Personal Computer Modems

This product outline presents the salient characteristics of modems targeted at the personal computer market. It is a quick reference guide to vendors whose modems match specific user operating requirements. For detailed product information on these modems, please refer to the Personal Computer Modems survey in Data Decisions **Microcomputers** reference service, which presents specifications and pricing on over **140 modem models marketed by 41 vendors**.

Personal computer modems are designed to connect a personal computer to the public switched telephone (DDD) network. The modems connect directly to the phone line via modular wall jacks, or through acoustic couplers with rubber cups that cradle a conventional telephone handset to **acoustically** couple data transmission through its transducers. Some modems are equipped to connect to the phone line either acoustically or directly, allowing the user to choose the best alternative for the application. In general, direct connection is less error-prone and more reliable than acoustic coupling, especially at higher speeds. But in situations where direct connection is impossible or impractical, such as with a portable computer or terminal or in a hardwired PBX (in-house telephone switch) environment, an acoustic coupler is indispensable.

Most modems are packaged as separate (standalone) units, but several are packaged as plug-in circuit boards that slide into the appropriate slot within a personal computer, typically an Apple or IBM PC. Plug-in modems are designed for a specific computer model and cannot be used elsewhere.

Personal computer modems come in a variety of price ranges, from about $65 to $1,800, depending on their differing purposes and the attendant complexity. The major cost factor is the data rate—or speed—of the modem, measured in bits per second (bps). Ten bits per second equates to 1 character transmitted per second, with popular rates at 0 to 300 bps (30 characters per second), 1200 bps, and 2400 bps, with correspondingly higher prices for the higher-speed units. The 300-bps modems at the low end, represented by the AT&T 103 standard, have been popular for a number of years and will continue to attract the home computer user and the casual business computer user because of their low price and ubiquity. The 1200-bps modems, however, typically represented by the AT&T 212A standard, are becoming increasingly popular and reportedly represent 85 percent of current personal computer modem sales. At 4 times the speed of AT&T 103-compatible modems, the 212A lessens the lengthy wait (and associated telephone line costs) of transferring data files and retrieving entries from online database services. Moreover, the 212A is compatible with the 103 standard—it is actually 2 modems in 1—meaning that it can communicate with the widely established base of 103 users at 300 bps, as well as communicate with other 212A users.

It should be noted, however, that not all 1200-bps modems are compatible with the 212A. A sizable number of modems compatible with the Racal-Vadic VA3400 standard are also in use and the 2 cannot communicate. Therefore modem buyers should find out **what modem is at the other end** before they make a purchase decision. They might also want to consider a triple modem provided by Racal-Vadic or Anderson Jacobson, a device with 2 modems in 1 which can communicate with both the 212A and Racal-Vadic standards.

Until recently, 1200 bps was the fastest speed at which modems could communicate in full-duplex mode, or 2-way simultaneous transmission, over the public switched telephone network. Almost all personal computers are designed to communicate in full-duplex mode only, and cannot operate with half-duplex modems. Now, several modem vendors provide 2400-bps full-duplex modems that are attractive to corporate personal computer users. The 2400-bps modems are available from such vendors as Concord Data, Rixon, Racal-Vadic, Codex, Kinex, NEC, and Siemens. Users should be aware, however, that most of these vendors are implementing or attempting to implement a new modulation scheme called V.22 bis. V.22 bis is now an approved standard; it met final approval at the CCITT plenary session in May 1984. V.22 bis employs a frequency modulation (FM) technique, which is uncommon for low-/medium-speed modems, and is incompatible with half-duplex 2400-bps modem standards such as the AT&T 201 and CCITT V.26; it is also incompatible with a proposed 4800-/2400-bps full-duplex/dial standard, CCITT V.26 ter. To add to the confusion, CCITT Recommendation V.22 (without the bis suffix) is a 1200-bps standard only, and although CCITT V.22 bis specifies a fallback data rate of 1200 bps using V.22 modulation, some vendors are incorporating a fallback data rate in the AT&T 212A mode. Obviously, prospective users of the new 2400-bps full-duplex/dial modems would be wise to secure guarantees of compatibility with whatever is at the other end of their transmission facility.

Because of the growing number of personal computers in the corporate environment, potential large users should consider the level of service and support provided by the vendor. Many high-speed modem vendors that traditionally service and support large computer installations tend to view personal computer modems as a low-margin/consumer-oriented enterprise, and are not

Personal Computer Modems

entering the low-speed marketplace. Therefore, corporate users who want to install large numbers of 212A-type modems at their central computer may have to go with a "nontraditional" supplier. They must make sure that rackmounted modem models are available for central-site placement as well as standalone versions for the end users, and that the modem vendor can provide an adequate on-site maintenance agreement. Very few of the vendors listed in this survey provide the kind of service expected by large users.

Other pitfalls await the unwary buyer of personal computer modems. For example, a modem advertised "for personal computers" may not work with **all** personal computers. Some prospective users still do not realize that a computer needs more than a modem in order to communicate over telephone lines. Modems communicate data in serial fashion—1 data bit at a time over the telephone wires—while computers transmit data in parallel fashion, 1 whole byte or word of data (several bits) at a time. This requires special hardware/software for converting parallel to serial formats; a special code and/or protocol for communicating data over the telephone "highways"; and a hardware serial interface (usually RS-232C) or other computer-specific interface adapter to fit the vagaries of many personal computers.

The software itself varies from simple terminal emulation packages to sophisticated communication software, and is available from a variety of personal computer software houses and from some modem vendors. The terminal emulation packages are fine for the beginner, but users with more complex needs—such as sending and receiving disk files or transmitting data error-free—require the more sophisticated software, with names like PC-Talk, ASCOM, Crosstalk, and Smartcom II. Most personal computer manufacturers also offer a communication or I/O card that inserts into one of the computer's backplane slots, and only requires an external modem for complete communication (additional software may or may not be required in this case). A couple of dozen or more communication programs are now on the market, ranging in price from $30 to $200, the majority of them compatible with CP/M operating systems and/or the more popular personal computers from IBM, Apple, and Radio Shack.

Alternatively, some independent vendors are now packaging a modem and I/O converter onto a single plug-in card with communication software sometimes thrown in as part of the deal. These packages simplify the chore of choosing a personal computer communication "system," taking the guesswork out of the buying decision and hence **ideal for the novice**. Only 1 item need be purchased instead of 2 or 3 separate devices, and it should work from the very first time it is plugged in. Personal computer manufacturers are themselves beginning to realize the advantages of a packaged communication system; IBM is said to be developing its own packaged modem with software for its PC/XT.

The capabilities of plug-in modems vary greatly, however, and sophisticated users will probably require communication features not supported by plug-in modem combos. These users will still need to go the route of purchasing an external modem, preferably one that is compatible with and matches the capabilities of the desired communication software. Users who comtemplate upgrading either their modems or their personal computer in the near future should also consider separate communication components in order to protect at least part of their communication investment.

Unfortunately, standalone modems can become a Pandora's box to an unsuspecting user. For example, many of the 103- and 212A-type modems now on the market were designed for communicating terminals; they will not work with a personal computer that is coupled with communication software because of a difference in EIA interface port signal assignments. The EIA RS-232C standard is the most popular data communications interface and consists of an external 25-pin connector, used for passing data along with communication control signals. Briefly, a display terminal requires that pin number 8 (carrier detect) on the RS-232C interface be "high," or on, all of the time. Most communication software packages designed for personal computers, on the other hand, require that pin 8 be high only when the modem carrier signal is present. Modems originally designed for the personal computer marketplace, such as the popular Hayes Smartmodem, are already adjusted for this difference; some other modems go one step further, providing switch-selection between communicating terminal or personal computer operation (Bytcom's 212AD has this capability). Most standalone modems designed prior to 1983, however, will probably not work when attached to personal computers.

Some personal computers need to have Data Terminal Ready (DTR, pin 6) fixed permanently in the high, or on, position. Thus the modem always sees the personal computer in an operational condition (when in fact it may be idle or off), and will keep the telephone connection open until physically disconnected by the users. This condition has been known to cause phone lines to remain inadvertantly connected overnight or over a weekend, unnoticed by the users and resulting in exorbitant phone bills. An open line is also an invitation for unscrupulous third parties to breach an otherwise secure system. If users with secure applications need to communicate over the telephone network, they should ensure that their personal computers do not require DTR high.

Interface problems in general are in fact common when attaching modems to personal computers. Sometimes, personal computers are configured to look like a data communicating device (DCE), such as a modem, in order to attach directly to a host computer. This, in turn, makes communication with a modem impossible, because the RS-232C ports on the modem and personal computer are configured exactly alike; a crossover cable must be implemented to reverse the signals and ensure communication. Other oddball interface problems can and do crop up, and so when buying a standalone modem the prospective user should determine beforehand that it will work with his personal computer. Users should ask their computer or software dealer for a list of compatible standalone modems, and be prepared to make adjustments themselves if they buy an unsanctioned

Personal Computer Modems

modem: most modem vendors will not spend the time or expense adjusting their product to a single personal computer, and most computer stores do not have the communication expertise to help their users, either.

Although the preceding sounds discouraging, it can get much worse: there are many other modem functions and associated pitfalls a user should consider before blindly buying a modem. For instance, many modem models presented in this survey include an integral—or optional integral—automatic number dialer. An auto-dialer permits its users to store frequently called telephone numbers and dial them at the press of a button, a useful but often expensive feature. The user must decide whether the extra convenience is worth the auto-dialer's cost, or whether he can dial the numbers manually just as easily. Another convenience feature is that auto-dialer functions—and often modem communication parameters—can usually be selected directly from the personal computer keyboard for loading into the modem. The thing to look for here is nonvolatile storage of auto-dialer and modem parameters, since a temporary power shortage or brownout will lose the modem's prestored program and entail a lengthy re-setting of modem parameters. Users shopping for sophisticated modems should determine that battery backup is available, or that a desired model uses nonvolatile RAM memory.

AT&T 212A-type modem buyers should look for another potential drawback. Although the AT&T 212A standard specifies 1200-bps communication in **either** asynchronous (start/stop) or synchronous modes, some 212A manufacturers provide 1200 bps in asynchronous mode only. Most personal computer users will be interested only in the asynchronous data rate, because of simplicity and compatibility with many online services; but for those who require synchronous transmission, such as IBM mainframe communication using BSC or SNA protocols, the "stripped-down" 212As will not be acceptable.

The final consideration in purchasing a personal computer modem is **where** one is purchased. Most personal computer stores and outlets will carry 1 or more modem lines, but rest assured that the selection will be small. Perhaps the best thing to do is to call the prospective modem vendor and obtain a list of the distributors or retail outlets in one's immediate area. And finally, upon contacting the retailer be sure to ascertain the level of support he provides, or whether telephone consultation is available, and check out the warranty and repair procedures. These measures could save a lot of grief later on when and if problems do develop.

PERSONAL COMPUTER MODEMS OUTLINE

COMPANY	Direct-Connect Modem	Acoustic Coupler	Direct-Connect/Acoustic Coupler	Standalone Modem	Plug-In Modem	Rackmount Modem Option	Communication Software	Bell 103-Compatible	Bell 212A-Compatible	Vadic 3400-Compatible	2400-bps Full-Duplex	Originate Only	Originate/Answer	IBM PC-Compatible	Apple-Compatible	Atari-Compatible	Commodore-Compatible	Other	Asynchronous Only	Synchronous Only	Asynchronous/Synchronous	Alternate Voice/Data	Auto-Answer	Auto-Dial	Diagnostics
Anchor Automation	●	–	–	●	●	–	●	●	–	–	–	●	●	●	–	●	●	●	●	–	–	●	●	●	–
Anderson Jacobson Inc	●	●	●	●	–	●	–	●	●	●	–	●	●	–	–	–	–	–	●	–	●	●	●	●	●
Astrocom Corporation	●	–	–	●	–	–	–	●	●	–	–	–	●	–	–	–	–	–	–	–	●	●	●	●	●
Atari Products Company	●	●	–	●	–	–	–	●	–	–	–	–	●	–	–	●	–	–	●	–	–	–	–	●	–
AT&T Information Systems	●	–	–	●	–	●	–	●	●	–	–	●	●	–	–	–	–	–	●	–	●	–	●	–	●
Backus Data Systems, Inc	–	●	–	●	–	–	–	●	–	–	–	●	●	–	–	–	–	–	●	–	–	–	–	–	–
Business Computer Corporation	●	–	–	●	●	–	●	●	●	–	–	●	●	●	●	●	●	–	●	–	●	●	●	●	●
Bytcom	●	–	–	●	–	●	–	●	●	–	–	–	●	–	–	–	–	–	–	–	●	●	●	●	●
Cermetek, Inc	●	–	–	●	–	–	–	●	●	–	–	–	●	–	–	–	–	–	–	–	●	●	●	●	●
Codex Corporation	●	–	–	●	–	●	–	●	●	–	●	–	●	–	–	–	–	–	●	–	●	●	●	–	●
Commodore Business Machines, Inc	●	–	–	–	●	–	●	●	–	–	–	–	●	–	–	–	●	–	●	–	–	●	●	●	–
Concord Data Systems, Inc	●	–	–	●	–	–	–	–	●	–	●	–	●	–	–	–	–	–	–	–	●	●	●	–	●
Datec, Inc	●	●	–	●	–	●	–	●	●	–	–	●	●	–	–	–	–	–	●	–	●	●	●	●	●
Digital Equipment Corporation	●	–	–	●	–	●	–	●	●	–	–	–	●	–	–	–	–	–	●	–	●	●	●	●	●
Gandalf Data, Inc	●	–	–	●	–	–	–	●	●	–	–	–	●	–	–	–	–	–	–	–	●	●	●	●	●

Personal Computer Modems

COMPANY	Direct-Connect Modem	Acoustic Coupler	Direct-Connect/Acoustic Coupler	Standalone Modem	Plug-In Modem	Rackmount Modem Option	Communication Software	Bell 103-Compatible	Bell 212A-Compatible	Vadic 3400-Compatible	2400-bps Full-Duplex	Originate Only	Originate/Answer	IBM PC-Compatible	Apple-Compatible	Atari-Compatible	Commodore-Compatible	Other	Asynchronous Only	Synchronous Only	Asynchronous/Synchronous	Alternate Voice/Data	Auto-Answer	Auto-Dial	Diagnostics
General DataComm Industries, Inc	●	–	–	●	–	●	–	●	●	–	–	–	●	–	–	–	–	–	●	–	●	●	●	–	●
Hayes Microcomputer Products, Inc	●	–	–	●	●	–	●	●	●	–	–	–	●	●	●	–	–	●	●	–	–	●	●	–	–
Intelligent Technologies Int'l Corp	●	–	–	–	●	–	●	●	–	–	–	–	●	●	–	–	–	–	●	–	–	●	●	●	–
The Int'l Modem Exchange Corp (TIMECOR)	●	–	–	–	●	–	–	●	–	–	–	–	●	–	●	–	–	●	●	–	–	–	●	–	–
Lexicon Corporation	●	●	●	●	–	–	–	●	–	–	–	–	●	–	–	–	–	–	●	–	–	●	–	–	–
MFJ Enterprises	–	●	–	●	–	–	●	●	–	–	–	–	●	–	–	–	–	–	●	–	–	–	–	–	–
Micro-Baud Systems, Inc	●	–	–	●	–	–	–	–	●	–	–	–	●	–	–	–	–	–	●	–	–	–	●	●	–
Microcom	●	–	–	●	–	–	–	●	●	–	–	–	●	–	–	–	–	–	●	–	●	–	●	●	●
Microperipheral Corporation	●	–	–	●	●	–	●	●	–	–	–	–	●	●	–	●	–	●	●	–	–	●	●	●	–
Multi-Tech Systems, Inc	●	–	–	●	●	–	●	●	●	–	–	–	●	●	●	–	–	●	●	–	–	●	●	●	●
Novation	●	●	–	●	●	–	●	●	●	–	–	–	●	–	●	–	–	●	●	–	–	●	●	●	●
Omnitec Data	●	–	–	●	–	●	–	●	●	–	–	–	●	–	–	–	–	●	●	–	●	●	●	●	●
Penril	●	–	–	●	–	–	●	–	●	–	–	–	●	–	–	–	–	–	–	–	●	●	●	–	●
Prentice Corporation	●	–	–	●	–	–	–	–	●	–	–	–	●	–	–	–	–	●	●	–	–	●	●	●	●
Racal-Vadic Inc	●	●	–	●	–	●	–	●	●	●	●	●	●	–	–	–	–	–	●	–	●	●	●	●	●
Rixon Inc	●	–	–	●	●	●	●	●	●	–	●	–	●	●	–	–	–	–	●	–	●	●	●	●	●
SSM Microcomputer Products, Inc	●	–	–	●	●	–	●	●	●	–	–	–	●	●	●	–	–	–	●	–	–	–	●	●	–
Tandy Corporation/Radio Shack	●	●	–	●	–	–	–	●	●	–	–	–	●	–	–	–	–	●	●	–	●	–	●	●	●
Tek-Com	●	●	–	●	–	–	–	●	●	–	–	●	●	–	–	–	–	●	●	–	●	●	●	●	–
Texas Instruments, Inc	●	–	–	●	–	–	–	●	–	–	–	–	●	–	–	–	–	●	●	–	–	–	–	–	–
Tri-Data	●	–	–	●	–	–	●	–	●	–	–	–	●	–	–	–	–	–	●	–	–	●	●	●	●
Universal Data Systems Inc	●	–	–	●	–	●	–	●	●	–	–	–	●	–	–	–	–	–	●	–	●	●	●	●	●
Ven-Tel Inc	●	●	–	●	●	●	●	●	●	–	–	●	●	●	–	–	–	–	●	–	●	–	●	●	●
Visionary Electronics	●	–	–	●	–	–	●	●	●	–	–	–	●	–	–	–	–	–	●	–	–	–	●	●	–
Wolfdata	●	–	–	–	●	–	●	–	●	–	–	–	●	●	–	–	–	●	●	–	–	●	●	●	●
Zoom Telephonics, Inc	●	–	–	–	●	–	●	●	–	–	–	–	●	–	●	–	–	–	●	–	–	–	–	–	–

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/ Long-Haul Modems & Line Drivers/Modem Eliminators

SCOPE

This Product Survey identifies and details the significant characteristics of general-purpose Data Circuit Terminating Equipment (DCE) and related devices. Specific features and operating parameters are delineated for a variety of devices including **Automatic Calling Units (ACUs), Data Service Units/Channel Service Units (DSUs/CSUs), Modem Sharing Units (MSUs), Acoustic Couplers, Short- and Long-Haul Modems, and Line Drivers/ Modem Eliminators.** Along with the company and model listings are references to modems designed for specific personal computers. This survey **does** provide coverage on those modems that can accommodate a PC board but are also sold as standalone, general purpose modems. For further information on modems designed exclusively for personal computers, please refer to the **PC Modem Survey** contained in the new Data Decisions service entitled **PC Communications.**

This revised edition of the Product Survey provides up-to-date specifications and pricing information on **over 600 models** marketed by **93 vendors.** The models in this survey utilize conventional voice-grade or wideband transmission facilities, including the public telephone network (DDD), dedicated (leased) lines, and private facilities provided by either the user or telephone company. These facilities can include metallic circuits, coaxial cable, or the more recently introduced fiber optic cable or open light beam (laser or infrared). Also premiering in this survey are model listings that describe Automatic Calling Units (ACUs), Data Service Units/Channel Service Units (DSUs/ CSUs), and Modem Sharing Units (MSUs). An **Automatic Calling Unit (ACU)** can be defined as a dialing device supplied by the communications carrier which allows the host system or terminal to automatically dial calls over the communication network. A **Data Service Unit (DSU)** is a device that replaces a modem on a Dataphone Digital Service (DDS) line. The digital signals are reproduced by the DSU for transmission over DDS. Also, the DSU provides bipolar signals and timing required to interface digital terminals either directly to DDS, or if required, through the CSU. A **Channel Service Unit (CSU)** provides the necessary link between the customer's premises equipment (CPE) and the telephone company's interface to either DDS or the Accunet service. Finally, a **Modem Sharing Unit (MSU)** is a device that enables multiple terminals to share one modem. MSUs are especially suited for networks that require clusters of terminals at remote sites because the number of modems and transmission lines is reduced. For a more in-depth tutorial on modems and related equipment, please refer to the **Modem & Multiplexers Technology Report.**

Over the past year, competition in the modem and modem-related equipment arena has intensified as an onslaught of vendors react to growing market pressures. For example, an increasing number of vendors are incorporating PC modem-expansion boards into their current product families in response to the proliferation of personal computers in the marketplace. Also, recent advances in Large-Scale Integration (LSI) technology have resulted in the introduction of more sophisticated products which operate at higher speeds and feature more compact packaging and advanced functions at lower prices.

This year's survey reflects the surge of high-end models with expanded capabilities and operating speeds up to 19.2K bps. Devices supporting data rates above 9600 bps represent a rapidly expanding segment of the market and leading vendors such as CASE, Codex, Paradyne, and Racal-Milgo have all jumped on the bandwagon with newly-released high-end products. Many of the sophisticated high-speed models feature enhanced diagnostics, built-in 4- or 6-channel multiplexers, and capabilities including automatic line monitoring and automatic speed selection to compensate for changes in line conditions. Prominent vendors CASE, Codex, and GDC also employ a trellis coded error correction scheme in an effort to improve transmission reliability at higher speeds.

