

Project Abstract

Analog to digital converters (ADCs) are widely used to convert analog signals to the digital domain. There are dominantly two major classes of data converters, one is termed Nyquist Rate converters and the other are termed Over-Sampled Data Converters or Delta-Sigma Data Converters. With Nyquist rate converters, samples of the input are converted to a Boolean signal when each sample is taken. In Over-sampled Data Converters, a large number of low resolutions are made with each sample and the large number of low resolution outputs are then combined (decimated) into a higher-resolution output. Over-sampled data converters invariably have a low effective conversion rate but can achieve very high resolution. For example, over-sampled converters can readily achieve an effective resolution of 20-bits or more with a low sample rate and with relatively simple circuits. This project will involve the design of a slow-speed over-sampled data converter and the use of this data converter to provide a high-resolution digital output of an on-chip temperature sensor.