

Analog vs. Digital

Analog Digital

Signal Analog signal is a continuous signal which represents physical measurements.

Digital signals are discrete time signals generated by digital modulation.

Waves Denoted by sine waves Denoted by square waves

Representation

Uses continuous range of values to represent information

Uses discrete or discontinuous values to represent information

Example Human voice in air, analogue electronic devices.

Computers, CDs, DVDs, and other digital electronic devices.

Technology Analog technology records waveforms as they are.

Samples analogue waveforms into a limited set of numbers and records them.

Data transmissions

Subjected to deterioration by noise during transmission and write/read cycle.

Can be noise-immune without deterioration during transmission and write/read cycle.

Response to Noise

More likely to get affected reducing accuracy

Less affected since noise response are analogy in nature

Flexibility Analog hardware is not flexible. Digital hardware is flexible in implementation.

Uses Can be used in analogue devices only. Best suited for audio and video transmission.

Best suited for Computing and digital electronics.

Applications Thermometer PCs, PDAs

Bandwidth Analog signal processing can be done in real time and consumes less bandwidth.

There is no guarantee that digital signal processing can be done in real time and consumes more bandwidth to carry out the same information.

Memory Stored in the form of wave signal Stored in the form of binary bit

Power Analog instrument draws large power Digital instrument draws only negligible

power

Cost Low cost and portable Cost is high and not easily portable

Impedance Low High order of 100 megaohm

Errors

Analog instruments usually have a scale which is cramped at lower end and give considerable observational errors.

Digital instruments are free from observational errors like parallax and approximation errors.

https://www.diffen.com/difference/Analog_vs_Digital

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