PCM Encoding

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***Abstract*—An introduction to Pulse Code Modulation(PCM) ENCODER module .**

Keywords—Sampling , Quantization & Coding

I. Introduction

Pulse Code Modulation(PCM) Encoding is the method used for the digital representation of an analog signal when the magnitude of the signal is sampled regularly at uniform intervals, then quantized to a series of symbols in a binary code.

II. OPERATION.

Sampling

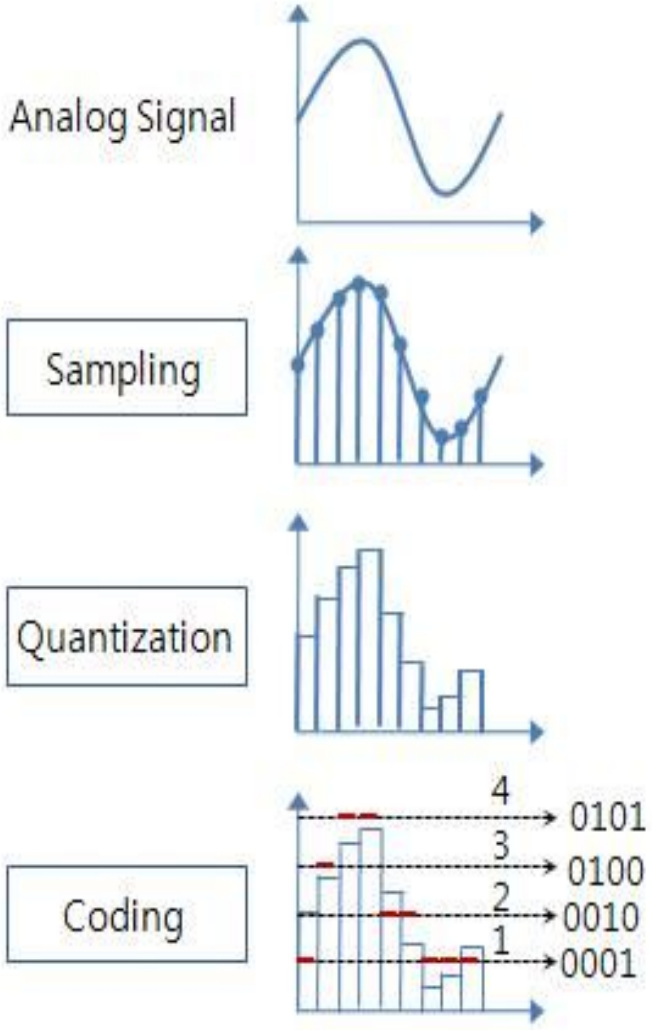
The analog signal is sampled at some fixed rate. For eg. if a voice channel is 4 KHz then the input analog signal will be sampled at the rate of 8000Hz. The value of each sample is an arbitrary number.

Quantization

In this process every sample is rounded to one of a finite number of values. Each sample amplitude is compared with a finite set of amplitude levels. These are distributed within a number of voltages ranging from -ve volts to +ve volts (For eg. -2.0v to +2.0v) , called the *quantization levels.* Each quantization level is assigned a number, starting from zero for the lowest level(-ve) level, with highest level being L-1, where L is the available number of levels.

Coding

Each sample is assigned a binary code word representing the number associated with the quantizing level which is closest to the sample amplitude. The number of bits for each code word will depend upon the quantization levels. For eg. if an input analog signal is sampled at 8000 samples per second, and suppose, every samples are quantized and represented by 8 bits, then the resulting digital signal will have a rate of 64,000 bits per second.



References

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