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Theory of Operation of GSS2001RF Wireless Gas Detector

Qtronics Manufacture Inc. has over 8 years in design and manufacture wire gas detection and shutoff devices for residential and commercial application. Once the gas detector detects gas leakage, it will send a signal to a main control unit through a 4 wires cable. The main control unit then sounds an alarm and shuts off the main gas supply valve.

The new GSS2001RF wireless gas detector is based on the same principle but use a RF link to replace the cable.

GSS2001RF wireless gas detector contains three main functional blocks:

- 1) Gas detection circuit:
- 2) Logic unit (micro-controller): PIC 16C73
- 3) Transmitter module:

The transmitter module contains single chip transmitter IC (MICRF102), some surrounding components and a PCB trace loop antenna. This on off keyed UHF transmitter module works at frequency 433.92Mhz. A SAW resonator is used for generating the frequency.

This transmitter module is in standby while normal operation. After the gas detection circuit senses gas leakage, the micro-controller will wake up the transmitter and send a preprogrammed 64 bits data string to the transmitter module. After the data is sent, the micro-controller puts the transmitter in standby again. The transmission ceases in 3 seconds.

The data string contains a preamble, a header, and 64 bits ID numbers.

The receiver receives the signal and performs the task accordingly.