Market expansion on the low-end is categorized by the increasing number of independent suppliers that have established a niche in the AT&T-compatible marketplace. The divestiture of AT&T's operating companies has affected the DCE market by creating a greater demand for a wider variety of products. Many modem vendors have responded by extending their product line with new AT&T-compatible offerings. In addition to the increase of AT&T-compatible models, this survey also demonstrates the overall emphasis on industry compatibility by including a larger range of vendors with new models that adhere to CCITT standards.

Listings in this revised edition of the Product Survey are arranged alphabetically by vendor name and then by specific model. Each model entry is further divided into 6 logical categories that define compatibility, application, packaging, operating parameters, features and options, diagnostic capabilities and visual indicators, and pricing and service support. Specific topic areas within each section are further delineated with a solid dot (•). The Modem Outline table below is a quick reference guide to vendors whose product parameters define the transmission facility, device type, compatibility, transmission speed, and technique (asynchronous/synchronous), and special features.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

DCE OUTLINE

COMPANY	APPLICATION: Switched Network (DDD)	APPLICATION: Dedicated/Leased Line	APPLICATION: Private Line Cable	TYPE: Long-Haul Modem	TYPE: Short-Haul Modem	TYPE: Acoustic Coupler	TYPE: Modem Eliminator/Line Driver	TYPE: Fiber Optic Modem	TYPE: DSU/CSU	TYPE: Automatic Calling Unit (ACU)	COMPATIBILITY: AT&T 103/113	COMPATIBILITY: AT&T 201C/202/208 A/B/209	COMPATIBILITY: CCITT V.22	COMPATIBILITY: CCITT V.22/212A	COMPATIBILITY: CCITT V.27	COMPATIBILITY: CCITT V.29	DATA RATE: 300 bps Maximum	DATA RATE: 1200/1800 bps Maximum	DATA RATE: 2400 bps Maximum	DATA RATE: 4800 bps Maximum	DATA RATE: 9600 bps Maximum	DATA RATE: 14.4K/19.2K bps Maximum	DATA RATE: 56K/64K bps Maximum	DATA RATE: Over 64K bps	SYNCHRONIZATION: Asynchronous Only	SYNCHRONIZATION: Synchronous Only	SYNCHRONIZATION: Asynchronous/Synchronous	FEATURES: Simultaneous Voice/Data	FEATURES: Alternate Voice/Data	FEATURES: Dial Backup	FEATURES: Digital/Analog Loopback	FEATURES: Multiport	FEATURES: Network Control	FEATURES: Secondary Channel
Adminet Inc	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	—	—	—	●	—	—	—	—	—
Amdahl Communications Systems	—	—	●	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	—	—	●	—	—	●	—	—	—	—	—
Anderson Jacobson	●	—	●	●	—	●	—	—	—	—	●	—	●	●	—	●	●	●	●	●	—	—	—	●	●	●	—	●	—	●	—	—	—
Ark Electronic Products	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	—	—	●	●	●	—	—	—	●	—	—	—
Astrocom Corp	—	—	●	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	●	●	●	—	—	—	●	—	—	—
AT&T Information Systems	●	—	—	●	—	—	—	—	●	—	●	●	●	—	—	—	●	—	●	●	—	●	—	●	●	—	—	●	●	●	●	—	●
Avanti Communications	—	●	●	●	●	—	●	—	—	—	—	—	—	—	—	—	—	—	●	—	●	●	●	●	●	—	—	—	—	●	—	—	—
Bo-sherrel co	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	—	—	●	●	—	—	—	—	—	—	—	—
Burroughs Corporation	●	●	—	●	—	—	—	—	—	—	—	●	—	—	—	—	—	—	●	●	—	—	—	●	●	—	—	—	—	●	●	●	—
California Data-Link	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●	—	—	●	—	—	●	—	—	—
Canoga Data Systems	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●	●	●	—	—	—	—	●	—	—	—
Canstar Communications	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●	—	—	—	—	—	●	—	—	—
CASE Communications	●	●	●	●	●	—	—	—	—	●	—	●	●	—	—	—	●	●	●	●	●	—	—	●	●	—	●	—	●	●	—	●	●
Codex Corporation	●	—	—	●	—	—	—	—	●	—	—	●	●	●	●	●	—	●	●	●	●	—	—	●	●	—	●	●	—	●	●	●	●
Coherent Communications	●	●	●	●	●	—	—	—	—	—	●	●	—	—	—	—	●	●	●	●	●	—	—	●	●	—	—	●	—	—	—	—	—
ComData Corporation	●	—	●	●	—	●	—	—	—	—	●	●	●	—	—	—	●	●	●	—	●	—	—	●	—	—	●	—	—	●	—	—	—
ComDesign	●	●	—	●	—	—	—	—	—	—	●	●	●	—	—	●	●	●	●	●	—	—	—	●	●	●	—	●	—	●	—	—	—
Communications Research Corp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	—	—	—	—	—	—	—	—	—
Complexx Systems	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	●	●	—	●	—	—	●	—	—	—	—	—
Comspec Inc	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	—	—	—	●	—	—	●	—	—	—	—	—	—
Concord Data Systems	●	●	—	●	—	—	—	—	—	—	●	—	●	●	—	—	●	●	●	—	—	—	—	●	●	—	●	●	—	—	—	—	—
Data Communications Brokers	—	●	—	●	—	—	—	—	—	—	—	—	—	—	●	●	—	—	●	●	—	●	—	—	●	—	—	—	—	—	—	—	—
Data-Control Systems	—	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	●	●	●	—	—	—	—	●	—	—	—
DataComm Management Sciences	—	●	●	●	●	—	—	—	—	—	●	●	—	—	—	—	—	●	—	—	●	—	—	●	●	—	—	—	—	—	—	—	—
Datalink Ready Inc	—	—	●	—	●	—	—	—	—	—	—	—	●	●	●	●	—	●	●	●	●	●	●	●	●	—	—	—	—	●	—	—	—
Dataprobe Inc	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	●	—	—	—	—	—	—	—	—
Dataproducts New England	—	—	●	—	●	—	—	—	—	—	—	—	●	—	—	—	—	—	●	—	—	●	—	—	●	—	—	—	—	—	—	—	—
Datatel Inc	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	—	—
Datec Inc	●	●	—	●	—	—	—	—	—	—	●	—	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—	●	—	—	—	—	—
DDC	—	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	—	●	—	—	—	—	—	—	—	—
DEI-Teleproducts	—	—	●	—	●	—	●	—	●	—	—	—	—	—	—	—	—	—	●	—	—	●	●	●	—	●	—	—	—	—	—	—	—
Develcon Electronics Inc	●	●	●	●	●	—	●	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	●	●	●	—	—	—	—	—	—	—
Digital Communications Assoc (DCA)	●	●	—	●	—	—	—	—	—	—	—	—	●	●	●	●	—	—	—	●	●	●	●	—	—	●	—	—	—	—	●	—	—
Digital Equipment Corp (DEC)	●	●	—	●	—	—	—	—	—	—	●	●	●	—	●	●	—	—	●	●	●	●	—	—	—	●	—	●	—	●	—	—	—
Digital Pathways	●	●	●	●	●	—	—	—	—	—	—	—	●	—	—	—	—	—	●	●	●	—	—	—	—	—	—	●	—	●	—	—	—
Electrodata Inc	—	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	●	—	—	—	—	—
E-TEC	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	●	—	—	●	—	—	—	—	—
Fairchild Data Corporation	—	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	—	—	—	—	—	—	—
Fibronics International Inc	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	—	—	—	—	—	—	—	—
Fujitsu America Inc	●	●	—	●	—	—	—	—	—	—	—	●	●	●	●	●	—	—	●	●	●	—	—	—	●	—	—	—	—	—	—	●	—
Gandalf Data Inc	—	●	●	●	●	—	●	—	●	—	—	—	—	—	—	—	—	—	●	—	●	●	●	●	●	●	—	●	●	—	●	●	—
General DataComm Industries	●	●	—	●	—	—	—	●	—	—	—	●	●	●	—	●	—	●	—	●	●	—	—	●	●	—	●	●	●	●	●	●	●
Halcyon Communications	—	●	—	●	—	—	—	—	—	●	—	—	—	—	●	●	—	●	—	●	●	—	—	●	●	—	—	—	—	—	●	—	—
Hewlett-Packard	●	●	—	●	—	—	—	—	●	—	●	—	●	—	—	—	—	—	●	—	—	—	—	●	●	—	—	—	—	●	—	—	—
Infinet Inc	—	●	●	●	●	—	—	—	—	●	—	—	—	—	●	●	—	●	●	●	●	—	—	●	●	—	●	●	—	—	●	—	●
Infotron Systems	●	●	—	●	—	—	—	—	—	—	●	●	●	—	—	—	●	●	●	●	●	—	—	●	●	—	●	—	—	—	—	—	—
Interactive Systems/3M	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	●	●	—	—	—	—	—	—	—	—
Int'l Business Machines (IBM)	●	●	—	●	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	●	—	—	—	●	—	—	—	—	—	—	—	●	●	—
Int'l Data Sciences	—	●	●	●	●	—	●	—	—	—	●	—	●	—	—	—	—	●	●	●	—	●	●	—	●	—	—	—	—	—	—	—	—
Int'l Telephone & Telegraph (ITT)	●	●	●	●	●	—	—	—	—	—	●	●	●	—	●	●	—	—	●	●	●	—	—	●	—	—	—	●	●	●	—	●	●

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

COMPANY	APPLICATION: Switched Network (DDD)	APPLICATION: Dedicated/Leased Line	APPLICATION: Private Line Cable	TYPE: Long-Haul Modem	TYPE: Short-Haul Modem	TYPE: Acoustic Coupler	TYPE: Modem Eliminator/Line Driver	TYPE: Fiber Optic Modem	TYPE: DSU/CSU	TYPE: Automatic Calling Unit (ACU)	COMPATIBILITY: AT&T 103/113	COMPATIBILITY: AT&T 201C/202/208 A/B/209	COMPATIBILITY: AT&T 212/212A	COMPATIBILITY: CCITT V.22	COMPATIBILITY: CCITT V.27	COMPATIBILITY: CCITT V.29	DATA RATE: 300 bps Maximum	DATA RATE: 1200/1800 bps Maximum	DATA RATE: 2400 bps Maximum	DATA RATE: 4800 bps Maximum	DATA RATE: 9600 bps Maximum	DATA RATE: 14.4K/15.8K/19.2K bps Maximum	DATA RATE: 56K/64K bps Maximum	DATA RATE: Over 64K bps	SYNCHRONIZATION: Asynchronous Only	SYNCHRONIZATION: Synchronous Only	SYNCHRONIZATION: Asynchronous/Synchronous	FEATURES: Simultaneous Voice/Data	FEATURES: Alternate Voice/Data	FEATURES: Dial Backup	FEATURES: Digital/Analog Loopback	FEATURES: Multiport	FEATURES: Network Control	FEATURES: Secondary Ch
Kidde Automated Systems	–	–	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	–	–	–	–	–	–	–	–	–	–
Lightwave Communications	–	–	●	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	○	–	–	–	–	–	–	–	–	–
Lockheed/Getex Division	●	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	–	●	–	–	–	–	–	–	–	●	–	–
Madzar Corporation	–	–	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	–	–	–	–	–	–	–	–	–	–
Math Associates Inc	–	–	●	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	●	●	–	–	–	–	–	–	–	–	–	–
Micom Systems Inc	–	●	●	●	–	–	–	–	–	–	●	●	●	–	○	●	●	●	●	●	●	–	●	●	●	–	–	–	●	–	●	–	–
Motorola Information Systems	●	●	–	●	–	–	–	–	–	–	–	●	–	–	–	–	●	–	–	●	●	–	–	●	–	–	–	–	●	–	●	–	–
Muirhead Inc	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	●	–	–	–	–	–	–	–	–
Multi-Tech Systems Inc	○	–	–	●	–	●	–	–	–	–	○	●	○	–	–	–	–	●	●	–	–	–	–	–	●	●	●	–	●	–	●	–	–
NCR Corporation	○	●	–	●	–	–	–	–	–	–	–	●	–	–	–	–	○	–	●	●	●	–	–	–	●	●	–	–	–	○	●	●	–
NEC America	○	●	–	●	–	–	–	–	–	–	○	●	○	–	○	●	●	●	●	○	●	○	–	–	●	●	●	–	–	–	○	●	–	●
Network Products	–	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	–	●	–	–	●	–	–	–	●	–	–
Noakes Data Communications	○	–	–	–	–	○	–	–	–	–	○	○	–	–	–	–	–	●	●	–	–	–	–	–	●	–	–	–	–	–	–	–	–	–
Nokia-Kinex	○	○	–	●	–	–	–	–	–	–	–	○	–	○	○	○	–	–	–	●	●	○	○	–	–	●	–	–	○	–	○	●	●	●
Northern Telecom/Spectron Div	–	–	●	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	○	–	●	●	–	–	–	–	–	–	–
Nu Data Corporation	–	●	○	○	●	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	–	●	–	–	●	●	–	–	–	–	●	–	–	–
Optelecom Inc	–	–	●	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	○	●	●	–	–	–	–	–	–	–	–
Paradyne Corporation	●	●	●	●	–	–	–	–	●	–	–	○	–	–	●	○	●	–	–	●	●	●	●	–	–	●	–	–	●	–	○	●	●	●
Penril Corporation	●	●	●	●	●	–	–	–	–	–	–	●	–	●	○	●	–	●	●	●	●	–	–	–	●	●	–	–	●	–	●	–	–	●
Prentice Corporation	●	●	●	●	●	–	–	–	–	–	○	○	○	●	–	○	–	●	●	●	●	○	–	–	●	●	–	–	●	–	○	●	–	–
Racal-Milgo	–	●	●	●	●	–	–	–	–	–	–	–	–	–	●	●	–	○	●	●	●	●	●	–	–	●	–	–	●	–	–	●	●	●
Racal-Vadic	○	○	–	○	–	–	–	–	–	–	○	○	○	○	–	–	○	○	○	●	–	–	–	–	●	●	○	–	–	–	–	○	–	–	–
Rockwell International Corp	○	○	–	●	–	–	–	–	–	–	○	●	○	○	○	○	●	●	●	●	○	●	–	–	●	●	●	–	–	–	–	○	–	–	●
s.i. Tech	–	–	●	–	●	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	○	●	–	●	●	–	–	–	–	–	○	–	–	–
Symplex Communications Corp	–	●	–	●	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–	–	●	–	–	–	–	–	○	●	–	–
Tek-Com	●	●	○	●	●	●	–	–	–	–	○	–	–	–	–	–	–	–	●	–	○	○	–	–	●	●	–	–	–	–	–	–	–	–
Tele-Signal Corporation	●	–	–	●	–	–	–	–	–	–	–	●	–	–	–	–	–	–	–	●	–	–	–	–	–	●	–	–	–	–	–	–	–	–
Telebyte Technology	–	–	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	○	–	–	–	–	–	–	–	●	–	–	–
Teleprocessing Products	–	–	●	–	●	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	●	●	●	–	●	●	–	–	–	–	●	–	–	–
Timplex Inc	●	–	●	●	●	–	–	–	–	–	–	–	–	●	●	–	–	●	●	●	●	–	–	–	–	●	–	–	–	–	–	●	●	–	–
Tri-Communications Industries	–	–	●	–	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	●	●	–	●	–	–	–	–	–	●	–	–	–
Tuck Electronics	●	●	●	●	●	●	–	–	–	–	●	●	–	–	–	–	●	●	●	–	–	●	●	–	–	●	–	–	–	–	●	–	●	–	–
Universal Data Systems (UDS)	●	●	–	●	–	–	●	–	●	–	●	●	●	●	–	–	●	●	●	●	–	●	●	–	–	●	–	–	–	–	●	–	●	–	–
Ven-Tel Inc	○	●	●	●	●	–	–	–	–	–	–	●	–	–	–	–	–	–	●	–	○	●	●	–	–	●	–	–	–	–	–	●	–	–	–
Veristron Inc	–	–	●	–	●	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	●	●	●	–	–	–	–	–	●	–	–	–
Wang Laboratories	●	–	●	●	–	–	–	–	–	–	○	–	○	–	–	–	–	–	●	–	–	○	–	●	●	●	–	–	–	–	–	●	–	–	–
Zeta Laboratories	–	–	●	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	○	○	○	–	●	–	–	○	–	–	–	–	–	–

DCE FEATURES

DCE DEVICE FEATURES

Vendor Modem Compatibility • specifies competitive modems that are electrically compatible with the vendor modem or other models within the vendor's own product line that are electrically compatible.

CCITT Compatibility • specifies modem compatibility with a specific recommended standard of the Consultative Committee of International Telegraphy and Telephony, Geneva, Switzerland.

The CCITT organization is a world leader in establishing recommended standards for telegraph and telephone communication and data transmission. CCITT recommendations define modem operating parameters from less than 300 bps to 9600 bps, but the recommendations below 2400 bps are rarely used except for international operation. The following CCITT recommendations define modems ranging in speed from 2400 bps to 9600 bps.

CCITT V.21 • defines 300-bps modem standard for full-duplex,

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

switched network operation or over a 2-wire leased line using FSK modulation.

CCITT V.22 • defines 1200/600 bps modem standard for full-duplex switched network operation or over a 2-wire leased line using differential 4-phase modulation at 1200 bps and differential modulation at 600 bps fallback rate. Up to 5 operating modes are supported: 1200 bps synchronous; 1200 bps asynchronous with 8/9/10/11 bpc; 600 bps synchronous; 600 bps asynchronous with 8/9/10/11 bpc. Channel carrier frequencies are 1200 and 2400 Hz.

CCITT V.22 bis • defines 2400/1200 bps modem standard for full-duplex, switched network operation or over a 2-wire leased line using a frequency division technique. Uses QAM (Quadrature Amplitude Modulation) for each channel. Channel carrier frequencies are 1200 an 2400 Hz Up to 4 operating modes are supported: 2400/1200 bps synchronous; and 2400/1200 asynchronous with 8/9/10/11 bpc.

CCITT V.23 • defines 0 to 1200/600 bps modems standard for full-duplex switched network operation or over a 2-wire leased line using FSK modulation. Optional 75 bps reverse channel supported. Assigned frequencies are 1300 Hz (mark) and 1700 Hz at 600 bps or 2100 Hz at 1200 bps (space).

CCITT V.26 • defines 2400 bps modem standard for full-duplex operation over a 4-wire point-to-point or multipoint leased line; identical to AT&T 201 modem except that only 4-wire leased line operation is specified. Uses 4-phase DPSK modulation; carrier frequency is 1800 Hz; optional 75 bps FSK reverse channel.

CCITT V.26 bis • defines 2400/1200 bps modem standard for switched network operation. Uses 2-phase DPSK modulation at 1200 bps; 4-phase DPSK modulation at 2400 bps; optional 75 bps FSK reverse channel.

CCITT V.27 • defines 4800 bps modem standard with manual equalizer for half- or full-duplex operation over a 4-wire leased line; similar to AT&T 208 modem specifications. Uses differential 8-phase modulation; optional 75 bps FSK reverse channel; 1800 Hz carrier frequency.

CCITT V.27 bis • defines 4800 bps modem standard with automatic adaptive equalizer for half- or full-duplex operation over a 4-wire leased line or half-duplex operation over a 2-wire leased line. Uses same modulation as V.27 except uses 4-phase modulation at 2400 bps; automatic adaptive equalizer.

CCITT V.27 ter • defines 4800/2400 bps modem standard with automatic adaptive equalizer for switched network operation.

CCITT V.29 • defines 9600/7200/4800 bps modem standard with automatic adaptive equalizer for half- or full-duplex operation over a 4-wire leased line; defines point-to-point operation; although half-duplex operation is possible with V.29, the long training delay specified (250 milliseconds) makes half-duplex operation undesirable. Uses QAM (Quadrature Amplitude Modulation); multiplexed multiport option.

CCITT V.32 • defines 9600/7200/4800/2400 bps full-duplex standard for switched network or over 2-wire point-to-point leased line. Uses QAM (Quadrature Amplitude Modulation); 1800 Hz carrier frequency; full echo cancellation.

APPLICATION

This Features Section defines the transmission facility and operating environment accommodated by the DCE device. Specific Topic fields covered within this section include the following:

Transmission Facility • the facility or medium employed by the DCE device as a communication link is defined as the DDD network, a dedicated Type 3002 voice channel, a wideband channel, a metallic circuit, a fiber optic cable, or AC power-wiring. Modem eliminators employ a user-supplied cable.

DDD Network • defines the public switched telephone network (PSTN), which provides point-to-point dial-up communication over a 2-wire line between subscriber and central office (local loop) and a 4-wire line between each central office. A modem is connected to the DDD network by 1 of 3 methods: direct connection, via a coupling device called a Data Access Arrangement (DAA), or acoustically.

Direct Connection • modems that are certified by the FCC under FCC docket 19528 Part 68 can be directly connected to the DDD network. Certified modems carry a registration number.

Connection Via DAA • modems that are not FCC certified under FCC docket 19528 Part 68 require a line coupling device called a Data Access Arrangement (DAA). The DAA is a network protection device that limits the modem output power and protects the network from hazardous voltages. It also performs signaling functions for network control. DAAs are available from a number of vendors in manual or automatic call originate and answer versions. Manual call originate and/or answer DAAs require a conventional telephone for call origination and/or answering.

