

QUEST2260SN Dual Technology Motion Detector.

QUEST2260SN Dual Technology Motion Detector detects an intruder using both microwave and infrared technologies. The microwave channel uses the Doppler shift signal obtained from the X-band DRO module (carrier frequency equals 10.525GHz), and the infrared channel uses the signal from the PIR (passive infrared) detector. Both signals pass through the two-stage AC-coupled amplifiers before entering the A/D converter of the microcontroller. In order to compensate for the ambient temperature changes, the signal from the temperature sensor (thermistor) is fed into the A/D of the microcontroller.

The desired mode of operation is set using a 6-position DIP switch. Various DIP switch settings enable or disable unit sensitivity level, LED indication, walk-test mode, possible unit operation in case of the microwave channel failure, and unit's ability to switch to a non-active state by shutting down an active (microwave) channel in order to reduce power consumption.

When the energy-saving mode is used, the PIR channel activity wakes up the microcontroller, which, in turn, enables the microwave channel and starts processing both channels to detect a potential alarm condition.

The unit is powered off ADEMCO proprietary "Polling Loop" interface. This interface allows carrying both information and power through the same wire connecting the unit and the control panel.

For the purposes of saving the power, the DRO module is used in the pulse mode. The power is applied to the module in the course of approximately 13 microseconds every 416 microseconds. When the DRO module is active (the power is "ON"), the microwave amplifier track and hold circuitry is also activated, capturing the DRO output signal. The microwave channel potentiometer sets the operating range of the microwave channel.

The unit conducts a self-test every 12 hours on both PIR and microwave channel. During the self-test of the PIR channel, the PIR detector receives the excitation signal at the drain of its output MOSFET. This excitation signal is a square wave with a period 80uS and 50% duty cycle. The PIR self-test lasts 3 seconds. The microwave self-test lasts 4 seconds.

The microcontroller used in QUEST2260SN is Motorola MC68HC705P6A. It uses an external 2MHz ceramic oscillator as an input for its internal clock.