



Blood Warmer

NBW-100

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1. Safety Measures

- This device is used to heat drugs (or blood) inside an infusion tube/blood transfusion tube. Don't use it for other purposes.
- Kindly follow the doctor's instructions when using this device, ensure the drug can be heated, and check the appropriate heating temperatures.
- To prevent impact or knocking on the device, kindly pick it up and lay it down gently.
- Kindly don't heat a broken blood transfusion tube or infusion tube.
- Read this user manual before installation and operation.
- Don't wash this device.

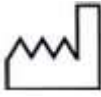



1.1 Operation Precautions

- Before operating the device, kindly check with the pharmacist, make sure the medicine can be heated or not, and what the appropriate temperature.
- Before operating the device, kindly check that the device is not damaged or that there is no liquid or wet inside; if the panel is damaged, kindly replace it in time, and avoid the medicine from leaking inside to damage the device.
- Kindly refer to the illustration of the user manual to install the device correctly and stably, to avoid the device falling from the infusion set. Kindly don't block the speaker. Kindly operate the device per the operation steps.
- If using the drop sensor, make sure the drop sensor socket corresponds to the right infusion tube slot.
- The device must be operated by well-trained professionals only.
- Do not recommend for personal use. If consumers have to use it individually, they must check with a pharmacist whether the medicine can be heated or not, and confirm the appropriate heating temperature too.

1.2 Symbols and descriptions

Symbols	Descriptions
	Production batch No
	Product serial No
	Caution: Check accompanying documents
	Type CF

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	Date of production
	Protective Earthing
IPX3	Waterproof level: Dripping water by slope angle 60°
	AC power
	DC power
	Caution: Consult instructions for use.
	Dispose of in an environmentally friendly way.

1.3 Electromagnetic Compatibility (EMC) information

Attention:

The user should install and use the electromagnetic compatibility information provided by the random document.

Portable and mobile RF communication devices may affect the performance of the Blood warmer; use caution to avoid strong electromagnetic interference, such as near mobile phones, microwave ovens, etc.

Warning:

- The Blood warmer should not be close to or stacked with other equipment. if you must close or stack us, you should observe the verification of the use of its configuration can be normal operation.
- Class A equipment is intended for use in industrial environments, and it may be difficult to ensure that electromagnetic compatibility is potentially difficult in other environments due to the Blood warmer's conduct harassment and radiation emissions.
- Besides internal components provided by the company of the blood warmer, using the other brand accessories and cables may result in the Blood warmer increasing or decreasing.

2. Introduction

Blood Warmer NBW-100 offers a tube size ranging from 3 to 4.5 mm and a heating range of 30°C to 42°C. It features a colourful LCD screen that provides detailed information for monitoring. This unit utilizes advanced thermal transfer technology for efficient fluid warming. It offers dual-groove heating for simultaneous use with two infusion sets. Our Blood Warmer includes an automatic power cutoff to prevent overheating.

3. Features

- Multi-language support
- Compact and lightweight design
- Drop sensor compatibility
- User-friendly interface
- Temperature control alarm
- Easy maintenance

4. Specifications

Model	NSD-100
Tube size	3 to 4.5 mm
Heating range	30°C to 42°C
Increment options	1°C or 0.1°C
Accuracy	Up to ±1°C
Classification	Class I / Type B
Power supply	AC 100 to 240V, 50Hz/60Hz
Dimensions	20 cm × 10 cm × 10 cm
Packing dimensions	22 cm × 19 cm × 12 cm
Net weight	550 g
Gross Weight	1000 g

5. Applications

Blood Warmer NBW-100 is primarily used in hospitals for surgeries, ICU, and emergency settings to warm fluids before infusion, ensuring patient comfort and safety.