Acoustic Coupling • a modem that acoustically connects to the DDD network is called an acoustic coupler. Coupling is through a conventional telephone handset, which is cradled in the coupler's acoustic transmitter and receiver cups. Acoustic couplers are useful for portability and in environments where direct connection is impossible or impractical (such as with a hard-wired PBX or other switch system), and are typically priced below conventional modems. Couplers, however, are limited to transmission speeds up to 1200 bps; with most limited to 450 bps.

Dedicated Type 3002 Voice Channel • the AT&T tariff classification for a leased 2- or 4-wire private line supports point-to-point or multipoint, half- or full-duplex communication. The term **multipoint** defines non-current communication between any 2 of 3 or more points on a single link. The bandwidth or signal handling capacity of a voiceband line is 3002 Hz, which supports numerous data rates up to 9600 bps using current modem technology. A few leading manufacturers of high-speed modems have extended the date rate limit over a voiceband channel to 14.4K bps and 16K bps, and several have pushed it to 19.2K bps.

Line Conditioning • a service provided by the telephone company to improve the quality (electrical characteristics) of leased voiceband lines. Conditioning is required by some modems to provide error-free performance without signal degradation; 2 types are available: "C" conditioning compensates for attenuation distortion and envelope delay; "D" conditioning compensates for poor signal-to-noise ratio and harmonic distortion. The telephone company offers 5 standard conditioning levels from minimum to maximum: C1, C2, C4, D1, and D2. Conditioning is not available for the DDD network.

Wideband Channel • a transmission facility that supports data rates in excess of 19.2K bps and is available from AT&T Communications as Series 8000 Wideband Service or Series 5000 Telpak Service. Wideband facilities are also available from independent carriers.

Metallic Circuits • a term applied to **private lines** installed on the user premises or supplied by the telephone company for local data distribution over a limited distance. Modems designed for use over metallic (copper) circuits are called **short-haul or limited-distance modems.** The transmission distance can range up to 30 miles, but is limited by **transmission speed** and **wire size** of the conductors in the twisted pair. Also, metallic circuits equipped with loading coils for voice transmission will restrict data rates to 9600 bps; some short-haul modems are designed for unloaded circuits only. Distance increases with increased conductor diameters and decreases with increased transmission rates. Wire Gauge (AWG) numbers. Conductor diameter diminishes as the numbers become larger. Typical wire size of metallic circuits range from AWG #19 through #26. AT&T has established specifications for transmission over private line metallic circuits under AT&T Technical Reference Publication 43401; short-haul modems conforming to AT&T Publication 43401 include filtering to ensure that transmitted signals do not cross over and interface with adjacent wire pairs in the same cable.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Applications that require data terminal equipment to be separated by distances that exceed the 50-foot limitation of EIA Standard RS-232C can be satisfied by a **line driver.** A line driver also called a **modem eliminator local distribution unit**, or **null modem**, is actually a digital repeater that amplifies a digital signal to extend cable distance between data terminal equipment located on user premises. A single line driver can extend cable distance from hundred to thousands of feet (depending on vendor) between communicating devices. It is an economical alternative to using a pair of limited-distance modems. More than 1 line driver can be used to further extend cable distance, but the cost of multiple line drivers can exceed the cost of limited-distance modems.

Fiber Optic Cable • a cable containing glass or plastic fibers that act as light guides for the transmission of light between source and destination equipment. The cable is required by modems designed for optical communications. Typically used for local data transmission is a viable alternative to transmission over metallic circuits.

AT&T Modem Compatibility • specifies AT&T modems that are electrically compatible with the vendor modem. Many manufacturers offer AT&T modem replacements at a lower price. Their modems are end-to-end compatible with the equivalent AT&T modem. The AT&T modem replacement market is a **significant segment** of the overall modem market.

PACKAGING

This feature section defines the physical packaging of the DCE device as a **standalone** unit for tabletop placement, a (standalone) **acoustic coupler**, a **rackmount module** that can be inserted in a rackmountable card cage for central-site communication, or aa C**C PC board** that can be integrated into a personal computer, or into a terminal or system by an OEM firm. The units per enclosure defines the number of modem modules that can be accommodated by the corresponding rackmountable card cage.

OPERATING PARAMETERS

This Features Section presents details on DCE device operating parameters. The section defines transmission mode synchronization, calling mode, RTS/CTS delay, modulation, equalization, and electrical interface. The operating parameters are defined under the following topic fields:

Transmission Mode • the direction that data is transmitted over a communication link is defined as simplex, half-duplex or full-duplex.

Simplex • defines **1-way** transmission between 2 points.

Half-Duplex • defines **2-way** transmission between 2 points, but in only **1 direction at a time.**

Full-Duplex • defines **2-way simultaneous** transmission between 2 points. Full-duplex transmission generally requires a 4-wire communication path, unless a **split-frequency-band modem** such as AT&T 103 and 113 series modems is used; this transmission technique uses FSK modulation to support full-duplex operation at data rates up to 1200 bps or better over a 2-wire line such as the DDD network. At least one vendor supports full-duplex operation over 2-wire line at data rates up to 4800 bps.

Synchronization • data is transmitted asynchronously or synchronously.

Asynchronous Transmission • also referred to as start-stop transmission, it frames each transmitted character with a start bit and 1 or 2 stop bits. The interval between successive characters can vary in time without affecting the transmission, but the interval between successive bits within a character is identical. Synchronization between transmitting and receiving devices is achieved on a character-by-character basis by each character's start and stop bits, which define the beginning and end of data.

Synchronous Transmission • transmits data in a continuous stream; the time interval between successive bits within a character and successive characters is constant. Synchronization between transmitting and receiving devices is achieved through synchronization bits or characters at the beginning of each transmission.

Calling Mode • modems that employ FSK modulation use 1 pair of frequencies (mark and space tones) to transmit data over a communication link, and receive data from the remote modem via a different pair of frequencies. The call originating modem is assigned 1 pair of frequencies and the call answering modem, a different frequency pair to enable full-duplex communication over a 2-wire link such as the DDD network. Telephone couplers are specified according to calling mode: answer only, originate only, or switch-selectable originate or answer.

RTS/CTS Delay • the elapsed time in milliseconds between the Request-To-Send (RTS) signal from the data terminal equipment (DTE) and the Clear-To-Send(CTS) signal generated by the modem, which the DTE must receive before it can transmit data. Long delay times of 150 or 200 milliseconds are necessary for the DDD network to disable echo suppressors (used only on switched lines); short delay times are desirable for 4-wire dedicated multipoint lines to improve the individual response times of the polled terminals. This can be a substantial saving when there are a considerable number of drops. On a 4-wire point-to-point communication facility where each modem maintains a continuous carrier, the RTS/CTS delay is zero.

Modulation • the method that the modem uses to alter its carrier frequency with respect to the data signal received from the data terminal equipment. The modem industry uses several different modulation techniques. Some are simple such as FSK (Frequency Shift Keying), which is employed for asynchronous transmission up to 1800 bps; some are complexed such as QAM (Quadrature Amplitude Modulation), which is used for synchronous transmission at speeds up to 9600 bps. In order to assure data transmisson reliability at speeds above 9600 bps, several vendors employ a trellis coded error correction scheme which trellises or interweaves additional data bits to each original data stream transmitted. The additional bits expedite the selection of the most accurate representation of the data being transmitted. Each modulation technique is advantageous to a specific application. **Communicating modems at the end of a data link must employ an identical modulation technique.**

Equalization • neutralizes the undesirable electrical characteristics of a communication line that distort the transmission, causing increased error rates and degraded performance. Equalization and line conditioning are extremely important to optimize modem performance, especially at data rates above 2400 bps. Both act to minimize signal impairments, such as envelope delay and attentuation distortion. Equalizers are essential because line conditioning does not totally neutralize distortion it assures that distortion is reduced to specific limits identified in the specifications for each type of line conditioning. Modems that operate on the DDD network at higher speeds require equalization since line conditioning is precluded on lines that are constantly switched. Each switched line exhibits different electrical characteristics. There are 3 basic forms of equalization currently in use: fixed, manually adjustable, and automatic adaptive.

Compromise or Statistical Equalization • fixed equalization based on the fact that about 90 percent of all unconditioned voiceband lines exhibit similar electrical characteristics.

Manual Equalization • performed by adjusting controls on the modem with respect to a visual indication of the results, such as a null meter, lights, eye pattern displayed on an oscilloscope, or by depressing a button on the modem's front panel.

Automatic Adaptive Equalization • automatically initiates equalization and adapts equalization to neutralize changes in line characteristics that occur during data transmission. It is used on the most high-speed modems because it provides the best performance. The time required to equalize a line is called training time and can range from as little as 25 milliseconds to as much as 150 milliseconds. Data transmission cannot proceed until equalization is completed.

Electrical Interface • the connection between data terminal equipment (DTE) and the data circuit terminating equipment

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

(DCE); i.e., the modem. The interface passes digital data and control signals between the devices, but can differ electrically depending on the application. Modems are available with the following electrical interfaces: RS-232C, RS-449, CCITT V.35, MIL-STD-188C or current loop.

RS-232C • the most common interface standard used throughout the industry, however, **exact conformation** to the standard is **typically not followed** by vendors because most vendor products use only the connections necessary for operation and because some connections are used for functions that differ among vendor products. The RS-232C interface supports transmission at data rates up to 20K bps at distances up to 50 feet between DTE and DCE; a 25-pin connector is used to connect DTE to DCE. The interface is designed around EIA standard **RS-423**, an unbalanced voltage digital interface circuit.

RS-449 • an improved interface standard that supercedes the RS-232C. The RS-449 Standard is compatible with RS-232C, but supports higher data rates at greater distances. The RS-449 interface supports transmission at data rates up to 2M bps at distances up to 200 feet between DTE and DCE; separate 37-pin and 9-pin connectors provided by RS-449 implement more control functions. The improved operating parameters of RS-449 are the result of improved circuit interface standard RS-422, a balanced digital interface circuit, RS-449 also supports the optional use of the unbalanced interface circuit standard, RS-423 at data rates of 20K bps and below in place of RS-422.

CCITT Recommendation V.28 • electrical characteristics for unbalanced double-current interchange circuits operating at data rates below the limit of 20K bps.

CCITT Recommendation V.35 • an international interface specification established by CCITT for data transmission rates above 20K bps, specifically 48K bps; for wideband modems.

MIL-STD-188C • an electrical interface standard for military equipment.

Current Loop • an electrical interface that employs telegraph technology. Data is transferred in the form of current pulses at rates up to 150 bps. Two signalling standards exist, neutral or unipolar in which signalling is performed by switching DC current on or off; and polar or bipolar in which signalling is performed by positive or negative DC current pulses. Signal current standards are 20- or 60-mA. Current transmission has been traditionally used for message communications via teletypewriters such as those produced by Teletype.

TTL • transistor-to-transistor logic. An industry-standard, digital non-communication interface used to connect 2 digital devices. Often employed with plug-in modems, connecting the modem directly to the personal computer data bus.

FEATURES/OPTIONS

Features and options associated with a specific modem are presented in this Section. Topic fields include the following:

Multiport • an integral time division multiplexer (TDM) that combines 2 or more (typically 4 low-speed digital data streams on the voiceband link). The aggregate data rate of the combined data streams cannot exceed the modem's maximum data rate; typically the low-speed data streams are multiples of the maximum rate.

Alternate Voice/Data • the transmission of voice or data via switch selection; requires a standard telephone for voice communication and for establishing a connection via the DDD network. Used for voice coordination preceding or proceeding data transmission.

Reverse Channel • a half-duplex operating technique that provides low-speed signaling in the opposite direction from data transmission via a narrowband channel. An alternative to full-duplex operation for message acknowledgement at the end of each received block. Eliminates turnaround time for acknowledgements.

Secondary Channel • a narrowband channel that supports transmission rates up to 150 bps in either direction concurrent with data transmission over the main channel. A voiceband facility has a bandwidth or signal handling capacity of 3 KHz. Data is transmitted in symmetry with the center frequency (1700 Hz) and typically requires a 2400-Hz bandwidth. The narrow bands of each side of the main channel can be used to implement 1 or 2 secondary channels for diagnostic and control functions at the remote modem. **Network Control System** compatibility is specified for vendors offering modems with diagnostic control and monitoring capabilities supported by the vendor's network control system. In addition, the secondary channel can be used to support auxiliary applications such as controlling temperature, lighting, and security functions at a remote location.

Auto-Call Interface • an electrical interface for an external automatic calling unit (ACU) such as AT&T 800 Series. The ACU automatically dials the number passed to it by the attached modem via the auto-call interface. Features include number storage and redial, which redials a number until a connection is established. Auto-call units are available from AT&T as well as from independent modem vendors and provide touch tone or pulse dialing techniques. See **Automatic Dial** and **Tandem Dial**.

Automatic Dial • a modem feature that automatically dials a pre-stored number from modem memory. Auto-dialers can store 1 or up to dozens of telephone numbers, depending on the model, with varying or user-definable lengths. Modems support pulse (rotary) and/or tone dialing techniques; some telephone networks and database services may require 1 method or the other.

Tandem Dial • an auto-dialer feature that permits dialing through a PBX (private branch exchange) or other in-house or on-campus switching system; requires dialing a specific digit to get into the public telephone network and the recognition of 2 separate dial tones. Some auto-dialers, in addition to or instead of tandem dialing, provide blind dialing which is designed for systems employing non-standard dial tones. Blind dialers dial the first digit, pause for a predetermined length of time (usually 5 seconds), and then dial the telephone number.

Auto-Answer • a modem feature that automatically responds to the ringing signal of an incoming call over the DDD network by generating an auto-answer tone (2025 Hz) and by connecting to the data terminal equipment (DTE) provided the equipment is ready. This feature supports applications that require unattended operation.

Dial Backup • a modem feature that restores communication interrupted by faulty dedicated lines until the failure is corrected. The feature provides manual or automatic switching between the modem and a 2-wire half-duplex or 4-wire full-duplex leased line and 1 or 2 switched lines of the DDD network. The dial-up connection is established from central or remote site by dialing via conventional telephones, 1 per line at each site. Some vendors provide automatic switching and call answering devices for the remote site to implement central-site control.

Hot-Spare Modem Switching • a modem feature that automatically switches from a faulty primary modem to a powered-up spare modem for remedial recovery. Remote-site switching is typically unattended and is performed under central-site control.

Elastic Buffer • a receive side data buffer that compensates for phase and short-term frequency fluctuations caused by transmission delay when the network is clocked by a master source, as in a digital network.

File Transfers • includes software for sending and receiving disk files to and from a central computer. Unattended file transfers are sometimes referred to as store-and-forward.

Text Editing • some communication software packages provide rudimentary text editing, allowing the user to alter online database retrievals and other text; usually not as comprehensive as separate word processing software.

Error Control • specifies the method by which some modems can detect and sometimes correct transmission errors generated over the phone line. The most sophisticated technique, cyclic redundancy checking (CRC 16), sends an error detection

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

algorithm along with the data stream and retransmits any incorrect blocks of data.

DIAGNOSTICS/INDICATORS

Diagnostic test functions provided by a specific modem for locating line or modem failures and visual indicators provided byte modem that indicate operating status are detailed in this Section. Modem diagnostic capabilities and indicators are defined under the following topic fields:

Self-Test • a performance test conducted on the transmit and receive circuits of a modem. The test is typically performed by introducing a random bit pattern from an integral generator into the transmitter input, looping the transmitter output to the receiver input, and comparing the bit pattern at the receiver output with the original bit pattern to detect bit errors.

Digital Loopback • a diagnostic method used with bit error rate testing to determine the integrity of the local or remote modem. The technique also allows the data terminal equipment to conduct self-testing. The data terminal equipment is disconnected from the modem and its send and receive paths are looped together. The digital output of the modem receiver is looped to the digital input of the modem transmitter. A bit error rate is conducted from the remote modem at the opposite end of the data link. A bit stream from the modem's random pattern generator is transmitted to the modem under test; the received bit pattern is then looped back and retransmitted to the remote modem where it is compared with the generated pattern to detect bit errors and to determine the bit error rate.

Remote Digital Loopback • a modem establishes a digital loopback path in response to a command received from the remote modem at the opposite end of the communication link, typically the central-site modem.

Local Digital Loopback • a modem establishes a digital loopback path via manual switching at the modem.

Analog Loopback • a diagnostic method used with bit error rate testing to determine the integrity of a local modem or communication link. The analog output of the modem transmitter is looped to the analog output of the modem receiver, and then the send site of the communication link is looped to the receive side of the link. A modem failure is determined by introducing a bit stream from the modem's random pattern generator into the digital input of the modem's transmitter. The looped back pattern at the digital receiver output is compared with the generated pattern to detect bit errors. A communication link failure is determined by introducing a bit stream from the random pattern generator of the modem at the opposite end of the communication link. The bit stream is looped back to the receive side of the transmitting modem and is compared with the generated pattern for errors. Absence of the returned bit stream indicates a link failure on the send or receive path of the link. The path of the failure is determined by reversing the procedure. Link degradation is indicated by an abnormal bit error rate.

Remote Analog Loopback • an analog loopback path automatically established at a modem in response to a command received from the remote modem at the opposite end of the communication link, typically the central-site modem.

Local Analog Loopback • an analog loopback path manually established at a modem by switching.

Eye Pattern Generator • an integral or external test feature that converts digital error signals from the modem equalizer to analog form to produce a special pattern called an eye pattern on the CRT screen of an attached oscilloscope. The eye pattern is used for a visual analysis of degraded analog parameters on the communications link including harmonic distortion, phase jitter, phase and amplitude hits, white noise, etc.

Visual Indicators • front panel indicator lamps or LEDs that present a visual indication of operating status.

Line Quality/Signal Level • indicates acceptable or marginal signal level and line quality conditions. A marginal indication results from deteriorating line conditions which subject the transmission to unacceptable error rates. Acceptable conditions reduce the average bit error rate to better than 1 in 10,000.

Test Mode • indicates modem is in a diagnostic test mode, such as self-test or loopback.

Error Condition • indicates a detected bit error, self-test error, or loopback test error.

Interface Signal Status • indicates operating status of electrical interface signals such as Request-To-Send (RTS), Clear-To-Send (CTS), Carrier Detect (DCD), and Data Set Ready (DSR).

Data Rate Fallback • indicates operating speed of multiple-rate modem or that the modem is operating at a fallback data rate in response to deteriorated transmission conditions.

COST/SERVICE

This Feature Section provides single-unit purchase pricing and monthly charge under a 1- or 2-year lease, which usually includes maintenance. Pricing is for the basic unit without options. Service is defined as factory or depot service, on-call service, third party service, and nationwide service. Hot-line diagnostic centers are mentioned where applicable.

The following are national sales/leasing companies for modems and related equipment:

American Computer Group Inc • Box 68 Kenmore Station, Boston, MA 02215 • 617-437-1100.

American Terminal Leasing Company • Box 68 Kenmore Station, Boston, MA 02215 • 617-437-1100.

W.A. Brown Instruments • P.O. Box 513, Orlando, FL 32802 • 305-425-5505.

C & L Terminals Inc • 1215 SE Iron, Portland, OR 97202 • 503-231-0333.

David Jamison Carlyle • Two Century Plaza, 2049 Century Park East, Los Angeles, CA 90067 • 213-277-4562.

Chess • 955 Bannock Street, Denver, CO 80204 • 303-573-5135.

Computer Datacom Inc • 1821 McGraw Avenue, Irvine, CA 92714 • 714-261-8200.

CSS Telecommunications • 2680 Bayshore Frontage Road, Mountain View, CA 94043 • 415-964-4335.

Data Rental/Sales, Inc • 8611 Hayden Place, Culver City, CA 90230 • 213-559-3822.

Electro Rent • 4209 Vancouver Place, Burbank, CA 91505 • 818-843-1221.

General Electric Company • One River Road, Schenectady, NY 12345 • 518-385-2211.

Instrumentation Sales Co • P.O. Box 176, Eagleville, PA 19408 • 215-265-5670.

Leasametric Inc/A Trans Union Co • 1164 Triton Drive, Foster City, CA 94404 • 415-574-4441.

MTI Sales Corp • 38 Harbor Drive, Port Washington, NY 11050 • 516-621-6200.

Rohr Associates • P.O. Box 27040, Philadephia, PA 19118 • 215-836-2200.

Terminal Data Corporation • 15733 Crabs Branch Way, Rockville, MD 20855 • 301-921-8282.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

DCE LISTINGS

■ ADMINET INC

27 Goulburn Avenue, Ottawa, ON K1N 8C7 • 613-563-9709

☐ Adminet Simultaneous Voice & Data Modem

Compatibility • unspecified.

Application • simultaneous voice and data communications for PBX networks; point-to-point operation over twisted pair telephone line.

Packaging • standalone; under the telephone mounting available.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps.

Features/Options • protocol transparent • maximum error rate of 1 in 10 million bits • plug-in, separate 9-volt power supply.

Diagnostics/Indicators • loopback test • LED indicators for carrier and power.

Cost/Service • contact vendor.

■ AMDAHL COMMUNICATIONS SYSTEMS DIVISION

2500 Walnut Avenue, Marina Del Rey, CA 90291; 213-822-3202 • Canadian Distribution: Tran Communications Limited, 1320 Shawson Drive, Mississauga, ON L4W 1C3; 416-678-9504.

