

**USRobotics®**

Glossary

## Glossary

Cross references are printed in **boldface**. Cross references with items in the Technical Reference section are printed in *italics*.

### **analogue loopback**

A modem self-test in which data from the keyboard or an internal test pattern is sent to the modem's transmitter, turned into analogue form, looped back to the receiver, and converted back into digital form.

### **analogue signals**

A variety of signals and wavelengths that can be transmitted over communications lines such as the sound of a voice over the phone line. These signals are in contrast with **digital signals**.

### **answer mode**

The mode used by your modem when answering an incoming call from an originating modem. The transmit/receive frequencies are the reverse of the originating modem, which is in **originate mode**.

### **application**

A computer program designed to perform a specific function, such as word processing or organizing data into a spreadsheet.

### **ARQ**

Automatic Repeat reQuest is a general term for a function that automatically allows your modem to detect flawed data and retransmit it. See **MNP** and **V.42**.

### **ASCII**

American Standard Code for Information Interchange is a code used to represent letters, numbers, and special **characters**, such as \$, !, and /

### **asynchronous transmission**

Data transmission in which the length of time between transmitted **characters** may vary. Since the time lapses between transmitted characters are not uniform, the receiving modem must be signaled as to when the data bits of a character begin and then they end. The addition of **start/stop bits** to each character serves this purpose.

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### **auto answer**

In this setting the modem can pick up the phone line when it detects a certain number of rings. See S-register (S0) in the Technical Reference section.

### **auto dial**

A process where your modem dials a call for you. The dialing process is initiated by sending an ATDT (dial tone) or ATDP (dial pulse) command followed by the telephone number to dial. Auto Dial is used to dial voice numbers. See command *Dn*.

### **baud rate**

A term used to measure the speed of an analogue transmission from one point to another. Although not technically accurate, baud rate is commonly used to mean **bit rate**.

### **binary digit (bit)**

A 0 or 1, which reflects the use of the binary numbering system. It is used because the computer recognises either of two states, OFF or ON. The shortened form of binary digit is bit.

### **bit rate**

This refers to the number of **binary digits**, or bits, transmitted per second (**bps**). It is also referred to as transmission rate. Communications channels using telephone channel modems are established at set bit rates, commonly 2400, 4800, 9600, 14,400, 28,800 and higher, e.g. when using the Public Switched Telephone Network (PSTN).

### **bits per second (BPS)**

This is the bits (**binary digits**) per second rate. Thousands of bits per second are expressed as kilobits per second or kbps.

### **buffer**

A memory area set aside to be used as temporary storage during input and output operations. An example is the modem's command buffer.

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### **byte**

A group of **binary digits** stored and operated upon as a unit. In user documentation, the term usually refers to 8-bit units or **characters**. One kilobyte (KB) is equal to 1,024 bytes or characters; 640 KB indicates 655,360 bytes or characters.

### **carrier**

A tone signifying a connection the modem can alter to communicate data across telephone lines.

### **character**

A representation, coded in **binary digits**, of a letter, number, or other symbol.

### **characters per second (CPS)**

A data transfer rate generally estimated from the **bit rate** and the **character** length. For example, at 2400 bps, 8-bit characters with **start/ stop bits** (for a total of ten bits per character) will be transmitted at a rate of approximately 240 characters per second (cps). Some protocols, like error-control protocols, employ advanced techniques such as longer transmission **frames** and **data compression** to increase cps.

### **Class 1 and 2.0**

International standards used between fax **application** programs and faxmodems for sending and receiving faxes.

### **cyclic redundancy checking (CRC)**

An error-detection technique consisting of a test performed on each block or **frame** of data by both sending and receiving modems. The sending modem inserts the results of its tests in each data block in the form of a CRC code. The receiving modem compares its results with the received CRC code and responds with either a positive or negative acknowledgment.

### **data communications**

A type of communications in which computers are able to exchange data over an electronic medium.

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### **data compression table**

A table containing values assigned for each **character** during a call under **MNP5** data compression. **Default** values in the table are continually altered and built during each call: the longer the table, the more efficient **throughput** gained.

### **data mode**

The mode in which the faxmodem is capable of sending and receiving data files. A standard modem without fax capabilities is always in data mode.

### **DCE**

**Data Communications** (or Circuit-Terminating) **Equipment** is equipment such as dial-up modems that establish and control the data link via the telephone network.

