

Service Manual

# KANMED BABYWARMER

Part no: BW-50-079 / 5B



## Modifications

Any modifications on the control unit, control unit electronics, heating pad, water mattress and baby nest will void KANMED's responsibilities totally and are not allowed without the written consent of KANMED.

## Caution

Please read this manual carefully. Incorrect use and service of patient warming equipment may cause serious patient injury.

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## 1 INTRODUCTION

For a general description of the KANMED Baby Warmer and how to verify that it is functioning properly we refer to the user manual. In case you do not have one it can be downloaded from internet in several languages. See [www.KANMED.se](http://www.KANMED.se)  
This service manual describes the basic functions of the KANMED Baby Warmer and how to determine faults and do smaller repairs.

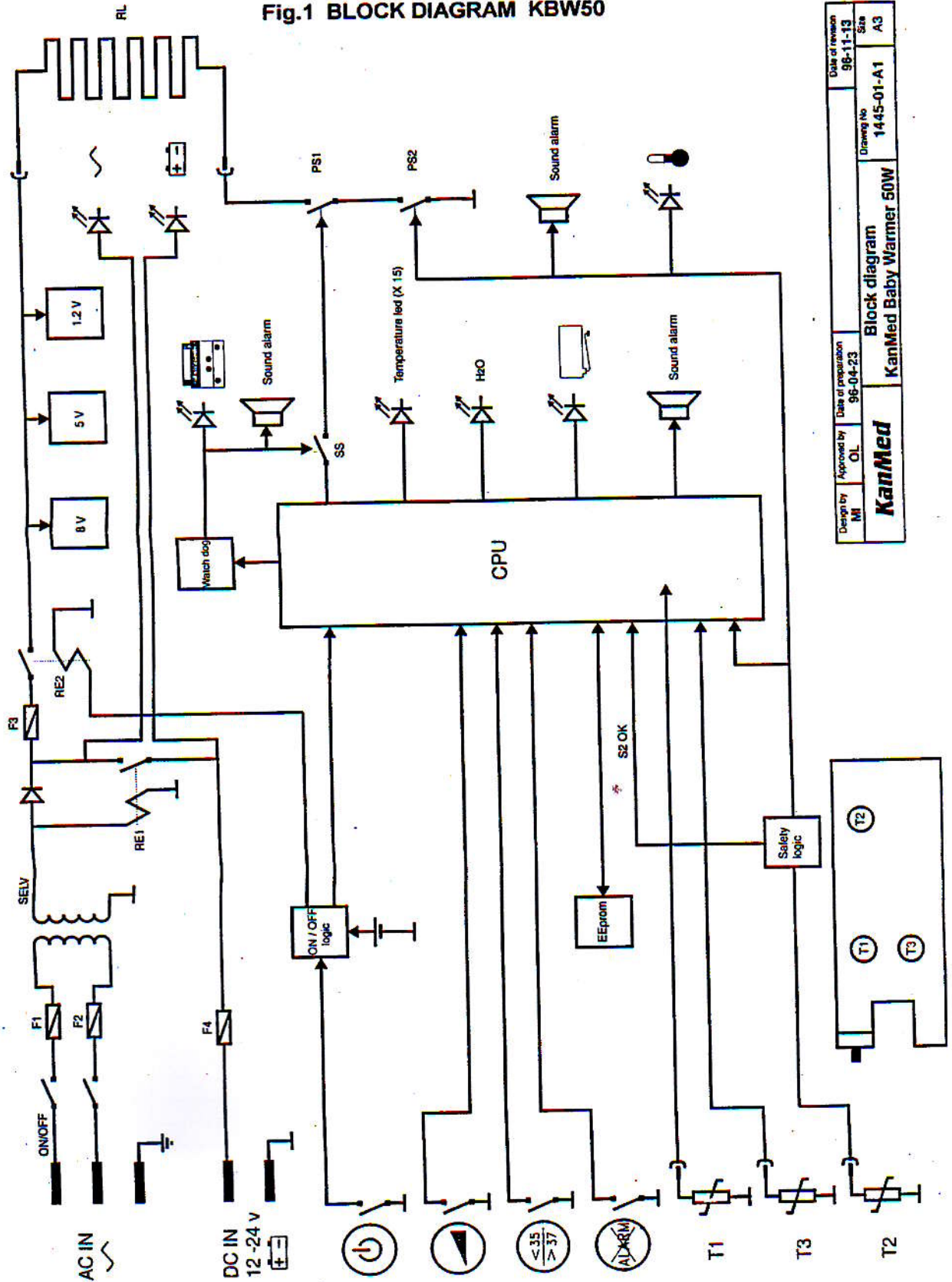
KANMED's service policy states that only properly trained distributor technicians and qualified Hospital technicians may carry out repairs on the main PCB.  
Instead we ask you to make full use of our PCB exchange program because this ensures the delivery of a tested and calibrated replacement PCB with 3 months warranty.

## 2 PRINCIPLE OF OPERATION

See also diagram page 3 and 9

The KANMED Baby Warmer is an electrically heated and precision controlled water bed for infants. It consists of a control unit and a heating pad, which is inserted, into a pocket in the water mattress. The heating power to the heating pad is supplied by the control unit, via power switches PS1 and PS2. The heating pad contains the heating element RL and thermistors T1, T2 and T3. T1 and T2 sense the temperature of the water in the mattress while T3 senses the temperature of the heating element in the pad. Using the information about element temperature supplied by T3, the CPU controls PS1 to limit the element temperature to about 43°C as long as the actual water temperature is lower than the selected temperature. Via T1 the CPU monitors the temperature of the water in the mattress and when the set temperature is reached, the CPU controls PS1 to keep the water temperature at the set value. T2 controls PS2 independent from the CPU and if for some reason the temperature of the water exceeds 39°C, T2 will switch off PS2 and stop the heating altogether and also activate the beeper and the over temp - LED. The watchdog monitors CPU operation and in case of a CPU failure switches off heating via the safety switch SS and also activates the beeper and the electronic failure - LED. The EEPROM is used to store calibration values for T1 and T3 input circuits. The supply voltage to the control unit can either be mains voltage 115 / 230 V AC or DC voltage 12 - 24 V from a battery. Both supply voltages can be connected simultaneously but the first choice of the unit will always be the mains supply. If the main disappears, is switched off by the ON/OFF switch or is not present at start up, RE1 will close and connect the DC supply to unit. At each start of the warming, the CPU issues a test signal to the "safety logic" and all safety circuits are tested during the so called self test. Only if all tests are successfully completed can the CPU continue to operate and start the warming.

Fig.1 BLOCK DIAGRAM KBW50



Design By	MI	Approved By	OL	Date of preparation	96-04-23	Drawing No	1445-01-A1	Date of revision	98-11-13
<b>KanMed</b>					<b>Block diagram KanMed Baby Warmer 50W</b>				
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