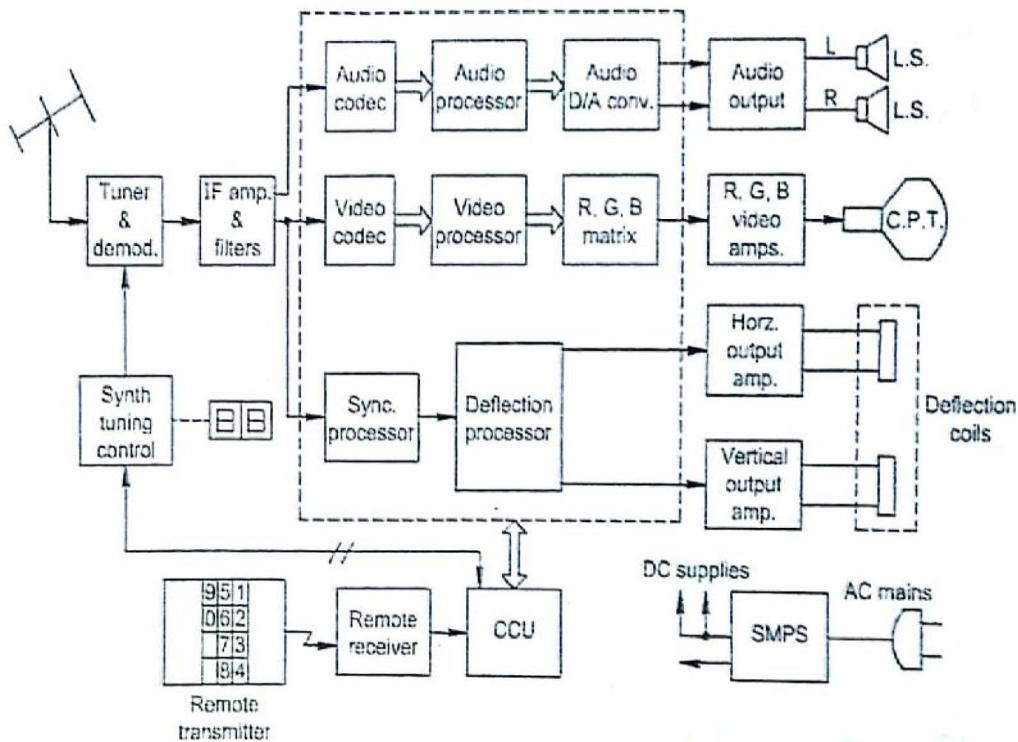


UNIT V ADVANCED TELEVISION SYSTEM

5.1 Block diagram of digital colour TV receiver:

- Digital television means the digital processing of TV signal both at the transmitter and at the receiver.
- The luminance and chrominance signal process are in digital form.
- The central control unit is a microcomputer based device used to control and coordinate all circuit in this receiver.
- The main block used in digital receivers are,
 - 1) Video codec
 - 2) Video processor
 - 3) Deflection processing unit
 - 4) Audio codec
 - 5) Audio processor
 - 6) Central control unit



5.1.1 Video codec:

The signal from the IF stage is converted to analog CVS by the high speed flash A/D converter into 8 bit digital signal and given to video processor.

5.1.2 Video processor:

The output of video codec is separated into two channels – luminance and chrominance. Brightness and contrast of luminance signal are adjusted in accordance with user's settings. Chrominance signal is encoded to relative weightage of red, green and blue.

These signals are then given to video codec. The D/A converter in video codec convert it to analog form. By the delay line technique and demodulation R,G,B signals are obtained amplified and applied to corresponding guns.

5.1.3 Deflection processing unit:

This unit senses the standard TV signals and synchronizes the vertical and horizontal sweep generators and amplified and given to corresponding deflection yokes.

5.1.4 Audio codec:

This samples the input signal to produce 1 bit data stream and convert this into 16 bit resolution stream. This is given as input to audio processor.

5.1.5 Audio processor:

The input signal is split into two channels. Then the stereo balance, tone, loudness, and other necessary function are controlled.

5.1.6 Central control unit (CCU):

It is a microcomputer based device used to control and coordinate all circuits in the receiver. It is supported by an EEPROM, a timer, a control bus and circuits to decode user commands.

