

Circuit description of ER300A – RF Base Unit

1). RF Board

When the voltage of TX-B+ terminal which is connected to the MCU control board is applied to high, the transmitter is activated and the RF signal is radiated through Antenna. The Encoded Data from MCU control board is applied to the stage of FM MOD OSC (Q10,L17,C54,L18,C56,L19,C58,D3), and Modulated to FSK signal which frequency is 49.7444 MHz, and converted to the triple frequency of 149.233 MHz. The signal is fed to the LC tuning circuit (L16,C51) and filtered the unwanted signals, and fed to the Tripler Amp Stage (Q9,L15,C47). The final frequency is converted to 447.700 MHz and also tuned through the LC tuning circuit (L14,C46) and fed to the final Power Amplifier Stage (Q8,L13,CT3). The signal is filtered and matched there Impedance by the Antenna Matching circuit (C1,L2,C41) and radiated from the Antenna.

When the voltage of Battery-save terminal is applied to high, the receiver circuit is activated. The FSK modulated RF signal induced from the antenna and amplified by the receiver RF amplifier stage (Q1,Q2), also this signal is mixed by the 1st Mixer amplifier stage (Q3), and converted the 1st LO frequency to the 1st IF frequency (21.4MHz).

The 1st LO stage is consisted of the 2-stage, the X-tal OSC/Tripler stage (Q7,L9,C25,L10,C27) is directly oscillated the frequency of 47.3666 MHz, and tripled to the frequency of 142.099 MHz. The signal is tuned by the LC tuning circuit (L8,C24), and fed to the tripler amplifier stage (Q6,L7,C20). The 1st LO frequency is 426.300 MHz.

The 1st IF signal from the 1st Mixer stage is compensated the loss of the IF filter by the compensated amplifier stage (Q4), is fed to the FM IF IC (U1). This signal is mixed with the 2nd LO frequency (20.945 MHz) and converted to the 2nd IF frequency of 455 KHz. The signal is filtered by the Ceramic BPF (FL2), and amplified by the internal Limiter/amplifier stage of the FM IF IC, and demodulated the AF signal by the Discriminator (DS1). The signal is wave-shaped through the LPF stage (R21,R22,R23,C37,C38,C39) and fed to the internal Data Amp stage and converted to the digital data. The Data is fed to the MCU control board through the RX-Data terminal.

2). Control Board

When the voltage is supplied from the Car Battery (12V), the voltage is converted to 5V by the regulator stage (U1) and applied to the MCU (U5) stage. The “Echo” is very sophisticated, but the operation is simple. Four button RF the transmitter is easy to use for arm, disarm, personal protection, keyless locking and unlocking, trunk release, remote engine start and stop.

1. If You press and release the transmitter button #1. One siren chirp sound and a light flash verify the operation And Doors Lock.
2. During lock mode If You press and release the transmitter button #1 again. Two siren chirps sound and two light flashes verify the operation And Doors Unlock.
3. Press and hold down the transmitter button #2 for approximately two seconds. Two chirp sounds and two flashing light signals verify the trunk release.
4. Press and release the transmitter button #3 for approximately two seconds. Alarm system arms and starts your vehicle. One chirp sound and a light flash verify arming.

Status Check

To check the status of the system, press and release the transmitter button #4. Antenna will be displayed first then the current status of the system will be displayed on the LCD screen.

If the system is triggered, LCD screen displays siren and lock or unlock icon. Siren with lock means that shock sensor or optional external sensor triggered the system. Siren with door means that the system was triggered by doors or hood.