# SNS COLLEGE OF ENGINEERING

**An Autonomous Institution**

**Coimbatore-641 107**

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## 19EC504-ANALOG AND DIGITAL COMMUNICATION

III YEAR/ V SEMESTER

## UNIT - II - RADIO TRANSMITTER & RECEIVER

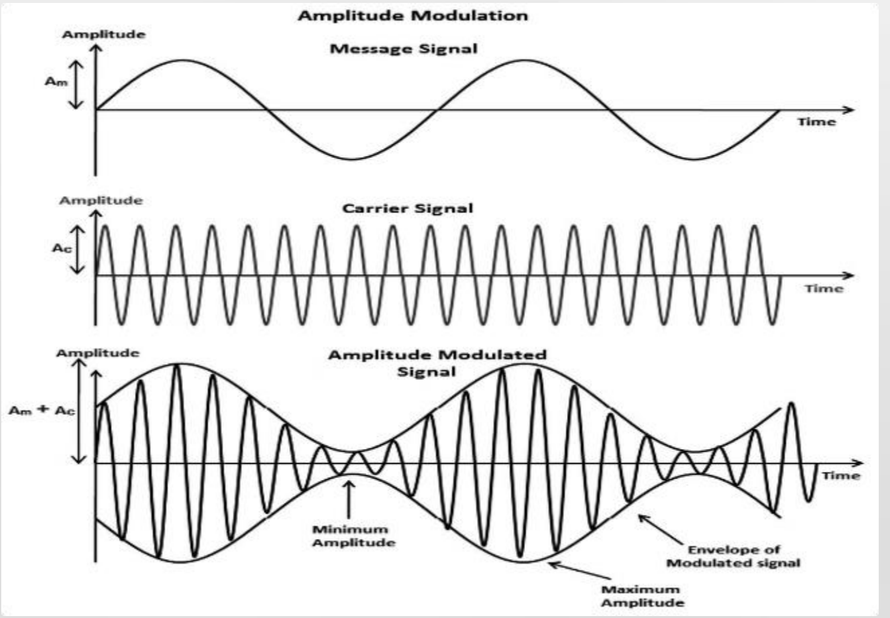
TOPIC - AM RECEIVERS

# Introduction to AM Receivers

An AM receiver is an electronic device that demodulates amplitude modulated radio waves. AM receivers are commonly used for listening to radio broadcasts.

# Principles of Amplitude Modulation

Amplitude modulation (AM) is a method of encoding information onto a radio carrier wave by varying its amplitude. The amplitude of the carrier wave is varied proportionally to the amplitude of the signal to be transmitted.




## 1 Carrier Wave

The carrier wave is a high-frequency electromagnetic wave that carries the modulated signal.

## 2 Modulating Signal

The modulating signal is the information to be transmitted, such as audio or data.