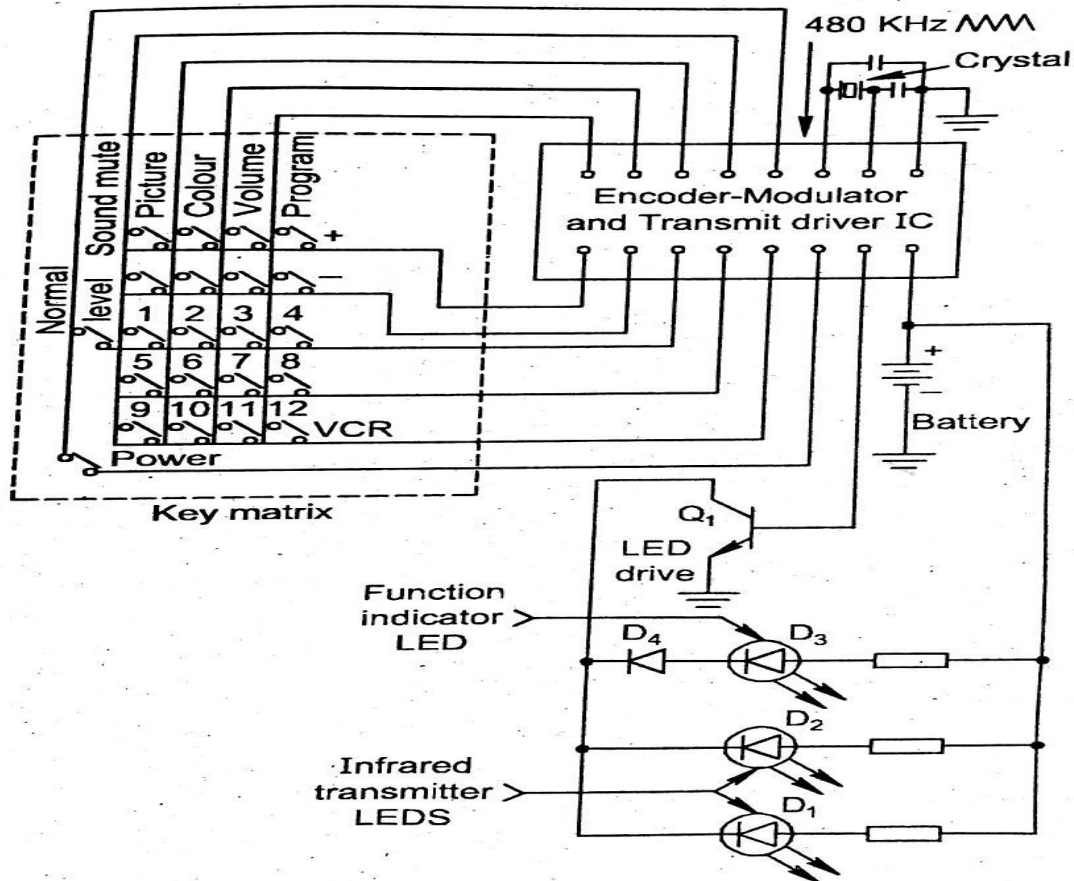
5.1.7 Merits of digital receiver:

- Resolution is high
- No interference of electrical appliances
- Synchronization is better.
- Picture in picture is possible.
- Improved reception in for fringe areas.

5.2 Remote control circuit:

- To operate the various receiver controls from a distance by the viewer, he is provided by the remote control circuits.
- The main function done by it are changing the channels, varying the sound level, turning ON and OFF the TV set , contrast level.
- Two signaling methods used for remote control.
 - 1) By ultrasonic waves
 - 2) By infrared wave using LED'S.
- We have 11 buttons for channels selection, one for VCR connection. Power ON / OFF button, volume control, color control are provided.
- The remote transmitter is somewhat directional since we are using the infrared waves.
- We can operate within 7 meters and at a radians of 30° from the receiver point, labeled for remote operation.

