

A

Acceleration: Measurement of the change in velocity over time, usually expressed as ft. or meters/second/second.

Accelerometer: A device used to measure acceleration, whose output is directly proportional to acceleration.

Active Filter: An electronic filter that combines active circuit devices, usually amplifiers, with passive circuit elements, such as resistors and capacitors. Active filters typically have characteristics that more closely match ideal filters than do strictly passive filters.

Address: An unique designation for location of data or the identity of a peripheral device; allows each device on a single communications line to respond to its own message.

Algorithm: A well-defined procedure for transforming input variables into output variables, using a finite number of steps.

Alias Frequency: A false lower frequency component that appears in analog data reconstructed from original data acquired at an insufficient sampling rate. It can cause high frequency signals to appear at low frequencies, and can be avoided by filtering out signals greater than half the sampling rate.

Amplitude: The magnitude of dynamic motion or vibration, generally expressed as peak-to-peak, zero-to-peak, or rms.

Analog: Continuous real time event

Analog Multiplexer: A set of switches that connects several analog inputs to a common analog output, allowing a single ADC to sample data from multiple inputs.

Analog Signal Processing: Processing signals while they are still represented as continuous values, typically voltages. Common analog signal processing functions are filtering, limiting, linearization, and temperature compensation.

Analog-to-Digital (A/D) Conversion: The process of changing an analog signal into a digital value that represents the magnitude of the signal at the moment of conversion.

Analog-to-Digital Converter (ADC): An electronic device, often an integrated circuit, that produces a digital output directly proportional to an analog input.

Analog Trigger: A trigger which occurs at a user-selectable point of an incoming analog signal, usually found in high speed data acquisition boards.

Anti-Aliasing Filter: An analog filter which removes high-frequency signal components that would cause aliasing, before the signal gets to the ADC.

Aperture Jitter: In simultaneous sample & hold operations, the variation in time required for the circuits to enter the "hold" mode. This variation can introduce error into the measurement, because of the uncertainty as to when the signal was actually sampled.

Aperture Time: The time between when a "hold" command is given, and when the SSH signal conditioner executes the command.

Array: Data arranged in single or multidimensional rows and columns.

Assembler: A program that converts a list of computer instructions written in a specific assembly-language format into binary instructions that can be executed by a specific processor.

Assembly-Language Program: A program written directly with processor commands using mnemonic representations of the commands. The program is then processed by an assembler to produce executable machine code.

Asynchronous: Transmission of information at an arbitrary, unsynchronized point in time, without synchronization to a reference timer or "clock."

Attenuation: The decrease in magnitude of a signal.

B

Bandpass Filter: A type of filter that allows a band of signal frequencies between two set frequencies to pass while attenuating all signal frequencies outside the bandpass range.

Bandwidth: The frequency range over which a system will pass or process incoming signals without significantly attenuating them.

Base Address: A memory address that serves as a point of reference. All other points are located by offsetting (adding to or subtracting from) in relation to the base address.

Baud: Unit of signaling speed. The speed in baud is the number of discrete conditions or events per second. If each event represents only one bit condition, baud rate equals bits per second (bps).

Baud Rate: Serial communications data transmission rate; normally the number of bits-per-second.

Bipolar: A signal range that includes both positive and negative values.

Bisynchronous Transmission (BSC or BISYNC): A byte or character-oriented communications protocol that has become an industry standard. It uses a defined set of control characters for synchronized transmission of binary coded data between stations in a data communications system.

Bit (Binary Digit): Contraction of "binary digit," the smallest unit of information in a binary system; a true or false condition.

Bits Per Second (BPS): Unit of data-transmission rate.

Buffer: 1) A temporary storage device used to compensate for a difference in data rate and data flow between two devices (typically a computer and a printer); also called a spooler. 2) An amplifier to increase the drive capability, current or distance, of an analog or digital signal.

Bus: A data path shared by many devices (e.g., multipoint line) with one or more conductors for transmitting signals, data, or power. In LAN technology, a bus is a type of linear network topology.

