

Subject: Wireless and mobile Network (WMN)	Subject Code: 22622
Semester: 6 th	Course: IF6IA
Laboratory No:	Name of Subject Teacher: Kalyani Pawar
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Experiment No:	10
Title of Experiment	Simulate the Delta Modulation using MATLAB and Simulink.

- Aim:**

Simulate the Delta Modulation using MATLAB and Simulink.

- Practical Significance:**

In PCM the signaling rate and transmission channel bandwidth are quite large since it transmits all the bits which are used to code a sample. To overcome this problem, Delta modulation is used. A delta modulation is an analog to digital and digital to analog signal conversion technique used for transmission of voice information. DM is the simplest form of differential pulse code modulation (DPCM) where the difference between successive samples is encoded in to n-bit data streams. In delta modulation, the transmitted data are reduced to a 1-bit data stream. This practical is designed to explain how different types of information signals which are analog in nature can be converted to digital form.

- Minimum Theoretical Background**

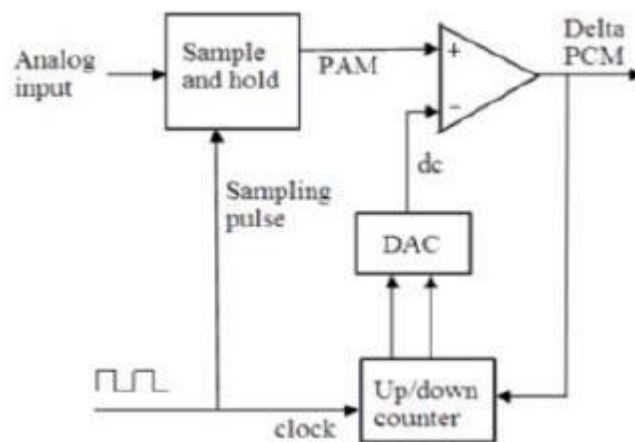


Figure 1: Delta Modulation Transmitter

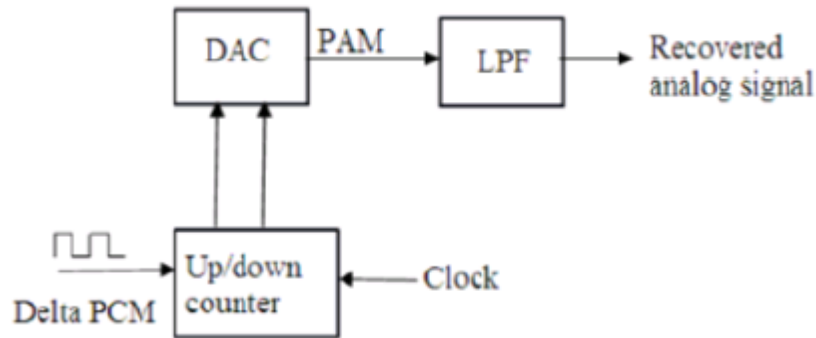


Figure 2: Delta Modulation Receiver

• **Practical Circuit Diagram:**

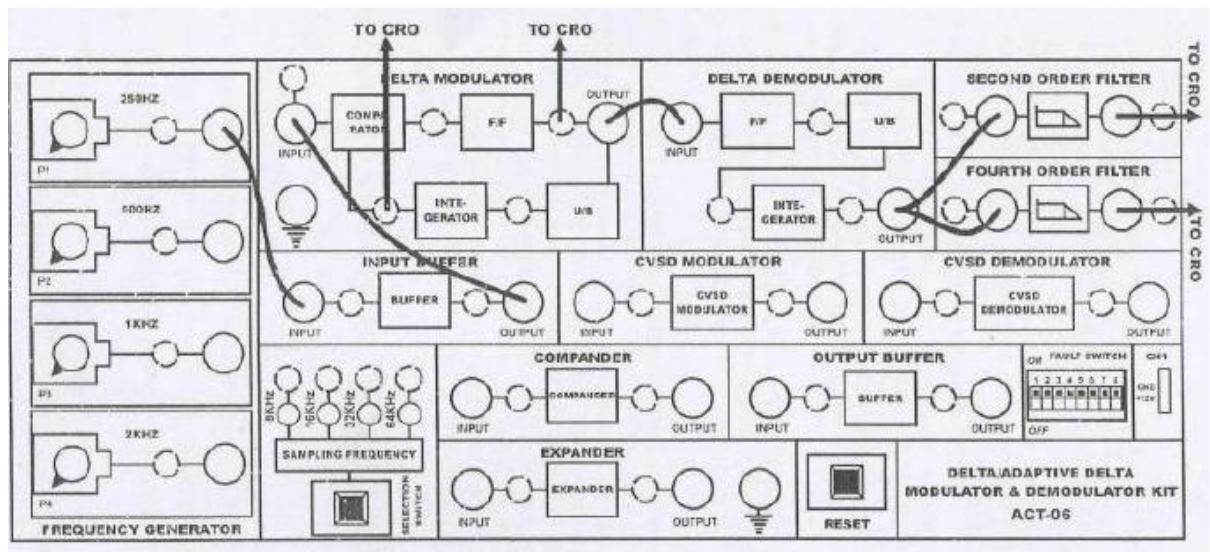
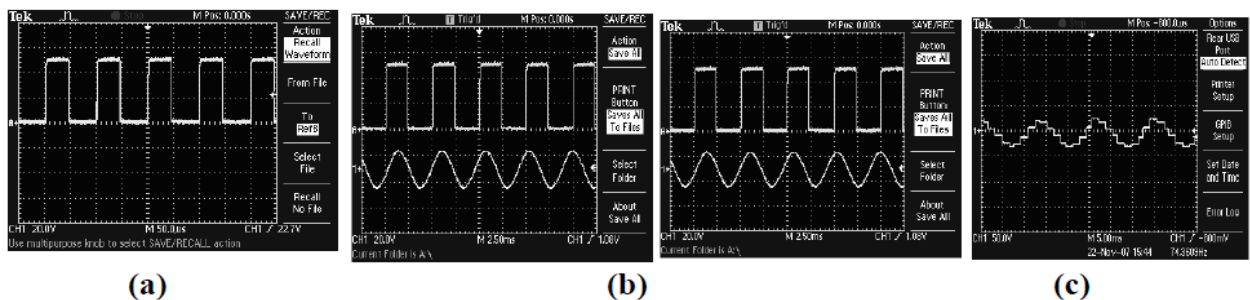


Figure 3: Practical set up




Waveforms (a) Clock input (b) Delta modulation output & message signal
(c) D/A converter output

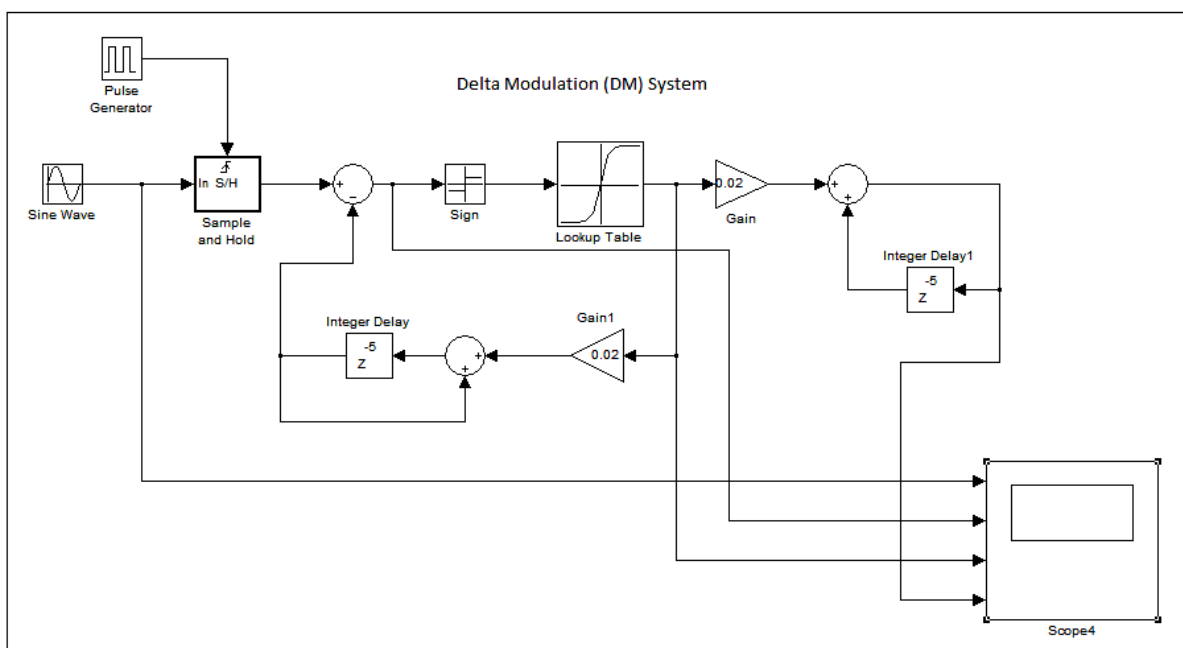
- **Procedure:**
 - **For Practical set up Circuit Diagram**
 - a. Make the connection as shown in figure.
 - b. Switch ON the power supply.

