

## Model SC-001 APPLICATION for FCC

# TECHNICAL DESCRIPTION

## MODEL SC-001 SECURITY CONSOLE

### DESCRIPTION

The console unit consists of three functional portion, namely digital control portion, radio frequency transmitter and receiver. The digital portion is controlled by a micro-controller which continuously monitors the system status, interfaces with the operation through the keypad, LEDs, and buzzer. It also encodes the data before transmission and decodes the data after reception. Following is a description of each functional block.

#### FUNCTION

##### Voltage Regulator

The input of the voltage regulator can accept 12VDC adapter output or 9V battery. Normally it consumes power from the DC adapter. In case of a mains power failure, the 9V battery can maintain normal operation until recovery of mains power. In the presence of DC adapter, only a few micro-ampere of current is drawn from the battery for battery level detection.

##### Low Battery Detection

The low battery detection circuit uses a comparator with hysteresis to compare the battery voltage and the 5V reference voltage from the fixed voltage regulator. The battery voltage is scaled down by a voltage divider before feeding to the comparator input. The threshold voltage is determined by the ratio of the resistor values. The values used in the circuit has a threshold voltage of 7.8V.

##### Micro-controller (U1 339A035A)

The micro-controller is an 8-bit microprocessor with built-in ROM, RAM, I/O and timer/counter. The external clock frequency is 4 MHz.

##### Non-volatile Storage

93C46

Non-volatile storage is achieved by EEPROM memory device. It is necessary in the system because the rolling code format of RF data communication require a sequence code which is calculated from previous communication. Therefore it must be maintained during total power removal. Other parameters such as passwords, factory programmed options, device ID codes, etc. can also take advantage of the non-volatile storage.

##### Key Matrix

A four-by-four key matrix provides user input capability. The console have features such as alarm reset, password setting, zone configuration, etc. In addition, it has a panic key which will transmit a signal for other peripheral devices upon depression. A tamper switch is connected in parallel

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with the panic key so that the former will be triggered when the console is being destructed by violence.

### LED Display

System operating status is indicated by LEDs. The AC power LED indicates presence of DC adapter. The low battery LED will blink when the battery drops low. The arm LED indicates whether the system is in arm or disarm status. The zone LEDs indicate the status of the corresponding zone. A tamper switch is connected in series with the low battery LED. This switch detects cover opening.

### Sound Generation

Different zones including the siren are generated by the micro-controller. A peaking coil is used to amplify the output of the micro-controller to a peak value of nearly a hundred volt which drives a PIEZO-electric buzzer. For normal sound level, a resistor is connected in series to reduce the volume. For siren sound, the resistor is bypassed so as to provide maximum sound pressure.

### RF Transmitter

Y2 433.92MHz

The RF transmitter uses saturated amplitude modulation for the data signal. The carrier frequency is generated by means of a SAW resonator. The data frame uses a rolling code format which means that the data content is different for each transmission. The data frame will be sent out ten times for each transmission, hence a total transmission time of two second.

### RF Receiver

(Q4 L2 TL2 C12A C10  
C10A1 C11 R111 R38)

The RF receiver uses a super-regenerative circuitry. The demodulated signal is then magnified to saturation by a two-stage amplifier. The digital signal is then feed to the micro-controller for decoding.

U7-8 LM358

U1 339A035A

Warning: Changes or modifications to this unit not expressly approved by the party responsible of compliance could void the user's authority to operate the equipment.