

GLOSSARY

Accuracy: The degree of precision. Usually expressed, in terms of error, as a percentage of the specified value, or as a percentage of a range.

A/D: Analog-to-digital conversion. The process changes an analog signal into a digital value representative of the magnitude of the signal at the moment of conversion.

Absolute pressure (psia): The total force per unit area exerted by a fluid. It is the sum of atmospheric and gauge pressures.

Alternating current (AC): Current that reverses polarity at a uniform frequency.

Atmospheric pressure: The force exerted per unit area by the weight of the atmosphere.

Automatic temperature compensation (ATC): meters with ATC receive a continuous signal from a temperature sensor in a solution and then automatically standardize the displayed value to 25°C.

Baud rate: A unit of measure for data transmission speed. It represents the number of signal elements (typically bits) transmitted per second. Typical baud rates are 600, 1200, 2400, 4800, 9600, 19.2K, 35.4K, and 115.2K.

Buffer: In chemistry terms, a solution that maintains a set pH value regardless of added acids or bases; often used for calibration. In computer terms, a device used to store data temporarily, normally to compensate for differences in speed between system components (for example, a high-speed data acquisition board and main memory).

Byte: Eight related bits of information processed as a unit. Eight bits equal one byte.

Cavitation: Process in which small bubbles are formed and implode violently. This results in aggressive cleaning action in ultrasonic cleaners.

Contacts: Elements used to mechanically make or break an electric circuit.

Continuous duty: A device able to operate continuously with no off or rest periods.

Convection: Transmission of energy or mass in a medium by movement of the medium itself.

Density: The mass of a given substance per unit volume, often expressed as pounds/ft³ or grams/cm³.

Direct current (DC): A current with a constant polarity.

Double-pole, double-throw (DPDT): A term used to describe a switch or relay output contact form (form C). Two separate switches that operate simultaneously, each with a normally open and normally closed contact and a common connection.

Explosion-proof (XPRF) motor: A totally enclosed motor that will withstand an explosion of a specific vapor or gas within its housing, or will prevent sparks or flashes generated within its housing from igniting surrounding vapor or gas.

Factory calibration: The tuning or altering of a control device by the manufacturer to bring it into specification.

Gain: Ratio of output voltage, current, or power to input voltage, current, or power.

Gauge pressure (psig): A measure of the force per area exerted by a fluid using atmospheric pressure as a zero reference.

Impedance: The opposition in an electric circuit to the flow of an alternating current. It consists of ohmic resistance, inductive reactance, and capacitive reactance.

Inductive load: Electrical devices made of wound or coiled wire. Current passing through the coil creates a magnetic field that in turn produces mechanical work.

Intrinsically safe motor: A motor designed to prevent sparks generated within its housing from igniting surrounding vapor or gas, but is not rated "explosion-proof."

Ion-selective electrode (ISE): An electrode that is sensitive to specific ions in a solution.

LIMS (Laboratory Information Management System): A system that manages operations of a testing laboratory.

Linearity: The degree to which performance or response approaches the condition of being linear. Expressed in percent.

Normally closed (NC): A switch in which the contacts are closed (contacting) without any external force acting upon it.

Normally open (NO): A switch in which the contacts are open (separated) when no external forces act upon the switch.

On/off control: A simple control system in which the device being controlled is either full on or full off, with no intermediate operating positions.

Open drip-proof (ODP) motor: An open motor with ventilator openings that prevent liquids and solids, dropped from an angle of 0° to 15° from vertical, from interfering with its operation.

Parallel transmission: The transmission of data bits over different lines, usually simultaneously; as opposed to serial transmission.

pH: An indication of the acidity or alkalinity of a solution. Units range from 0 (most acidic), to 7 (neutral), to 14 (most alkaline).

PID control (proportional, integral, derivative): Control in which the control signal is a linear combination of the error signal, its integral, and its derivative.

Pressure: Force exerted per unit area.

Proportional control: Control in which the amount of corrective action is proportional to the amount of error.

Range: The limits within which a device or circuit operates or the distance over which a transmitter operates reliably.

RS-232: A standard computer interface used primarily to connect PCs and microprocessors with instruments, such as pH meters.

Serial transmission: Sending one bit at a time on a single transmission line.

Series (Universal) motor: A non-induction type motor utilized for small equipment. Speed will decrease as load increases.

Shaded-pole motor: A low-starting torque motor that depends on induced current to create the magnetic field necessary to start the motor.

Shunt: A conductor joining two points in an electrical circuit to form a parallel path. All or some portion of the current may pass through the shunt.

Single-phase motor: Any motor energized by a single alternation voltage.

Single-pole, double-throw (SPDT): A switch that in one position completes one of two circuits. In the second position the switch completes a second circuit and breaks the first circuit.

Single-pole, single-throw (SPST): A switch that will open or complete a circuit.

Solid-state: Any element that controls current without moving parts, heated filaments, or vacuum gaps.

Standard operating conditions, standard temperature and pressure (STP): Defined temperature and pressure to which all values are referenced for comparison. Generally 760 mm Hg (1 atm), 25°C.

Stop bit: A signal following a character or block that prepares the receiving device to receive the next character or block.

Temperature compensation: Correction for the influence of temperature on a measurement.

Tolerance: The maximum allowable deviation from a specified standard, as the range of variation permitted, expressed in actual values or more often as a percentage of the nominal value.

Totally enclosed (TE) motor: Motors that prevent the free flow of air from the inside of the motor enclosure to the outside.

Totally enclosed, nonventilated (TENV) motor: A motor in a totally enclosed housing that is not equipped with an external cooling device.

Totally enclosed, fan-cooled (TEFC) motor: A motor in a totally enclosed housing that is equipped with a separate external blower.

Transducer: Any device that generates an electrical signal from real-world physical measurements.

Transmitter: A device that translates the low-level output of a sensor or transducer to a higher level signal suitable for transmission to a site where it can be further processed.

Three-phase motor: A relatively inexpensive, self-starting motor (no starting winding or capacitor); can start heavy loads. The motor requires a three-phase AC power supply.

Universal Serial Bus (USB): A serial bus standard to connect devices to a host computer. Conveniences include plug-and-play and low-power transmission.

Viscosity: The resistance of a fluid to flow when subjected to shear stress.

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