Bangladesh Army University of Engineering & Technology

CSE-3215
Data Communication

Lecture-18

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# # #

A system is using NRZ-I to transfer 10-Mbps data. What are the average signal rate and minimum bandwidth?

Solution

The average signal rate is S = N/2 = 500 kbaud. The minimum bandwidth for this average baud rate is;

$B_{min} = S = 500\ kHz.$

Polar RZ (Return-to-Zero)

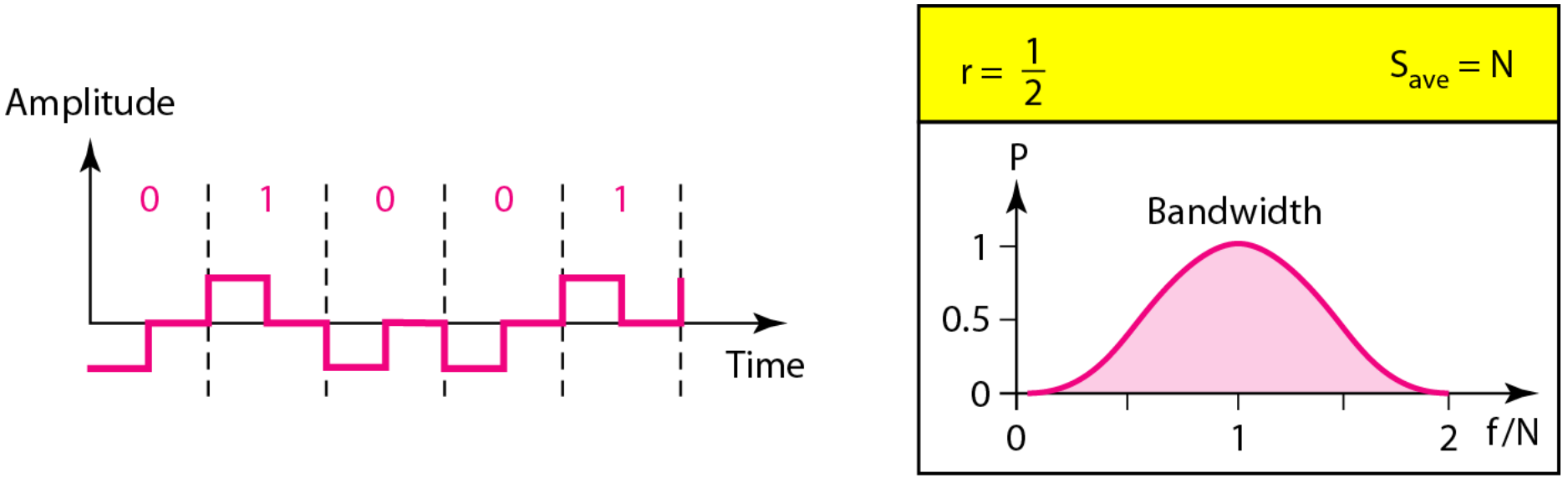
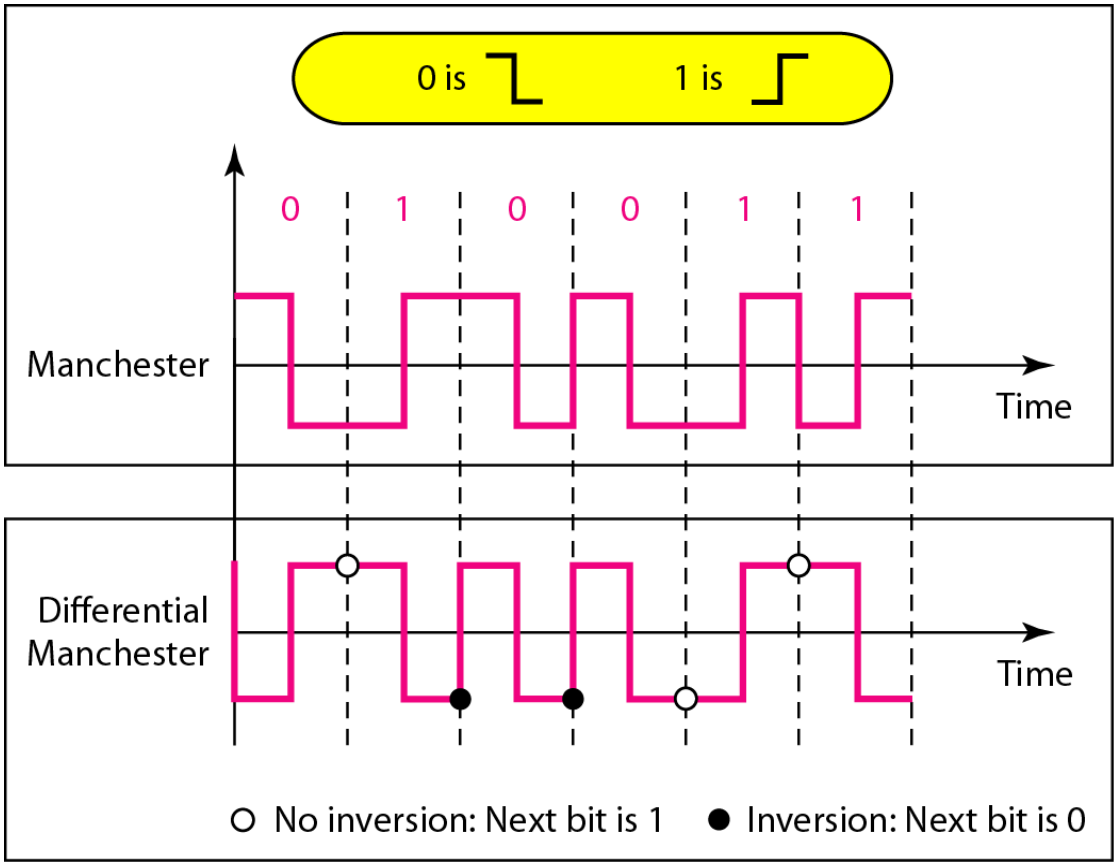