### **default**

Any setting assumed, at startup or reset, by the computer's software and attached devices. The computer or software will use these settings until changed by the user or other software.

### **detect phase**

In the **ITU-T V.42** error-control **protocol**, the first stage in establishing if both modems attempting to connect have **V.42** capability.

### **dictionary**

The term used for compression codes built by the **V.42 bis** data compression algorithm.

### **digital loopback**

A test that checks the modem's **RS-232** interface and the cable that connects the **terminal** (computer) and the modem. The modem receives data (in the form of **digital signals**) from the computer or terminal, and immediately returns the data to the screen for verification.

### **digital signals**

Signals that are discrete and uniform. In this manual, the term refers to the **binary digits** 0 and 1. These signals are in contrast with **analogue signals**.

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### **DTE**

**Data Terminal** (or Terminating) **Equipment** is a computer that generates or is the final destination of data.

### **duplex**

Duplex indicates a communications channel capable of carrying signals in both directions. See **half duplex**, **full duplex**.

### **EIA**

Electronic Industries Association is a group which defines electronic standards in the U.S.

### **error control**

A variety of techniques that check the reliability of **characters (parity)** or blocks of data. **V.42** and **MNP** error-control **protocols** use error detection (**CRC**) and retransmission of flawed **frames (ARQ)**.

### **facsimile**

A method for transmitting the image on a page from one point to another. This is commonly referred to as fax.

### **fax mode**

The mode in which the faxmodem is capable of sending and receiving files in a **facsimile** format. See definitions for **V.17**, **V.27ter**, **V.29**.

### **flow control**

A mechanism that compensates for differences in the flow of data into and out of a modem or other device. See commands *&Hn*, *&In*, *&Rn*.

### **frame**

A data communications term for a block of data with header and trailer information attached. The added information usually includes a frame number, block size data, error-check codes, and Start/End indicators.

### **full duplex**

These signals will flow in both directions at the same time. In microcomputer communications, may refer to the suppression of the on-line **local echo**.

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### **half duplex**

These signals will flow in both directions, but only one way at a time. In microcomputer communications, may refer to activation of the online **local echo**, which causes the modem to send a copy of the transmitted data to the screen of the sending computer.

### **Hz**

Hertz is a frequency measurement unit used internationally to indicate one cycle per second.

### **ITU-T**

An international organization that defines standards for telegraphic and telephone equipment. For example, the Bell 212A standard for 1200 bps communication in North America is observed internationally as **ITU-T V.22**. For 2400 bps communication, most U.S. manufacturers observe V.22 bis. The initials ITU-T represent the 'International Telecommunications Union - Telecommunications sector'.

### **LAPM**

Link Access Procedure for Modems is an error-control **protocol** defined in **ITU-T** Recommendation V.42. Like the **MNP** protocols, LAPM uses **cyclic redundancy checking (CRC)** and retransmission of corrupted data (**ARQ**) to ensure data reliability.

### **local echo**

A modem feature that enables the modem to display keyboard commands and transmitted data on the screen. See command *Hz*.

### **MNP**

Microcom Networking Protocol is an error-control **protocol** developed by Microcom, Inc., and now in the public domain. There are several different **MNP** protocols, but the most commonly used one ensures error-free transmission through error detection (**CRC**) and retransmission of erred **frames**.

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### **modem**

A device that transmits/receives computer data through a communications channel such as radio or telephone lines. It also changes signals received from the phone line back to **digital signals** before passing them to the receiving computer.

### **nonvolatile memory (NVRAM)**

A user-programmable random access memory which retains data when power is turned off. On the 3Com U.S. Robotics modem it includes four stored phone numbers and the modem settings.

### **OFF/ON hook**

Modem operations that are the equivalent of manually lifting a phone receiver (taking it off-hook) and replacing it (going on-hook).

### **online fallback/fall forward**

A feature that allows a high-speed, error-control modem to monitor line quality and fall back to the next lower speed in a defined range if line quality diminishes. As line conditions improve, the modem switches up to the next higher speed.

### **originate mode**

The mode used by your modem when initiating an outgoing call to a destination modem. The transmit/receive frequencies are the reverse of the called modem, which is in **answer mode**.

### **parity**

A simple error-detection method that checks the validity of a transmitted character. Character checking has been surpassed by more reliable and efficient forms of error checking, including **V.42 and MNP 2-4 protocols**. Either the same type of **parity** must be used by two communicating computers, or both may omit parity.

