Glossary

AC: Alternating current; an electric current that reverses its direction at regularly recurring intervals.
Accuracy: The closeness of an indication or reading of a measurement device to the actual value of the quantity being measured. Usually expressed as ± percent of full scale output or reading,
Adaptor: A mechanism or device for attaching non-mating parts.
ADC: Analog-to-Digital Converter: an electronic device which converts analog signals to an equivalent digital form, in either a binary code or a binary-coded decimal code. When used for dynamic waveforms, the sampling rate must be high to prevent aliasing errors.
Address: The label or number identifying the memory location where a unit of information is stored.
Alphanumeric: A character set that contains both letters and digits.
ALU: Arithmetic Logic Unit. The part of a CPU where binary data is acted upon with mathematical operations.
Amplifier: A device which draws power from a source other than the input signal and which produces as an output an enlarged reproduction of the essential features of its input.
Amplitude: A measurement of the distance from the highest to the lowest excursion of motion, as in the case of a mechanical body in oscillation or the peak-to-peak swing of an electrical waveform.
Amplitude Span: The Y-axis range of a graphic display of data in either the time or frequency domain, Usually a log display (dB), but can also be linear.
Analog Output: A voltage or current signal that is a continuous function of the measured parameter.
Analog-to-Digital Converter (A/D or ADC): A device or circuit that outputs a binary number corresponding to an analog signal level at the input.
Application Program: A computer program that accomplishes specific tasks, such as word processing.
ASCII: American Standard Code for Information Interchange. A seven- or eight-bit code used to represent alphanumeric characters. It is the standard code used for communications between data processing systems and associated equipment.
Assembler: A program that translates assembly language instructions into machine-language instructions.
Assembly Language: A machine-oriented language in which mnemonics are used to represent each machine language instruction. Each CPU has its own specific assembly language.
Asynchronous: A communication method where data is sent when it is ready without being referenced to a timing clock, rather than waiting until the receiver signals that it is ready to receive.

Backup: A system, device, file or facility that can be used as an alternative in case of a malfunction or loss of data.
BASIC: A high-level programming language designed at Dartmouth College as a learning tool. Acronym for Beginner's All-purpose Symbolic Instruction Code.
Baud: A unit of data transmission speed equal to the number of bits (or signal events) per second. 300 baud = 300 bits per second.
BCD, Buffered: Binary-coded decimal output with output drivers, to increase line-drive capability.
BCD, Parallel: A digital data output formal where every decimal digit is represented by binary signals on four lines and all digits are presented in parallel. The total number of lines is 4 times the number of decimal digits.
BCD, Serial: A digital data output format where every decimal digit is represented by binary signals on four lines and up to five decimal digits are presented sequentially. The total number of lines is four data lines plus one strobe line per digit.
BCD, Three-State: An implementation of parallel BCD, which has 0, 1 and high-impedance output states. The high-impedance state is used when the BCD output is not addressed in parallel connect applications.
Binary: Refers to base 2 numbering system, in which the only allowable digits are 0 and 1. Pertaining to a condition that has only two possible values or states.
Binary Coded Decimal (BCD): The representation of a decimal number (base 10, 0 through 9) by means of a 4-bit binary nibble.
BIOS: Acronym for basic input/output system. The commands used to tell a CPU how it will communicate with the rest of the computer.
Bipolar: The ability of a panel meter to display both positive and negative readings.
Bit: Acronym for binary digit. The smallest unit of computer information; it is either a binary 0 or 1.
BPS: Bits per second.
Bridge Resistance: See Input impedance and Output impedance.
Buffer: A storage area for data that is used to compensate for a speed difference, when transferring data from one device to another. Usually refers to an area reserved for I/O operations, into which data is read, or from which data is written.
Bus: Parallel lines used to transfer signals between devices or components. Computers are often described by their bus structure (*i.e.*, S-100, IBM PC)
Byte: The representation of a character in binary; eight bits.