6. Instrument Introduction

6.1 Exterior Diagram

Complete Machine Diagram

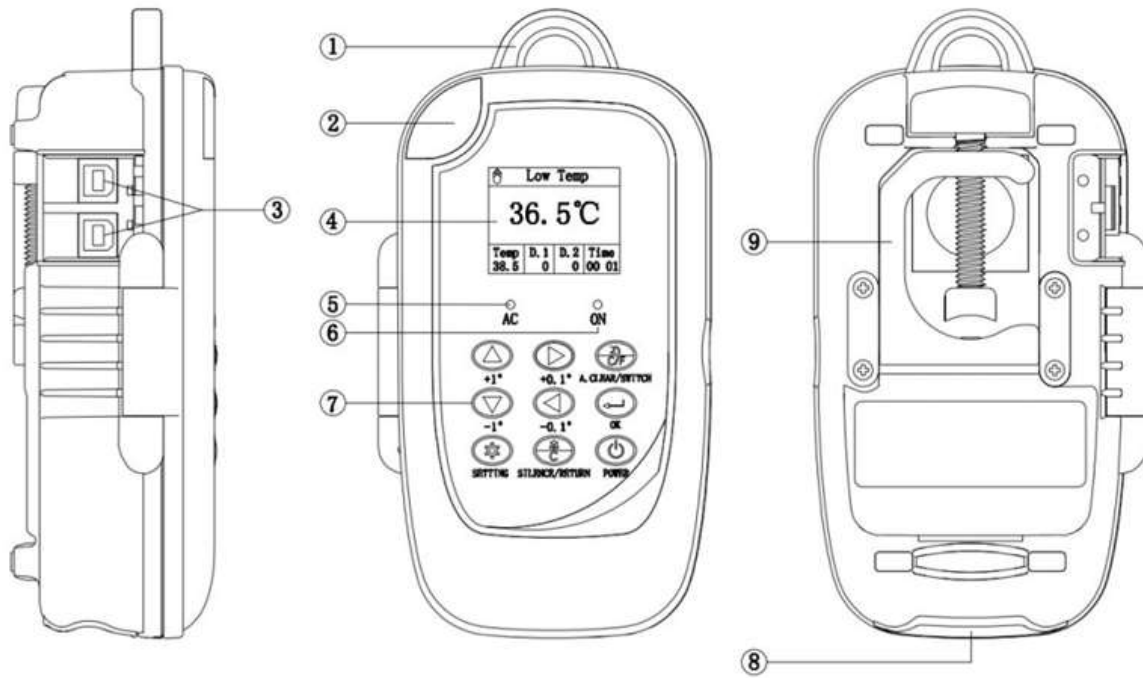











Figure-1

- 1) Hand ring
- 2) Light Cover
- 3) Drop Sensor port
- 4) Display interface
- 5) AC indicator light
- 6) Switch on the indicator light
- 7) Keypad
- 8) Power Cable interface
- 9) Fixing the clamp (Hidden status)

6.2 Instructions of the keypad

Description	Function
	In the main interface or standby interface, it means +0.1° temperature value. In setting the menu interface, it indicates the "To Right" navigation key.

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 -0.1°	In the main interface or the standby interface means -0.1° temperature value. In setting the menu interface, it indicates the "To Left" navigation key.
 +1°	In the main interface or standby interface, it means +1° temperature value. In the setting menu interface, it indicates the "To UP" navigation key.
 -1°	In the main interface or standby interface means -1° temperature value. In setting the menu interface, it indicates the "To Down" navigation key.
 SETTING	Enter the settings menu.
 SILENCE/RETURN	Return to the upper-level menu; clear the alarm sound if there's an alarm.
 POWER	Power key—Keep pressing Power for seconds to switch on/switch off the device.
 OK	In the setting menu interface, Enter is the confirm key, with no effect in the main menu.
 A. CLEAR/SWITCH	In the main menu, switch to the unit of temperature. It can clear the alarm sound if there's an alarm.

7. Installation

7.1 Operational Environment

- **Temperature:** 5°C- 30°C
- **Relative humidity:** 10%- 93% (No frost)
- **Atmospheric pressure:** 86.0 kPa~106.0 kPa

Two methods to install this device:

- 1) Use a suspension belt to hang the device.

