

Using the AK5365/66 for Input Range Selection

The AK5365 is a 24-bit ADC that includes a 5-channel stereo input selector and an input programmable gain amplifier. The input selector can also be used to provide input range selection. Professional audio applications often have multiple inputs with varying signal levels. For example, an input to a professional audio system may have a line level of +4dBu (3.472Vp-p) nominal, or it can be -10dBV (894mVp-p) nominal. The AK5365 can be configured to deal with any typical input level. By using the input selector and a single resistor, the input channel can be set to a number of different ranges, including a microphone input.

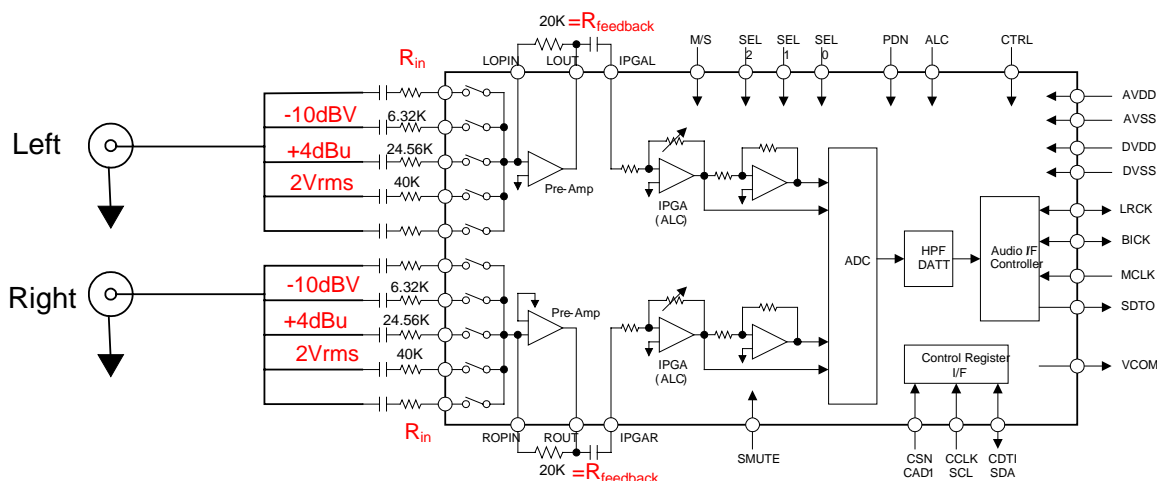


Figure 1. AK5365 configured for multiple input gain selection.

The input range can be selected by software, enabling simple system design. The AK5365/66 is controlled by either a 4-wire serial interface or I²C. This interface allows for multiple converters to be controlled on the same serial bus. It is possible to control AK5365/66 in hardware or parallel mode by selecting the input via three hardware pins, SEL2:0. This can be accomplished with a simple push button switch.

Additional features and flexibility can be realized through use of a microcontroller. From Figure 1, the input pre-amplifiers in the AK5365 provide fixed gain for individual input channels:

$$\text{Input gain equation: } G = -R_{\text{feedback}} / R_{\text{in}}$$

From figure 1, combinations of R_{feedback} and R_{in} have been selected to achieve -10dBV, +4dBu, and 2Vrms respectively, on input channels 2, 3, and 4. In addition to the resistor-programmed input gain, there is a programmable gain block that is controlled through the serial interface providing additional gain from 0 to +18dB.

AK5366 offers an additional feature that is useful in professional applications. The AK5366 has a peak meter function for professional audio applications. There are four registers that hold a byte of information that corresponds to the input value. These registers can be read at user-defined intervals, and can be used to drive level meters in the application.