



**i-Warm™  
Fluid Warmer**

# User's Guide



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## **i-Warm Fluid Warmer Features**

- Portable and light weight
- Warms up all I.V. fluids except transfusion fluids
- Convenient hanging belt to hang on a stand
- I.V. temperature displayed in Fahrenheit or Celsius
- Temperature overheating protection

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## General Information

The i-Warm Fluid Warmer is a dry-heat device designed for warming I.V. fluids safely through the heating plate. The warmer does not provide fluid flow rate control. Fluids normally refrigerated can be warmed to temperatures between 96 – 104°F (35.5C – 40°C) at flow rates up to 320 ml/hr in room temperature between 68 – 77°F (20 – 25°C). Because it can reach 104°F, it is not recommended for blood.

## Precautions

### **SAVE THIS MANUAL FOR FUTURE REFERENCE!**

- **IMPORTANT:** Before using the i-Warm Fluid Warmer, please read and understand this User's Guide and the SAFETY PRECAUTIONS prior to use. If you have any questions, please contact Midmark Corporation at 1-800-643-6275.
- The disposable infusion tubing set used together with this product should conform to the requirement of ISO 8536.4
- Electromagnetic Interference – This device uses RF energy for its internal function. The RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. If interference is noticed between another device and this fluid warmer:
  - Remove interfering device from room
  - Plug fluid warmer into an isolated circuit
  - Increase separation between warmer and interfering device
  - Contact Midmark if interference persists
- The product shall be used under the guidance of medical staff and shall not be used with heat-sensitive medicine.

## Warnings

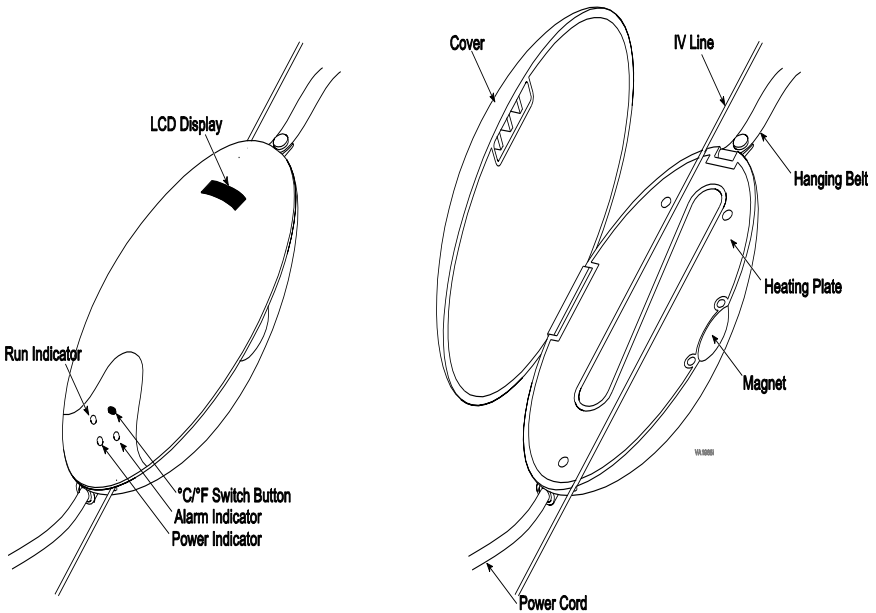
**Failure to follow warnings could result in the administration of air to the patient which could cause death or serious injury.**

- All air must be purged from the fluid lines prior to connection to the patient. Monitor the fluid lines to insure they are air free. Never administer fluids if there are air bubbles in the line between the drip chamber and the patient connection.

## Equipment Alert

- The i-Warm must be unplugged when not in use. Failure to do so could result in electrical failure.
- Do not immerse in cleaning and/or sterilization solution. Do not submerge or soak unit. It is fluid resistant, not fluid proof.
- For grounding reliability of the Fluid Warmer, plug only into a properly grounded outlet.
- Isolation of the power supply can only be achieved by disconnecting the cord from the main power source.
- The length of the IV line between the patient and warmer should be limited. If over 10" from the patient, heat loss will begin to occur before fluid is infused into the patient.
- The warmer is designed to be IV pole mounted with the hanging belt which can be adjusted.

