

## Technical Description

### **Transmitter unit**

The device is a random 10 channels (ch1~10 or ch11~20 is selected at programming) transmitter to monitor and send the unit' state to base unit. It contains follows functional blocks:

**CPU:** It is the core of the unit. It controls "Sentry Mat" and programming state monitoring, LEDs control, push buttons detection, alarm tone frequency, on / off and level control, EEPROM read/write, RF power on/off control, PLL control, battery Low and battery full detection.

The coding of the unit is assigned by Base CPU. It is up-loaded to the device via a 3.5mm mono-phone wire. All information is stored into EEPROM to prevent re-programming after power fault.

**RF section:** It is a 20-channel transmitter from 924.875MHz to 927.725MHz (150KHz/channel). The RF signal is generated from the VCO (Q7, R24~31, C14, 36, 37, 39, 49 and D2), which is control by PLL (U2, XL1, C5, 6, 41, 42, R27~29 and 41) for corresponded channel. The signal then feed into power amp (Q5, R20, 21 and C32) and then antenna via a 927MHz filter (BPF2).

**RF Power Control:** It includes Q4, R69 and 70. It is a switch to cut off RF power while no data sending in order to improve standby time.

**Alarm generator:** It contents two parts – 2/3KHz-tone generator and level control.

2/3KHz-tone generator is given by U5-B, Q11, R44~49, 55, C16 and C17. It produces a 2KHz or 3KHz tone that is controlled by CPU, for alarm sound.

Level control is offered by Q12~16, R50~60, D24 and D25. CPU's signals control Q14 on/off and the gain of Q13 for alarm level setting.

**Charging control:** It includes Q1, 6, R11~15, 42, 43, 71, 72, D3, 4, Z1, C9 and 12. While battery is not full, the CPU turns on Q1, 90mA max. charging current will flow into batteries to provide quicker charge up time. While battery full, CPU turns off Q1, the charging current reduced to 30mA max.

The zener diode Z1 is employed for over-voltage protection when battery is not connected while charging.

**Voltage regulator:** A low drop out IC, U6, is employed as voltage regulator to supply fixed 3V DC system power.

**Battery Low detection:** It include U5-C, Q2, R16~19, 34, 35 and 61. It gives out logic 1 when battery is low.

**Battery Full detection:** It include U5-D, Q3 and R62~7. It gives out logic 1 when battery is full