

APPLICATION FOR CERTIFICATION: MODEL SMK95 TRANSMITTER
TECHNICAL REPORT

FCC ID DCP7FGAERSK95

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 SMK95 is intended for use with receivers:

FCC ID DCP7FG800, DCP7FGAER902L, DCP7FGAER904L, DCP7FG811

The format of the transmission is compatible with the receivers.

The SMK95 is an auxiliary transmitter for use in security alarm systems. It is designed to be used with devices such as smoke detectors with internal 9 volt battery power sources and having available switched or voltage trigger circuits such as buzzer driver outputs.

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 only during emergency alarm conditions or when a low battery condition is detected.

The transmitter is activated by applying voltage to either one of two input circuits. One input is capable of capturing transient type voltages such as may be present on a buzzer driver and the other for direct logic level voltage input.

When the transmitter is activated there is a delay of a few seconds before the transmitter is activated after which the transmitter checks the input circuit to determine if the activating voltage is continuously present. If the activating voltage is present only for a very short duration it is assumed that the activation is a "Low Battery" annunciation and will transmit the corresponding information. If the activating voltage is present for a period of .5 to 10 seconds it is assumed that this is a user test of the device and the transmitter is shutdown with no

transmission being activated. If the activating voltage is present for a period of more than 10 seconds it is assumed that an emergency alarm condition exists and the corresponding information is transmitted. All transmissions from the device are of identical format except that certain bits are set to "1" or "0" to indicate "Low Battery" or "Alarm".

CIRCUIT OPERATION DETAIL

Referring to the schematic diagram:

The input voltage is supplied to the circuit via pin 1 (+) and pin 2 (-) of the input circuit. Activating voltage may be input to Pins 3 or 4. When pin 3 is used as an input then pin 4 is connected to the (-) supply input as a ground return.

When a positive voltage is applied to either pin 3 or pin 4 transistor Q3 conducts which causes current to flow in the base of transistor Q4 and thereby applying power to the encoder and RF sections of the circuit. Upon activation the encoder immediately outputs a positive level via RB6 to the input of transistor Q2 thereby latching on the power until the activation is complete.

Because the input voltage must be present for approximately 25 ms before the encoder can capture and output a latching signal the transmitter is relatively immune to transient inputs. When the input voltage is pulsed DC or has an AC component such as a buzzer driver output the input pin 3 is used. In this instance Q5 aids in charging the capacitor C6 to a voltage sufficient to cause Q3 to conduct.

The encoder IC1 samples the input voltage on pin RB4 via resistor R10 to determine whether the activating voltage is present at different intervals from the initial starting time. In this manner the encoder can determine whether the input is the result of a test, low battery or an alarm condition.

The status of the battery source is also checked each time the system is activated by any input voltage by monitoring the voltage on pin RB0. The voltage on pin RB0 is a fixed voltage less than the battery voltage as set by zener diode DZ1. If the voltage drops below the logical "1" input to the encoder a low battery flag will be transmitted.

Resistor R2 and capacitor C3 set the internal clock frequency of the encoder. The encoder current passes through R4 such that the resulting voltage applied to the encoder is in the range of 5 volts. C4 is a power supply filter capacitor for the encoder.

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 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 via resistor R3. 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 Q2 is removed and the entire circuit resets to the "OFF" low current state.