

Glossary of Useful Terms

Tech Note

Accuracy - Degree of conformity of an indicated value to a recognized standard value, or ideal value.

Analog signal - A signal representing a variable which may be continuously observed and continuously represented.

Attenuation - A decrease in signal magnitude between two points, or between two frequencies. The reciprocal of gain.

Bias - A voltage that is maintained at a point in a circuit.

Damping - The progressive reduction or suppression of oscillation in a device or system. Viscous damping uses the viscosity of liquids or gases to effect damping.

Differential signal - A voltage measured with reference to another voltage that is isolated from power or signal ground. Differential measurement helps reject noise that originated from the ground.

Digital signal - Representation of information by a set of discrete values in accordance with a prescribed law. These values are represented by numbers.

Dynamic response - The behavior of the output of a device as a function of the input, both with respect to time.

Error - The algebraic difference between the indication and the ideal value of the measured signal. It is the quantity which algebraically subtracted from the indicated value gives the ideal value.

Gain - An increase (or change) in signal power (or amplitude) from one point in a circuit or system to another.

Hysteresis - Dependence of the output signal, after transients have decayed, upon the history of prior inputs and the direction of the current traverse.

Linearity - The maximum deviation of the calibration curve from a straight line so positioned as to minimize the maximum deviation.

Natural frequency - The frequency of free oscillation in cycles per unit of time.

Range - The region over which useful signals can be detected.

Reliability - The probability specified that a device will perform its objective adequately, for the period of time, under the operating conditions specified.

Repeatability - The closeness of agreement among a number of consecutive measurements of the output for the same value of the input under the same operating conditions, approaching from the same direction, for full-range traverses.

Reproducibility - The closeness of agreement among repeated measurements of the output for the same value of input made under the same operating conditions over a period of time, approaching from both directions.

Resolution - The least interval between two adjacent discrete details which can be distinguished one from another.

Scale factor - The factor by which the output signal of an instrument (volts, milliamps, frequency, etc.) should be multiplied to compute the value of the measured variable.

Settling time - The time required, following the initiation of a specified stimulus to the system, for the output to enter and remain within a specified narrow band centered on its steady-state value.

Single-ended signal - A voltage measured with reference to power or signal ground.

Span - the algebraic difference between the upper and lower range values.

Temperature coefficient of scale factor - A coefficient describing the relationship of instrument scale factor to instrument temperature. Also called *temperature coefficient of span*.

Temperature coefficient of zero shift - A coefficient describing the change in output bias as a function of instrument temperature.

Time constant - At any instant of a response to a step or impulse, the time constant (T) is the quotient of the instantaneous rate of change divided into the change still to be completed. For the output of a first-order system, T is the time required to complete 62.3% of the total rise or decay occurring as a result of the step or impulse.

Transient - The behavior of a variable during transition between two steady states.

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