Character: A letter, digit or other symbol that is used as the representation of data. A connected sequence of characters is called a character string.
Clear: To restore a device to a prescribed initial state, usually the zero state.
Clock: A device that generates periodic signals for synchronization
Common Mode: The output form or type of control action used by a temperature controller to control temperature, *i.e.*, on/off, time proportioning, PID.
Common-Mode Rejection (CMR): The ability of a panel meter to eliminate the effect of ac or dc noise between signal and ground. Normally expressed in dB at dc to 60 Hz. One type of CMR is specified between SIG LO and PWR GND. In differential meters, a second type of CMR is specified between SIG LO and ANA GND (METER GND).
Common-Mode Rejection Ratio: The ability of an instrument to reject interference from a common voltage at its input terminals with relation to ground. Usually expressed in dB (decibels).
Common-Mode Voltage(CMV): The ac or dc voltage which is tolerable between signal and ground. One type of CMV is specified between SIG LO and PWR GND. In differential meters, a second type of CMV is specified between SIG HI or LO and ANA GND (METER GND).
Communication: Transmission and reception of data among data processing equipment and related peripherals.
Compiler: A program that translates a high-level language, such as Basic, into machine language.
Control Character: A character whose occurrence in a particular context starts, modifies or stops an operation that effects the recording, processing, transmission or interpretation of data.
CPS: Cycles per second; the rate or number of periodic events in one second, expressed in Hertz (Hz).
CPU: Central processing unit. The part of the computer that contains the circuits that control and perform the execution of computer instructions.
Current: The rate of flow of electricity. The unit is the ampere (a), defined as = 1 coulomb per second.

Data Base; A large amount of data stored in a well-organized manner. A data base management system (DBMS) is a program that allows access to the information.
dB (Decibel): 20 times the log to the base 10 of the ratio of two voltages. Every 20 dB's corresponds to a voltage ratio of 10, every 10 dB's to a voltage ratio of 3.162. For instance, a CMR of 120 dB provides voltage noise rejection of 1,000,000/1. An NMR of 70 dB provides voltage noise rejection of 3,162/1.
DC: Direct current; an electric current flowing in one direction only and substantially constant in value.
Debug: To find and correct mistakes in a program.
Decimal: Refers to a base ten number system using the characters 0 through 9 to represent values.
Default: The value(s) or option(s) that are assumed during operation when not specified.
Differential Input: A signal-input circuit where SIG LO and SIG HI are electrically floating with respect to ANALOG GND (METER GND, which is normally tied to DIG GND). This allows the measurement of the voltage difference between two signals tied to the same ground and provides superior common-mode noise rejection.
Digital Output: An output signal which represents the size of an

input in the form of a series of discrete quantities.
Digital-to-Analog Converter (D/A or DAC): A device or circuit to convert a digital value to an analog signal level.
Disk Operating System (DOS): Program used to control the transfer of information to and from a disk, such as MIS DOS.
DMA: Acronym for direct memory access. A high speed data storage mode of the IBM PC.
Double Precision: The degree of accuracy that requires two computer words to represent a number. Numbers are stored with 17 digits of accuracy and printed with up to 16 digits.
Dual-slope A/D Converter: An analog-to-digital converter which integrates the signal for a specific time, then counts time intervals for a reference voltage to bring the integrated signal back to zero. Such converters provide high resolution at low cost, excellent normal-mode noise rejection, and minimal dependence on circuit elements.
Duplex: Pertaining to simultaneous two-way independent data communication transmission in both directions. Same as "full duplex."

Echo: To reflect received data to the sender. For example, keys depressed on a keyboard are usually echoed as characters displayed on the screen.
Electronic Industries Association (EIA): A standards organization specializing in the electrical and functional characteristics of interface equipment.
EMF: Electromotive force. A measure of (electrical) potential energy. The principal unit is the volt.
EMI: Electromagnetic interference.
EPROM: Erasable Programmable Read-Only Memory. The PROM can be erased by ultraviolet light or electricity.

File: A set of related records or data treated as a unit.
Firmware: Programs stored in PROM's.
Flag: Any of various types of indicators used for identification of a condition or event; for example, a character that signals the termination of a transmission.
Floppy Disk: A small, flexible disk carrying a magnetic medium in which digital data is stored for later retrieval and use.
FORTRAN: Formula Translation language. A widely used high-level programming language well suited to problems that can be expressed in terms of algebraic formulas. It is generally used in scientific applications.
Full Scale Output: The algebraic difference between the minimum output and maximum output.

Gain: The amount of amplification used in an electrical circuit.

Half-Duplex: One-way-at-a-time data communication; both devices can transmit and receive data, but only one at a time.
Handshake: An interface procedure that is based on status/data signals that assures orderly data transfer (as opposed to asynchronous exchange).
Hardcopy: Output in a permanent form (usually a printout) rather than in temporary form, as on a disk or display terminal.
Hardware: The electrical, mechanical and electromechanical equipment and parts associated with a computing system, as opposed to its firmware or software.
Hertz (Hz): Units in which frequency is expressed. Synonymous with cycles per second.
Hexadecimal: Refers to a base sixteen number system using the characters 0 through 9 and A through F to represent the values. Machine language programs are often written in hexadecimal notation.
Host: The primary or controlling computer in a multiple part system.