### **protocol**

A system of rules and procedures governing communications between two or more devices. Protocols vary, but communicating devices must follow the same protocol in order to exchange data. The format of the data, readiness to receive or send, error detection and error correction are some of the operations that may be defined in protocols.



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### **RAM**

Random Access Memory is memory that is available for use when the modem is turned on, but that clears of all information when the power is turned off. The modem's RAM holds the current operational settings, a **flow control** buffer, and a command **buffer**.

### **remote digital loopback**

A test that checks the phone link and a remote modem's transmitter and receiver.

### **remote echo**

A copy of the data received by the remote system, returned to the sending system, and displayed on the screen. Remote echoing is a function of the remote system.

### **ROM**

Read Only Memory is permanent memory, which is not user-programmable.

### **serial transmission**

The consecutive flow of data in a single channel. Compare to parallel transmissions where data flows simultaneously in multiple channels.

### **start/stop bits**

These signaling bits attached to a **character** before and after the character is transmitted during **asynchronous transmission**.

### **terminal**

A device whose keyboard and display are used for sending and receiving data over a communications link. This device differs from a microcomputer or a mainframe in that it has little or no internal processing capabilities.

### **terminal mode**

A software mode that allows direct communication with the modem. This is also known as command mode.

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### **throughput**

The amount of actual user data transmitted per second without the overhead of **protocol** information such as **start/stop bits** or **frame** headers and trailers. Compare it with **characters per second**.

### **V.8**

The ITU-T standard specification that covers the initial handshaking process.

### **V.17 Fax**

An **ITU-T** standard for making **facsimile** connections at 14400 bps, 12000 bps, 9600 bps, and 7200 bps.

### **V.21**

An **ITU-T** standard for modems operating in asynchronous mode at speeds up to 300 bps, **full-duplex**, on public switched telephone networks.

### **V.22**

An **ITU-T** standard for modem communications at 1200 bps, compatible with the Bell 212A standard observed in the U.S. and Canada.

### **V.22 bis**

An **ITU-T** standard for modem communications at 2400 bps. The standard includes an automatic link negotiation fallback to 1200 bps and compatibility with Bell 212A/V.22 modems.

### **V.23**

An **ITU-T** standard for modem communication at 1200 bps with a 75 bps back channel. This standard is used in the U.K.

### **V.27ter**

An **ITU-T** standard for facsimile operations that specifies modulation at 4800 bps, with fallback to 2400 bps.

### **V.29**

An **ITU-T** standard for **facsimile** operations that specifies modulation at 9600 bps, with fallback to 7200 bps.

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### V.32

An **ITU-T** standard for modem communications at 9600 bps and 4800 bps. V.32 modems fall back to 4800 bps when line quality is impaired.

### V.32 bis

An **ITU-T** standard that extends the V.32 connection range: 4800, 7200, 9600, 12000, and 14400 bps. V.32 bis modems fall back to the next lower speed when line quality is impaired, fall back further as necessary, and also fall forward (switch back up) when line conditions improve.

See **online fall back/fall forward**

### V.34

An **ITU-T** standard that currently allows data rates as high as 33,600bps and 28,800bps.

### V.42

An **ITU-T** standard for modem communications that defines a two-stage process of detection and negotiation for **LAPM error control**.

### V.42 bis

An extension of **ITU-T** V.42 that defines a specific data compression scheme for use during V.42 connections.

### V.90

An **ITU-T** standard that currently allows data rates as high as 56,000 bps receive and 31,200 bps transmit.

### x2™

A 3Com proprietary protocol that allows data rates as high as 56,000 bps receive and 31,200 bps transmit.

### Xmodem

The first of a family of **error control** software **protocols** used to transfer files between modems. These protocols are in the public domain and are available from many bulletin board services.

### XON/XOFF

Standard **ASCII** control **characters** used to tell an intelligent device to stop/resume transmitting data.

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### **Ymodem**

An error-checking **protocol** that can send several files of data at a time in 1024-byte (1K) blocks. This protocol can use either checksums or CRC for error checking.

### **Ymodem G**

This is similar to **Ymodem**, except it relies on the modem for error checking, which makes it faster.

### **Zmodem**

This is similar to **Xmodem** and **Ymodem**, except it includes batch transfer, the ability to recover from a partially complete transfer, an autostart feature, and improved efficiency.

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