☐ Amdahl Synchronous Data Set Model 982-2

Compatibility • unspecified.

Application • point-to-point operation over 4-wire unloaded Telco lines or over in-house private lines; at distances up to 32 miles complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • internal clocking for master unit configuration; external clocking from remote 982 or in external Mode from terminal for slave configuration; Automatic Line Buildout (ALBO) circuit in the 982 for distort-free transmissions; repeaters available to extend cable distance range.

Diagnostics/Indicators • digital and analog loopback tests • front-panel status indicators.

Cost/Service • standalone: $495 single-unit purchase price • rackmount: $450 single-unit purchase price • factory service.

☐ Amdahl Synchronous Data Set Model 982-4

Compatibility • unspecified.

Application • same as 982-2 • see above

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 982-2 • see above.

Diagnostics/Indicators • same as 982-2 • see above.

Cost/Service • standalone: $550 single-unit purchase price • rackmount: $500 single-unit purchase price • factory service.

☐ Amdahl Synchronous Data Set Model 982-6

Compatibility • unspecified.

Application • same as 982-2 • see above.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 64K bps • AT&T 301/303; CCITT V.35 interface; AT&T OCC specifications.

Features/Options • same as 982-2 • see above.

Diagnostics/Indicators • same as 982-2 • see above.

Cost/Service • standalone: $700/$850 (V.35/303 interface) single-unit • factory service.

☐ Amdahl 984-232/432 Multiport Data Set

Compatibility • WECO 209.

Application • point-to-point operation over 4-wire unloaded Telco lines or in house private lines.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 9600/19.2K (232/432) bps • automatic adaptive equalization • RS-232C interface.

Features/Options • multiplexes 2 to 4 synchronous data channels onto one 4-wire line; a remote 984 can be located up to 28 miles from a local 984; can be used in network extension applications in conjunction with Amdahl multiplexers or other equipment.

Diagnostics/Indicators • same as 982-2 • see above.

Cost/Service • standalone: single-unit purchase price • rackmount: single-unit purchase price • quantity discounts available • warranty • factory service.

☐ Amdahl 983 DSU-A Synchronous Data Service Unit-A

Compatibility • DDS network.

Application • direct interface between customer DTE at the user's premises and the DDS, without the need for a CSU; may also be used in private PCM systems.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates at 56K bps, models-631/-671; up to 9600 bps all other models • automatic adaptive equalization • RS-232C/CCITT V.35 interface.

Features/Options • operates transparently; operates in slave clock mode and serial clock transmit external (SCTE)signal from the DTE.

Diagnostics/Indicators • end-to-end continuity of entire transmission path in network can be performed by operator via local and remote loopback tests.

Cost/Service • contact vendor.

☐ Amdahl 983 Synchronous Data Service Unit-B

Compatibility • DDS network; WECO 500B DSU.

Application • same as 983 Unit A • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 56K bps, model -633; up to 9600 bps, model -133 • automatic adaptive equalization • RS-232C/CCITT V.35 interface.

Features/Options • operates transparently.

Diagnostics/Indicators • local and remote loopback tests • front-panel indicators.

Cost/Service • contact vendor.

☐ Amdahl 983P Synchronous Channel Service Unit

Compatibility • DDS network.

Application • same as 983 Unit A • see above.

Packaging • standalone or rackmount.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • same as 983 Unit-B • see above.

Features/Options • ALBO circuit in line receiver circuit compensates for losses in transmission path from DDS network

Diagnostics/Indicators • same as 983 Unit-B • see above.

Cost/Service • standalone: single-unit purchase price • rackmount: single-unit purchase price • quantity discounts available • warranty • factory service.

■ ANDERSON JACOBSON, INC

521 Charcot Avenue, San Jose, CA 95131; 408-263-8520 • Canadian Distribution: Anderson Jacobson Canada Ltd/Ltee, 205 Torbay Road, Unit 2, Markham, ON L3R 1H1; 416-475-5510.

☐ AJ 243 Acoustic Coupler

Compatibility • unspecified.

Application • DDD network via acoustic coupling.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 450 bps • originate-only mode • FSK modulation • TTL interface.

Features/Options • manual dial via telephone.

Diagnostics/Indicators • front-panel LEDs for modem power and carrier detect • status indicators.

Cost/Service • standalone: $265 single-unit purchase price • quantity discounts available • 1-year warranty • factory/on-call service or on-site service at 1 of 23 service center locations.

☐ AJ 1245 Acoustic Coupler/Modem

Compatibility • AT&T 103/113 modems at up to 300 bps and 202 at up to 1200 bps.

Application • DDD network via DAA or acoustic coupler.

Packaging • standalone; direct-connect modem or acoustic coupler.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • originate/answer modes • RTS/CTS delay of 200 milliseconds • FSK modulation • compromise equalization • RS-232C interface.

Features/Options • auto-mode supports full-duplex terminals in AT&T 202 half-duplex mode • optional integral switch-selectable echo suppression disable (local only).

Diagnostics/Indicators • self-test of modem circuitry;local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $695 single-unit purchase price • • quantity discounts available • 1-year warranty • factory/on-call service; on-site service at 1 of 23 service center locations.

☐ AJ 4048 Modem

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 4800/2400 bps • originate/answer/automatic answer modes • QAM modulation • RS-232C interface.

Features/Options • alternate voice/data via voice/data switch; automatic disconnect • optional signal display board.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; end-to-end digital/analog loopback; integral test pattern generator • status indicators.

Cost/Service • standalone: $3,495 single-unit purchase price • rackmount adapter: $98 • quantity discounts available • 1-year warranty • factory/on-call service; on-site service at 1 of 23 service center locations.

☐ AJ 1212-AD 1

Compatibility • AT&T 103/212A modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • manual/auto originate/answer modes • QAM (212 mode); FSK (103 mode) modulation • RS-232C interface.

Features/Options • 16 telephone number memory up to 37 digits each; keyboard or stored number dialing; single key redial or automatic redial; auto linking dials alternative numbers; single number editing; auto speed and parity detection; non-volatile memory; audio tone indication of call progress; user-definable disconnect sequence; automatic pulse/touch tone dialing; tandem dialing/blind dialing; integral power supply.

Diagnostics/Indicators • front-panel LEDs.

Cost/Service • contact vendor.

☐ AJ 1212-AD 2

Compatibility • AT&T 103/113/212A modems.

Application • same as 1212-AD 1 • see above.

Packaging • standalone.

Operating Parameters • same as 1212-AD 1 • see above.

Features/Options • 16 telephone number memory for up to 37 digits each; two-speed dialing phone numbers; keyboard or stored number dialing; user-definable mnemonics; auto linking dials alternative numbers; pulse/tone dialing; auto redialing; auto speed and parity detect; auto busy/ringing/dead phone/voice detect; auto dial tone detect; auto/manual dial; two-level password security; log-on sequence storage; unattended program execution; downline data loading; non-volatile memory; user-definable disconnect sequence; programmable answerback sequence; integral power supply • optional software-controls.

Diagnostics/Indicators • same as 1212-AD 1 • see above.

Cost/Service • contact vendor.

☐ AJ 1212-ST

Compatibility • AT&T 103/113/212A modems.

Application • same as 1212-AD1 • see above.

Packaging • standalone.

Operating Parameters • same as 1212-AD 1 • see above.

Features/Options • auto data rate detect; front-panel membrane switches; integral power supply.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback response • front-panel indicators.

Cost/Service • contact vendor.

☐ AJ Data Modem/2400

Compatibility • AT&T 212 modem at 1200 bps; CCITT V.22 at 2400 bps.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • RS-232C interface.

Features/Options • automatic dialing of up to 20 telephone numbers; auto-log-on stores up to 20 sequences, which can be linked with one or more directory-stored telephone numbers.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $795 single-unit purchase price •

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

quantity discounts available • 1-year warranty • factory/on-call service at 1 of 23 service center locations.

☐ AJ 9601-LD Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps • RS-232C interface.

Features/Options • automatic dial; internal security switch.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $2,545 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory/on-call service at 1 of 23 service center locations.

☐ **Personal Computer Modems** • AJ 242-A; AJ 245; AJ 247; AJ 347; AJ 1211; AJ 1232; AJ 1233; AJ 1234-A; AJ 1235; AJ 1256; AJ 1259.

■ ARK ELECTRONIC PRODUCTS INC

Subsidiary of Paradyne Corp • 325 Hibiscus Blvd, Melbourne, FL 32901; 305-724-5260 • Canadian Distribution: none.

☐ ARK Limited-Distance Modem Model 1 B

Compatibility • unspecified.

Application • point-to-point operation over a non-loaded twisted-pair or 4-wire metallic circuit; at distances up to 17 miles using AWG # 22 or 13 mile using AWG # 22 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 19.2K bps • delay modulation • compromise equalization • RS-232C interface.

Features/Options • internal or external clock source • optional RTS/CTS delay selectable at 8.5 or 50 milliseconds.

Diagnostics/Indicators • self-test; local and remote digital loopback; remote analog loopback • visual indicators for line quality/signal level; test mode; error condition; interface signal status.

Cost/Service • standalone: $693 single-unit purchase price • quantity discounts available for 25 or more units • factory service.

☐ Ark Limited-Distance Modem Model 4

Compatibility • unspecified.

Application • point-to-point or multipoint operation over non-loaded twisted-pair or a 4-wire metallic circuit; at distances up to 6 miles • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • QAM modulation • compromise equalization • RS-232C interface.

Features/Options • switched or constant carrier • optional RTS/CTS delay selectable at CTS on, 0, 8, 50 milliseconds.

Diagnostics/Indicators • local digital loopback; LED indicators for test mode and interface signal status.

Cost/Service • standalone: $295 single-unit purchase price • • factory service.

☐ ARK Limited-Distance Modem Model 5

Compatibility • Ark Modem Model 4.

Application • point-to-point operation over non-loaded twisted-pair or a 4-wire metallic circuit; at distances up to 5 miles • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous/synchronous at data rates up to 9600 bps • QAM modulation • compromise equalization • RS-232C interface.

Features/Options • no strap changes required to switch from asynchronous/synchronous.

Diagnostics/Indicators • local digital loopback • LED indicators for interface signal status.

Cost/Service • standalone: $395 single-unit purchase price • quantity discounts available for 5 or more units • factory service.

☐ ARK Limited-Distance Modem Model 6

Compatibility • unspecified.

Application • point-to-point operation over metallic circuit with DC continuity; at distances up to 3 miles.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps up to 3 miles; can operate at data rates up to 100K bps over shorter distances • RS-232C interface.

Features/Options • optional RTS/CTS delay of 0, 9, 50 milliseconds.

Diagnostics/Indicators • LED indicators for TX/RX data and power.

Cost/Service • standalone: $195 single-unit purchase price • quantity discounts available • factory service.

☐ ARK Limited-Distance Line Driver Model 7

Compatibility • unspecified.

Application • point-to-point operation over metallic circuit with DC continuity ; at distances up to 1 Km.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 56K bps • RTS/CTS delay of 0 milliseconds • RS-232C interface.

Features/Options • RTS/CTS delay strap selectable.

Diagnostics/Indicators • LED indicators for TX/RX data, and power.

Cost/Service • standalone: $425 single-unit purchase price • quantity discounts available • factory service.

■ ASTROCOM CORPORATION

120 West Plato Blvd, St. Paul, MN 55107; 612-227-8651 • Canadian Distribution: Louis Albert Associates Inc, 5411 Kanotek Road, Gloucester, ON K1J 8Y5; 613-748-9751.

☐ Astrocom Modem Emulator

Compatibility • unspecified.

Application • point-to-point operation over private cable up to 200 feet.

Packaging • standalone or rackmount; up to 16 units per enclosure PC board.

Operating Parameters • half-/full-duplex; synchronous/asynchronous at data rates up to 57.6K bps • RTS/CTS delay of 24 milliseconds • RS-232C interface.

Features/Options • optional CCITT/V.35 interface.

Diagnostics/Indicators • status indicators.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Cost/Service • standalone: $315 single-unit purchase price • quantity discounts available for 25 or more units • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model MOS-2

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a metallic circuit; at distances up to 15 miles • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure; PC board.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 24 milliseconds • PSK modulation • manual equalization • RS-232C interface.

Features/Options • 2- or 4-wire option.

Diagnostics/Indicators • self-test; local digital and analog loopback; optional remote digital loopback • visual indicators for test mode; error condition, and interface signal status.

Cost/Service • standalone: $610 single-unit purchase price • PC board: $475 single-unit purchase price • quantity discounts available for 25 or more units • rackmount pricing available on request • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model SH48A

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a metallic circuit; at distances up to 5 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 4800 bps • FSK modulation • originate and answer modes • RS-232C interface.

Features/Options • same as MOS-2 • see above.

Diagnostics/Indicators • local digital and analog loopback; visual indicators for interface signal status.

Cost/Service • standalone: $295 single-unit purchase price • PC board; $195 single-unit purchase price • rackmount pricing available on request • quantity discounts available for 25 or more units • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model SH192A

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 1.75 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure, PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • FSK/PSK modulation • automatic equalization • RS-232C interface.

Features/Options • same as MOS-2 • see above.

Diagnostics/Indicators • local digital and analog loopback; visual indicators for interface status.

Cost/Service • standalone: $295 single-unit purchase price • PC board: $195 single-unit purchase price • quantity discounts: $195/$175 for 10 to 24 units single-unit/PC board • rackmount pricing available on request • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model SH192S

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 8 miles using AWG #22 or 26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure, PC board.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • typical CTS delay of 20 milliseconds • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local analog loopback • visual indicators.

Cost/Service • standalone: $395 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model SH96A

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 3 miles using AWG #26.

Packaging • standalone or rackmount; up to 16 units per enclosure, PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • FSK/PSK modulation • compromise equalization • RS-232C interface.

Features/Options • same as MOS-2 • see above.

Diagnostics/Indicators • digital and analog loopback • visual indicators.

Cost/Service • standalone: $295 single-unit purchase price • PC board: $195 single-unit purchase price • quantity discounts: $275/$175 for 10 to 24 units (standalone/PC board) • 1-year warranty • factory service.

☐ Astrocom Limited-Distance Modem Model SH56S

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a metallic circuit; at distances up to 3 miles.

Packaging • standalone or rackmount; up to 16 units per enclosure, PC board.

Operating Parameters • half-/full-duplex; synchronous at data rates of 28K or 56K bps • PSK modulation • RS-232C interface.

Features/Options • CCITT/V.35 interface optional.

Diagnostics/Indicators • self-test local digital and analog • visual indicators • LEDs.

Cost/Service • standalone: $730 single-unit purchase price • PC board: $540 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ AT&T INFORMATION SYSTEMS (ATTIS)

100 Southgate Parkway, Morristown, NJ 07960; 201-898-8000• Canadian Distribution: none.

☐ AT&T Dataphone II 2001A Tertiary Channel Modem

Compatibility • other Dataphone II modems.

Application • point-to-point operation over a private Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 110 bps • RS-232C interface.

Features/Options • code transparent; backup battery; continuous or switched carrier capability • provides a third channel for alarm/security that is overlaid on private line Dataphone II service network; not restricted by traffic flow on the primary or diagnostic channels.

Diagnostics/Indicators • front-panel self-test; digital and analog loopback.

Cost/Service • standalone: $650 single-unit purchase price.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ AT&T Dataphone II Data Set 2024A

Compatibility • AT&T 201B/C/D modems.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 2400 bps • RTS/CTS delay of 8 milliseconds • PSK modulation • automatic adaptive equalization • RS-449/423 interface.

Features/Options • 110 bps secondary channel • fully featured for Telcos • provides diagnostic and control functions for Dataphone II service Levels I, II, III.

Diagnostics/Indicators • self-test; local and remote digital and analog loopback • visual indicators for 4-character alpha fault display, test mode, error condition, and interface signal status.

Cost/Service • standalone: $1,958 single-unit purchase price.

☐ AT&T Dataphone II 2024T Modem

Compatibility • AT&T Dataphone II 2024A modem.

Application • same as 2024A • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 2400 bps • RTS/CTS delay of 8 milliseconds • fixed compromise equalization • RS-232C interface.

Features/Options • central Dataphone II diagnostics • optional switched/continuous carrier; scrambler/descrambler.

Diagnostics/Indicators • continuous self-diagnostics • front-panel indicators.

Cost/Service • standalone: $1,800 single-unit purchase price.

☐ AT&T Dataphone II Data Set 2048A

Compatibility • AT&T 208A modem.

Application • same as 2024A • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 50 milliseconds • PSK modulation • RS-449/423 interface.

Features/Options • 110 bps secondary channel for diagnostic and control functions; alternate voice/data; antistreaming; dial backup and hot-spare modem switching available, but not an integral component of Dataphone II series; fully featured for Telcos.

Diagnostics/Indicators • same as 2024A • see above.

Cost/Service • standalone: $2,790 single-unit purchase price.

☐ AT&T Dataphone Data Set 2048C

Compatibility • AT&T 208A modem.

Application • same as 2024A • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 20 milliseconds • PSK modulation • RS-449/423 interface.

Features/Options • same as 2024A • see above.

Diagnostics/Indicators • same as 2048A • see above.

Cost/Service • standalone: $3,060 single-unit purchase price.

☐ AT&T Dataphone II Data Set 2096A

Compatibility • unspecified.

Application • same as 2024A • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates at 9600 bps; D1 or D2 conditioning required • QAM modulation • RS-449/423 interface.

Features/Options • 4-port multiplexer multiplexes 2400 bps combinations of 2400/4800/7200/9600 bps data streams for an aggregate 9600 bps • 110 bps secondary channel • fully featured for Telcos.

Diagnostics/Indicators • same as 2024A • see above.

Cost/Service • standalone: $4,230 single-unit purchase price.

☐ AT&T Dataphone II Data Set 2096C

Compatibility • unspecified.

Application • multipoint operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 30 milliseconds • automatic adaptive equalization • RS-449/423 interface.

Features/Options • same as 2024A • see above.

Diagnostics/Indicators • same as 2024A • see above.

Cost/Service • standalone: $4,230 single-unit purchase price.

☐ AT&T 2500 DSU

Compatibility • unspecified.

Application • direct interface between customer's premises and the DDS.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800/9600 bps; selectable 56K bps • RS-232C/CCITT V.35 (56K only) interface.

Features/Options • optional dial backup.

Diagnostics/Indicators • built-in test pattern generator; built-in elastic store; streaming form detection and disable.

Cost/Service • contact vendor.

☐ **Personal Computer Modems** • 103JR; 2212C/FDX; 2212D/FDX.

■ AVANTI COMMUNICATIONS CORPORATION

Aquidneck Industrial Park, Newport, RI 02840; 401-849-4660 • Canadian Distribution: Vida System, 200 Consumers Way, Willowdale, ON, M2J 4R4; 416-499-2270.

☐ Avanti Modem Eliminator Models 300 & 300H

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 400 feet.

Packaging • standalone or rackmount; up to 11 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps (Model 300) up to 224K bps (Model 300H) • RTS/CTS delay of 0, 8, 50 milliseconds (Model 300); 0, 8, 16, milliseconds (Model 300H) • RS-232C (M0del 300); CCITT/V.35 (Model 300H) interface.

Features/Options • constant and switched carrier operation.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $360/$550 (300/300H) single-unit purchase price • rackmount: $265/$500 (300/300H) single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti Local Area Data Distributor 2300H

Compatibility • unspecified.

Application • point-to-point operation over a twisted-pair or

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

coaxial cable; at distances up to 4,300 feet using AWG #22.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates from 512K to 3.152M bps • no equalization adjustments • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local analog loopback; remote digital loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $2,075 single-unit purchase price • rackmount: $1,925 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti Local Area Data Distributor 2300M

Compatibility • AT&T 301/303.

Application • point-to-point operation over a twisted- pair or coaxial cable; at distances up to 2.5 miles using AWG #22.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates of 56 to 460.8K bps • switch-selectable equalization • RS-449/422/CCITT V.35/MIL-188/-114 interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $1,920 single-unit purchase price • rackmount: $1,770 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti Local Area Data Distributor 1900

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 8 miles using AWG # 26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 50 milliseconds • DPSK modulation • no equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $575 single-unit purchase price • rackmount: $475 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti 2400

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire unconditioned Type 3002 voice channel.

Packaging • standalone or rackmount; up to 10 units per enclosure; PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200/2400 bps • RTS/CTS delay of 0, 50 milliseconds • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local analog loopback and remote digital loopback.

Cost/Service • standalone: $1,200 single-unit purchase price • rackmount: $1,100 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti Local Area Data Distributor 2200

Compatibility • AT&T 301/303.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 6 miles using AWG # 26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous (optional)/synchronous at data rates 2400 to 19.2K bps synchronous only 2400 to 56K bps • RTS/CTS delay of 0, 8, 16, 32 milliseconds • DPSK modulation • manual equalization • RS-232C/CCITT V.35/MIL-188/-114 interface.

Features/Options • DSU buffer option for extending and multidropping a DDS circuit • internal, external, and loop timing.

Diagnostics/Indicators • local analog loopback; remote digital loopback.

Cost/Service • standalone: $650 single-unit purchase price • rackmount: $550 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti LDX 100

Compatibility • unspecified.