Icon: A graphic functional symbol display. A graphic representation of a function or functions to be performed by the computer.
Impedance: The total opposition to electrical flow (resistive plus reactive).
Input Impedance: The resistance measured across the excitation terminals of a transducer.
Interface: The means by which two systems or devices are connected and interact with each other.
Interpreter: A system program that converts and executes each instruction of a high-level language program into machine code as it runs, before going on to the next instruction.
Interrupt: To stop a process in such a way that it can be resumed.

K: When referring to memory capacity, two to the tenth power (1024 in decimal notation)

Large Scale Integration (LSI): The combining of about 1,000 to 10,000 circuits on a single chip. Typical examples of LSI circuits are memory chips and microprocessors.
Load: The electrical demand of a process expressed as power (watts), current (amps) or resistance (ohms).
Load Impedance: The impedance presented to the output terminals of a transducer by the associated external circuitry.
LSD (Least-Significant Digit): The rightmost active (non-dummy digit of a display.
LS-TTL Compatible: For digital input circuits, a logic 1 is obtained for inputs of 2.0 to 5.5 V which can source 20 µA, and a logic 0 is obtained for inputs of 0 to 0.8 V which can sink 400 µA. For digital output signals, a logic 1 is represented by 2.4 to 5.5 V with a current source capability of at least 400 µA, and a logic 0 is represented by 0 to 0.6 V with a current sink capability of at least 16 mA. "LS" stands for low-power Schottky.
LS-TTL Unit Load: A load with LS-TTL voltage levels, which will draw 20 µA for a logic 1 and -400 µA for a logic 0.

M: Mega; one million. When referring to memory capacity, two to the twentieth power (1,048,576 in decimal notation).
Machine Language: Instructions that are written in binary form that a computer can execute directly. Also called object code and object language.
Mass Storage: A device like a disk or magtape that can store large amounts of data readily accessible to the central processing unit.
Microcomputer: A computer which is physically small. It can fit on top of or under a desk; based on LSI circuitry, computers of this type are now available with much of the power currently associated with minicomputer systems.
Modem: Modulator/Demodulator. A device that transforms digital signals into audio tones for transmission over telephone lines, and does the reverse for reception.
Motherboard: The pc board of a computer that contains the bus lines and edge connectors to accommodate other boards in the system. In a microcomputer, the motherboard contains the microprocessor and connectors for expansion boards.
Multiplex: A technique which allows different input (or output) signals to use the same lines at different times, controlled by an external signal. Multiplexing is used to save on wiring and I/O ports.

Network: A group of computers that are connected to each other by communications lines to share information and resources.
Nibble: One half of a byte.
Noise: Unwanted electrical interference on the signal wires.
Normal-Mode Rejection(NMR): The ability of a panel meter to filter out noise superimposed on the signal and applied across the SIG HI to SIG LO input terminals. Normally expressed in dB at 50/60 Hz.
Normal-Mode Rejection Ratio: The ability of an instrument to reject interference usually of line frequency (50-60 Hz) across its input terminals.
Null: A condition, such as balance, which results in a minimum absolute value of output.

Octal: Pertaining to a base 8 number system.
Open Circuit: The lack of electrical contact in any part of the measuring circuit. An open circuit is usually characterized by rapid large jumps in displayed potential, followed by an off-scale reading.
Operating System: A collection of programs that controls the overall operation of a computer and performs such tasks as assigning

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places in memory to programs and data, processing interrupts, scheduling jobs and controlling the overall input/output of the system.

Optical Isolation: Two networks which are connected only through an LED transmitter and photo-electric receiver with no electrical continuity between the two networks.

Output Impedance: The resistance as measured on the output terminals of a pressure transducer.

Output Noise: The RMS, peak-to-peak (as specified) ac component of a transducer's dc output in the absence of a measurement variation.

Parallel Transmission: Sending all data bits simultaneously. Commonly used for communications between computers and printer devices.

Parity: A technique for testing transmitting data. Typically, a binary digit is added to the data to make the sum of all the digits of the binary data either always even (even parity) or always odd (odd parity).

Peripheral: A device that is external to the CPU and main memory, *i.e.*, a printer, modem or terminal, but is connected by appropriate electrical connections.

Pixel: Picture element. Definable locations on a display screen that are used to form images on the screen. For graphic displays, screens with more pixels provide higher resolution.

Polarity: In electricity, the quality of having two oppositely charged poles, one positive, one negative.

Port: A signal input (access) or output point on a computer.

PPM: Abbreviation for "parts per million," sometimes used to express temperature coefficients. For instance, 100 ppm is identical to 0.01%.

Program: A list of instructions that a computer follows to perform a task.

