

# Operational Description

FCC ID: SGXMPIDA-610

The DA-610 transmitter uses a magnetic field sensor consisting of 3000 turns of number 30 wire on a soft iron core. Any disturbance of the earth's magnetic field results in an 8 Hertz partial sine wave output. This partial wave is filtered and amplified by a Texas Instruments TLC27L4 operational amplifier with gain set to 500 by negative feedback. Another frequency dependent TLC27L4 amplifier with a gain of 100 further amplifies this signal. The amplification is tuned by an RC network for selective response at 8 Hertz. The amplified sine wave is fed to a dual operational amplifier setup as a switch depending on the polarity of the wave. This switch output is diode coupled to an RC time constant circuit to fully decay below transmit enable threshold within 5 seconds. This limits the maximum transmit time for any one alarm to 5 seconds. The diode switched output triggers the transmit enable pin on the LINX Technologies model KH encoder/transmitter creating an output to the antenna of amplitude keyed 433.92 megahertz. The antenna is a fixed  $\frac{1}{4}$  wave monopole with a gain of 0 dBi. The LINX Technologies model KH transmitter output is fixed at 2 milliwatts by a T-pad resistor network in series with the antenna. Only four of the 10 available address lines are used to identify the transmitter to the receiver. One of the 8 available digital lines is used to signify when battery voltage falls below 2.7 volts DC. For technical questions not covered here, please refer to the LINX Technologies literature.

The DA-600 receiver uses a LINX Technologies model LR receiver that has its output fed to a HOLTEK 658 decoder IC. The antenna is a  $\frac{1}{4}$  wave monopole fixed to the steel case of the receiver. The output of the decoder IC is used to trigger a 2N6427 darlington transistor that drives a relay. The relay controls power to a piezo whistle that provides the consumer with an alarm. The receiver and electronics are powered by a 24 volt DC power supply fed from 110 VAC mains. A 5 volt regulator is included for the low voltage electronics. An SCR is used to drive an LED for the low battery signal.

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This system, DA-610 and DA-600, are used to detect moving vehicles and alert the user.