Figure 1: ***Polar RZ scheme***

Polar Bi-phase



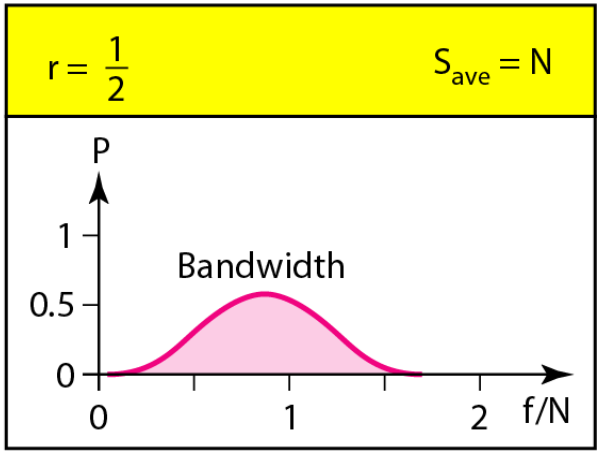


Figure 2: ***Polar Biphase: Manchester and differential Manchester schemes***

Note

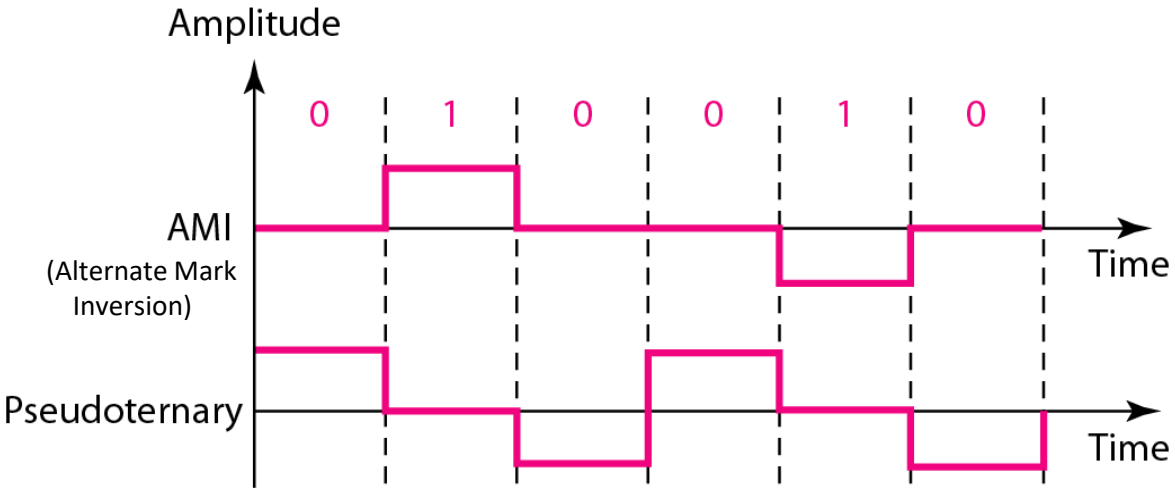
In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for synchronization.

The minimum bandwidth of Manchester and differential Manchester is 2 times that of NRZ.

Note

In bipolar encoding, we use three levels: positive, zero, and negative.

Bipolar Schemes



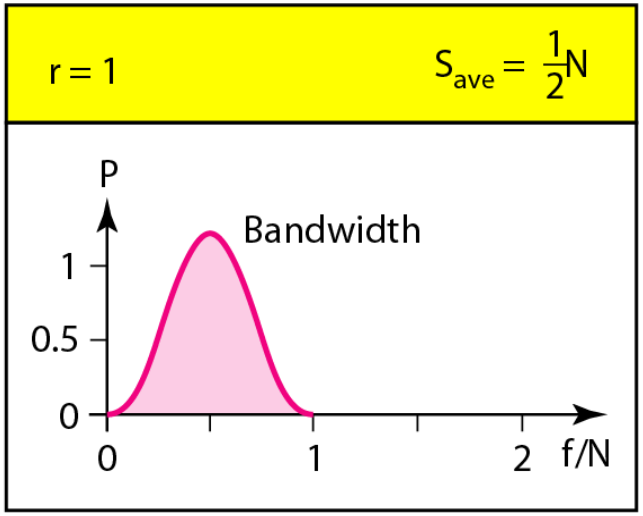


Figure 3: ***Bipolar schemes: AMI and pseudoternary***

That's all for today

Thank You