DS9370 Technical Description
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The DS9370 is a ceiling Mt. Dual motion detector with 360deg, 70ft diameter coverage. The PIR subsystem incorporates three pyro sensors and lenses. The additional sensors provide improved signal to noise ratios over single pyro designs. The MW subsystem is similar to previous designs but we have added a low noise amplifier to the MW front end to again improve the signal to noise ratio.

The DS9370 schematic, product specification and software specification should be used in addition to this document to fully understand its operation.

Power supply: The supply input voltage is regulated down to +5VDC via U3. D3 provides reverse power protection and RV3 provides over-voltage protection.

Microwave Subsystem: The MW subsection consists of an X band transceiver. Its output produces a Doppler signal that is amplified and then processed to determine human motion. The MW oscillator is FET based and is DRO stabilized. The antennas are a monopole configuration a with a separate transmit and receive element. The receiver incorporates a low noise amp that feeds the mixer diode. The low noise amp requires a negative 2.76V supply. The uP clock output pin with D5, D4, C46 and C47 from a switching supply. The Up provides the required MW drive pulses. Q2 is used drive the MW FET. The receiver is connected to an amplifier U4-4 via a samples and hold circuit formed by Q1 and C33. A second stage of gain is provided by U4-2. The user may adjust the range of the MW detection by adjusting R37. The amplified MW Doppler signal is then fed to the A/D input of the uP. Further signal processing is performed within the uP (see uP software specification).

PIR Sub System: The PIR sub system incorporates 3 pyro sensors and three separate PIR amplifier channels formed by U1, U2 and part of U4. The

analog signals are fed directly to the A/D pins on the uP where all of the signal processing is performed (see software spec.). The PIR subsystem has a temperature compensation circuit to provide consistent catch performance at elevated temperatures. The 3 PIR channels are processed independently for an alarm condition. The Alarm relay will activate when a MW alarm coincides with a PIR alarm from any or all PIR channels.

Microprocessor: The DS9370 uses the PIC 16C715. Refer to the DS9370 Software Specification for further details.