



**Biomedical Engineering Department**

**Indira Gandhi Memorial Hospital**

**Male', Republic of Maldives**

## **Fluid Warmer**

**Equipment Name:** Fluid Warmer

**Category:** Patient Care / Perioperative Support Equipment

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### **1. Intended Clinical Use**

The fluid warmer is intended for warming of liquid medicine, nutrient solutions, rinsing liquid and physiological saline.

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### **2. General Functional Requirements**

- Compact stainless-steel design
- Suitable for adult, pediatric, and neonatal applications
- Rapid and consistent warming performance
- User-friendly interface with minimal setup steps
- Designed for continuous operation
- UV sterilization option
- Overheating protection

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### 3. Warming Performance

- Adjustable temperature control
- Temperature range from 26°C- 50°C.
- Fast warm-up time suitable for emergency use
- Uniform heat transfer without fluid overheating

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### 4. Temperature Control & Safety

- Microprocessor-controlled temperature regulation
- Continuous temperature monitoring
- Over-temperature protection with automatic shutdown
- Audible and visual alarms for:
  - Over-temperature
  - System fault
  - Sensor failure
- No direct contact between heating element and fluid

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### 5. User Interface

- Digital LED or LCD display
  - Real-time temperature indication
  - Clear alarm indicators
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## 8. Cleaning & Infection Control

- Smooth, flat surfaces for easy cleaning
  - Compatible with hospital-grade disinfectants
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## 9. Power Supply

- **220–240 V AC, 50–60 Hz**
  - Fitted with **13-amp plug**
  - Low power consumption suitable for continuous use
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## 10. Environmental Conditions

- Operating temperature: 10 – 40 °C
  - Relative humidity: up to 90%, non-condensin
  - Suitable for hospital and emergency care environments
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## 11. Training & Technical Support

- On-site user training for clinical staff
  - Biomedical engineering training for:
    - Preventive maintenance
    - Basic troubleshooting
  - Training to comply with manufacturer recommendations
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## 12. Testing, Calibration & Maintenance

- Built-in self-test or diagnostic system
  - Preventive maintenance to be carried out during warranty period
  - Maintenance documentation and manufacturer-approved checklists
  - Calibration verification as per manufacturer standards
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## 13. Standards & Safety Compliance

The fluid warmer shall comply with the following standards:

- CE marked and/or FDA approved
  - ISO 13485 certified manufacturer
  - IEC 60601-1 (Medical Electrical Safety)
  - IEC 60601-1-2 (Electromagnetic Compatibility)
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## 14. Warranty

- Minimum warranty period: **12 months**
  - Warranty to commence from:
    - Date of installation
    - Commissioning and final handover
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