Application • point-to-point operation via PBX system.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 9600 bps; isochronous at data rates of 300 to 1200 bps • RS-232C interface.

Features/Options • auto-answer • transmits voice or data.

Diagnostics/Indicators • local analog loopback; remote digital loopback.

Cost/Service • standalone: $849 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Avanti Local Area Data Distributors 1935 & 1949

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 2.5 miles at 0-dBm levels.

Packaging • standalone or rackmount; up to 11 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 56 or 64K bps • RTS/CTS delay of 0, 5 milliseconds • DPSK modulation • no equalization • RS-232C interface.

Features/Options • external, internal, and loop timing.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: $595 single-unit purchase price • quantity discounts available • warranty • factory service.

☐ Avanti TPAC 1.5

Compatibility • unspecified.

Application • direct connection from user's premises to the DDS.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 1.544M bps • RS-232C/449; CCITT V.35 interface.

Features/Options • T1 programmable access unit; capable of multiplexing voice and data.

Diagnostics/Indicators • local analog loopback; remote digital loopback.

Cost/Service • contact vendor.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

■ BO-SHERREL CO

36133 Niles Boulevard, Fremont, CA 94536; 415-792-0354 • Canadian Distribution: none.

☐ bo-sherrel M-1A Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2-or 4-wire metallic circuit; at distances up to 10 miles.

Packaging • standalone; cards available.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $138 single-unit purchase price • quantity discount $115 for 10 to 99 units; $96 for 100 to 999 units; $81 for 1,000 and over units • 2-year warranty • factory service.

☐ bo-sherrel M-3 Asynchronous Line Driver

Compatibility • bo-sherrel M-1A Limited Distance modem.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 2 miles.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • palm sized • powered by attached terminal.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $49 single-unit purchase price • quantity discounts: $43 for 10 to 99 units; $38 for 100 and over units • 2-year warranty • factory service.

☐ bo-sherrel M-4 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 6 miles.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 10, 20, or 50 milliseconds • RS-232C interface.

Features/Options • internal/external clock.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $440 single-unit purchase price • quantity discounts available: $368 for 10 to 99 units; $296 for 100 and over units • 2-year warranty • factory service.

■ BURROUGHS CORPORATION

Burroughs Place, Detroit, MI 48232; 313-972-7000 • Canadian Distribution: Burroughs Canada, 801 York Mills Road, Don Mills, ON M3B 1X7; 416-445-4030.

☐ Burroughs Modem CP 1004

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified. • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 25 milliseconds • PSK modulation • adaptive digital transversal equalization • RS-232C/CCITT V.28 interface.

Features/Options • multiplexes up to 2 ports over 1 circuit; controlled or continuous carrier.

Diagnostics/Indicators • remote and local testing; internal data quality monitor indicator; internal pseudo-random test pattern.

Cost/Service • standalone: $2,000 single-unit purchase price • $174 per month 1-year lease • $22.20 per month maintenance • 1-year warranty • factory service.

☐ Burroughs Modem CP 1009

Compatibility • CCITT V.29.

Application • same as CP 1004 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • QAM modulation • automatic digital transversal equalization • RS-232C/CCITT V.28 interface.

Features/Options • multiplexes up to 4 ports over 1 circuit; supports dial backup at 4800 bps.

Diagnostics/Indicators • same as CP 1004 • see above.

Cost/Service • standalone: $3,250 single-unit purchase price • $375 per month 1-year lease • $27.80 per month maintenance • 1-year warranty • factory service.

☐ Burroughs Modem CP 1009-R

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned 2- or 4-wire voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 20 milliseconds • QAM modulation • adaptive digital transversal equalization • RS-232C/CCITT V.28 interface.

Features/Options • rapid polling in multipoint networks; supports dial backup at 4800 bps.

Diagnostics/Indicators • same as CP 104 • see above.

Cost/Service • standalone: $3,950 single-unit purchase price • $392 per month 1-year lease • $27.80 per month maintenance • 1-year warranty • factory service.

☐ Burroughs CP 1009-T

Compatibility • CCITT V.29.

Application • same as CP 1009 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • QAM modulation • adaptive digital transversal equalization • RS-232C/CCITT V.28 interface.

Features/Options • supports dial backup at 4800 bps, with automatic answer.

Diagnostics/Indicators • same as CP 1004 • see above.

Cost/Service • standalone: $2,000 single-unit purchase price • $174 per month 1-year lease • $22.20 per month maintenance • 1-year warranty • factory service.

☐ Burroughs Modem Model TA 1201

Compatibility • AT&T 202 and Burroughs TA700/1200/1800 modems.

Application • DDD network via DAA • point-to-point operation over an unconditioned or conditioned 2- or 4-wire voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; a synchronous at data rates of 600 (opt)/1200/1800 bps; C1 conditioning required at 1800 bps • originate/answer modes • RTS/CTS delay of 16, 20, 60 milliseconds over 4-wire line and 200 milliseconds over 2-wire

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

line • FSK modulation • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote digital and analog loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $710 single-unit purchase price • $28 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem Model TA 1203

Compatibility • AT&T 202 and Burroughs TA 700/1200/1800 modems.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • simplex, half-duplex; asynchronous at data rates up to 600 (opt)/1200 bps • originate/answer modes • RTS/CTS delay of 200 milliseconds • FSK modulation • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • auto-answer • optional auto or manual dial.

Diagnostics/Indicators • same as TA 1201 • see above.

Cost/Service • standalone: $963 single-unit purchase price • $300 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem TA 1801

Compatibility • same as TA 1203 • see above.

Application • same as TA 1203 • see above.

Packaging • standalone.

Operating Parameters • same as TA 1201 • see above.

Features/Options • none supported.

Diagnostics/Indicators • same as TA 1203 • see above.

Cost/Service • standalone: $1,012 single-unit purchase price • $31 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem TA 1802

Compatibility • unspecified.

Application • same as TA 1203 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200/1800 bps • RTS/CTS delay of 8 milliseconds • FSK modulation • RS-232C/CCITT V.28 interface.

Features/Options • optional multiport multiplexes 2 data streams for an aggregate rate of 1800 bps.

Diagnostics/Indicators • local digital and analog loopback.

Cost/Service • standalone: $1,375 single-unit purchase price • $64 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem TA 2401

Compatibility • AT&T 201B/C and Burroughs TA734-24 and TA 240 Series modems.

Application • DDD network via DAA • point-to-point or multipoint operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 8, 16 milliseconds over 4-wire line; 200 milliseconds over 2-wire line • PSK modulation • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote digital and analog loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $1,375 single-unit purchase price • $64 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem Model TA 2403

Compatibility • AT&T 201B/C and Burroughs TA 734-24 and TA 2401 modems.

Application • DDD network via DAA.

Packaging • standalone.

Operating Parameters • simplex, half-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 200 milliseconds • PSK modulation; 1800-Hz carrier • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • data rate selection; auto-answer • optional auto-dial/answer .

Diagnostics/Indicators • local and remote digital and analog loopback • visual indicators for line quality/signal level; test mode; interface signal status.

Cost/Service • standalone: $1,595 single-unit purchase price • $81 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem Model TA 2404

Compatibility • AT&T 201B/C and Burroughs TA 734-24 and TA 2401 modems.

Application • same as TA 1201 • see above.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 8, 16 milliseconds over 4-wire line; 200 milliseconds over 2-wire line • PSK modulation 1800-Hz carrier • automatic compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • data rate selection; manual switching between 4-wire dedicated line and DDD network • optional manual dialing/answer.

Diagnostics/Indicators • same as TA 2403 • see above.

Cost/Service • standalone: $1,815 single-unit purchase price • $64 per month 1-year lease • 1-year warranty • factory service.

☐ Burroughs Modem Model TA 2405

Compatibility • AT&T 201B/C and Burroughs TA-734-24 and TA 2401 modems.

Application • same as TA 1201 • see above.

Packaging • standalone.

Operating Parameters • same as TA 2404 see above.

Features/Options • data rate selection; auto-answer; automatic switching between 4-wire dedicated line and DDD network • optional auto-dialing.

Diagnostics/Indicators • same as TA 2404 • see above.

Cost/Service • standalone: $2,035 single-unit purchase price • $115 per month 1-year lease • 1-year warranty • factory service.

■ CALIFORNIA DATA-LINK, INC

45 Granada Court, Portola Valley, CA 97025; 415-851-3459 • Canadian Distribution: none.

☐ California Data-Link T-1 Fiber Optic Modem

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 1.544M bps • RS-442A interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • alternate voice/data.

Diagnostics/Indicators • self-test; local and remote digital loopback; error condition; front-panel LEDs • status indicators.

Cost/Service • standalone: $1,400 single-unit purchase price • rackmount: prices available on request • quantity discounts; $1,190 for 11 to 25 units; $1,120 for 26 or more units • 2-year warranty • factory service.

■ CANOGA DATA SYSTEMS

21218 Vanowen St, Canoga Park, CA 91303; 213-888-2003 • Canadian Distribution: ROR Associates Ltd, 21 Rolark Drive, Scarborough, ON M1R 3B1; 416-291-7121.

☐ Canoga Fiber Optic Modem CSA-100

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable; at distances up to 2 miles.

Packaging • standalone or rackmount.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 115K bps; asynchronous at data rates up to 19.2K bps • RS-232C/RS-422/CCITT interface.

Features/Options • internal clocking; full handshaking; guaranteed bit error rate of 1 out of 1 billion bits, or better.

Diagnostics/Indicators • remote loopback • visual indicators for modem link.

Cost/Service • standalone: $495 single-unit purchase price, RS-232C interface • rackmount: $425 single-unit purchase price, RS-232C interface; additional cost for other interfaces • own service; factory service.

☐ Canoga Fiber Optic Modem CSY-306 Series

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable; at distances in excess of 1 kilometer.

Packaging • standalone or rackmount.

Operating Parameters • CSY-306-S data rates up to 2.6M bps • CSY-306A-S data rates to 4M bps • CSY-306A-S-TC same as CSY-306A-S except with a modified T1 interface operating at 1.544M bps • CSY306AX-R same as 306A-S for rackmount only • CSY-306R-T1 same as 306AX-R except with a T1 interface operating at 1.544M bps, DS-1 compatibility • RS-232C/RS-422/-423/CCITT V.35 interface.

Features/Options • guaranteed bit error rate of 1 out of 1 billion bits or better.

Diagnostics/Indicators • CSY-306-S includes remote loopback • visual indicators for modem link status on all services.

Cost/Service • standalone: $1,800/$1,500/$1,800/$1,200/$1,500 single-unit purchase price (CSY-306-S/CSY-306A-S/CSY-306A-TC/CSY-306AX-R/CSY-306AX-R-T1.

■ CANSTAR COMMUNICATIONS

1240 Ellesmere Road, Scarborough, ON M7P 2X4 • 416-293-9722.

☐ Canstar Electro-Optic Modem Modular System Model CMS-100K

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable (single or twin) with links up to 5 kilometers.

Packaging • rackmount; up to 8 plug-in modules per enclosure.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 100K bps • 1 25-pin RS-232 connector for each module • RS-232C interface.

Features/Options • single power supply supports 8-modem system • usable as repeater to extend system.

Diagnostics/Indicators • self-test loopback • front-panel indicator lights for transmit/receive signals and receive carrier.

Cost/Service • plug-in: $860 single-unit purchase price • quantity discounts available • factory service.

■ CASE COMMUNICATIONS, INC.

2120 Industrial Parkway, Silver Springs MD 20904; 301-381-2300 • Canadian Distribution: Case Communications Ltd, 284 Consumers Road, Willowdale, ON M2J 1P8; 416-465-0333.

☐ CASE LDM 710 Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 11 miles using AWG #19; 6 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 8 milliseconds • RS-232C/current loop interface.

Features/Options • bipolar pulse.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote test via CASE Data Center • visual indicators for test mode; error condition.

Cost/Service • standalone: $950 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE LDM720 Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 20 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8 milliseconds • miller or pseudo FSK modulation • variable transmit and receive equalization • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • same as LDM710 • see above.

Cost/Service • standalone: $400 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R201C Modem

Compatibility • AT&T 201B/C; Case T201C/TA201C modems.

Application • DDD network via DAA.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; synchronous at data rates of 2400 bps • RTS/CTS delay of 150 milliseconds • 4-phase differentially coherent modulation • RS-232C interface.

Features/Options • manual originate/answer; automatic answer; integral synchronous autodialer.

Diagnostics/Indicators • front-panel self-test; analog loopback • status indicators.

Cost/Service • standalone: $600 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ CASE R208B LSI Modem

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; synchronous at data rates of 4800 bps • RTS/CTS delay of 50, 150, 600 milliseconds • 8-phase DPSK modulation • continuously adaptive delay and amplitude equalization • RS-232C interface.

Features/Options • automatic answer; abort timer.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $950 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R500A Data Service Unit

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-wire metallic circuit; at distances up to 21 miles using AWG #19 at 2400 bps; up to 4.5 miles using AWG #26 at 9600 bps • complies with AT&T Publication 62310.

Packaging • standalone.

Operating Parameters • half-duplex; synchronous at data rates of 2400/4800/9600 bps • RTS/CTS delay of 2/4/8 (9600/4800/2400 bps) milliseconds • RS-232C interface.

Features/Options • bipolar pulse.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $800 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R14.4 Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K bps with fallback to 9600 bps • CTS delay of 0, 8 milliseconds • QAM modulation • continuously adaptive amplitude and delay equalization • RS-232C interface.

Features/Options • six-port integral multiplexer.

Diagnostics/Indicators • local and remote digital and analog loopback.

Cost/Service • standalone: $5,100 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R48FP LSI Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or card.

Operating Parameters • half-/full-duplex; synchronous at data rate of 4800 bps • RTS/CTS delay of 15, 253 milliseconds; fast poll 12, 18 milliseconds • QAM modulation • RS-232C interface.

Features/Options • switched or continuous carrier; internal/external/slaved clock.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $1,500 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R96 Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 9 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200 bps; fallback 7200/4800 bps • RTS/CTS delay of 15, 253 milliseconds • QAM modulation • continuous automatic adaptive equalization • RS-232C interface.

Features/Options • same as R48FP • see above.

Diagnostics/Indicators • front-panel LEDs for interface, test status, operating modes.

Cost/Service • standalone: $1,600 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE R96FP Modem

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 9 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 9600/7200 bps; fallback 7200/4800 • RTS/CTS delay of 15, 253 milliseconds, 12, 18 milliseconds in fast poll • QAM modulation • RS-232C interface.

Features/Options • 1 R96FP is optioned as hub or master station; all other modems optioned as tributary modems.

Diagnostics/Indicators • same as R96 • see above.

Cost/Service • standalone: $2,000 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE RV.29 & RV.29FP Modems

Compatibility • CCITT V.29.

Application • point-to-point operation for 2 remote DTEs sharing a single 4-wire Type 3002 voice channel via line contention.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200 bps; 7200/4800 fallback • RTS/CTS delay of 15, 253 milliseconds; 12, 18 milliseconds for fast poll • modulation in accordance with CCITT V.29 • CCITT V.24/28 interface.

Features/Options • allows 2 colocated terminals (DTEs) to contend for the transmit side of the modem • both DTEs receive data simultaneously; first DTE to raise RTS gains control of RV.29 transmit circuitry.

Diagnostics/Indicators • same as LDM 710 • see above.

Cost/Service • standalone: $2,000/$2,500 (RV.29/RV.29FP) single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE T108 Modem

Compatibility • AT&T 100 series modems.

Application • point-to-point operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate-only or answer-only modes • RTS/CTS delay of 0, 8.5, 265 milliseconds • FSK modulation • RS-232C interface.

Features/Options • alternate voice/data and manual dial backup via Case 829 auxiliary set.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote test via Case Data Center • visual indicators for test mode, error condition, interface signal status.

Cost/Service • standalone: $300 single-unit purchase price • rackmount: single-unit purchase price • quantity discounts available for 5 or units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE T202S Modem

Compatibility • AT&T 202 modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-duplex; asynchronous at data rates up to 1200 bps • RTS/CTS delay of 7, 30, 60, 180 milliseconds • FSK modulation • RS-232C interface.

Features/Options • auto-answer • optional alternate voice/data.

Diagnostics/Indicators • same as T108 • see above.

Cost/Service • standalone: $500 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE T202T Modem

Compatibility • AT&T 202 series modems.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200/1800 bps; C2 conditioning required over 1400 bps • RTS/CTS delay of 8, 30, 60, 180 milliseconds • FSK modulation • RS-232C interface.

Features/Options • optional 5 bps reverse channel; alternate voice/data; manual dial backup.

Diagnostics/Indicators • same as T108 • see above.

Cost/Service • standalone: $495 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE TA201C Modem

Compatibility • AT&T 201B/C modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • RTS/CTS delay of 0, 7, 150 milliseconds • DPSK modulation 1800 Hz carrier • compromise equalization • RS-232C interface.

Features/Options • full-featured model for Telcos; alternate voice/data; auto-answer.

Diagnostics/Indicators • same as T108 • see above.

Cost/Service • standalone: $650 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE TA208A/B

Compatibility • AT&T 208A/B modems.

Application • same as TA 201C • see above.

Packaging • standalone or rackmount; 8 up to units per enclosure; PC card available.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • RTS/CTS delay of 0, 8.5, 50, 150, 600 milliseconds • 8-phase differentially coherent modulation • automatic adaptive and amplitude equalization • RS-232C interface.

Features/Options • alternate voice/data when used in conjunction with modified 565 telephone, T829 data auxiliary set, and C481A alternate voice unit; auto-call/answer.

Diagnostics/Indicators • local and end-to-end self-test; digital and analog loopback; remote test via CASE Data Center • continuous status indicators.

Cost/Service • standalone: $1,250 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE 1224 Modem

Compatibility • unspecified.

Application • DDD network via DAA • point-to-point operation over a 2-wire unconditioned Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 1200 bps • QAM/PSK/FSK (2400/1200/300 bps) modulation • RS-232C/CCITT V.28 interface.

Features/Options • autodialer; audio and visual call progress monitoring.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $799 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE 4048 Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unconditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; fallback to 2400 bps • RTS/CTS delay of 15, 253 milliseconds; 12, 18 milliseconds for fast poll • QAM modulation • RS-232C interface.

Features/Options • 2-port TDM multiplexer; line conditioning not required; intelligent front-panel with menu driven keys and 14-character liquid crystal display; downline load through front-panel • optional DXM diagnostic card provides network options and diagnostic initiation via CASE 5200 Network Management and Control System.

Diagnostics/Indicators • self-test; local and remote digital loopback; end-to-end self test; integral bit pattern generator and error detector provides bit error rate and analysis for loopback testing • status indicators.

Cost/Service • standalone: $1,995 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ CASE 4096 Modem

Compatibility • unspecified.

Application • same as 4048 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600 bps; fallback of 7200/4800 bps • RTS/CTS delay of 15, 253 milliseconds; 12, 18 for fast poll • QAM modulation • RS-232C interface.

Features/Options • same as 4048 • see above.

Diagnostics/Indicators • same as 4048 • see above.

Cost/Service • standalone: $2,995 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

☐ CASE 4144 Modem

Compatibility • CCITT V.29 at 9600 bps.

Application • point-to-point operation over a 4-wire D1 conditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K/12K/9600 bps • RTS/CTS delay of 1.4 seconds • QAM modulation with trellis coded error correction scheme • RS-232C interface.

Features/Options • same as 4048 • see above.

Diagnostics/Indicators • same as 4048 • see above.

Cost/Service • standalone: $7,995 single-unit purchase price • available for lease • quantity discounts available for 5 or more units • 1-year warranty • factory and depot service; special service plans available.

■ CODEX CORPORATION/A Subsidiary of Motorola Inc

20 Cabot Boulevard, Mansfield, MA 02048; 617-364-2000 • Canadian Distribution: Motorola Information Systems Limited, 9445 Airport Road, Brampton, ON L6S 4J3; 416-793-5700.

☐ Codex CS 4800 Modem Network Control Series

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel • performs monitoring, diagnostic and reconfiguration functions as part of the Codex Distributed Network Control System.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/4800 bps; C1 or C2 conditioning recommended for optimum performance • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28; RS-423/CCITT V.10 interface.

Features/Options • integral 4-channel buffered multiplexer multiplexes combinations of two, three or four 1200/2400/3600 bps data streams for an aggregate 4800 bps; data rate selection; 150 bps secondary channel for Codex DNCS network control; optional 150 bps auxiliary secondary channel • optional alternate voice/data; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem.

Diagnostics/Indicators • local digital and analog loopback; eye pattern generator • visual indicators for line quality/signal level, test mode, error condition, and interface signal status.

Cost/Service • standalone: $4,250 single-unit purchase price • on-call service; nationwide service organization.

☐ Codex CS 9600 Data Modem Network Control Series

Compatibility • unspecified.

Application • same as CS 4800 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/4800/7200/9600 bps; C1 or C2 conditioning recommended for optimum performance • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • integral 4-channel buffered multiplexer multiplexes combinations of two, three or four 1200/2400/3600/7200 bps data streams for an aggregate 9600 bps; data rate selection; 75 bps auxiliary secondary channel supports by network control for Codex DNCS System; manual dial backup with auto-answer • optional alternate voice/data; modem substitution switch for remote switching to a hot-spare modem.