Byte: A term referring to eight related bits of information. Eight bits equals one byte.

C

C: A programming language, developed around the concept of structured programming, that bears a strong resemblance to PASCAL.

Cache Memory: Fast memory used to improve the performance of a CPU. Instructions that will soon be executed are placed in cache memory shortly before they are needed. This process speeds up the operation of the CPU.

CAE: Computer-aided engineering. A computer system designed to aid engineering development.

CAM: Computer-aided manufacturing. A computer system used for automating manufacturing operations.

Call: A software instruction used to pass control to a subroutine of a program. At the completion of this subroutine, control is returned to the original program at the point of the “call” statement. Often used for specialized routines such as “analog read” from a data acquisition system or communication transmission/reception.

Card and Socket Services: PCMCIA driver specifications. These software elements were designed to configure seamlessly and to initialize any PC-Card.

Card Services Client Drivers: Tend to be card-specific drivers that use Card and Socket Services and perform initialization and resource management functions.

Center Frequency: The center of the transmission band for a bandpass filter.

Central Processing Unit (CPU): The central part of a computer system that performs operations on data. In a personal computer the CPU is typically a single microprocessor integrated circuit.

Clock: The source(s) of timing signals for sequencing electronic events (e.g. synchronous data transfer).

Cold-Junction Compensation: A method of providing artificial reference levels and compensation for ambient temperature variations in thermocouples.

Common-Mode Rejection Ratio (CMRR): A measure of an instrument’s ability to ignore or reject interference from a voltage common to its input terminals relative to ground. CMRR is usually expressed in decibels (DB).

Communication Protocol: The rules governing the exchange of information between devices on a data link.

Comparator: An electronic circuit used to compare two values and to set an indicator identifying the greater value.

Compensation: Modifying data to correct for corrupting environmental effects.

Compiler: A computer program used to translate or interpret a higher order language into its relocatable or absolute machine code equivalent.

Control Register: The place on a data acquisition adapter where control information such as gain, channel and conversion rate, is stored.

Conversion Time: The time required, in an analog I/O system, from the moment a channel is interrogated (such as with a read instruction) to the moment that accurate data is available. This includes: switching time, settling time, acquisition time, A/D conversion time, etc.

Counter: In software, a memory location used by a program for the purpose of counting certain occurrences. In hardware, a circuit that can count events.

Counter/Timer: A counter that can either count events or measure time between events.

Crossover: A conductor running through a communication cable and connecting to a different pin number at each end.

Crosstalk: An unwanted signal on one channel due to an input on a different channel.

Current Loop: Communications method that allows data to be transmitted over relatively long distances and through relatively high noise environments. Levels of current, rather than voltage, are detected and translated into binary data.

D

Data Acquisition: Gathering information from sources such as sensors and transducers in an accurate, timely and organized manner. DAQ systems convert the information to digital data which can be stored and processed by a computer.

Data Communications Equipment (DCE): Devices that provide the functions required to establish, maintain, and terminate a data-transmission connection; e.g., a modem.

Data Logger: Small, typically portable, data acquisition system which is intended to collect data on its own for a period of time and then download that data into another computer for processing.

Data Register: A register on a DAQ card where data is read or written.

Data Set Ready (DSR): A modem interface control signal which indicates the terminal is ready for transmission.

Data Terminal Equipment (DTE): Devices acting as data source, sink, or both.

Debouncing: Either a hardware circuit or a delay in software to prevent false inputs from a bouncing key or switch contact.

Decibel: A logarithmic measure of the ratio of two signal levels: $dB=20\text{Log}(V1/V2)=10\text{Log}(P1/P2)$.

Differential Amplifier: An amplifier producing output which is proportional to the difference between two input values, generally used to measure the difference in voltage across a differential input.

Digital: A signal which has two distinct states. Digital computers process data as binary information having either true (1) or false (0) states.

Digital Filter: A filter which acts on data after it has been processed by the ADC and thus digitized.