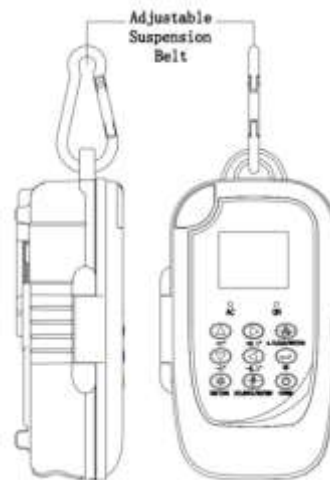


Figure-2

- 2) Pole Clamp install illustration:(Open the hidden pole clamp and rotate 90 °, same as below second photo)

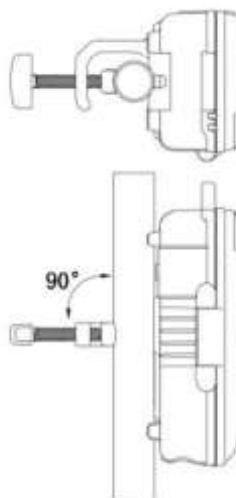


Figure-2

Note: This device has two Tube Channel Installation Slots for warming the fluid or blood, which can be installed with two Tube Channels or one Tube Channel. Illustration as below.

7.2 Transportation and storage

Storage conditions:

Temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$.

Relative humidity: 10%~93% (no frosting)

Atmosphere pressure: 50.0 kPa~106.0 kPa.

Transport

Place the product as per No. of layers indicated on the packing carton.

Temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$.

Relative humidity: 10%~93% (no frosting).

Atmosphere pressure: 50.0 kPa~106.0 kPa.

8. Operations

8.1 Switch on, operating, and standby interfaces

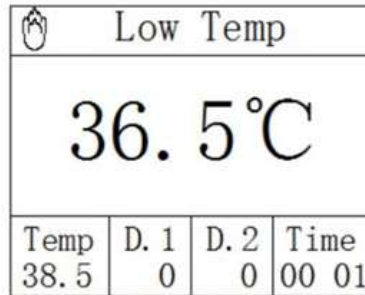


Figure-3

8.2 Instruction for use

The product is mainly used for heating the fluid or blood in a transfusion tube. In addition, it can detect the infusion drop rate and alarm when the bottle is empty.

8.2.1 Main Interface

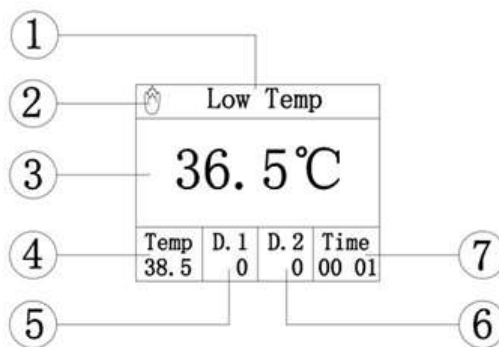


Figure-4

Description	Function
Alarm Display Area	When an alarm occurs, display the relevant alarm symbol.
Heating Symbol	When the symbol is displayed, it indicates that the heating plate is warming up.
Real-time temperature	Display Heating Plate Real Time Temperature.
Set the temperature	Display the setting temperature.
Drop 1	Drop rate of 1 st Tube Channel.
Drop 2	Drop rate of 2 nd Tube Channel.
Operating Time	Total operating time of the device.

