

Digital vs. Analog Signals

Think about how you communicate with other people on a daily basis. Do you call on your cell phone, text, or email? Have you ever used a landline to make a phone call?

Now, think about how messages are actually sent and received. Messages are delivered by **signals**, which are wave pulses that can be transmitted and received.

Digital vs. Analog Signals

Although both digital and analog signals deliver messages, they have more differences than similarities.

Analog Signals

Analog signals are made up of continuously streaming data. Look at the picture of the clocks to the right. The top one you probably already know is called a digital clock, but did you know the bottom one is called an analog clock? Why do you think that would be? Analog clocks provide continuous data (as shown by the constant movement of the second and minute hands) just like analog signals provide continuous data.

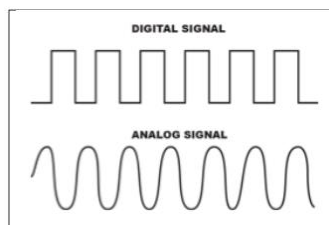
Analog signals also have significant variation. Take a light wave, for example. In the visible light spectrum, you can see a full range of colors. There's not just blue and green, but a multitude of other colors that fall between those two. Analog signals vary in frequency just as the waves carrying the information continuously vary.

Digital Signals

Digital signals, on the other hand, are like a light switch. They have two distinct values that they can send, rather than an infinite set of values like in analog signals. A common digital signal is binary code, a language of just zeroes and ones that computers use to communicate. A one in binary turns on the signal, while zero turns off the signal.

Which type of signal is a more reliable way to encode and transmit information? The answer is digital. Can you think of why this is the case?

If a message is disrupted, digitized signals are able to pick it up more easily at the exact point the message dropped. (The segmented nature of the digital signal allows this.) Analog signals, on the other hand, are continuous; if they are disrupted, they must be restarted at the very beginning of the message. This is why more modern technological devices tend to use digitized signals rather than analog ones.



People send messages via signals everyday.

signal: a wave pulse that can be transmitted or received