Digital-to-Analog (D/A) Conversion: The process of translating discrete data into a continuously varying signal. Common uses are to present the output of a digital computer as a graphic display or as a test stimulus.

Digital-to-Analog Converter (DAC):

A device that converts digital information into a corresponding analog voltage or current.

DIP: Acronym for "dual in-line package." A physical form factor for integrated circuits and switches.

DIP Switches: A bank of switches typically used in setting hardware configuration and base address of an option card.

Direct Memory Access (DMA):

Method by which information is transferred from the computer memory to a device on the bus without using the CPU.

DOS: Disk Operating System.

Driver - (hardware): An electronic circuit that provides input to another electronic circuit.

Driver - (software): A program that exercises a system or system component by simulating the activity of a higher level component.

Duplex: The ability to both send and receive data simultaneously over the same communications line.

Dynamic Link Libraries (DLL):

Microsoft Windows Dynamic Link Libraries (DLL) standard allows you to use any language that supports the DLL contract, including Microsoft's Visual Basic and C for Windows and Borland's C++ and Turbo Pascal for Windows. Using the DLL driver option, all the features of Microsoft Windows are accessible. This includes running multiple programs and using extended memory all through the consistent graphical user interface of Windows. Microsoft Windows lets you set up and run your data acquisition program and automatically transfer collected data to another application through the standard Dynamic Data Exchange (DDE).

Dynamic Range: The ratio of the full scale range (FSR) of a data converter to the smallest difference it can resolve. Dynamic Range (DR)= $2n$. Generally expressed in dB, $DR=20\log 2n$, where "n" is the resolution in bits.

E

Electromagnetic Interference/Radio Frequency Interference (EMI/RFI):

"Background noise" that could alter or destroy data transmission.

Emulation: The imitation of a computer system, performed by a combination of hardware and software, that allows programs to run between incompatible systems.

Even Parity: A data-verification method in which each character must have an even number of "true" bits.

Event Counter: A circuit used to count pulses that are related to the occurrences of a certain condition.

Excitation Current: Power provided by a signal conditioning board to a sensor.

Expansion Board: A plug-in circuit board that adds features or capabilities beyond those basic to a computer, such as a data acquisition system expansion board.

Expansion Chassis: An enclosure used to increase the capabilities of a computer system by providing space for additional expansion boards.

Expansion Slots: Spaces provided in a computer for expansion boards that enhance the computer's basic operation.

External Trigger: A voltage pulse from an external source which spurs an event, such as A/D conversion.

F

FCC: Federal Communications Commission.

Filter: A signal conditioning device which allows some part of a signal to pass while blocking undesired elements of the signal.

FIFO: First In/First Out Register. A buffer wherein the first bit of data received is the first bit of data retrieved by the processor.

Firmware: A computer program or software stored permanently in PROM or ROM or semi-permanently in EPROM.

Flow Control: The procedure for regulating the flow of data between two devices; prevents the loss of data once a device's buffer has reached its capacity.

Frequency: The rate at which an event periodically repeats, usually measured in cycles per second (Hz), revolutions per minute (RPM), or multiples of rotational speed.

Frequency to Voltage Converter: A device which converts data input as frequency into a voltage input.

Front End: The preprocessing of data before a program uses it. Could refer to signal conditioning in a data acquisition system.

Full Duplex (FDX): Simultaneous, two-way, independent transmission in both directions.

Full Scale Range (FSR): For a data acquisition system, the difference between the maximum and minimum allowable input values.

G

Gain: The ratio of output to input for a given system, or the slope of the data transfer function at a particular point.

Gain Amplifier: An electronic circuit that allows the input of low level signals (e.g. thermocouple microphone).

Gain Drift: The change in gain vs. environmental variables.

Gain Error: The difference between a system's actual and ideal gain.

Ground: An electrically neutral circuit having the same potential as the earth. Normally, a noncurrent carrying circuit intended for safety purposes.

H

Half Duplex (HDX): Transmission in either direction, but not simultaneously.