## Product Description



## Instructions for Use

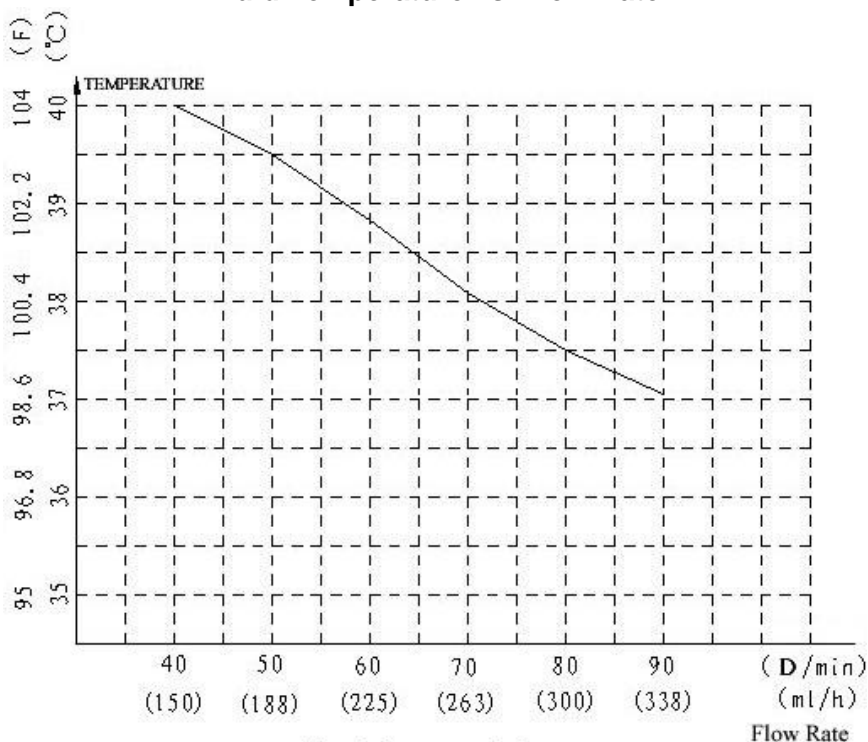
1. Hang the warmer on the IV pole vertically.  
**Note:** If an infusion pump is used, the warmer should be located slightly under the IV line's exit from the pump.
2. Slide the IV line ( $\leq 4$  mm) into the groove on the heating plate carefully. Then close the cover of the warmer.
3. Plug the power cord into a properly grounded outlet. The Power Indicator will light green indicating warmer has been connected to electricity.
4. Press the grey button on the front panel to switch the temperature between Fahrenheit and Celsius.
5. The warmer will start to warm up immediately when it's plugged in. The Run Indicator will flash yellow when the device is heating up and will go off when the heating plate reaches approximately 105°F (41°C). The warmer will automatically turn on again once the temperature inside the warmer goes down.
6. The displayed temperature value on the LCD Display is the temperature at the exit of the warmer after reaching the steady state.
7. When finished using the warmer, remove the power cord from the outlet. Clean and sterilize the surface of the infusion warmer. Use a 70-75% solution of isopropyl alcohol and water to clean and sterilize the unit. (75% is the maximum strength recommended)

**IMPORTANT:** A backup system within the warmer is independent of the main controller. If the heating plate temperature exceeds 117°F (47°C), the Alarm Indicator will light and the backup system will immediately interrupt power to the heaters.

## Effect of Flow Rate on Fluid Temperature

Fluid temperatures exiting the patient line are affected by flow rate. The following flow vs. output fluid temperature curve shows typical warming performance in relationship to flow rate. (Fluids being bolused will not gain much benefit from fluid warmers.)

### Fluid Temperature vs. Flow Rate



**For Reference Only**

Note: Temperature is measured at the exit of the warmer.

## Specifications

Suggested Operating Temp.	68 – 77°F (20 – 25°C)
Relative Humidity	80% Maximum
Power Requirement	
VF-4	110VAC/60HZ
VF-4-220-EU	220VAC/60HZ
VF-4-220-UK	220VAC/60HZ
Power Consumption	≤ 70
Suitable speed of Infusion fluid	40-80 drops (2-5.3 ml/min)
Dimensions	7.7" x 3.5" x 2.2"
	190 x 100 x 60 mm
Weight	1.32 lbs. (0.6 kg)

## Storage

This product should be stored in an environment with an ambient temperature range of 14°F – 131°F (-10°C – 55°C), relative humidity less than or equal to 80%, and air pressure 500hpa – 1060hpa. Do not store close to corrosive vapor and/or harmful impurities.

## Equipment Alert:

Do **not** wrap cord as shown in this picture. Fluid warmer may malfunction or cord damage may result from improper storage.



## Warranty

Midmark Corporation warrants that the i-Warm Fluid Warmer will be free from defects in materials and workmanship under normal use and service for a period of one year from the date of delivery by the distributor to the first purchaser. If any defect occurs during the one year warranty period, the aforesaid purchaser should call Midmark Corporation at 1-800-643-6275. After the warranty period, Midmark Corporation will provide service, charging for necessary parts. The warmer should be returned properly packaged, postage prepaid.