APPLICATIONS OF IC LM380

(i) Audio Power Amplifier:

- Amplifier requires very few external components because of the internal biasing, compensation & fixed gain.
- When the power amplifier is used in the non inverting configuration, the inverting terminal may be either shorted to ground, connected to ground through resistors & capacitors.
- Similarly when the power amplifier is used in the inverting mode, the non inverting terminal may be either shorted to ground or returned to ground through resistor or capacitor.
- Usually a capacitor is connected between the inverting terminal & ground if the input has a high internal impedance.
- As a precautionary measure, an RC combination should be used at the output terminal (pin 8) to eliminate 5-to-10 MHz oscillation.
- C1 is coupling capacitor which couples the output of the amplifier to the 8 ohms loud speaker which act as a load. The amplifier will amplify the $V_{in}$ applied at the non-inverting terminal.

(ii) LM 380 as a High gain:

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The gain of LM380 is internally fixed at 50. But it can be increased by using the external components.

The increase in gain is possible due to the use of positive feedback, this setup to obtain a gain 200.

(iii) LM 380 as a variable Gain:

Instead of getting a fixed gain of 50, it is possible to obtain a variable gain up to 50 by connecting a potentiometer between the input terminals.

(iv) LM 380 as a Bridge Audio Power Amplifier:
- If a certain application requires more power than what is provided by a single LM380 amplifier, then 2 LM380 chips can be used in the bridge configuration.
- With this arrangement we get an output voltage swing which is twice that of a single LM380 amplifier.
- As the voltage is doubled, power output will increase by four times that of a single LM380 amplifier. The pot R4 is used to balance the output offset voltages of the two chips.

**v) Intercom system using LM 380:**

- When the switch is in Talk mode position, the master speaker acts as a microphone.
- When the switch is in Listen position, the remote speaker acts as a microphone.
- In either phone the overall gain of the circuit is the same depends on the turns of transformer T.
Fig: Talk mode

Fig: Listen mode

Source: https://aihteienotes.files.wordpress.com/2014/07/lic-notes.doc