

# Operational Description

## 1. Organization and summary

- 1) Included : a. Transmitter  
b. Receiver

### 2) Summary

This products is for keyless entry for vehicle and use 433.92 MHz.

Main function is including remote engine start, automatic/manual door lock/unlock, door open/shock detect, panic siren, trunk open, engine start kill, arm/disarm.

## 2. Circuit

### 1) Transmitter

When "High" signal is supplied from Pin 2 of IC01 and "Low" signal is supplied from Pin 9 and Base Bias is supplied to Q2, X02 is oscillated and transmitting frequency(433.92 MHz) is generated by Q2 and the surrounding elements.

At this moment, when Pin 2 of IC01 is converted to "Low" signal, transmitting frequency is OFF. When Pin 2 of IC01 is converted to "High" signal, transmitting frequency is ON.

By using this method, it generates A1A frequency and transmit the data.

Transmitting frequency(433.92 MHz) oscillated by Q02 and X02 comes out from C14, at this moment, the transmitter power goes through R09 and Forward Bias is filtered by D03 and then the current flow to L04.

Due to short status of inside of D03, the transmitting frequency came through C14 passes by D03 and then goes through C17 and come to be discharged through Antenna.

Basically, Bias of Q02 is adjusted by Lower Power, and Output of "High"/"Low" power is converted according to the input variation of "High", "Low" at Q01, Q05, Input Base.

### 2) Receiver

When Pin 10 of IC01 provides "Low" signal, power is supplied to Receiver.

When receiving frequency(433.92 MHz) caused from Antenna comes in through C17, power of Receiver is supplied to R09 and Forward Bias is filtered by D03 and current flows to L04.

When receiving frequency comes into C21 through D03, only the required substitute receiving frequency goes through by tuning circuit of L05 and C22, and entered to Pin 14 of IC02 through C23.

Receiving frequency entered to Pin 14 of IC02 is amplified by the internal amplification circuit, and comes out to Pin 16, and filtered again by L06 and C25, and come into Pin 17.

And then it is mixed with Local frequency oscillated by the internal oscillation elements, L07,

C26 and C27.

The local frequency( $F_L$ ) is oscillated as the frequency deducted 1.8 MHz from Receiving Frequency.

At this moment, receiving frequency generates  $F_L + F_R$  and  $F_L - F_R$  through Local frequency and Mixer, and only  $F_L - F_R$  (1.8 MHz) passes through the Internal Filter and come out to Pin 2.

Again, it goes into Pin 11 through C28. Receiving Frequency is converted to Audio signal by the Internal Filter and AMP, and then it comes out to Pin 8 through Internal Comparator and it makes the voltage filtering R13 change to Data signal.

This data signal is entered to Pin 19 of IC01 and analyze.

### 3) General Descriptions

When power is applied and vibration is sensed by SW04, transmission is conducted for the specified time at the regular interval.

After the transmission and regular time, turn the power of receiver ON and analyze the received data.

At this moment, in case of no data and improper data input, it moves to Sleep Mode and does not work for the regular time. And, when proper data is entered, the 2nd data is transmitted at the specified time.

This operation transmits the output data of transmitting part as the status of Lower Power.

And also, when press the SW01, 02, 03 buttons, the related data signal is transmitted.

At this moment, the output data is transmitted as the status of High Power.

Also, the power voltage supplied through Pin 1 of IC01 is entered to Pin 20 of IC01 through R04, D02. And these are compared with power voltage of IC01, and, in case of battery is dropped below a regular voltage, it transmit the data being transmitted including power abnormal code when SW01, 02, 03 button is pressed.

Also it will be notified to the outside through D01.