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Overview

The PowerMax+ is a wireless alarm control system that provides protection against burglary, fire and tampering. In addition, it can be used to control lights and electrical appliances within household and/or to monitor the activity of disabled or elderly people left at home. Status information is presented visually and verbally, and in most cases a recorded voice prompts to take correct action.
The PowerMax+ is governed by a control panel designed to collect data from various sensors that are strategically located within and along the perimeter of the protected site.
In the **disarmed stat**e, the system provides visual and verbal status information, and initiates an alarm if smoke is detected or upon disturbance in a 24-hour zone (a zone which is active 24-hours a day).
In the **armed stat**e, the system will initiate an alarm upon detection of disturbance in any one of the armed zones. A 4-digit security code is needed to master the system, and 7 other persons can be authorized to use the system by providing them with their own security codes.
The system identifies a wide range of events - alarms, attempts to tamper with sensors and several types of trouble. Events are automatically reported via the public telephone network or GSM network to central monitoring stations (in digital form) and to private telephones (in plain language). The person receiving such a message is expected to investigate the event and act accordingly.

Brief description of Transmissions from the Powermax+

The Powermax+ transmits two types of messages:

1. Alarm activation of Siren. This is activated in reaction to the detection of an intruder.

2. Acknowledge of supervision signal (one every hour) received from the wireless siren (MCS 700)

In case of Alarm, the Powermax+ transmits a message consisting of 72 data bits and expects to get back an acknowledge signal of data 72 bits.

In case of Supervision, the Powermax+ gets a 72 data bits message and sends an acknowledge signal of data 88 bits.
The signal consists of a train of 1 and 0, whose duration is as per fig 1

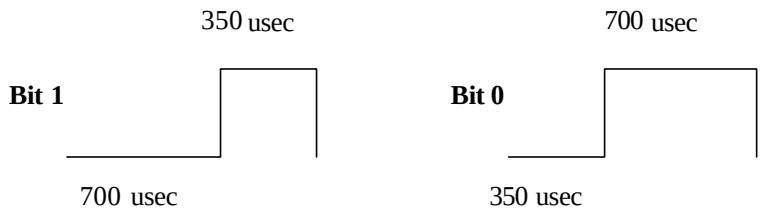

Fig 1 Bits waveform/duration Total 1050 usec

Each transmission is superseded by a preamble part whose duration is as per fig 2, and then the "message" part is transmitted.

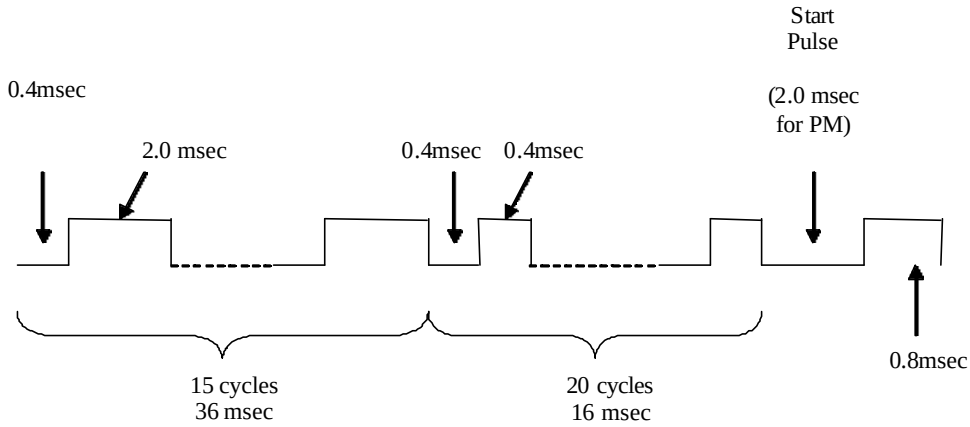

Fig 2 Preamble waveform/duration

The total duration of the preamble is 54.8 msec
The total ON during the preamble is 38.8 msec

Since the total duration of a bit is 1050 usec, 88 bits (supervision ack.)duration is 92.4 msec, and 72 (alarm) bits are 75.6 msec

Total duration of a supervision acknowledge signal then is:

54.8 msec + 92.4 msec = 147.2 msec

Total duration of an alarm signal then is:

54.8 msec + 75.6 msec = 130.4 msec

Each is less then 2 or 5 seconds (as limited/required by FCC part 15)

Calculating the average factor of the supervision acknowledge signal

The "worst" case of supervision acknowledge message is 83 bits "0" and 5 bits "1" which give a total ON of:

83 X 700 usec +5 X 350 usec = 59.85 msec

Total signal (message + preamble) = 147.2 msec
Total ON = 38.8 + 59.85 = 98.65 msec

Duty cycle = 98.6/147.2 = 67.4%
Average factor = 20 Log 0.674=-3.414