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Waveform generators are electronic devices that are used to generate repeating or non-repeating, analog or digital signals. This type of generator synthesizes as well as generates waveforms. Arbitrary waveform Generator (AWG) is the main device that generates waveforms.

These waveforms are generally defined as a series of wave points that are known as specific voltage targets occurring at particular time intervals along with the waveforms. Waveform Generation panel controls the operation of AWGâ€™s in the similar way as done by standard generators.

Waveforms may either be repetitive or single shot that require initial triggering. Single shot which is usually known as one-shot replay with optional repeat is useful for bitscope operator. It produces more than one cycles in a single initiation. Example four cycle, one short single function. Loop mode is an example of repetitive waveform generation.

Operation of these waveforms can be tested & analyzed by putting them into generator device that are capable of pin-pointing a default in the working, if any.

AWGâ€™s are capable of generating different wave shapes as their output. Some of the standard waves include triangle, sine, pulse, square and ramp waveform. These waveforms differ from each other in terms of attenuation, frequency as well as phase shift. They are mainly used in applications like sonar, testing of baseband, audio and video components plus circuits.

These can also be used for performing different tests related to device linearity, frequency response characterization, DC offset signal generation, as well as digital logic generation. AWGâ€™s are known to perform certain advanced functions like AM, FM, multi-tone, cardiac, haverzine, Gaussian pulse, noise and Lorentz pulse.

Among these, haversine and cardiac signal type waveforms are used in medical testing devices whereas Lorentz as well as Gaussian pulses are used to generate signals from magnetic disk drives. Exponential pulses are used for simulating certain physical phenomena including resistor-capacitor charging circuits. Sine pulses characterize communication channel with a limited bandwidth.

Arbitrary waveform generators synthesize waveforms using digital signal processing technique with maximum frequency limiting to a few GHz. BNC connector acts as an output connector taking 50-75 ohm termination.

AWGâ€™s consist of attenuators with an automatic ability to sweep the frequency or modulation of output waveform. Illumination of a capture LED indicates that the device is active. Generated waveform is displayed with the help of waveform preview function. Wave function is used to select synthesize the waveform which has been generated. Detailed functioning of AWG can be depicted with the help of bit scope modal.

More Details:

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