Diagnostics/Indicators • local digital and analog loopback; eye pattern generator • visual indicators for test mode; error condition and interface signal status.

Cost/Service • standalone: $5,700 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex CS 48FP Data Modem Fast-Poll Network Control Series

Compatibility • unspecified.

Application • same as CS 4800 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/4800 bps; C1 conditioning recommended for optimum performance • RTS/CTS delay of 9 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • 150 bps secondary channel for Codex DNCS network control; optional 150 bps auxiliary secondary channel • optional alternate voice/data; manual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem.

Diagnostics/Indicators • same as CS 4800 • see above.

Cost/Service • standalone: $3,750 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex CS 96FP Data Modem Fast-Poll Network Control Series

Compatibility • unspecified.

Application • same as CS 4800 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/7200/9600 bps; C1 conditioning recommended for optimum performance • RTS/CTS delay of 9 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • 75 bps secondary channel supports network control for Codex DNCS system • optional alternate voice/data; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem.

Diagnostics/Indicators • same as CS 4800 • see above.

Cost/Service • standalone: $5,400 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex SP14.4 Data Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a D1 conditioned 4-wire dedicated Type 3002 voice channel.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600/12K/14.4K bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • optional 6-channel buffered multiplexer multiplexes 2, 3, 4, 5, or 6 channels at any mix of data rates to an aggregate 14.4K bps; selectable data rates • optional diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS system; remote channel loopback on each multiplexer channel; eye pattern generator.

Diagnostics/Indicators • local digital and analog loopback; • visual indicators for line quality/signal level; test mode; error condition; interface signal status; and data rate.

Cost/Service • contact vendor • 1-year warranty • factory service.

☐ Codex LSI 4800 Data Modem Point-To-Point Series

Compatibility • Codex LSI and CS Series modems.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • RTS/CTS delay of 280 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • optional 4-channel buffered multiplexer multiplexes two, three or four 1200/2400/3600 bps data streams for an aggregate 4800 bps; alternate voice/data; one or two 150 bps secondary channels; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem; circuit quality monitoring via Codex CQMS or systems; elastic store buffer; diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS system.

Diagnostics/Indicators • self-test; local digital and analog loopback; optional remote digital and analog loopback; optional eye pattern generator • visual indicators for line quality/signal level; test mode; error condition and interface signal status.

Cost/Service • standalone: $2,100 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI 9600 Data Modem Point-To-Point Series

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 4800/7200/9600 bps • RTS/CTS delay of 280, 100 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • optional 4-channel buffered multiplexer multiplexes 2, 3, or 4 1200/2400/4800/7200 bps data streams for an aggregate 9600 bps; alternate voice/data; 75 bps secondary channel; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem; circuit quality monitoring via Codex CQMS system; elastic store buffer; diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS system.

Diagnostics/Indicators • same as LSI 4800 • see above.

Cost/Service • standalone: $3,600 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI 48FP Data Modem Multipoint Fast-Poll Series

Compatibility • Codex LSI and CS Series.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • RTS/CTS delay of 9 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 or RS-423/CCITT V.10 interface.

Features/Options • optional alternate voice/data; one or two 150 bps secondary channels; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem; circuit quality monitoring via Codex CQMS system; diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS; MIL-188C interface.

Diagnostics/Indicators • same as LSI 4800 • see above.

Cost/Service • standalone: $2,125 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI 96FP Data Modem Multipoint Fast-Poll Series

Compatibility • same as LSI 48FP • see above.

Application • same as LSI 48 FP • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 4800/7200/9600 bps; C2 or D1 conditioning recommended for optimum performance • RTS/CTS delay of 9 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional alternate voice/data; 75 bps secondary channel; manual dual dial backup with auto-answer; modem substitution switch for remote switching to a hot-spare modem; circuit quality monitoring via Codex CQMS system; diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS system; MIL-188C interface.

Diagnostics/Indicators • same as LSI 4800 • see above.

Cost/Service • standalone: $3,625 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI 48I Data Modem

Compatibility • Codex LSI and CS Series modems.

Application • same as LSI 49FP • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • 8-phase DPSK (V.27bis) or 8-point QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • manual dual dial backup with auto-answer • optional 4-channel buffered multiplexer multiplexes two, three or four 1200/2400/3600/4800 bps data streams for an aggregate 4800 bps; alternate voice/data; 75 or 150 bps secondary channel; circuit quality monitoring via Codex CQMS system; elastic store buffer; MIL-188C interface.

Diagnostics/Indicators • same as LSI 4800 • see above.

Cost/Service • standalone: $2,400 single-unit purchase price • 1-year warranty • $130 factory service charge; on-call service; nationwide service organization.

☐ Codex LSI 48/V.27 bis/ter Data Modem

Compatibility • CCITT V.27/V.27 bis/ter.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

rates of 2400/4800 bps • RTS/CTS delay of 9 milliseconds • 8-phase DPSK or QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • data rate selection • optional alternate voice/data; 75 or 150 bps secondary channel; circuit quality monitoring via Codex CQMS system; 3-digit DB meter; hit counter; audio monitor; circuit quality display.

Diagnostics/Indicators • same as LSI 48FP • see above.

Cost/Service • standalone: $2,400 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI 96/V.29 Data Modem

Compatibility • Codex LSI and C series modems • CCITT V.29.

Application • same as LSI 48 FP • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/4800/7200/9600 bps; C1 conditioning recommended for optimum performance • RTS/CTS delay of 253, 100 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional 4-channel buffered multiplexer multiplexes two, three or four 1200/2400/3500/4800/7200 bps data streams for an aggregate 9600 bps; alternate voice/data; 75 bps secondary channel; circuit quality monitoring via Codex CQMS system; elastic store buffer; circuit quality display.

Diagnostics/Indicators • local digital and analog loopback; optional remote digital and analog loopback; optional eye pattern generator • visual indicators for line quality/signal level; test mode; error condition and interface signal status.

Cost/Service • standalone: $3,600 single-unit purchase price • 1-year warranty • $130 factory service charge; on-call service; nationwide service organization.

☐ Codex LSI 24/24 Data Modem

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; asynchronous (optional)/synchronous at data rates of 2400 bps • RTS/CTS delay of 0, 8, 16, 32, 64, 128, 256 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • data rate selection; auto or manual answer • optional asynchronous adapter; MIL-188C interface.

Diagnostics/Indicators • local digital loopback • visual indicators for line quality/signal level; test mode and interface signal status.

Cost/Service • standalone: $2,650 single-unit purchase price • 1-year warranty • on-call service; nationwide service organization.

☐ Codex LSI E9600 Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/4800 bps • RTS/CTS delay of 253, 100 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional alternate voice/data.

Diagnostics/Indicators • local/remote unattended loopback testing in accordance with CCITT V.54.

Cost/Service • standalone: $2,350 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex LSI E9604 Modem

Compatibility • CCITT V.29.

Application • same as LSI E9600 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/4800 bps • RTS/CTS delay of 253, 100 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • integral 4-channel buffered multiplexer • optional alternate voice/data.

Diagnostics/Indicators • local/remote unattended loopback testing in accordance with CCITT V.54 • visual indicators.

Cost/Service • standalone: $2,950 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex LSI E96/V.29 Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel • PTT approved interface for international communication.

Packaging • standalone or rackmount.

Operating Parameters • same as E9604 • see above.

Features/Options • same as E9604 • see above.

Diagnostics/Indicators • same as E9604 • see above.

Cost/Service • contact vendor.

☐ Codex MX 2400 Data Modem

Compatibility • AT&T 201B/C modems • CCITT V.26/V.26 bis.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • half-/full-duplex; asynchronous (optional)/synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 2, 8.5, 33, 150 milliseconds (domestic) or 2, 33, 75, 213 milliseconds (international) • DPSK modulation • adaptive and statistical equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional alternate voice/data; 75 or 150 bps secondary channel; auto-call unit; elastic store buffer; asynchronous converter; 2-channel asynchronous multiplexer for two 1200 bps data streams over primary channel; diagnostic test, monitor, and reconfiguration functions supported by Codex DNCS system; MIL-188C interface; eye pattern generator.

Diagnostics/Indicators • local and remote digital and analog loopback • visual indicators for line quality/signal level and interface signal status.

Cost/Service • contact vendor • 1-year warranty • nationwide service organization.

☐ Codex 5201C Data Modem

Compatibility • AT&T 201B/C modems • Codex MX 2400 modem.

Application • same as MX 2400 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • originate/answer modes • RTS/CTS delay

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

of 0, 8.5 milliseconds • PSK modulation • compromise equalization • RS-232C interface.

Features/Options • alternate voice/data; auto or manual answer; auto-call; satellite delay.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $775 single-unit purchase price • rackmount: $625 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 5202S Data Modem

Compatibility • AT&T 201S/T modems.

Application • same as MX 2400 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 1200 bps • originate/answer modes • RTS/CTS delay of 8.5 milliseconds • FSK modulation • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • alternate voice/data; auto or manual answer; auto-call.

Diagnostics/Indicators • same as 5201C • see above.

Cost/Service • standalone: $475 single-unit purchase price • rackmount: $325 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 5201 B Data Modem

Compatibility • AT&T 201B modem.

Application • multipoint operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • RTS/CTS delay of 8.5, 150 milliseconds • DPSK modulation; 1800 Hz carrier • compromise equalization • RS-232C interface.

Features/Options • alternate voice/data; anti-streaming.

Diagnostics/Indicators • self-test; local and remote digital and analog loopback.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: $545 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 5202T Data Modem

Compatibility • AT&T 202T modem.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1800 bps; C2 conditioning at 1800 bps • originate/answer modes • RTS/CTS delay of 8, 33, 59, 219 milliseconds • FSK modulation • compromise equalization • RS-232C interface.

Features/Options • alternate voice/data; auto or manual answer.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $275 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 5208BR Data Modem

Compatibility • AT&T 208A/B modems.

Application • same as MX 2400 • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • RTS/CTS delay of 8.5, 50, 150 milliseconds • 8-phase DPSK modulation; 1800 Hz carrier • automatic adaptive and compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • alternate voice/data; auto-answer; front-panel Talk-Data switch.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for error condition and interface signal status.

Cost/Service • standalone: $1,750 single-unit purchase price • rackmount: $1,600 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 224/V.22 bis Data Modem

Compatibility • AT&T 212 modem in fallback mode at 1200 bps • CCITT V.22 bis at 2400 and 1200 bps.

Application • same as MX 2400 • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400 bps; fallback at 1200 bps • originate, manual, and auto-answer modes • QAM modulation • automatic adaptive and compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • automatically responds to AT&T 212 modems at 1200 bps; alternate voice/data.

Diagnostics/Indicators • self-test; local and remote digital loopback; modem check • status indicators.

Cost/Service • standalone: $1,195 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 8150 Local Distribution Service Unit

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 23 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • baseband modulation • compromise equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote unattended loopback • LED indicators.

Cost/Service • standalone: $335 single-unit purchase price • rackmount: $225 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 8250 Local Distribution Service Unit

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 23 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone, rackmount, or single-circuit board; up to 14 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • differential diphase modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • same as 8150 • see above.

Cost/Service • standalone: $750 single-unit purchase price • rackmount: $615 single-unit purchase price • single-circuit board $650 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 8300 Group Band Modem

Compatibility • CCITT V.35.

Application • point-to-point operation over a wideband (groupband) channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 48K/56K/64K bps • 4-phase PSK modulation • compromise equalization • CCITT V.35 interface.

Features/Options • 5-records turnaround • optional alternate voice/data; Elastic Store Buffer for digital network applications; AT&T 303 interface.

Diagnostics/Indicators • local and remote digital and analog loopback; eye pattern generator • visual indicators for line quality/signal level, test mode, error condition, interface signal status.

Cost/Service • standalone: $6,450 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 8550 Channel Service Unit

Compatibility • unspecified.

Application • direct interface between customer's DTE at the user's premises and the DDS.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/4800/2400 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; local and remote loopback.

Cost/Service • standalone: $425 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 8550B Data Service Unit

Compatibility • unspecified.

Application • same as 8550 CSU • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/4800/2400 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • EIA/DDS loopback; test pattern generator.

Cost/Service • standalone: $475 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 8557 Channel Service Unit

Compatibility • unspecified.

Application • same as 8550 CSU • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 19.2K/56K bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; local and remote loopback.

Cost/Service • standalone: $675 single-unit purchase price • quantity discounts available • 1-year warranty • nationwide service organization.

☐ Codex 2231 Modem

Compatibility • AT&T 212A modem in fallback mode • CCITT V.22 bis in high-speed mode.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 1200/2400 bps • originate/answer modes • RS-232C interface.

Features/Options • manual dial via telephone; manual answer or automatic answer.

Diagnostics/Indicators • contact vendor.

Cost/Service • standalone: $995 single-unit purchase price • quantity discounts available • 1-year warranty • own-service; factory service; field service locations nationwide.

☐ Codex 2121 LDSU Local Distribution Series

Compatibility • Codex 8200, 8250, 2123 modems.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 13 miles using AWG #19 • complies with AT&T Publication 41028 or 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • QAM or differential diphase modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • line sharing unit for specific multidrop applications; asynchronous operation up to 4800 bps.

Diagnostics/Indicators • local and remote unattended loopback testing in accordance with CCITT V.54 • status indicators.

Cost/Service • standalone: $775 single-unit purchase price • • 1-year warranty • nationwide service organization.

☐ Codex 2123 LDSU Local Distribution Series

Compatibility • same as 2121 LDSU • see above.

Application • point-to-point or multipoint operation over 4-wire metallic wire; distances up to 13 miles using AWG #19 • complies with AT&T Publication 41208 and 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • QAM or differential biphase modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • integral network control; 75 bps secondary channel.

Diagnostics/Indicators • local and remote unattended loopback testing in accordance with CCITT V.54 • status indicators.

Cost/Service • standalone: $1,250 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 2206 Data Modem

Compatibility • CCITT V.29.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • manual or automatic originate/answer modes • RTS/CTS delay of 253 milliseconds (leased) 30, 50, 150 milliseconds • QAM modulation • automatic digital adaptive equalization • RS-232C interface.

Features/Options • unattended automatic answer; pulse through dial feature.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • self-test; local and remote analog loopback; remote digital loopback; test pattern generator • visual indicators for line quality/signal level; test mode; error condition; interface signal status.

Cost/Service • standalone: $1,995 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 100-day warranty • factory service.

☐ Codex 2232 FDX Data Modem

Compatibility • CCITT V.22/V.22 bis or AT&T 212 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • automatic calling mode • 16- or 4-point QAM modulation • fixed transmitter and automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • integral automatic dialer; programmable soft straps; integral memory storage of nine 40-digit phone numbers; selectable menu-driven keyboard interface and call progress messages; automatic answer; FDX dial with integral ACU.

Diagnostics/Indicators • remote unattended tests and test pattern generator.

Cost/Service • standalone: $895 single-unit purchase price • 1-year warranty • nationwide service organization.

☐ Codex 2360 Data Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned or D1 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 14.4K bps in 2400 bps increments; fallback to 1200/9600 bps • 8-state trellis coded modulation; QAM modulation at 9600 bps • automatic equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional enhanced control panel; 4-/6-channel buffered multiplexer with built-in asynchronous/synchronous converter and control signaling capability; integral dual dial restoral; network control; control panel test capability.

Diagnostics/Indicators • internal eye pattern generator • visual and status indicators.

Cost/Service • standalone: $8,750 to $60,380 single-unit purchase price depending on options • 1-year warranty • nationwide service organization.

☐ Codex 2620 Data Modem

Compatibility • CCITT V.27 bis.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 9, 50, 67, 708, 943 milliseconds • FSK modulation • automatic line equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional 4-channel buffered multiplexer with modem sharing unit (MSU), asynchronous/synchronous converter and control signaling capability.

Diagnostics/Indicators • terminal, local digital and analog loopback in accordance with CCITT V.54 Loop audio loopback; poll test; power-up self-test; internal eye pattern generator; circuit quality monitoring system; multipoint signal quality binning • status indicators.

Cost/Service • standalone: $4,175 single-unit purchase price • $130 per month 2-year lease; $26 per month Zone A maintenance • 1-year warranty • nationwide service organization.

☐ Codex 2640 Data Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 9, 17, 253 milliseconds • Codex Improved 96 (CI96), QAM or CS48FP compatible modulation • automatic line equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as 2620 • see above.

Diagnostics/Indicators • same as 2520 • see above.

Cost/Service • standalone: $7,200 single-unit purchase price • $205 per month 2-year lease; $26 per month Zone A maintenance • 1-year warranty • nationwide service organization.

☐ Codex 2660 Data Modem

Compatibility • unspecified.

Application • point-to-point operation over a D1 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 16.8K/14.4K/12K/9600/7200/4800 bps • RTS/CTS delay of 200/300/400/500 milliseconds • 8-state trellis coded/QAM modulation at 9600 bps • automatic line equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as 2620 • see above.

Diagnostics/Indicators • same as 2620 • see above.

Cost/Service • standalone: $13,000 single-unit purchase price • $360 per month 2-year lease; $25 per month Zone A maintenance • 1-year warranty • nationwide service organization.

■ COHERENT COMMUNICATIONS SYSTEMS CORPORATION

60 Commerce Drive, Hauppauge, NY 11788; 516-231-1550 • Canadian Distribution: none.

☐ Coherent Modem Model DAM-4F

Compatibility • unspecified.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 600/1200 bps • originate/answer modes • FSK modulation • automatic equalization • RS-232C interface.

Features/Options • optional 75 bps reverse channel.

Diagnostics/Indicators • local digital and analog loopback; • visual indicators for interface signal status.

Cost/Service • standalone: $420 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Modem Model DAM-5D

Compatibility • AT&T 202 modems.

Application • DDD network via DAA; point-to-point operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 1200/1400/1800 bps • C1 conditioning required over 1200 bps; C2 over 1400 bps • RTS/CTS delay

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

of 8.5, 30, 65, or 200 milliseconds • FSK modulation • automatic equalization • originate and answer modes • RS-232C or current loop interface.

Features/Options • optional 75 bps reverse channel.

Diagnostics/Indicators • local digital and analog loopback; • visual indicators for interface signal status.

Cost/Service • standalone: $482 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service • international service organization.

☐ Coherent Modem Model SPMT-9A

Compatibility • unspecified.

Application • simultaneous voice, message, and data transmission over a point-to-point unconditioned or conditioned 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount; 1 unit per enclosure; PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 2400 bps; synchronous at data rates of 2400 bps • C1 conditioning required at 2400 bps • FSK modulation • compromise equalization • RS-232C or current-loop interface.

Features/Options • simultaneous voice/data • optional 75 bps Teletype channel.

Diagnostics/Indicators • local digital and analog loopback; • visual indicators for interface signal status.

Cost/Service • standalone: $6,900 single-unit purchase price • rackmount: prices available on request • available for lease • quantity discounts available • 1-year warranty • factory service • international service organization.

☐ Coherent Linemate 96 Plus (SPMT-10)

Compatibility • unspecified.

Application • simultaneous voice and data transmission over a 2-wire metallic circuit; at distances up to 7 miles using AWG #19,22,24, and 26.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps; synchronous data rates from 2400 to 9600 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $245 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Linemate 192

Compatibility • unspecified.

Application • simultaneous voice and data transmission over a 2-wire metallic circuit; at distances up to 7 miles using AWG #19.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $245 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FSM-75A

Compatibility • AT&T 103/108/113 and Coherent FSM-85 modems.

Application • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • answer mode • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • front-panel LED indicators.

Cost/Service • standalone: $240 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FSM-76A

Compatibility • unspecified.

Application • universal single channel Telegraph/Data modem.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 600 bps • FSK modulation • RS-232C or current loop interface.

Features/Options • primarily intended for use in Frequency Division Multiplexing systems • optional interfaces available.

Diagnostics/Indicators • front-panel LED indicators.

Cost/Service • standalone: $318 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FSM-77A

Compatibility • AT&T 103/108/113; Coherent FSM-75A modems.

Application • same as FSM-75A • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as FSM-75A • see above.

Features/Options • not available.

Diagnostics/Indicators • front-panel LED indicators.

Cost/Service • standalone: $280 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FSM-83A-C

Compatibility • AT&T 103 modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • pre-stored telephone numbers.

Diagnostics/Indicators • front-panel LED indicators.

Cost/Service • standalone: $500 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FSM-83A

Compatibility • AT&T 103 modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • pre-stored telephone number under direction of telex terminal, speed and code conversion.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $495 single-unit purchase price • quantity discounts available • factory service.

☐ Coherent Model FSM-86A

Compatibility • AT&T 103 modem; CCITT; CCIR.

Application • point-to-point operation over a 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 4 units per enclosure; PC card.

Operating Parameters • full-duplex; synchronous at data rates up to 600 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $590 single-unit purchase price • available for lease • quantity discounts available.

☐ Coherent Model SPM-94A/B

Compatibility • unspecified.

Application • simultaneous voice and data transmission over a point-to-point 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C or current loop interface.

Features/Options • voice connection via RJ-11 jacks.

Diagnostics/Indicators • LED status indicators.

Cost/Service • standalone: $525-$575 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Coherent Model FMS-85A

Compatibility • unspecified.

Application • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 4 units per enclosure; PC card.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $400 single-unit purchase price • available for lease • quantity discounts available.

