APPLICATION FOR CERTIFICATION: MODEL DW101CW and PW-UT TRANSMITTER

TECHNICAL REPORT

FCC ID DCP7FGDW101CW

Name and address of Applicant:

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Installation and Operating Instructions:

A copy of the Model DW-101CW "Installation and Operating Instructions" is attached to this report.

DESCRIPTION OF CIRCUIT FUNCTIONS:

POWER SOURCE: 9V Battery (3 lithium cells type CR1220)
Replaceable
There are no provisions for any other power source.

GENERAL OPERATION:

The DW-101CW is intended for use with receivers:

FCC ID DCP7FG800, DCP7FGAER902L, DCP7FGAER904L, DCP7FG811

The format of the transmission is compatible with the receivers.

The DW-101CW is an auxiliary transmitter for use in security alarm systems. Its primary function is to monitory sensors which have dry switch contacts such as door switches, window switches, wired loops, etc. The transmitter is activated by the change of the switch input condition, either from closed to open or from open to closed. When the transmitter senses a change in input condition a transmission is sent which indicates the status of the input switch relative to the condition of a program jumper on the circuit board. If the input condition is the same as the program jumper the transmitter sends a "Restore" status. If the input condition is different from the program jumper the transmitter sends an "Alarm" status. The transmissions are identical in format, clock rate and output except for the 1 bit of the data stream which is set to a "1" for Alarm and "0" for Restore. Each time the transmitter is activated the circuit checks the battery voltage and sets 1 bit of the data stream according to whether the battery is "OK" or "LOW".

During the time when the transmitter is inoperative the transmitter draws negligible

power from the battery except for that required to monitor the input circuit when it is closed. (Approx. .5 microamps.

CIRCUIT OPERATION DETAIL

Referring to the schematic diagram:

Integrated circuit IC1 is a CD4093 gate which is used to monitor the input circuit and control the power strobe to the encoder IC2 and RF section - Q1. The status of the input is monitored by gate IC1A. Resistors R9 and R10 supply bias current to monitor the condition of the alarm loop input. R8, C9, and C10 form a low pass filter network to prevent transient noise from activating the transmitter

The input voltage is inverted by IC1A and again by IC1B. The outputs of IC1A and IC1B are applied to the inputs of IC1C via C7 and C8 respectively. Each time the input changes state a negative pulse is applied to one of the inputs of IC1C. The length of the negative pulse is set by the time constant(s) of the respective resistor/capacitor network(s) R11C8 or R13C7.

The output of gate IC1C is therefore a short positive pulse which is inverted by gate IC1D. The negative pulse output of gate IC1D turns on transistor Q3 causing (+) power to be applied to the encoder IC2 and the RF section Q1.

Once power is applied the encoder first outputs a positive level on RB0 which latches on the power and applies power to the jumpers J1 and J2. The power is latched on by turning on FET transistor Q2 which holds the input to IC1C negative until the transmission is complete. The encoder then samples the status of the jumpers J1 and J2 to determine if they are connected.

The status of the battery is determined by the voltage on encoder pin RB7. If the voltage is above approx. 1.3 volts the encoder will read the input as a digital “1" and report that the battery voltage is “OK”, if not the encoder will report a “Low Battery” status.

The encoder generates a serial data code consisting of 18 bits followed by a word space and this sequence is repeated several times. The data code is output to the RF section via encoder pin RA0.

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 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 output duration of transmission to approximately 2 seconds.

When the transmission sequence is complete the encoder outputs a negative (ground) level at RB0 turning off FET transistor Q2. This causes the input to IC1C to go positive and the output of IC1D to go positive. Transistor Q3 will turn off power and the transmitter reverts to the standby low current mode until activated again by the input circuit.

The transmitter is housed in a small plastic case wilth dimensions of 2.5" x 1.25" x .6" with provisions to remove the cover to attach the input wiring. Mounting is typically by double adhesive tape affixed to the case. When the cover is removed the tuning elements are protected from tampering by an additional internal plastic non removable partition.`

An internal reed switch S1 is included as part of the input circuit to allow the transmitter to be activated by a proximity magnet.