- c. Set the input information signal at 1Vpp,500Hz.
- d. Connect the above set input to DM modulator input i.e to comparator input.
- e. Select the sampling frequency of 8 KHz.
- f. Observe the integrator output by varying amplitude from 0.5V to 1V.
- g. Observe the output wave format various block output of DM modulator.
- h. Connect the output of DM modulator to demodulator the input.
- i. Observe the output of DM demodulator.
- j. Observe the waveform at the output of filter by connecting the output of demodulator to the input of low pass filter.
- k. Repeat the above procedure from step f to j for sampling frequency of 32 KHz.
- l. Draw observed waveforms on the graph paper.
- m. After completion of practical switch off the supply, remove the connection and submit the wires and equipments.

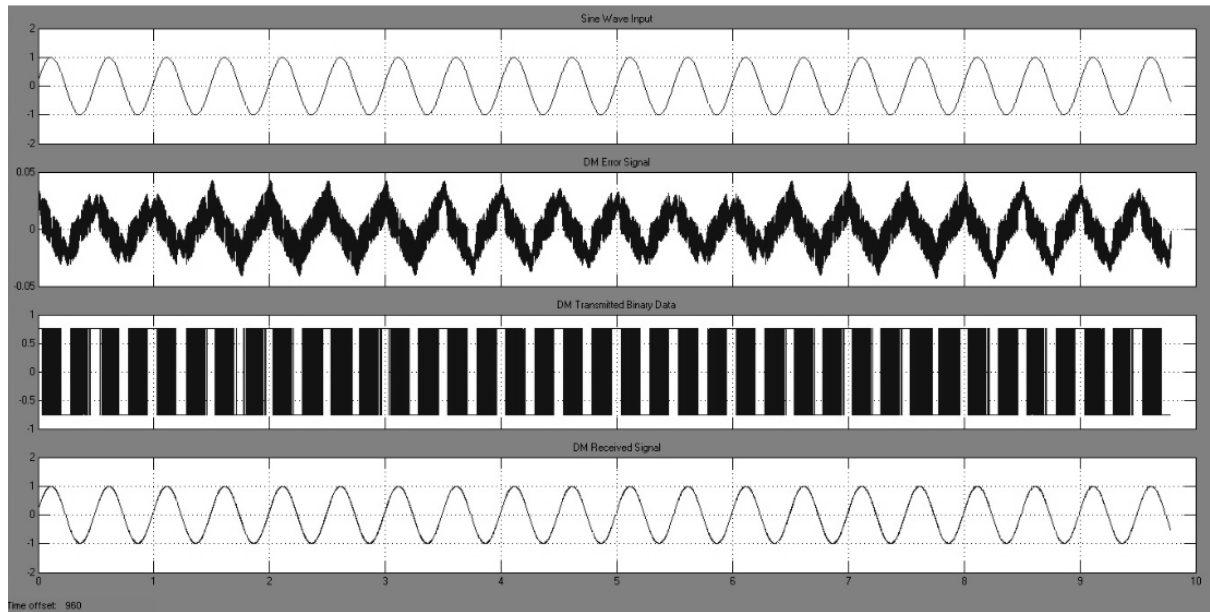
- **For Simulation**

- a. Switch on the computer and click on the MATLAB icon.
- b. Go to start at the bottom of the command window, then select “simulink” then go to library browser and drag it into creating file.(or) Once you open the MATLAB then click on simulink icon  .Go to file and select new and then select model. You will get a new window.
- c. Arrange the functional blocks as shown in simulink model.
- d. Assign required parameters to each functional block.
- e. Observe the outputs on scope.

- **Simulink Model of Delta Modulation Technique**



- **Simulation Output**



Grade and Dated Signature of Teacher	C (4M)	P (4M)	A (2M)	Total (10 M)	Dated Sign