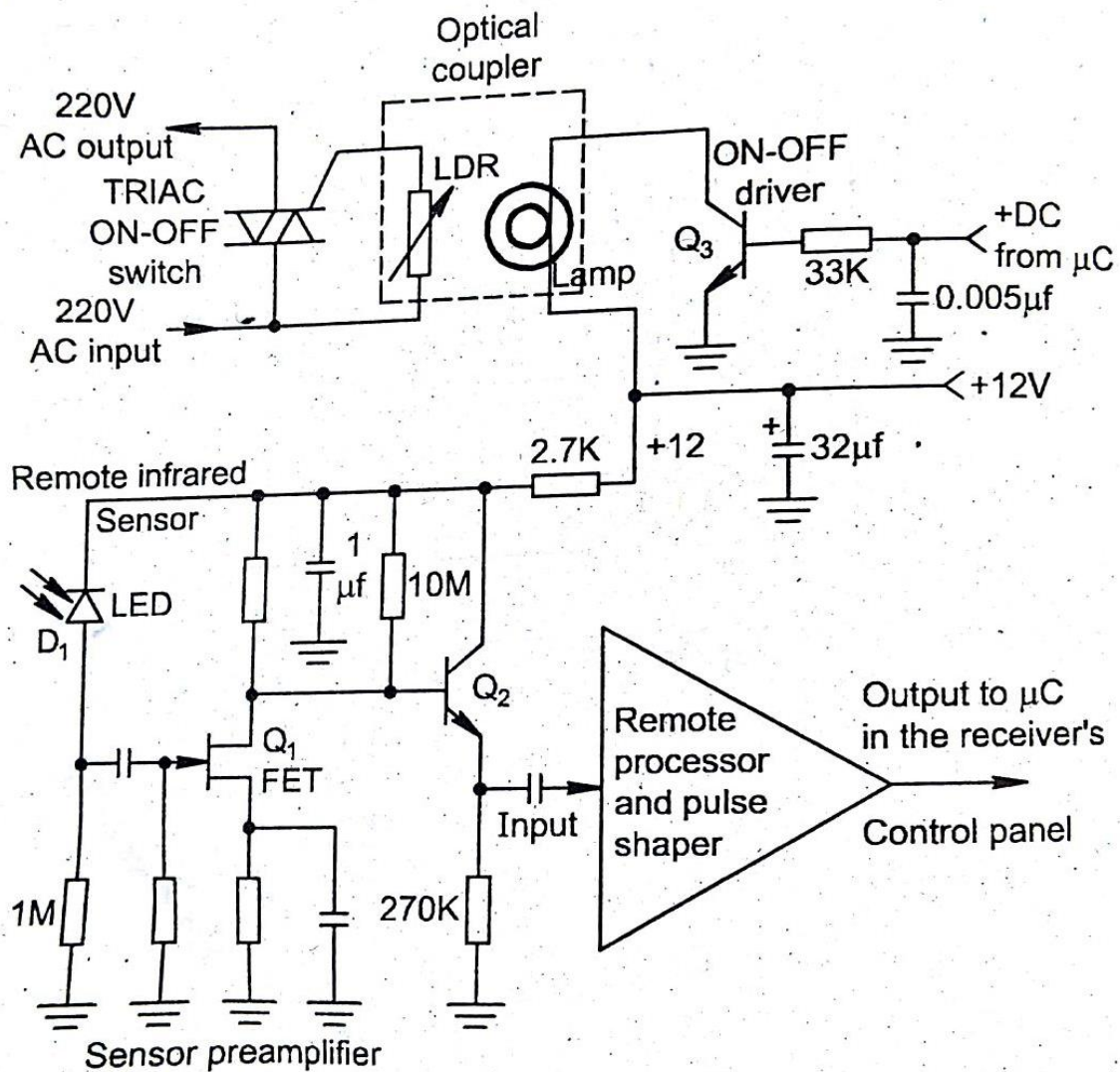
5.3 Remote control IR transmitters:



- To achieve all the necessary basic function 24 different commands are needed. So 24 different pulse patterns are generated. The modulator IC (encoder) performs the main function.

- The waves are modulated through a 480 KHZ carrier by one of the 24 pulse pattern.
- If any one of the key is pressed, it produces a distinctive pulse train which modulates the crystal controlled 480KHZ carrier.
- After proper amplification, it is fed to LED driver (Q1).The output of the Q1 drives the infrared LED D1 and D2 then the IR signal is transmitted.
- Then the function indicates LED D3 comes to ON state.
- If the LED is not glow on depression of a button then it indicates that the battery is to be replaced.

5.4 Remote control IR receiver:



- A simplified circuit diagram used for the synthesis of remote control receiver.
- The remote infrared sensor D1 is used to pick up the pulse modulated infrared signals send by the IR transmitter.