☐ Coherent Model FMS-73B Dual R.20 Modem

Compatibility • unspecified.

Application • point-to-point over 2-wire Type 3002 voice channel to compatible subscriber teleprinter terminal.

Packaging • rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C/V.28; Coherent R.20 proprietary interface.

Features/Options • provides continuous, unattended operation in telegraph central offices.

Diagnostics/Indicators • front-panel LEDs.

Cost/Service • standalone: $295 single-unit purchase price • factory service.

■ COMDATA CORPORATION

7900 N. Nagle, Morton Grove, IL 60052; 312-470-9600 • Canadian Distribution: none.

☐ ComData Model 151A2-12

Compatibility • unspecified.

Application • same as 150A2-14B • see above.

Packaging • same as 150A2-14B • see above.

Operating Parameters • same as 150A2-14B • see above.

Features/Options • internal power supply and 110 VAC power card.

Diagnostics/Indicators • same as 150A2-14B • see above.

Cost/Service • standalone: $117 single-unit purchase price • factory service.

☐ ComData Model 208A/B

Compatibility • AT&T 208A/B modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • PM modulation • automatic equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote loopback.

Cost/Service • standalone: $1,437 single-unit purchase price • available for lease • quantity discounts available • factory service.

☐ ComData Model P212SA

Compatibility • AT&T 103/113/212A modems.

Application • same as 212E2-32 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps; synchronous up to 1200 bps • originate/answer modes • FSK to 300 bps; PSK to 1200 bps modulation • automatic equalization • RS-232C interface.

Features/Options • auto-call interface for AT&T 801 or equivalent ACU; auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for line quality/signal level; interface signal status.

Cost/Service • standalone: $437 single-unit purchase price • available for lease • quantity discounts available • factory service.

☐ ComData Model 305E2-12

Compatibility • AT&T 103/113 modems.

Application • same as P212SA • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C/20-/60-mA current loop interface.

Features/Options • RJ11 jack for standard modular telephone; voice/data switch; alternate voice/data.

Diagnostics/Indicators • LEDs for carrier and data.

Cost/Service • standalone: $87 single-unit purchase price • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ ComData Model 330E2-42

Compatibility • AT&T 103A/103E/113B modems.

Application • same as P212SA • see above.

Packaging • rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex asynchronous at data rates up to 300 bps • FSK modulation • compromise equalization • RS-232C interface.

Features/Options • optional DTL/TTL interfaces.

Diagnostics/Indicators • loopback diagnostics • 4 front-panel status indicators.

Cost/Service • standalone: $187 single-unit purchase price • factory service.

☐ ComData Model 330F2-12L/330F2-22L

Compatibility • AT&T 103A/103E/113B modems.

Application • point-to-point operation over an unconditioned 2-wire Type 3002 voice channel.

Packaging • rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • L3 answer mode • FSK modulation • RS-232C interface.

Features/Options • same as 330E2-42 • see above.

Diagnostics/Indicators • same as 330E2-42 • see above.

Cost/Service • standalone: $117/$127 (12L/22L) single-unit purchase price • factory service.

☐ ComData Model 332F7-22L/332F8-22L

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire Type 3002 voice channel with C2 conditioning.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex asynchronous at data rates of 1200 bps; fallback 300 bps • FSK modulation • compromise equalization • RS-232C interface.

Features/Options • reverse channel; integral multiplexer • optional alternate voice/data.

Diagnostics/Indicators • local digital and analog loopback • 8 LED status indicators.

Cost/Service • standalone: $197/$247 (F7/F8) single-unit purchase price • factory service.

☐ ComData Model 334 Series

Compatibility • AT&T 201B/C modems.

Application • point-to-point operation over an unconditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps; synchronous at 2400 bps • originate/answer modes • RTS/CTS delay of 15 to 265 millisecond • DPSK modulation • RS-232C interface.

Features/Options • optional alternate voice/data; equalization.

Diagnostics/Indicators • local digital loopback; • LED status indicators.

Cost/Service • standalone: $587 single-unit purchase price • factory service.

☐ ComData Model 355F3-72 Line Driver

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 3 miles using AWG #19.

Packaging • standalone, rackmount or PC board; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $97 single-unit purchase price • factory service.

☐ ComData Model 370E2-12 Phonem

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified; or acoustic coupling.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate-only mode • no equalization • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $177 single-unit purchase price • rackmount: price available on request • available for lease • quantity discounts available • factory service.

☐ ComData Model 370E2-42 Phonem

Compatibility • unspecified.

Application • same as 370E2-12 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $197 single-unit purchase price • factory service.

☐ ComData Model ME-1

Compatibility • unspecified.

Application • point-to-point operation over an EIA cable; at distances up to 100 feet apart.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2Kbps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • digital loopback.

Cost/Service • standalone: $297 single-unit purchase price • factory service.

■ COMDESIGN

751 South Kellogg Avenue, Goleta, CA; 93117; 805-964-9852 • Canadian Distribution: none.

☐ ComDesign TM-1200 Modem

Compatibility • AT&T 103/113/212A.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; 1 unit per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • RTS/CTS delay of 765 milliseconds • FSK modulation up to 300 bps; PSK at 1200 bps • originate and answer modes • RS-232C interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • alternate voice/data • auto-call interface • auto-answer.

Diagnostics/Indicators • self-test; local and remote digital loopback • visual indicators for test mode; error condition; interface signal status.

Cost/Service • standalone: $750 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

☐ ComDesign TM-2400 Modem

Compatibility • AT&T 201B modem.

Application • DDD network via DAA, or point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 2400 bps • RTS/CTS delay of 0, 8.5, 25, or 150 milliseconds • DPSK modulation • answer-only mode • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $750 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

☐ ComDesign TM-4800 Modem

Compatibility • AT&T 208A/B modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a conditioned or unconditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 8.5, 50, 150 milliseconds • 8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data • auto-answer.

Diagnostics/Indicators • self-test; local and remote digital and analog loopback • visual indicators for error condition and interface signal status.

Cost/Service • standalone: $1,750 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

☐ ComDesign TM-9600 Modem

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • CTS delay of 100 milliseconds • QAM modulation per CCITT V.29 • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • same as TM-4800 • see above.

Cost/Service • standalone: $2,750 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

☐ ComDesign IM-4800 Modem

Compatibility • CCITT V.27.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned leased 2- or 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates to 4800 bps; fallback to 2400 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • designed for use with ComDesign network systems.

Diagnostics/Indicators • self-test, self-link;local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $1,795 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

☐ ComDesign IM-9600 Modem

Compatibility • CCITT V.29.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates at 9600 bps; fallback to 7200/4800 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • same as IM-4800 • see above.

Diagnostics/Indicators • same as IM-9600 • see above.

Cost/Service • standalone: $2,595 single-unit purchase price • 1-year warranty • on-call service; hot line diagnostic center at headquarters.

■ COMMUNICATIONS RESEARCH CORPORATION (CRC)

1720 130 th Avenue NE, Bellevue, WA 98005; 206-881-9550 • Canadian Distribution: none.

☐ CRC Model 100 Line Carrier Modem

Compatibility • unspecified.

Application • in-house communication over existing AC power lines.

Packaging • standalone pair (2 units).

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • FSK modulation • RS-232C interface.

Features/Options • provides a communication link over a single building's AC power system • optional coupler available.

Diagnostics/Indicators • red LED indicators for power on; green LED indicators for carrier signal transmission.

Cost/Service • standalone: $365 single-unit purchase price.

■ COMPLEXX SYSTEMS, INC

4930 Research Drive, Huntsville, AL 35805; 205-830-4310 • Canadian Distribution: Atelco Inc, 3400 Pharmacy Avenue, Unit 1, Scarborough, ON M1W 3J8; 416-497-2208.

☐ Complexx LS56K Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 3 miles using AWG #22.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 56K bps • proprietary bi-phase modulation • CCITT V.35 interface.

Features/Options • none supported.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • self-test; digital and analog loopback • LED status indicators.

Cost/Service • standalone: $650 single-unit purchase price • rackmount: $525 single-unit purchase price.

☐ Complexx LVS76.8 Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 8,250 feet using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates from 2400 to 76.8K bps • proprietary bi-phase modulation • RS-232C interface.

Features/Options • internal/external clocking • optional CCITT V.35 interface.

Diagnostics/Indicators • local and remote loopbacks • LED status indicators.

Cost/Service • standalone: $650/$725 (RS-232C/CCITT V.35) single-unit purchase price • rackmount: $525/$600 (RS-232C/CCITT V.35) single-unit purchase price.

■ COMSEL CORPORATION

8453 N Tyco Road, Vienna, VA 22180; 703-734-3880 • Canadian Distribution: none.

☐ Comsel LLD-II Line Driver

Compatibility • Gandalf LDS120.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 10 miles using AWG #26.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex(2-wire), half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • differential driver.

Diagnostics/Indicators • LED status indicators.

Cost/Service • standalone: $167 single-unit purchase price • rackmount: $52.50 single-unit purchase price.

■ COMSPEC, INC

10700 Hammerly Blvd, Houston, TX 77043; 713-461-4487 • Canadian Distribution: none.

☐ Comspec 9600C Datatalker

Compatibility • CCITT V.29/CCITT V.27 bis/ter.

Application • point-to-point operation over a 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 bps • QAM at 9600/7200bps; DPSK at 2400 bps modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • speaker phone for alternate voice/data; auto-dial, pulse or dual tone stores up to 40 numbers • optional third 2-wire automatic voice/data.

Diagnostics/Indicators • built-in local and remote diagnostics.

Cost/Service • standalone: $6,495 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ CONCORD DATA SYSTEMS, INC

303 Bear Hill Road, Waltham, MA 02154; 617-890-1394 • Canadian Distribution: Electronetics Systems, 4211 Kingsway, Suite 511, Barnaby, BC V5H 1Z6; 604-437-6434.

☐ CDS V.22 Series

Compatibility • unspecified.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 600/1200 bps • originate/answer modes • DPSK modulation • automatic and compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for line quality/signal level; test mode; error condition; and interface signal status.

Cost/Service • contact vendor.

☐ CDS V.22 bis Data Modem

Compatibility • CCITT V.22 bis.

Application • point-to-point operation over a 2-wire switched network or dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • originate/answer modes • QAM (DPSK in V.22 fallback mode) modulation • automatic adaptive equalization equalization • RS-232C/CCITT V.28 interface.

Features/Options • auto-answer; tabletop model derives power from external AC power pack; rackmount model utilizes standard ANSI configuration.

Diagnostics/Indicators • self-test; local digital and analog loopback.

Cost/Service • contact vendor.

☐ CDC V.22 bis AD Modem

Compatibility • CCITT V.22 bis.

Application • same as V.22 bis • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • originate/answer modes • QAM/DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • auto dial/redial; alternate voice/data; automatic answer; non volatile memory.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; internal test pattern • status indicators.

Cost/Service • contact vendor.

☐ CDS V.22 bis ARQ

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates of 1200/2400 bps • originate/answer mode • DPSK, QAM modulation • automatic equalization • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • contact vendor.

☐ CDS V.22 bis ARQ/AD

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Packaging • standalone or rackmount.

Operating Parameters • same as V.22 ARQ • see above.

Features/Options • auto dial/redial; keyboard dial; alternate voice/data; automatic answer.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • contact vendor.

☐ CDS V.22 bis Multiplex

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as V.22 ARQ • see above.

Features/Options • alternate voice/data; automatic answer.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • contact vendor.

☐ CDS V.22 bis Superduplex

Compatibility • CCITT V.22/V.22 bis/V.24.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 1200/2400 bps • originate/answer modes • DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • keyboard dial; autodial; alternate voice/data • optional integral handset.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • standalone: $695 single-unit purchase price.

☐ CDS 224 AD

Compatibility • CCITT V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as V.22 bis Superduplex • see above.

Features/Options • auto dial/redial; alternate voice/data; automatic answer.

Diagnostics/Indicators • loopbacks, keyboard or manual controlled.

Cost/Service • standalone: $795 single-unit purchase price.

☐ CDS 224 ARQ

Compatibility • CCITT V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as 224 AD • see above.

Features/Options • same as 224 AD • see above.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • standalone: $935 single-unit purchase price.

☐ CDS 224 ARQ/AD

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as 224 AD • see above.

Features/Options • same as 224 AD • see above.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • standalone: $975 single-unit purchase price.

☐ CDS 224 Multiplex

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • same as 224 AD • see above.

Features/Options • same as 224 AD • see above.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • contact vendor.

☐ CDS 224 Superduplex

Compatibility • CCITT V.22/V.22 bis.

Application • same as V.22 • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps • originate/answer modes • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 224 AD • see above.

Diagnostics/Indicators • same as V.22 bis AD • see above.

Cost/Service • standalone: $1,695 single-unit purchase price.

☐ CDS 224 Trispeed

Compatibility • AT&T 103/212A modems; CCITT V.22/V.22 bis.

Application • same as V.22 Series • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates 300/1200/2400 bps • originate/answer modes • FSK; DPSK; QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • automatic answer • optional autodial.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • rackmount: $855/$895 (without/with autodial) single-unit purchase price.

☐ **Personal Computer Modems** • 212; 224.

■ DATA COMMUNICATIONS BROKERS

4 Henson Place, Champaign, IL 61820; 217-352-3207 • Canadian Distribution: none.

☐ DCB PL4.8/PL4.8 Plus

Compatibility • CCITT V.27.

Application • point-to-point or multipoint operation over a C1 conditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • RTS/CTS delay of 50 milliseconds • QAM modulation • automatic equalization • RS-232C/CCITT V.28 interface.

Features/Options • Plus model includes responder for remote addressing, loopback and tone generation, remote control of modems possible with DCB responder or remote analog test system • rackmount version in planning stages.

Diagnostics/Indicators • local digital loopback; bidirectional loopback • status indicators.

Cost/Service • standalone: $1,200/$1,600 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ DCB 9.6/PL9.6 Plus

Compatibility • CCITT V.29.

Application • point-to-point operation over a C1 conditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 4800/7200/9600 bps • QAM modulation • automatic equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as PL4.8/PL4.8 Plus • see above.

Diagnostics/Indicators • same as PL4.8/PL4.8 Plus • see above.

Cost/Service • standalone: $1,600/$2,000 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ DCB PL14.4/PL14.4 Plus

Compatibility • CCITT V.29.

Application • point-to-point operation over a C1 conditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 4800/7200/9600/ bps • QAM modulation • automatic equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as PL4.8/PL4.8 Plus • see above.

Diagnostics/Indicators • same as PL4.8/PL4.8 Plus • see above.

Cost/Service • standalone: $2,900/$3,300 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ DATA-CONTROL SYSTEMS

1455 Research Boulevard, Rockville, MD 20850; 301-279-8798 • Canadian Distribution: Plandata Electronics Ltd, 4 Farnham, Place Bonaventure, Montreal, PQ H5A 1C3; 514-866-1380.

☐ Data-Control Model RAM-11 Wireless Modem

Compatibility • unspecified.

Application • multipoint in-house data distribution via an AC power line; automated warehousing.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 10 milliseconds • FM modulation; FDM for up to 5 channels using existing AC power • proprietary equalization • originate and answer modes • RS-232C interface.

Features/Options • optional power range, including 220-227VAC • optional phase bridging adapters to provide signal path between multiphase, Delta, Wye, facility power wiring.

Diagnostics/Indicators • bilateral loopback • status indicators.

Cost/Service • standalone: $1,750 single-unit purchase price • rackmount: $1,625 single-unit purchase price • quantity discounts: $1,700 for 6 to 14 units; $1,665 for 15 to 49 units • 1-year warranty • nationwide service organization.

☐ Data-Control Model RAM-22 Wireless Modem

Compatibility • unspecified.

Application • multipoint in-house data distribution via an AC power line, automated warehousing.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800/9600 bps • RTS/CTS delay of 10 milliseconds • FM modulation; FDM for up to 5 channels • originate and answer modes • RS-232C interface.

Features/Options • same as RAM-11 • see above.

Diagnostics/Indicators • same as RAM-11 • see above.

Cost/Service • standalone: $2,025 single-unit purchase price • quantity discounts: $1,975 for 6 to 14 units; $1,925 for 15 to 49 units • 1-year warranty • nationwide service organization.

☐ Data-Control Model CCM 100 Coaxial Cable Modem

Compatibility • unspecified.

Application • multipoint operation over a broadband coaxial cable; at distances up to 5 miles.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 56K bps • RTS/CTS delay of 5 milliseconds • FM modulation • originate and answer modes • RS-232C interface.

Features/Options • less than 5 millisecond turnaround for polled environments • high noise immunity.

Diagnostics/Indicators • analog loopback • status indicators.

Cost/Service • contact vendor.

☐ Data-Control CCM 200 Coaxial Cable Modem

Compatibility • unspecified.

Application • multipoint operation over a broadband coaxial cable; at distances up to 5 miles.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 38.4K bps • RTS/CTS delay of 5 milliseconds • FM modulation • originate and answer modes • RS-232C interface.

Features/Options • same as CCM 100 • see above.

Diagnostics/Indicators • same as CCM 100 • see above.

Cost/Service • contact vendor.

☐ Data-Control Model SR 102 Asynchronous Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 16 miles using AWG # 22 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 1.0 M bps • baseband modulation • no equalization • RS-232C interface.

Features/Options • test loop switch.

Diagnostics/Indicators • analog loopback • LED status indicators.

Cost/Service • standalone: $895 single-unit purchase price • • quantity discounts: $875 for 6 to 14 units; $850 for 15 to 49 units • 1-year warranty • nationwide service organization.

☐ Data-Control Model SR 202 Synchronous Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 16 miles using AWG #22 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates from 2400 bps to 19.2K bps • RTS/CTS delay of 10 milliseconds • baseband modulation • RS-232C interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • same as SR 102 • see above.

Diagnostics/Indicators • same as SR 102 • see above.

Cost/Service • standalone: $1,250 single-unit purchase price • quantity discounts: $1,215 for 6 to 14 units; $1,185 for 15 to 49 units • 1-year warranty • factory service.

☐ Data-Control LAM-XD Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire LADC circuit or unloaded private line; at distances up to 20 miles • complies with AT&T Publication 43401; 41028.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • automatic adaptive equalization • RS-232C/RS-449 interface.

Features/Options • front-panel distortion meter • DC continuity not required.

Diagnostics/Indicators • local and remote digital and analog loopback, both unilateral and bilateral • LEDs for power, test, CD, RTS, TC, SD, and RD.

Cost/Service • standalone: $845 single-unit purchase price • quantity discounts available • factory service.

■ DATACOMM MANAGEMENT SCIENCES, INC

25 Van Zant Street, East Norwalk, CT 06851; 203-838-7183 • Canadian Distribution: none.

☐ DataComm Modem Eliminator Model ME-31

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 10, 50 milliseconds • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $325 single-unit purchase price • • 1-year warranty • factory service.

☐ DataComm Universal Modem UM-EIA for DataPak System

Compatibility • AT&T 103F/202B modems.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel or telegraph loop.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • originate/answer modes • FSK modulation • automatic adaptive equalization • RS-232C/current loop interface.

Features/Options • modem center frequency and bandwidth (data rate) selected from a set of 72 different transmit and receive filter.

Diagnostics/Indicators • not available.

Cost/Service • contact vendor • 1-year warranty • factory service.

■ DATALINK READY INC

250 East Drive, Suites E&F, Melbourne, FL 32901; 305-676-0500 • Canadian Distribution: none.

☐ Datalink LDM-1B

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 17 miles using AWG # 22 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 8.5, 50 milliseconds • phase delay modulation • automatic equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; RX, SQ, TX, RX, TX indicators.

Cost/Service • standalone: $693 single-unit purchase price • rackmount: $595 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink LDM-4

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 6 miles • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 8, 50 milliseconds • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • power on, TX, RX carrier/data, carrier control; digital loopback.

Cost/Service • standalone: $295 single-unit purchase price • rackmount: $245 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink LDM-5

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 5 miles • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous/synchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 8, 50 milliseconds • modulation • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • same as LDM-4 • see above.

Cost/Service • standalone: $395 single-unit purchase price • rackmount: $345 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink LDM-6

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 7 miles.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 100K bps • RTS/CTS delay of 0, 9, 50 milliseconds • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • none available.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Cost/Service • standalone: $150 single-unit purchase price • rackmount: $120 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink LDM-7

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 1 kilometer.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 57.6K bps • RS-232C interface.

Features/Options • internal/external clocking • additional data speeds available on special order basis.

Diagnostics/Indicators • LED indicators.

Cost/Service • standalone: $425 single-unit purchase price • rackmount: $375 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink SRM-6 Family

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 17.5 miles using AWG # 24.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to b19.2K ps • RTS/CTS delay of 0 milliseconds • RS-232C interface.

Features/Options • no connection to AC supply.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $70 to $200 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink 212 V.22

Compatibility • AT&T 212 modem; CCITT V.22.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 1200 bps; fallback at 600 bps • originate/answer modes • DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • automatic answer • optional eye pattern generator.

Diagnostics/Indicators • extensive test and full diagnostics.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: $695 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink DLR-224/V.22 bis Data Modem

Compatibility • AT&T 212 modem.

Application • DDD network via direct connection; FCC certified • point-to-point over 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400 bps; fallback 1200 bps • originate/answer modes • QAM/DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • automatic answer • optional autodial.

