



SPECIFICATION

Electric Blanket EE Specification

1.0 Remote: (see block diagram)

Microcontroller, U1, wakes from sleep state every 100mSec and checks for change of status. If pushbutton SW2, or potentiometer R1 change state, the microcontroller remains on for 350mSec to transmit power level setting of potentiometer. Slide switch setting, SW1, is also encoded into transmission and indicates left or right zone of blanket to be controlled. A 3V lithium cell battery provides power to the microcontroller and RF oscillator. The battery low terminal is the circuit common (ground) for the microcontroller and RF circuit. A ground plane extends below the digital circuit but does not extend below the RF circuit or antenna. In this way RF impedances are controlled.

Microcontroller output U1 pin 13 turns on and off the RF oscillator. 8 repetitions of a 26-bit pattern is transmitted over a 350mSec interval. The RF output at 418MHz is coupled through C10 onto the $\frac{1}{4}$ wave PCB etch antenna.

All timing is derived from the crystal oscillator formed from Y1 and U1. The oscillator frequency is 32kHz.

2.0 Receiver:

A PCB etch antenna picks up 418MHz transmission from the remote. Network L1, C9, C13, form a tank circuit limiting pickup of off-frequency signals. RF receiver, U3, is a complete RF receiver, performing all intermediate demodulation and AGC functions. The output of U3 is baseband control data at 1kHz, which is asynchronously decoded by microcontroller U1. Crystal Y1 forms a resonant circuit at 6.5Mhz with U1, which is also tapped to provide the clock to the RF IC. The RF IC generates all demodulation frequencies internally and none are present outside of the IC.

EEPROM memory within U1 is loaded during production with an ID codes to match two transmitters. U1 parses received data and upon detecting a valid ID implements the received command. See the blanket operator's manual for a complete description of functions.

A linear power supply is comprised of a transformer, a bridge circuit, and filter capacitors C14 and C15. Power is gated onto the blanket under the control of microcontroller U1 through FETs Q1 and Q2 onto the right side of the blanket, and through FETS Q3 and Q4 onto the left side of the blanket. Power is controlled through a PWM cycle of 20 seconds with minimum power at 30% duty cycle (six of twenty seconds on) and maximum power at 100% duty cycle (continuous on).

The negative output of the bridge circuit serves as circuit common for all digital and RF functions. A ground plane extends under all digital circuits.

3.0 Contact Information

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