APPLICATION FOR CERTIFICATION: MODEL PIR and PIRX73 TRANSMITTER

TECHNICAL REPORT

FCC ID DCP7FGAERPIR1

Name and address of Applicant:

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Installation and Operating Instructions:

A copy of the Model SMK95 "Installation and Operating Instructions" is attached to this report.

DESCRIPTION OF CIRCUIT FUNCTIONS:

POWER SOURCE: 9V Battery

GENERAL OPERATION:

The PIRD73A is intended for use with receivers:

FCC ID DCP7FG800, DCP7FGAER902L, DCP7FGAER904L, DCP7FG811

The format of the transmission is compatible with the receivers.

The PIR73A is an auxiliary transmitter for use in security alarm systems. It is designed to be used with devices such as battery powered passive inferred motion detectors with internal 9 volt battery power sources and having switched voltage or relay outputs and tamper switches.

There is no power drain from the battery power source until such time as the transmitter is activated. The transmitter has a built in timer program which limits output transmission to less than 3 seconds. The transmitter is expected to be activated during alarm conditions or when the tamper protection is violated.

The transmitter is activated by applying voltage to the input power. The transmitter will then transmit the alarm signal until power is removed or the internal 3 second timer expires.

When the transmitter is activated the input circuit is checked to determine if the activation is a result of tamper switch operation or restore and also checks the status of the 9 volt battery. All transmissions from the device are of identical format except that certain bits are set to "1" or "0" to indicate "Low Battery", "Alarm",and/or "Tamper".

CIRCUIT OPERATION DETAIL

Referring to the schematic diagram:

The input voltage is supplied to the circuit via input P3 (-) and P 2 (+) of the input circuit. The detector will apply power to the transmitter under conditions of alarm, tamper activation, and tamper restore. When the tamper switch is activated the voltage input P1 is supplied as an input simultaneously with the application of input power. The tamper input voltage remains present as long as the tamper switch is activated. When a tamper restore occurs the power is applied to the transmitter at the same time the tamper voltage is removed. An alarm condition causes the power to be applied to the transmitter without tamper voltage input.

The tamper input voltage is applied to the two MOS FET devices Q2 and Q3. When the tamper voltage is first applied Q2 will turn on immediately and the turn on of Q3 will be delayed because of the RC time constant R8C6. Therefore upon initial power input RB5=0 and RA0=1 is the state of logic input to the encoder which indicates a tamper activation. When tamper voltage is removed Q2 Will turn off immediately and Q3 will be delayed. Therefore RB5=1 and RA0=0 is the logic state indicating tamper restore.

With no tamper voltage present before or during activation of the power input the logic states of both RB5 and RA0 will be “1" indicating and alarm condition.

Resistor R4 is a series voltage drop resistor with a value such that the 9 volt supply is lowered to approx. 5 volts at the processor input. C4 is the encoder power supply filter. R2 and C3 form RC network which sets the clock frequency for the encoder. DZ1 is a 6.2 v zener diode through which the battery voltage is monitored. When the applied input voltage is below the zener diode voltage plus the encoder trip voltage (approx 1 volt) a “Low battery” condition is detected at the encoder input RB0 and the transmitter will set the low battery flag bit in the transmitted data stream.

The encoder generates the serial digital data output on pin RA1. This digital data is applied to the input of the RF stage transistor Q1 via resistor R3.

The RF section consists of a crystal oscillator where the primary tuning element L1 is also the primary radiating element (antenna) of the transmitter.. Capacitors C1 and C2 tune the resonant circuit to the same frequency as the crystal CRY1 which is in the feedback loop. The frequency of operation is thereby determined by the crystal frequency. The crystal is a two port SAW type device. The transmitter is aligned at the factory and there are no provisions for user adjustment of the operating frequency.

The digital output of the encoder is applied to the base of transistor Q1. This causes the RF to be gated on and off with the digital output of the encoder. The encoder limits the duration of the output transmission to 3 seconds after which the voltage input to transistor Q1 is stopped. In practice the duration of transmission is limited by the period of the voltage output from the detector which is in the order of 1 second. The time is minimized to prolong battery life.