

MP-841 product description, FCC ID:WP3MP841

Motion Sensor MP-841 is a security device/sensor that allows the detection of movement with-in a targeted area. The events captured by motion detector used to detect security events. It has Pet immunity feature to help reduce false alarms. Sensor has home automation features by incorporating ambient Temperature and Light sensing. Device has build-in Zigbee transceiver (Zigbee HA 1.2 standard) with two diversity antennas for wireless communication. Device support OTA (over the air) firmware upgrades.

Operational description of Zigbee Motion Sensor MP-841

PIR circuit

LDO U4 is activated by an I/O port of microcontroller U2. U4 supply 2.2V regulated voltage to the PIR circuit.

Dual-element pyro sensor Q2 receive IR radiation from target and convert it to a small electrical signal. This signal is amplified and filtered by operational amplifier U5. U5 output signal is fed to PIC microcontroller U2 for ADC conversion. The converted digital samples are sent to Ember processor U1 through 2 lines bidirectional serial communication for signal processing and alarm decision.

To enable fast stabilization after power-up, U5 amplifier capacitor is charged by an I/O port from microcontroller U2.

NTC circuit (temperature measurement)

At periodic intervals the Ember processor U1 enables power to the NTC sensor R12 by an I/O port. The NTC output voltage is sampled by ADC input of U1. The measured sample is converted to a temperature value.

Light sensor circuit

At periodic intervals the Ember processor U1 enables power to the light sensor LD4 circuit by an I/O port. The light sensor output voltage is sampled by ADC input of U1. The measured sample is converted to light value.

RF part

Zigbee transceiver consist two chips:

EM-3555- high performance Integrated Zigbee /802.15.4 system-on-chip and 2.4GHz Transmit/Receive Front-End chip SKY-66109. FEM has integrated antenna switch with transmit and receive diversity function.

In transmit mode RF signal from U1 (EM-3555) come to RF input of U8 (SKY-66109) Power amplifier. Integrated antenna switch connect output to ANT1 or ANT2.

In receive mode RF signal from ANT1 or ANT2 come to LNA input of Front-End U8 and after to Receiver input of U1.

Tamper protect back cover from opening and used for hardware Reset.

Sensor work from two Lithium batteries CR123 3V and has a reverse voltage protection (back battery).