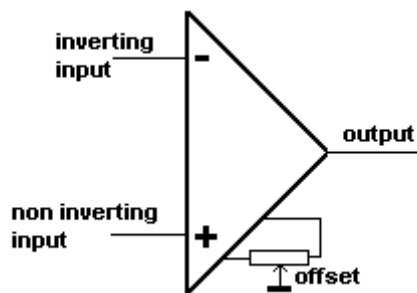


What is an Op Amp?

The OpAmp was originally designed to carry out mathematical operations in analogue computers, such as bombsights, but was soon recognized as having many other applications. The OpAmp usually comes in the form of an 8 pin integrated circuit, the most common one being the type 741. It has two inputs and one output. The input marked with a - sign produces an amplified inverted output. The input marked with a + sign produces an amplified but non inverted output. The OpAmp requires positive and negative power supplies, together with a common ground. Some circuits can be designed to work from a single supply. If the two inputs are joined together, then the output voltage should be midway between the two supply rails, i.e. zero volts.



If it is not, then there are two connections for adding a potentiometer, to remove this OFFSET. The OpAmp has a very high gain, typically (100 dB) 100,000 times. Looking at the left hand diagram, an input with a swing of a fraction of millivolts produces an output that changes between + 12 volts and - 12 volts. In most cases this gain is excessive, and is reduced by negative feed back. Looking at the right hand diagram we can see that the OpAmp amplifies right down to dc. Gain falls quite rapidly as the frequency increases. In fact the bandwidth (the point at which the output has fallen by 3 dB) is only 1 kHz. This is also improved upon by the use of negative feedback. The input impedance is high, 1M. The output impedance is low, 150 ohms.