Handshaking: Exchange of predetermined signals between two devices establishing a connection. Usually part of a communications protocol.

Hardware: The visible parts of a computer system, such as the circuit boards, chassis, enclosures, peripherals, cables, etc. It does not include data or computer programs.

Hertz(Hz): Cycles per second. A measure of frequency or bandwidth.

Hexadecimal: Base 16 number system

High-Level Data Link Control (HDLC): The international standard communication protocol defined by ISO.

High-Level Language: A program used to simplify the creation of computer code. Allows the specification of a computer action using fewer steps than assembly language.

High-Pass Filter: A signal conditioning feature which allows only signal components above a specified frequency level to pass into the data acquisition board.

Host Adapter: An interface chip included on notebooks with PCMCIA expansion slots which connects the expansion bus to one or more (usually two) 68-pin PCMCIA sockets.

Host Independence: Allows PCMCIA cards to run with any computer carrying a PCMCIA-compliant interface.

Hot-Swapping: The ability to pull one peripheral device out of your system, insert another, and continue computing.

I

IEEE: (Institute of Electrical and Electronic Engineers) An international professional society that issues its own standards and is a member of ANSI and ISO.

Impedance: The equivalent resistance of an input or output. Gain errors will result if input impedances are not considerably higher than output impedances.

Input Bias Current: The current drawn by the input terminal of an A/D adapter.

Input/Output (I/O): The process of transferring data from or to a computer system including communication channels, operator interface devices, or data acquisition and control channels.

Instrumentation Amplifier: A precision amplifier circuit with both high-impedance differential inputs and high common-mode rejection.

Integrating A/D Converter: An A/D conversion technique in which the analog input is integrated over time. Different types of integrating A/D converters include dual slope, triple slope, and charge balancing types.

Interface: A shared boundary defined by common physical interconnection characteristics, signal characteristics, and meanings of interchanged signals.

Internal Trigger: A trigger generated by the data acquisition board itself.

Interpreter: A high-level language in which the command statements are converted, one at a time and in the order they are used, into code that can be executed by the processor.

Interrupt: An external event telling the CPU to suspend its current task to service a designated activity.

Interrupt Handler: The section of a program that performs the necessary operations to service an interrupt when it occurs.

I/O Address: A method that allows the CPU to distinguish between the different boards in a system. All boards must have different addresses.

I/O Mapping: Method of connecting I/O devices to the CPU in an addressable fashion without using memory space. Disk drives, printers and monitors are usually I/O mapped.

ISO: International Standards Organization.

ISO 9001: The ISO certification which applies to facilities which design/develop, produce and install products or services. Quatech has received this type of certification.

Isolation Amplifier: An amplifier with electrically isolated inputs and outputs which allow it to amplify a differential signal superimposed on a high common-mode voltage.

Isolation Voltage: The voltage which an isolated circuit can normally withstand. Isolation voltage is usually specified from input to input and/or from any input to the amplifier output, or to the computer bus.

Isothermal: A process or area that is maintained at a constant temperature.

J

Jumper: A wire which connects a number of pins on one end of a cable only, such as looping back Request to Send from Clear to Send.

K

K- kilo. In referring to computers, a "kilo" is 1024 or 2 to the 10th power. (Note that it's actually slightly more than an even 1000.)

L

Latch: A term used to indicate that the state of a digital signal will remain stored until changed by the CPU or specified external command signal.

Linearity: The adherence of a device's response to a straight line relationship. Output is directly proportional to input.

Linearization: The process of modifying an analog or digital signal to compensate for nonlinearities introduced by the source or previous signal conditioning.

Line Driver: A signal converter that conditions a signal to ensure reliable transmission over an extended distance.

Local Area Network (LAN): A data-communications system confined to a limited geographic area (typically up to six miles or about 10 km) with moderate to high data rates (100 kbps to 50 Mbps). The area served may consist of a single building, a cluster of buildings, or a campus-type arrangement. The network uses some type of switching technology, and does not use common carrier circuits (i.e. telephone lines) although it may provide access to other public or private networks.