8.2.2 Setting Interface

After press the "SETTING" Key, enter the following interface sequentially

Interface	Description	Function
1st Interface	Temperature setting	Set the target temperature and press the "OK" key to save the settings
	Drop sensor 1 Setting (optional)	<p>When using with a drop sensor, set the empty bottle alarm and the drop abnormal alarm.</p> <ol style="list-style-type: none"> 1) Set the Drop rate of the 1st channel. Default: 100 drops/min 2) Set the Empty alarm as ON. 3) Set the drop's abnormal alarm to ON. 4) Set the alarm activation range. Default: 10%. (For example, when the drop rate is 200 drops/min, the range is 10%, which means the device will give a drop abnormal alarm when the real drop rate is out of 180-220 drops/min. <p>After setting, press the Return key to last interface.</p> <p>Attention: When the Blood warmer is not used with a drop sensor, kindly ignore this function. Kindly keep all the alarms in this interface as OFF.</p>
	Drop sensor 2 Setting (optional)	<p>When using with a drop sensor, set the empty bottle alarm and the drop abnormal alarm.</p> <ol style="list-style-type: none"> 1) Set the Drop rate of the second channel. Default: 100 drops/min 2) Set. The empty alarm is ON. 3) Set the drop's abnormal alarm to ON. 4) Set the alarm activation range Default: 10%. (For example, when the drop rate is 200 drops/min, the range is 10%, which means the device will give a drop abnormal alarm when the real drop rate is out of 180-220 drops/min. <p>After setting, press the Return key to last interface.</p>

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		Attention: When the Blood warmer is not used with a drop sensor, kindly ignore this function. Kindly keep all the alarm settings in this interface as OFF.
	Backlight	Set the LCD screen backlight brightness to Light or Dark, and press the "OK" key to save the settings
2nd Interface	Volume	Set the speaker volume, the speaker volume is 8 levels, and press the "OK" key to save the settings, High volume>65dB, Low volume≥45dB
	Key sound	Set the key sound to ON or OFF, and press the "OK" to save the settings
	Restore to factory settings	Restore all the specifications to factory settings
	Language Settings	Select English, French, Italian, Spanish, Russian, and so on. Press the "OK" key to save settings.
3rd Interface	Temp Err Alarm (Temperature error alarm)	When setting this function as ON, and the range setting as 1°C, when the real temperature is higher or lower than the target temperature by 1°C, the device will give a temperature error alarm. The range setting could be 1-4 °C. When this function is set as Off, the device will not give an alarm when real temperature is higher or lower than target temperature by 1-4°C, but the device will still give a high temperature alarm when the real temperature is higher than 43°C and will give low temperature alarm when real temperature is lower than 29°C. The default setting is Off.
	Device Information	Review the information of the device, version, etc.

8.3 Power on / off

- Keep pressing the "Power" key until the LCD is ON
- Keep pressing the "Power" key for 2 seconds, the display will be off.

8.4 Operation Steps

- 1) Clean the surface of the Blood Warmer.
- 2) Fix the device per the installation illustration and connect to the power supply.
- 3) Install the fluid/blood transfusion tube to the corresponding heating plate slot, close the front cover, insert the drop sensor into the corresponding socket (if required), Press "**Power**" key, the indicator of "**ON**" will be lighted, and the Blood warmer starts system self-test, if any abnormal the warmer will give audible and visual alarm.
- 4) According to the actual need to set the parameters and press the "**OK**" key to save the settings, after back to the main interface, the Blood Warmer will operate normally.
- 5) Switch off the device and pull out the power plug from the AC socket after warming.
- 6) Clean the surface of the Blood Warmer and store it correctly.

9. Maintenance

Routine Maintenance

- Should inspect the function of temperature control regularly (once every 2 months) as below steps:
- Switch on the device in room temperature (20 ± 2)°C, set the device temperature to 36°C, when the device heating is stable (The heating symbol disappear), check the display temperature on interface, and use the temperature measure equipment to test the temperature of the heating grooved plate, both should in the range of 36 ± 1 °C.
Note: The accuracy of temperature measurement equipment is ± 1 °C.
- Keep the surface of the device clean. Clean the surface with a wet cloth, add cleaner, then wipe it with a wet cloth, finally dry it with a cloth, and store it on the clean shelf. Do not use solvents like xylene, acetone, or similar solvents, which can lead to corrosion of the Blood Warmer.
- The heating surface should be cleaned thoroughly before and after use to avoid cross-infection.
- Keep the surface of the warmer away from sharp objects, otherwise the damage of the Blood Warmer may lead to the tube channel breaking, thus may cause the patient's infection.
- Keep the surface of the tube channel dry. Forbid any liquid from immersing into the Blood Warmer.
- Inspect the pole clamp of Blood Warmer before operation, to prevent it from falling during use and hurting people & damaging the device.

