product Maintenance

6.1 Clean & Disinfection

1. Keep the machine clean at all times. Use a piece of wet soft cloth with warm water to wipe the surface of the infusion pump when any liquid drops on it.

2. Use a cotton swab moistened with 75% of alcohol to wipe the outer shell of the machine for disinfection, keeping the room ventilated for 2 hours.

3. Make sure to turn the infusion pump off and disconnect it from AC power supply before wiping the liquid off.

4. Do not use something like xylene, acetone or something analogous to clean the infusion pump. These chemicals will cause damage to the outer shell.

The above mentioned operation is just for guidance. Sufficient methods are required for inspection disinfection.

6.2 Routine Maintenance

1. Check infusion flow rate

Use the measuring cup for testing infusion volume every six months.

2. Maintain battery performance

- Using the battery every one month till its depletion and the power of the pump turns off automatically for insuring battery performance and prolonging its life. After battery depletion, recharging over 8～14 hours for next use.
- The following inspection need to be taken every six months.
  - （1） Connect to AC power, more than 8 hours for recharging.
  - （2） Turn on the infusion pump and install infusion components
  - （3） Set up infusion rate at 25ml/h and start infusion.
  - （4） Continuous operation of the infusion pump till it turns off based on low battery.

    If the infusion pump takes 90 minutes or even longer time from start infusion to shut down, the battery is in good condition.

    If the infusion pump takes 45-90 minutes from start infusion to shut down, the battery life close to its end.

    If the infusion pump takes less than 45 minutes from start infusion to shut down, the battery is up to its end and recharge of battery is required.
  - （5） After battery inspection, recharging the battery again for next use.

3. Replace battery

Batteries belong to expendables. Replace the battery when they are used up. If replacing batteries are required, please contact its distributor or the manufacturer. Model: Lithium Polymer battery （7.4V, 1600mAh）.Battery replacing methods are as follows:

(1). Remove the four screws on back cover of the battery with a screwdriver, and then open the back shell;

(2). Take out the old battery together with the leads of the battery;
(3). Insert the leads plug of the new battery into the corresponding circuit board interface, then put the battery into the battery holders;
(4). Install the fixed foam and batter cover, then tighten all the screws up with a screwdriver and make ensure it is tight enough.

3. Routine Maintenance

intervening time	Routine maintenance procedures
According to hospital policy	Thoroughly cleaning of infusion pump shell is required before or after long period of storage.
Inspection at least once a year	1. Inspection of AC power cord and wires. 2. To run the machine till low voltage alarm sounds, then charging the battery to ensure normal operation and charging.

6.3 Pollution-free Treatment, Recovery

We ensure the machine can work in good condition for the first three years. After three years, the performance of machine may go down. The user should take the service life of machine into consideration.

1. Infusion pumps that are no longer in use could be delivered to its distributors or manufacturer for proper recycling.
2. Used Lithium Polymer batteries could be delivered to its distributors or manufacturers for handling, or handling it as per applicable laws and regulations.

7. Electromagnetic Compatibility and Interference

This infusion pump has a function to prevent external interference, including high-intensity radio frequency radiation, magnetic field and static. Users should avoid the use of the mobile phone within 0.5 meters from the machines.

This infusion pump is quite low in electromagnetic frequency, which will not interfere the surrounding electronic equipments. But this pump produces certain amount of electromagnetic radiation, which is in compliance with IEC/EN 60601-1-2 and IEC/EN60601-2-24 standard. If interference caused when this pump is used with other equipment, measures must be taken to reduce this interaction, such as replace the location of these two machines.

Avoid using this pump in combination with MRI (Nuclear Magnetic Resonance Image) or something analogous to this equipment, otherwise the electromagnetic interference will cause mechanical failure or machine collapse.

When using this infusion pump, do not use equipments which produce electromagnetic field such as mobile phone near this infusion pump, otherwise the electromagnetic interference will cause mechanical failure or machine collapse.