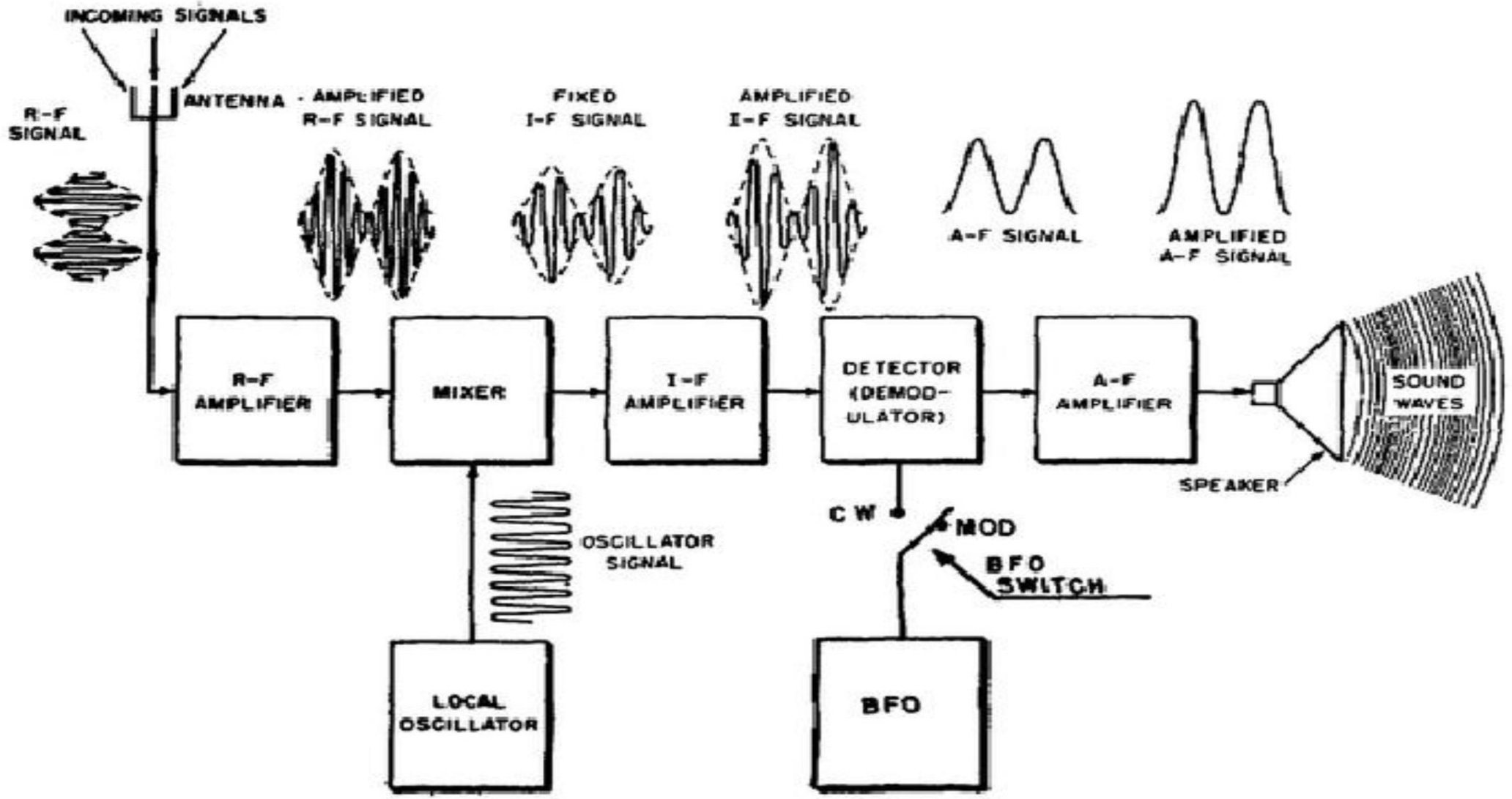
## 3 Modulator

The modulator is a device that combines the carrier wave and the modulating signal to create the AM signal.

## 4 Demodulator

The demodulator is a device that extracts the modulating signal from the AM signal.

# AM Receiver –Block Diagram



# Demodulation and Detection

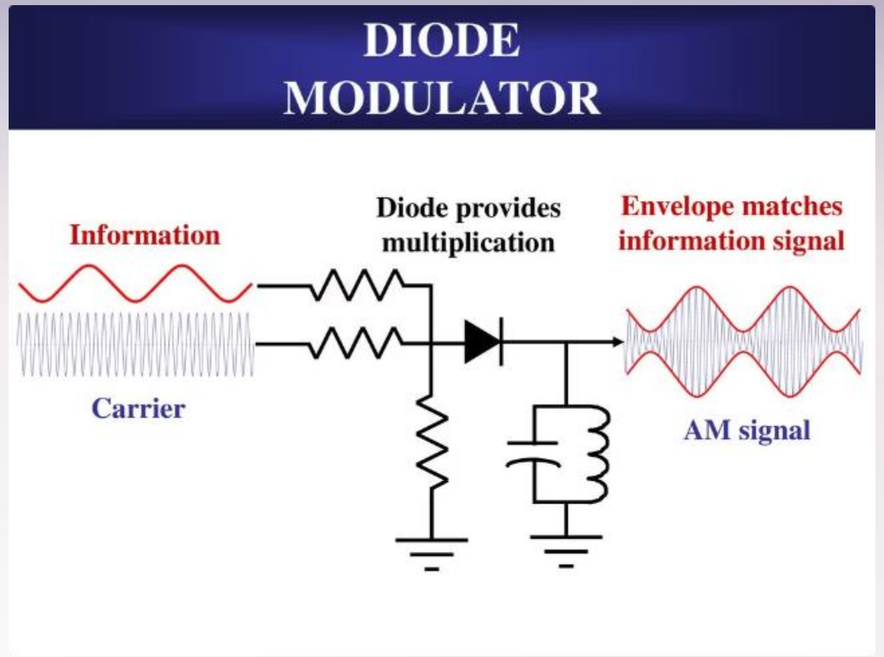
The demodulator is a critical component in an AM receiver, responsible for extracting the original audio signal from the AM signal.

## Envelope Detection

Envelope detection is a common method for demodulating AM signals. The AM signal is rectified to extract its envelope, which corresponds to the original audio signal.

## Synchronous Detection

Synchronous detection is a more complex method that involves using a local oscillator to generate a reference signal synchronized with the carrier wave.



# Audio Amplification and Filtering

After demodulation, the audio signal needs to be amplified and filtered to produce a clear and audible output.

| | |
|---|---|
| Audio Amplifier | Amplifies the audio signal to a level suitable for driving a speaker. |
| Audio Filter | Removes unwanted frequencies from the audio signal, such as noise and interference. |

# Applications and Use Cases

AM receivers have a wide range of applications and use cases, from broadcasting to communication.

## Radio Broadcasting

AM receivers are widely used for listening to radio broadcasts, such as news, music, and talk shows.

## Emergency Communications

AM radios are often used for emergency communication, as AM signals can travel farther than FM signals.

## Navigation

Some AM receivers are used for navigation, such as marine radios.

## Aviation

AM receivers are used in aviation for communication between pilots and air traffic control.

# THANK YOU