10. Troubleshooting

Failure	Cause Analysis	Solution
AC lights are not on	1) No AC power supply 2) Control circuit failure	Check the AC power supply
Not heated	1) Control circuit failure 2) Heating device failure 3) The heater failure	
Message shows partially	LCD abnormal	
Alarm Note Error E1	It means the internal temperature detector has failed.	The temperature detector is loose or damaged. Press the " SILENCE/RETURN " key to clear the sound prompt.
Alarm Note Error E3	It means an incorrect parameter and needs to restore factory settings.	Parameter storage error; need to restore the factory settings. Press the " SILENCE/RETURN " key to clear the sound. Enter the settings interface, select "restore factory settings" to return to normal.
When appearing 10.1, the alarm cannot be eliminated even when the problem was solved.		

Alarms and solutions

Description	Alarm	Reasons and Solutions
Door Open	The front cover is open or does not cover well.	Detect whether the front cover is opened or not cover well, show alarms in visual and audible, press the " SILENCE/RETURN " key to clear the audible alarm
Temp Err	Temperature Error. The temperature is 1°C higher or lower than the setting temperature	The heating function is abnormal. Show visual and audible alarm, when the temperature goes back to the control range, the alarm will disappear automatically. Press the " SILENCE/RETURN " key to clear the audible alarm.
High Temp	The temperature is higher than 43°C	When the device detects a temperature higher than 43°C, it will give a high

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		temperature alarm. Show visual and audible alarm, when the temperature goes back to the control range, the alarm will disappear automatically. Press the " SILENCE/RETURN " key to clear the audible alarm.
Low Temp	The temperature is lower than 29°C after heating stably	When the device detects a temperature lower than 29°C, it will give a low temperature alarm. Show visual and audible alarm, when the temperature goes back to the control range, the alarm will disappear automatically. Press the " SILENCE/RETURN " key to clear the audible alarm.
Empty 1	Drop 1 Empty	Detect the infusion bottle of the 1st tube channel is empty. Show visual and audible alarm, press the CLEAR/SWITCH key to clear the visual alarm, press" SILENCE/RETURN key to clear the audible alarm.
Empty 2	Drop 2 Empty	Detect the infusion bottle of the 2nd tube channel is empty. Show visual and audible alarm, press" CLEAR/SWITCH " key to clear the visual alarm, press" SILENCE/RETURN " key to clear the audible alarm.
Drop1Err	Drop 1 Error/ Abnormal	Detect drop rate of the 1st tube channel is abnormal. Show visual and audible alarm when the Drop rate goes back to the correct rate; then the alarm will disappear automatically. Press the" SILENCE/RETURN " key to clear the audible alarm.
Drop2Err	Drop 2 Error/ Abnormal	Detect drop rate of the 2nd tube channel is abnormal. Show visual and audible alarm when the Drop rate goes back to the correct rate; then the alarm will disappear automatically. Press the" SILENCE/RETURN " key to clear the audible alarm.
Error E3	System data error	Detect system errors/abnormalities. Show a visual and audible alarm, the alarm will disappear after restoring factory settings

11. Accessories

Standard Accessories

Accessories	Quantity
Original Power Cord	1 pc
Blood Transfusion and Infusion Heater	1pc



Labnics Ltd.
Unit 2D Station House, 1 Pembroke Broadway, Camberley,
Surrey GU15 3XD United Kingdom
Email: info@labnics.com | Website: www.labnics.com