PROM: Programmable read-only memory. A semiconductor memory whose contents cannot be changed by the computer after it has been programmed.

Protocol: A formal definition that describes how data is to be exchanged.

Random Access Memory (RAM): Memory that can be both read and changed during computer operation. Unlike, other semi-conductor memories, RAM is volatile--if power to the RAM is disrupted or lost, all the data stored is lost.

Read Only Memory (ROM): Memory that contains fixed data. The computer can read the data, but cannot change it in any way.

Real-Time: The time interval over which the system temperature is sampled for the derivative function.

Record: A collection of unrelated information that is treated as a single unit.

Register: A storage device with a specific capacity, such as a bit, byte or word.

Relay (Mechanical): An electromechanical device that completes or interrupts a circuit by physically moving electrical contacts into contact with each other.

Relay (Solid State): A solid state switching device which completes or interrupts a circuit electrically with no moving parts.

Remote: Not hard-wired; communicating via switched lines, such as telephone lines. Usually refers to peripheral devices that are located at a site away from the CPU.

Reserved Word: A word that has a defined function in the language, and cannot be used as a variable name.

Resolution: The smallest detectable increment of measurement. Resolution is usually limited by the number of bits used to quantize the input signal. For example, a 112-bit A/D can resolve to one part in 4096 (2 to the 12 power equals 4096).

RFI: Radio frequency interference.

Root Mean Square (RMS): Square root of the mean of the square of the signal taken during one full cycle.

Scroll: To move all or part of the screen material up or down, left or right, to allow new information to appear.

Sequential Access: An access mode in which records are retrieved in the same order in which they were written. Each successive access to the file refers to the next record in the file.

Serial Transmission: Sending one bit at a time on a single transmission line. Compare with parallel transmission.

Signal: An electrical transmittance (either input or output) that conveys information.

Signal Conditioner: A circuit module which offsets, attenuates, amplifies, linearizes and/or filters the signal for input to the A/D converter. The typical output signal conditioner is +2 Vdc.

Signal Conditioning: To process the form or mode of a signal so as to make it intelligible to, or compatible with, a given device, including such manipulation as pulse shaping, pulse clipping, compensating, digitizing, and linearizing.

Single-Ended Input: A signal input circuit where SIG LO (or sometimes SIG HI) is tied to METER GND. Ground loops are normally not a problem in AC powered meters, since METER GND is transformer-isolated from AC GND.

Single Precision: The degree of numeric accuracy that requires the use of one computer word. In single precision, seven digits are stored, and up to seven digits are printed. Contrast with double precision.

Software: Generally, programs loaded into a computer from external mass storage but also extended to include operating systems and documentation.

Source Code: A non-executable program written in a high-level language. A compiler or assembler must translate the source code into object code (machine language) that the computer can understand and process.

SSR: Solid state relay (see relay, solid state).

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

String: A sequence of characters.

Syntax: The rules governing the structure of a language.

Tape: A recording medium for data or computer programs. Tape can be in permanent form, such as perforated paper tape, or erasable, such as magnetic tape. Generally, tape is used as a mass storage medium, in magnetic form, and has a much higher storage capacity than disk storage, but it takes much longer to write or recover data from tape than from a disk.

Telecommunication: Synonym for data communication. The transmission of information from one point to another.

Transducer: A device (or medium) that converts energy from one form to another. The term is generally applied to devices that take a physical phenomenon (pressure, temperature, humidity, flow, etc.) and convert it to an electrical signal.

Transmitter: A device which 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.

Triac: A solid state switching device used to switch alternating current wave forms.

TTL: Transistor-to-transistor logic. A form of solid state logic which uses only transistors to form the logic gates.

TTL-Compatible: For digital input circuits, a logic 1 is obtained for inputs of 2.0 to 5.5 V which can source 40 µA, and a logic 0 is obtained for inputs of 0 to 0.8 V which can sink 1.6 mA. For digital output signals, a logic 1 is represented by 2.4 to 5.5 V with a current source capability of at least 400 µA; and a logic 0 is represented by 0 to 0.6 V with a current sink capability of at least 16 mA.

TTL Unit Load: A load with TTL voltage levels, which will draw 40 µA for a logic 1 and -1.6 mA for a logic 0.

Window: In computer graphics, a defined area in a system not bounded by any limits; unlimited "space" in graphics.

Word: Number of bits treated as a single unit by the CPU. In an 8-bit machine, the word length is 8 bits; in a sixteen-bit machine, it is 16 bits.

Write: To record data in a storage device or on a data medium.

Zooming: In computer graphics, causing an object to appear smaller or larger by moving the window and specifying various window sizes.