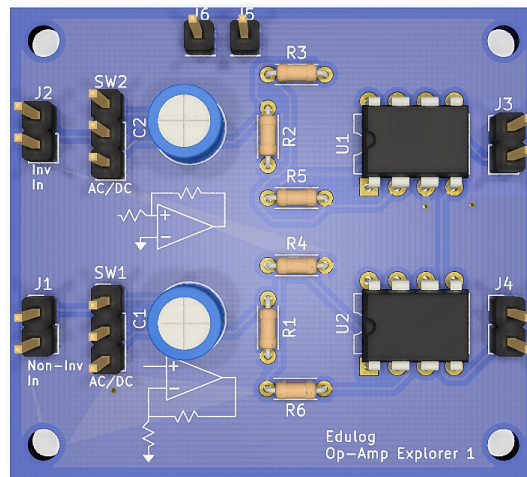


EduLog Module System



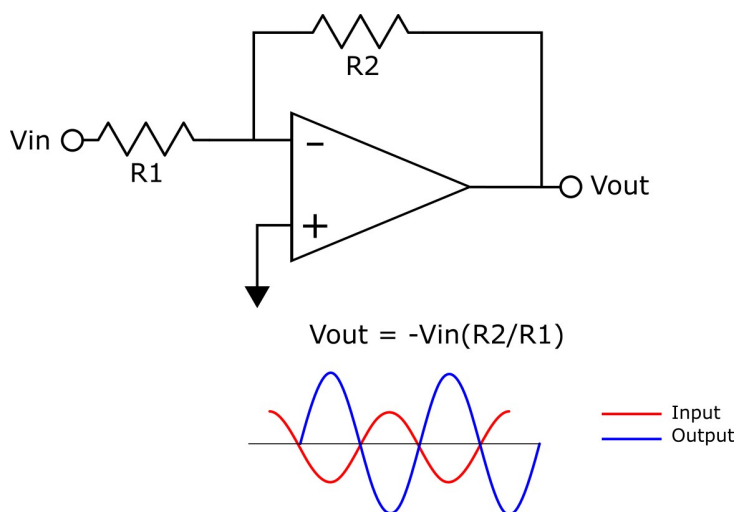
Op-Amp Explorer 1

Background Theory

An Operational Amplifier (Op-Amp) is a type of amplifier that is intended to perform mathematical functions. Linear functions such as addition, subtraction, multiplication, division, integration and differentiation can be achieved with an op-amp and few external components. Two of the most basic op-amp configurations are the inverting amplifier and the non-inverting amplifier.

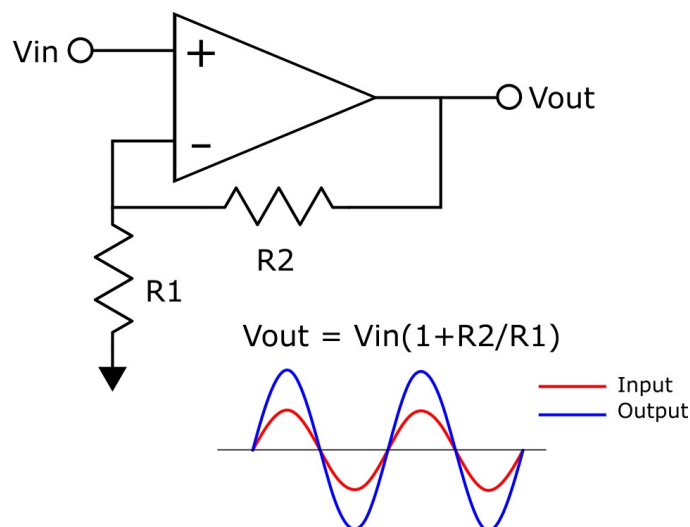
The inverting amplifier takes an incoming signal, multiplies it by its gain, and inverts it. A positive voltage becomes negative, and a negative becomes positive. The non-inverting op-amp does the same thing as the inverting amplifier, except it does not invert the signal. The primary purpose of both of these amplifiers is to apply gain to a signal, and increase its amplitude, but the inverting op-amp can be used to provide a 90° phase shift to a signal.

Inverting Amplifier



The above illustration shows the inverting op-amp configuration, and its gain formula (also called a transfer function). The incoming signal is both amplified and inverted.

Non-Inverting Amplifier



The above illustration shows the non-inverting op-amp, and its gain formula. The incoming signal is amplified, and not inverted.