8. Product Specification

Product Name	Infusion pump
Product model	SK-600Ⅲ
Infusion Pump Mechanism	Peristaltic Mechanism
Maximum flow rate	2000 ml/h
Flow rate range	1 ml/h～2000 ml/h
Bolus rate	1000 ml/h
Infusion increment	0.1
Water-proof classification	IP21
Infusion mode selection	1. Rate mode; 2. Time mode; 3. Body Weight Mode
Rate Mode	Rate: 1.0ml/h～2000.0 ml/h ; preset volume: 0.0～9999.9ml
Time mode	Time: 1minute～2000minutes Volume limit: 1ml～9999.9 ml
Body Weight Mode	Weight：0.1～300.0 kg Drug：1.0～999.9 mg Volume：1.0～999.9 ml Dose: when unit as ng/lb/min, the dose range is 1～4294967290, when unit as mg/lb/h, the dose range is 1～333300000000;（maximum values depend on weight, drug, volume, dose）
KVO rate	Adjustable range：1ml/h～5 ml/h （start KVO function under occlusion situation）
Preset volume range (VTBI)	0.1ml～9999.9 ml
Preset time range	0～2000 minutes
Accumulated infusion volume	0.1ml～9999.9ml
Infusion accuracy	±5％
Power supply	AC100V～240V， 50Hz/60Hz
Battery	Rechargeable lithium polymer battery，7.4V，1600mAh
Maximum power consumption	25VA, running more than 2 hours at the rate of 25ml/h after being fully recharged.
Battery charge	When infusion pump is connected to AC power and turn on the machine, the battery will recharge automatically.(about 8-14 hours to recharge fully)

Fuses	T 2AL 250V～
Displayed information	Infusion rate, preset volume, accumulated volume, battery capacity, AC power indicator, over, occlusion, air bubbles, bed No., pressure value, etc.
State indication information	Infusion, stop, bolus, KVO
Alarm information	Over, occlusion, air bubbles, low voltage, door open, installation error of IV set, malfunction 1, malfunction 2, extremely low battery（battery exhaust）
Air bubble detection	Detect the minimum size of air bubble is 0.025ml.
Infusion pressure	Maximum pressure is 300kPa, occlusion alarm pressure value is（39.2～137.2）kPa, the longest time of occlusion alarm is 2 minutes at the rate of 25ml/h; the longest time of occlusion alarm is 5 minutes at the rate of 5ml/h.
Maximum size of the outer shell	265 mm×230 mm×175 mm（length×width×height）
Maximum weight	< 3.0 kg
Classification	Class II, Type BF
Work mode	Continuous operation
Outer Shell material	ABS Plastic
Operating conditions	Environment temperature 5℃～+40℃，air pressure (86～106)kPa, relative humidity ≤80%
Storage conditions	Environment temperature -20℃～+55℃，air pressure (50～106)kPa，relative humidity ≤95%
Applicable IV sets	National standard IV sets
Applied standards	IEC60601-1：1988+A1：1991+ A2：1995.IEC60601-2-24：1998.IEC60601-1-2：2001.ISO14971：2007.ISO780：1998

9. Recommended Infusion Component

We test and set the parameters under the brand of “Dragon Heart”. If you use other brands of IV sets which are complied with the national standard, please reset the parameters and adjust the accuracy as per this instruction manual.

Infusion accuracy may be influenced by solution consistency and proportion.

10. Maintenance Service

The warranty is 1 year beginning from the purchasing date. We can offer free repair service within the warranty time on condition that the product is operated properly. The following situation is not within the range of free maintenance and repair:

1. Malfunction caused by false use, repair or reconstruction by any unprofessional, disqualified or untrained people.
2. Malfunction or damage caused during transportation after purchasing.
3. Malfunction or damages caused by fire, salt, poisonous gas, earthquake, hurricane, flood, abnormal voltage and other nature factors.

The company can provide the necessary circuit diagrams or components list for maintenance to the authorized maintenance personnel.

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