Loopback: Type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data-communications link or network. A loopback test permits the comparison of a returned signal with the transmitted signal.

Low Pass Filter: A signal conditioning filter which allows only signal components below a specified range to pass to the data acquisition adapter.

M

Machine Language: Binary code executed directly by a computer CPU and translated into electronic actions. Machine language is different for each CPU type.

Macro: A small set of program steps combined to act as a single, more powerful program step.

Mainframe: A large-scale computer system that can house comprehensive software and several peripherals.

Memory: Electronic devices that enable a computer to store and recall information. In its broadest sense, memory refers to any hardware capable of serving that end: disk, tape, or semiconductor storage.

Menu: The list of available functions for selection by the operator, usually displayed on the computer screen once a program has been entered.

Modem (MODulator-DEModulator): A device used to convert serial digital data from a transmitting terminal to a signal suitable for transmission over a common carrier, or to reconvert the transmitted signal to digital data for acceptance by a receiving terminal.

Modem Eliminator: Device used to connect a local terminal and a computer port in lieu of a pair of modems, allows DTE-to-DTE data and control signal connections not easily achieved by standard cables or connectors.

Modular-(hardware): The use of smaller, application specific components to derive a customized complete system.

Modular-(software): The practice of writing routines to accomplish a specific task and collecting these routines into a larger program.

Monotonicity: The desirable characteristic of a digital-to-analog converter to produce a continuously increasing analog output for a correspondingly increased digital input code.

Multidrop: A single communication line or bus used to connect three or more points.

Multiplexer (mux): An array of semiconductor or electromechanical switches with a common output used for selecting one of a number of input signals.

Multipoint Line: See multidrop.

Multi-tasking: The characteristic of an operating system and/or CPU that allows a processor to perform several operations at once.

N

Noise: Unwanted disturbances superimposed upon a useful signal that tend to obscure its information content.

Null Modem: A device that connects two DTE devices directly by emulating the physical connections of a DTE device. See modem eliminator.

Nyquist Sampling Theorem: If a continuous bandwidth limited signal contains no frequency components higher than a specified frequency, then the original signal can be recovered without distortion if it is sampled at a rate of at least twice the specified frequency.

O

Operating System (O/S): The master control program that governs the operation of a computer system. Software or firmware that manages internal memory allocation and the control of peripheral devices for application programs.

Optical Isolation: Two networks connected only through an optoelectric transmitter and receiver with no electrical continuity between the two networks.

Overhead: The amount of computer processing resources, such as time or memory, required to accomplish a task.

P

Pacer Clock: A timer which triggers the DAC on a data acquisition board, allowing it to periodically process data without direct supervision from the CPU.

Parity Bit: A bit that is set at "0" or "1" in a character to ensure that the total number of 1 bits in the data field is even or odd.

Parity Check: The addition of non-information bits that make up a transmission block to ensure that the total number of 1's is always either even (even parity) or odd (odd parity); used to detect transmission errors.

Passive Filter: A filter circuit using only resistors, capacitors, and inductors. (No active devices such as integrated-circuit amplifiers).

Pascal: A high-level programming language originally developed as a tool for teaching the concepts of structured programming. It has evolved into a powerful general-purpose language popular for writing scientific and business programs.

PCMCIA: Personal Computer Memory Card International Association. Established June 1991.

Peripheral: The input/output and data storage devices attached to a computer such as disk drives, printers, keyboards, displays, data acquisition systems, etc.

Phase: The measurement of the timing relationship between two signals.

Phase Response: The difference between the filter input and output signals as frequency varies.

Phizelectric: A material which provides a conversion between mechanical and electrical energy. The most common material used in an accelerometer.

PID: Proportional, Integral, Derivative. A three-mode control algorithm.

Point-to-Point(link): A connection between 2, and only 2, pieces of equipment.

Polling: A means of controlling devices on a multipoint line. A controller will query devices for a response.

Port: A place of access to a device or network, used for input/output of digital and analog signals.

