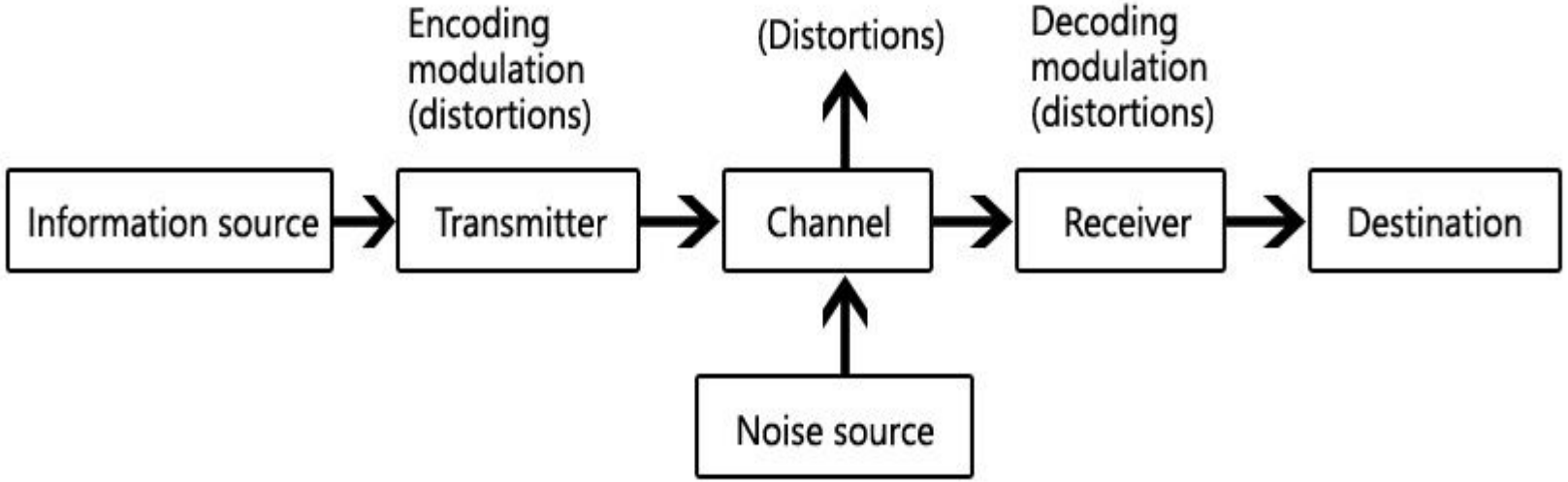
SUBJECT: BASIC ELECTRONICS

Block Diagram of Communication System

Elementrix Classes

Block Diagram of Communication System



A basic communication system consists of five essential blocks:

1. Source:

This is the origin of the information you want to transmit. It can be anything from a microphone capturing sound waves to a computer generating digital data.

Examples: Microphone, camera, keyboard, sensor.

2. Transmitter:

This block takes the information from the source and converts it into a signal suitable for transmission through the chosen channel. This process often involves:

Modulation: Combining the information signal with a carrier wave to create a higher-frequency signal suitable for transmission.

Encoding: Converting the information into a format the receiver can understand (e.g., digital data into binary codes).

Amplification: Boosting the signal strength to overcome losses during transmission.

Examples: Radio transmitter, modem, encoder.

3. Channel:

This is the medium through which the transmitted signal travels from the transmitter to the receiver. It can be:

Wired: Cables (coaxial, fiber optic)

Wireless: Radio waves, microwaves, infrared waves.

Important factors: Bandwidth (amount of information the channel can carry), attenuation (signal weakening over distance), noise (unwanted interference).

4. Receiver:

This block picks up the transmitted signal from the channel and performs the opposite operations of the transmitter to recover the original information. This may involve:

Demodulation: Extracting the information signal from the carrier wave.

Decoding: Interpreting the received signal back into its original format.

Amplification: Boosting the weakened signal after transmission.

Examples: Radio receiver, modem, decoder.

5. Destination:

This is where the recovered information is delivered and presented to the intended user. It can be:

Speaker: For sound output

Display: For visual information

Computer: For data processing

Examples: Speaker, headphones, display screen, computer.

Additional Considerations:

- Depending on the complexity of the system, additional blocks like error correction or encryption might be present.

- The specific details and implementations of each block vary depending on the type of communication system (analog vs. digital, wired vs. wireless).

पढ़िए और पढ़ाइये

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