Pre-Triggering: Technique used to keep a buffer continuously filled with data, so that when trigger conditions are met, the sample taken includes the data leading up to the event that triggered the reading.

Protocol: A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.

Q

Quantizing Error: Inherent uncertainty in digitizing an analog value due to the finite resolution of the conversion process. This error can be reduced only by increasing the resolution of the converter.

R

Radio Frequency Interference (RFI): Interference with frequency components greater than 100kHz (radio freq. range)

Random Access Memory (RAM): Semiconductor read/write volatile memory. Data stored is lost if power is removed.

Range: Refers to the maximum allowable full-scale signal (input or output) that yields a specified performance level.

Rate Generator: A device that provides an output pulse at a software-programmable frequency.

Read-Only Memory (ROM): Computer memory written to only when manufactured, but can be read at any time. ROM is used for storing data or programs (e.g. operating systems) on a permanent basis.

Real Time: Data acted upon immediately instead of being accumulated and processed at a later time.

Real-World: Referring to events, signals and conditions that occur naturally or in everyday life.

Repeatability: The ability of an instrument to give the same result under repeated identical conditions.

Resistance Temperature Detector (RTD): Electrical circuit element characterized by a positive coefficient of resistivity.

Resolution: The smallest significant number to which a measurement can be determined. For example, a converter with 12-bit resolution can resolve 1 part in 4096.

Response Time: The elapsed time between the generation of the last character of a message at a terminal and the receipt of the first character of the reply. It includes terminal delay and network delay.

Ribbon Cable: A flat cable in which the conductors are side by side rather than in a bundle.

RS: Recommended Standard. Standards defined for serial data interchange (e.g. RS-232C). Newer designations use "EIA" instead of "RS" (e.g. EIA-232C).

RS-232C: A serial asynchronous communications standard used to connect modems, terminals and printers with serial interfaces. RS-232C has a specified distance limitation of 50 feet at a maximum data rate of 19,200 baud.

RS-422: Electrical characteristics of balanced-voltage digital interface circuits. Maximum connection distance of 4000'.

RS-485: The recommended standard of the Electronic Industry Association that specifies the electrical characteristics of drivers and receivers for use in balanced digital multipoint systems.

S

Sample and Hold: A circuit which acquires and stores an analog voltage for a short period of time. Typically used to stabilize the input of an analog to digital converter during conversion.

Sampling: Process of obtaining a sequence of instantaneous values of a function at regular or intermittent intervals.

Sampling Rate: The rate at which analog signals are sampled and then digitized by the DAC.

Seebeck Effect: The basic principal behind thermocouples. When a circuit is created by the junctions of two dissimilar metals and the junctions are held at different temperatures, a current caused by the difference in temperature between the two junctions will flow in the circuit.

Sensitivity: A measure of the minimum change in an input signal that an instrument can detect.

Sensor: A device that converts physical stimuli (heat, light, sound, pressure, motion, etc.) to a corresponding electrical output suitable for measurement by test equipment.

Serial I/O: Common form of data transmission, in which the bits of each character are sent one at a time over the line.

Serial Port: A communications interface that uses one data line to transfer data bits sequentially. On the IBM PC the serial port refers to a standard asynchronous serial interface which uses the 16550/16750 family of UART's.

Set Point: A "level" or control point in a feedback system.

Settling Time: Time required, after application of a step input signal, for output voltage to settle and remain within a specified error band around the final value.

Shielding: Protective covering that eliminates electromagnetic and radio frequency interference.

Shielded Cable: A cable with foil or other sheathing around it to stop radio frequency interference and magnetic fields from generating extraneous signals on the cable conductors.

Signal Conditioning: Techniques for converting an analog "real world" signal into an electrical signal which can then be digitized and processed by a computer.

Signal Conditioner: A device placed between a sensor recording analog signals and the DAC.

Signal-to-Noise Ratio: A measure of signal quality. The ratio of signal strength to the level of noise.

Simplex Transmission: Data transmission in one direction only.

Simultaneous Sample and Hold (SSH): A data acquisition system in which several sample and hold circuits are used to sample a number of analog channels at the same instant. One sample and hold per analog channel is required.

Single Ended: Circuit with a single signal conductor, referenced to a system ground.

Slew Rate: The maximum rate at which a signal can change, generally measured in volts per second.

Software: The nonphysical parts of a computer system that includes computer programs such as operating systems, high-level languages, applications, etc.

Software Trigger: A software programmable event which in turn causes an action to occur, such as causing a data acquisition board to begin sampling data.

Span: The difference between the lower and upper limits of a range. Span is expressed in the same units as the range.

Spike: A transient disturbance of an electrical circuit. (e.g. lightning or other electrostatic sources.)

Spike Protector: Device placed in an electrical circuit to prevent spikes and surges that might otherwise damage electronic equipment connected to that circuit.

Stability: The ability of an instrument or sensor to maintain a consistent output when a constant input is applied.

Status Register: The place on a data acquisition board which indicates the status of that board, i.e. whether it is ready to acquire data, is busy, or has data ready.

Strain: Physical deformation, deflection or change in length resulting from a stress.

Strain Gage: Sensor used to measure stress on an object, generally constructed of a material which changes with applied stress.

Subroutine: A sequence of computer instructions that perform a specific task and can be called repeatedly in a program whenever that specific task is required.

Successive-Approximation A/D Converter: An analog-to-digital conversion method that sequentially compares a series of binary-weighted values with an analog input to produce an output digital word in "n" steps, where "n" is the bit resolution of the A/D converter.

Surge: A sudden change (usually an increase) in the voltage on a power line. A surge is similar to a spike, but is of longer duration.

Synchronous Data Link Control (SDLC): IBM standard bit oriented protocol, superseding BSE.

Synchronous Transmission: Transmission in which data bits are sent at a fixed rate, with the transmitter and receiver synchronized. Synchronized transmission eliminates the need for start and stop bits with every character.

Syntax: Comparable to the grammar of a human language. Syntax is the set of rules used for forming statements in a particular programming language.

T

Termination: Placement of a connector on a cable.

Termination Panel: A circuit board with screw terminals, or other connector system that allows convenient connection of field signals to a data acquisition or communication system.

Throughput Rate: The maximum repetitive rate at which a data conversion system can operate with a specified accuracy. It is determined by adding the various times required for each part of the system and then by taking the inverse of this time.

Time Stamp: Information added to a message, record, or other unit of data indicating the time at which it was processed by the system.

Transducer: A device that converts length, position, temperature, pressure, level, etc., to a different energy form (i.e., voltage or current).

Transient: An abrupt change in voltage, of short duration (e.g., a brief pulse caused by the operation of a switch).

TTL: Transistor-Translator Logic. A logic family characterized by high speeds, and medium power consumption.

Turnkey: A system that combines all the hardware and software required for a specific application.

U

Unipolar: In a data acquisition system, an input or output channel which will support either positive or negative signals, but not both.

Universal Asynchronous Receiver-transmitter (UART): An electronic circuit that translates the data format between a parallel representation within the computer and the serial method of transmitting data over a communication line.

V

Virtual Memory: A method of making disk storage appear like RAM memory to the CPU, thus allowing programs that need more RAM memory than is installed to run in the system. This technique is slow compared to "real" memory.

Volatile Memory: A storage medium that loses all data when power is removed.

Voltage-to-Frequency Converter (VFC): A device which converts an analog input voltage into a sequence of digital pulses with frequency proportional to the input voltage.

W

Word: The standard number of bits that a processor or memory manipulates at one time. Microprocessors typically use 8 or 16-bit words.

XYZ

X.21: CCITT standard governing interface between data terminal equipment (DTE) and data circuit terminating equipment (DCE) for synchronous operation on public data networks.

X.25: CCITT standard governing interface between data terminal equipment (DTE) and data circuit terminating equipment (DCE) for terminals operating in the packet mode on public data networks.