Diagnostics/Indicators • same as 212 V.22 • see above.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: $750 single-unit purchase price • quantity discounts available • factory service.

☐ Datalink DLR 224 ARQ/V.22 ARQ Modems

Compatibility • AT&T 212 modem; CCITT V.22 bis.

Application • DDD network via direct connection; FCC certified • point-to-point operation over 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates of 2400 bps; fallback 1200 bps • originate/answer modes • QAM/DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • automatic answer • optional autodial.

Diagnostics/Indicators • same as 212 V.22 • see above.

Cost/Service • standalone: $935 single-unit purchase price • rackmount: prices available on request • quantity discounts available • factory service.

☐ Datalink Superduplex 224/V.22 bis

Compatibility • AT&T 212 modem; CCITT V.22 bis.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps; fallback 1200 bps • originate/answer modes • QAM/DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • integral 3-port statistical multiplexer; error free ARQ transmission; echoplex; XON/XOFF or control signal flow control; priority bandwidth allocation; adaptive data compression; autodial, pulse/tone dial, automatic redial, user friendly menus, prompts, and call progress messages.

Diagnostics/Indicators • same as 212 V.22 • see above.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: prices available on request • quantity discounts available • factory service.

☐ Datalink 48/208AB Data Modem

Compatibility • AT&T 201C/208A/B modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; fallback 2400 bps • RTS/CTS delay of 0.8, 7.5, 50, 150 milliseconds • 4-/8-DPSK modulation • automatic adaptive/fixed compromise equalization • RS-232C interface.

Features/Options • automatic answer/disconnect; auto-speed recognition; 801C auto caller compatibility.

Diagnostics/Indicators • remote digital loopback • built-in error test set.

Cost/Service • standalone: $1,695 to $2,195 single-unit purchase price • rackmount: prices available on request • quantity discounts available • factory service.

☐ Datalink Vanilla Series Modems

Compatibility • CCITT V.26/V.27/V.29.

Application • point-to-point or multipoint operation over a an unconditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/4800/9600 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • optional two-call dial back-up; eye pattern

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

generator or analog extension interface on all models; 4-channel multiplexer on 4800/9600 bps models.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $700/$1,400/$2,100 (2400/4800/9600 bps) single-unit purchase price • quantity discounts available • factory service.

☐ **Datalink DLR 96/V.29**

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned 4-wire Type 3002 or CCITT M.1040 voice channel.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • external/internal clock.

Diagnostics/Indicators • local and remote loopback • status indicators.

Cost/Service • standalone: $1,800 single-unit purchase price • rackmount: $1,300 single-unit purchase price • quantity discounts available • factory service.

☐ **Personal Computer Modems** • 24K; 212AH Companion Modem.

■ DATAPROBE, INC

110 West Palisades Boulevard, Palisades Park, NJ 07650; 201-947-9500 • Canadian Distribution: none.

☐ **Dataprobe ME-2/ME-2R**

Compatibility • unspecified.

Application • point-to-point operation over a private cable at distances up to 1,000 feet by use of special low-capacity cable.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 10, 50 milliseconds • RS-232C interface.

Features/Options • single units eliminates 2 back-to-back modems.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $330/$275 single-unit purchase price • 1-year warranty • factory service.

■ DATAPRODUCTS NEW ENGLAND, INC

Barnes Park North, Wallingford, CT 06492; 203-265-7151 • Canadian Distribution: none.

☐ **Dataproducts Digital Distribution Unit DDU-1**

Compatibility • AT&T 209A modem.

Application • point-to-point or multipoint operation over an unloaded 4-wire twisted-pair cable; at distances up to 23 miles • complies with AT&T Publication 43401.

Packaging • rackmount or subset; 12 plug-in modules per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps; asynchronous up to 2400 bps (multiple bit-sampled 8 or more times per bit) • RTS/CTS delay of 0, 10 milliseconds • RS-423 (compatible with RS-232C/MIL-188C/-100/-114,data) interface.

Features/Options • can extend sub-rate ports from AT&T 209-type modems to terminals and convert MIL-188 to EIA or EIA to MIL-188 • subset equipped with power supply, AC line cord, rear-panel EIA connector.

Diagnostics/Indicators • local and remote line and DC loopback • front-panel controls and status indicators.

Cost/Service • contact vendor.

■ DATATEL, INC

Cherry Hill Industrial Center, Cherry Hill, NJ 08003; 609-424-4451 • Canadian Distribution: none.

☐ **Datatel Modem Eliminator DCP 2005/2015/2215**

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 64K bps • RTS/CTS delay of 0, 8.8, 53 milliseconds • RS-232C interface.

Features/Options • crystal-controlled clocks; single unit replaces back-to-back modems; RTS/CTS delay switch-selectable on front panel.

Diagnostics/Indicators • front-panel LEDs.

Cost/Service • standalone: $300/$400 (2005/2015) single-unit purchase price • rackmount: $350 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge; on-call service.

☐ **Datatel Limited Distance Modem Models DCP 3000/3100**

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 15 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 64K bps • RTS/CTS delay of 0, 8, 25, 50 milliseconds • digital baseband modulation • RS-232C interface.

Features/Options • DC continuity required.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $200 single-unit purchase price • rackmount: $190 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge.

☐ **Datatel Limited Distance Modem Model DCP 3010/3110**

Compatibility • unspecified.

Application • same as DCP 3000/3100 • see above.

Packaging • same as DCP 3000/3100 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 64K bps • RTS/CTS delay of 0, 8, 25, 50 milliseconds • digital baseband modulation • RS-232C/Burroughs interface.

Features/Options • same as DCP 3000/3100 • see above.

Diagnostics/Indicators • same as DCP 3000/3100 • see above.

Cost/Service • standalone: $260 single-unit purchase price • rackmount: $250 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge.

☐ **Datatel Limited Distance Modem Model DCP 3020/3120**

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-

Data Circuit Terminating Equipment (DCE) & Associated Devices
ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

or 4-wire metallic circuit; at distances up to 15 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 64K bps • RTS/CTS delay of 0, 8, 25, 50 milliseconds • digital baseband modulation • RS-232C interface.

Features/Options • same as DCP 3000/3100 • see above.

Diagnostics/Indicators • same as DCP 3000/3100 • see above.

Cost/Service • standalone: $250 single-unit purchase price • rackmount: $240 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge; on-call or fixed-price service.

☐ Datatel Limited Distance Modem Model DCP 3050/3150

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 10 miles using AWG #19 or #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.8, 17.7, 35.5 milliseconds • digital baseband modulation • RS-232C interface.

Features/Options • same as DCP 3000/3100 • see above.

Diagnostics/Indicators • same as DCP 3000/3100 • see above.

Cost/Service • standalone: $420 single-unit purchase price • rackmount: $380 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge.

☐ Datatel Limited Distance Modem Model DCP 3055/3155

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 10 miles using AWG #19 or #26.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • same as DCP 3050/3155 • see above.

Features/Options • same as DCP 3000/3100 • see above.

Diagnostics/Indicators • same as DCP 3000/3100 • see above.

Cost/Service • standalone: $550 single-unit purchase price • rackmount: $510 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge.

☐ Datatel Limited Distance Modem Model DCP 3057/3157

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 8 miles.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 64 bps • RTS/CTS delay of 0, 8.8, 17.7, 35.5 milliseconds • digital baseband modulation • RS-232C interface.

Features/Options • same as DCP 3000/3100 • see above.

Diagnostics/Indicators • same as DCP 3000/3100 • see above.

Cost/Service • standalone: $550 single-unit purchase price • rackmount: $510 single-unit purchase price • quantity discounts available • 1-year warranty • factory out-of-warranty service charge.

☐ Datatel Limited Distance Modem Model DCP 3080/3180

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 7 miles.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 56K bps • RS-232C interface.

Features/Options • also functions as a CSU/DSU, which can be used as an asynchronous LDM.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • 10 front-panel LED indicators.

Cost/Service • standalone: $995 single-unit purchase price • rackmount: $795 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ DATEC INCORPORATED

200 Eastowne Drive, Suite 116, Chapel Hill, NC 27514; 919-929-2135 • Canadian Distribution: Future Electronics, 237 Hymus Blvd, Pointe Claire, PQ H9R 5C7; 514-694-7710.

☐ Datec 212R Modem

Compatibility • AT&T 103/113/212A modems.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 1200 bps • automatic/manual answer/originate modes • FSK/PSK modulation • RS-232C interface.

Features/Options • touch-tone/rotary dial • optional ACU.

Diagnostics/Indicators • self test; local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $495/$545 (without/with ACU) single-unit purchase price • rackmount: $475 without ACU single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Datec 212/801 Modem

Compatibility • same as 212R • see above.

Application • same as 212R • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • same as 212R • see above.

Features/Options • touch-tone/rotary dial; 801 dialer.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $799 single-unit purchase price • rackmount: $750 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ **Personal Computer Modems** • PAL 212; PAL Plus; 212SA; 212SB; 212SC; 212SD.

■ DDC

7300 North Crescent Blvd, Pennsauken, NJ 08110; 609-662-7272 • Canadian Headquarters: none.

☐ DDC ECS-10

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

circuit; at distances up to 10 miles using AWG #18 or #24.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • also serves as interface converter to 20-mA current loop operation.

Diagnostics/Indicators • manual local loopback; LED diagnostics.

Cost/Service • standalone: $99 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ DDC ECS-20

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 2 miles.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps • 20-/60-mA current loop interface.

Features/Options • none supported.

Diagnostics/Indicators • same as ECS-10 • see above.

Cost/Service • standalone: $125 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ DEI-TELEPRODUCTS

230 N. Market Place, Escondido, CA 92025; 619-743-8344 • Canadian Distribution: none.

☐ DEI Model ADT-3 Asynchronous Data Transceiver-Line Driver

Compatibility • DEI SDT-2 modem.

Application • point-to-point or multipoint operation over an unloaded 4-wire metallic circuit; at distances up to 20 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; a synchronous at data rates up to 9600 bps • RTS/CTS delay of 8, 40, milliseconds • baseband modulation • RS-232C interface.

Features/Options • auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $225 single-unit purchase price; $14 per month 1-year rental • rackmount: $189 single-unit purchase price; $12 per month 1-year rental • card cage: $310 single-unit purchase price; $20 per month 1-year rental • quantity discounts: standalone - $205 for 10 to 24 units, $195 for 25 to 49 units; rackmount - $$179 for 10 to 24 units, $175 for 25 to 49 units • 1-year warranty • factory service.

☐ DEI ELD-1 Line Driver

Compatibility • DEI SDT-2 modem.

Application • same as ADT-3 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 8, 40 milliseconds • baseband modulation • RS-232C interface.

Features/Options • same as ADT-3 • see above.

Diagnostics/Indicators • same as ADT-3 • see above.

Cost/Service • standalone: $175 single-unit purchase price; $11 per month 1-year rental • quantity discounts available • 1-year warranty • factory service.

☐ DEI Model SDT-3 Synchronous Data Transceiver-Line Driver

Compatibility • DEI ADT-2 modem.

Application • point-to-point or multipoint operation over an unloaded 4-wire metallic circuit; at distances up to 17 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 8, 40 milliseconds • baseband modulation • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • same as ADT-3 • see above.

Cost/Service • standalone: $445 single-unit purchase price; $28 per month 1-year rental • rackmount: $420 single-unit purchase price; $27 per month 1-year rental • card cage: $310 single-unit purchase price • quantity discounts: standalone—$422 for 10 to 24 units, $413 for 25 to 49 units; rackmount—contact vendor • 1-year warranty • factory service.

☐ DEI 2000 Line Driver

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 2 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 56K bps • RTS/CTS delay of 8, 40 milliseconds • baseband modulation • no equalization • CCITT V.35 interface.

Features/Options • not available.

Diagnostics/Indicators • same as ADT-3 • see above.

Cost/Service • standalone: $650 single-unit purchase price; $44 per month 1-year rental • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ DEI ME-1 Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a private unloaded cable; at distances up to 100 feet • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 50 milliseconds • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • loopback diagnostics.

Cost/Service • standalone: $295 single-unit purchase price; $20 per month 1-year rental • quantity discounts available • 1-year warranty • factory service.

☐ DEI MME

Compatibility • unspecified.

Application • same as ME-1 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200 to 1M bps • RTS/CTS delay of 0, 8, 50 milliseconds • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • same as ME-1 • see above.

Cost/Service • standalone: $435 single-unit purchase price; $28 per month 1-year rental • quantity discounts available • 1-year warranty • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ DEI Models 1300/1350 Data Channel Service Unit

Compatibility • unspecified.

Application • data service unit provides interface between customer data terminal equipment and AT&T DDS.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-duplex; synchronous at data rates of 2400/4800/9600 bps • RTS/CTS delay of 2, 4, 8 milliseconds • bipolar modulation • RS-232C interface.

Features/Options • all encoding and decoding functions required by DDS are provided.

Diagnostics/Indicators • digital loopback • front-panel LEDs.

Cost/Service • standalone: $995 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ DEI 1301/1351 Data Channel Service Unit

Compatibility • unspecified.

Application • same as 1300/1350 • see above.

Packaging • standalone or rackmount; up to 15 units per enclosure.

Operating Parameters • half-duplex; synchronous at data rates of 56K bps • RTS/CTS delay of 430 milliseconds • bipolar modulation • CCITT V.35 interface.

Features/Options • same as 1300/1350 • see above.

Diagnostics/Indicators • same as 1300/1350 • see above.

Cost/Service • standalone: $1,095 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

■ DEVELCON ELECTRONICS INC

744 Nina Way, Warminister, PA 18974; 215-443-5450 • Canadian Distribution: Develcon Electronics Ltd, 856 51st Street, Saskatoon, SK S7K 5C7; 306-933-3300.

☐ Develcon Model DS202D Asynchronous Modem

Compatibility • unspecified.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps on DDD and 1800 bps on dedicated line • originate/answer modes • RTS/CTS delay of 8, 50, 200 milliseconds • FSK modulation • RS-232C interface.

Features/Options • optional 150 bps reverse channel.

Diagnostics/Indicators • self-test; local and remote digital and analog loopback.

Cost/Service • standalone: $495 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

☐ Develcon DS507

Compatibility • unspecified.

Application • point-to-point operation over a metallic circuit; at distances up to 6 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • not available.

Cost/Service • standalone: $95 single-unit purchase price • • quantity discounts available • 2-year warranty • factory service.

☐ Develcon DS511A

Compatibility • unspecified.

Application • point-to-point operation over a metallic circuit; at distances up to 8 miles using AWG #26.

Packaging • standalone, rackmount or PC card.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • compromise equalization • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • self-test; digital and analog loopback.

Cost/Service • standalone: $198 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

☐ Develcon DS547

Compatibility • unspecified.

Application • point-to-point operation over a metallic circuit; at distances up to 6 miles.

Packaging • standalone, rackmount or PC card.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • compromise equalization • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • digital and analog loopback.

Cost/Service • standalone: $425 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

☐ Develcon Model DS 513 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 50 miles using AWG #19.

Packaging • standalone or rackmount; up to 26 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 50 milliseconds • NRZI baseband modulation • compromise equalization • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • self-test; local digital loopback.

Cost/Service • standalone: $330 single-unit purchase price • rackmount 2 units per module: $425 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

☐ Develcon Model DS 541 Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 50, 200 milliseconds • RS-232C interface.

Features/Options • single unit eliminates back-to-back modems • optional 100K bps data rate.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $445 single-unit purchase price • rackmount: $270 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Develcon Model DS 548 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 60.5 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 8, 50 milliseconds • delay modulation • manual equalization • RS-232C interface.

Features/Options • reverse channel.

Diagnostics/Indicators • local and remote digital loopback.

Cost/Service • standalone: $770 single-unit purchase price • rackmount: $645 single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

☐ Develcon Model DS 558 High-Speed Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a metallic circuit; at distances up to 2.5 miles using AWG #26.

Packaging • PC board, standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 19.2K or 100K bps; 56K standard • delay modulation • manual equalization • RS-232C/AT&T 303/CCITT V.35 interface.

Features/Options • reverse channel.

Diagnostics/Indicators • self-test; local and remote digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $770/$1,100/$895 (RS-232C/AT&T 303/CCITT V.35 interface) single-unit purchase price • rackmount: $630/$760 (RS-232C or AT&T 303/CCITT V.35 interface) single-unit purchase price • quantity discounts available • 2-year warranty • factory service.

■ DIGITAL COMMUNICATIONS ASSOCIATES, INC (DCA)

303 Technology Park, Norcross, GA 30092; 404-448-1400 • Canadian Distribution: Logiquest, 555 Dorchester West, Suite 1616, Quebec PQ H2Z 1B1; 416-283-2567.

☐ DCA 910

Compatibility • CCITT V.26, V.26 bis.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/1200 bps • RTS/CTS delay of 7.1,0.5 milliseconds • PSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • front-panel programmable LED indicators.

Cost/Service • standalone: $1,095 single-unit purchase price.

☐ DCA 911

Compatibility • AT&T 212A; CCITT V.22, V.22 bis.

Application • DDD network via DAA • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates at 2400/1200 bps • RTS/CTS delay of 3.5 milliseconds • QAM/PSK modulation • automatic equalization • RS-232C/CCITT V.25 bis interface.

Features/Options • automatic dial/answer; call progress monitor; touch-tone/pulse dialing.

Diagnostics/Indicators • self-test; 11 LEDs status indicators.

Cost/Service • standalone: $1,195 single-unit purchase price.

☐ DCA 920

Compatibility • CCITT V.27 bis/ter.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 50 milliseconds • PSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • internal/external clock.

Diagnostics/Indicators • same as 911 • see above.

Cost/Service • standalone: $1,695 single-unit purchase price.

☐ DCA 930

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • built-in 4-channel multiplexer.

Diagnostics/Indicators • same as 911 • see above.

Cost/Service • standalone: $2,795 single-unit purchase price.

☐ DCA 940

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K/9600/7200/4800 bps • RTS/CTS delay of 433.5, 253 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • built-in 6-channel multiplexer.

Diagnostics/Indicators • same as 911 • see above.

Cost/Service • standalone: $5,395 single-unit purchase price.

■ DIGITAL EQUIPMENT CORPORATION

146 Main Street, Maynard, MA 01754; 617-897-5111 • Canadian Distribution: Digital Equipment of Canada, P.O. Box 13000, Kanata, ON K2K 2A6; 613-592-5111.

☐ DEC DF112 Modem Series

Compatibility • AT&T 103J/212A modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates of 300/1200 bps; synchronous at data rates of 1200 bps • originate/answer modes • FSK/DPSK modulation • compromise equalization • RS-423A interface using RS-232C mechanical interface specs.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • DOC certified for use in Canada; auto-answer; auto-call.

Diagnostics/Indicators • self-test; local and remote digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $745 single-unit purchase price • rackmount: $595 single-unit purchase price • quantity discounts available • on-site service; carry-in service; module mailer.

☐ DEC Model DF126 Modems

Compatibility • AT&T 201B/C modems; CCITT V.26.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 2400 bps; fallback 1200 bps • originate/answer mode in either automatic or manual • 4-phase DPSK modulation • compromise equalization • RS-423A interface using RS-232C mechanical interface specifications.

Features/Options • same as DF126 • see above.

Diagnostics/Indicators • full-featured testing functions including LT (local test), RT (remote test), TPG (test pattern generator), RDL (remote digital loop), and local digital loop • status indicators for carrier presence, DTR, DSR, speed indicate, self-test, off-hook, and transmit/receive data monitoring.

Cost/Service • standalone: $895 single-unit purchase price • rackmount: $775 single-unit purchase price • on-site and off-site service.

☐ DEC Model DF104 Modems

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400 bps; fallback 1200 bps on high speed; 150 bps; fallback 75 bps on low speed • originate/answer modes • DPSK at 2400/1200 bps, FSK at 150/75 bps • compromise equalization • RS-423A interface using RS-232C mechanical interface specs.

Features/Options • DOC certified for use in Canada; auto-call; auto-answer; split speed with speed-up/down capabilities.

Diagnostics/Indicators • same as DF126 • see above.

Cost/Service • standalone: $750 single-unit purchase price • rackmount: $650 single-unit purchase price • on-site/off-site service.

☐ DEC DF127 Modem Series

Compatibility • CCITT V.27.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount • integral STDM modem module.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • automatic/manual fallback mode.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $2,045 single-unit purchase price • rackmount: $1,850 single-unit purchase price • quantity discounts available • on-site/carry-in service; module mailer.

☐ DEC DF129 Modem Series

Compatibility • CCITT V.29.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • same as DF127 • see above.

Operating Parameters • full-duplex; synchronous at data rates of 4800/7200/9600 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • automatic/manual fallback mode.

Diagnostics/Indicators • same as DF 127 • see above.

Cost/Service • standalone: $3,045 single-unit purchase price • rackmount: $2,850 single-unit purchase price • on-site/carry-in service; module mailer.

Personal Computer Modems • DF02; DF03.

■ DIGITAL PATHWAYS

1060 East Meadow Circle, Palo Alto, CA 94303; 415-493-5544 • Canadian Distribution: none.

☐ Digi-Path 212A Model 200

Compatibility • AT&T 212A modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-duplex; asynchronous/synchronous at data rates of 300/1200 bps • originate/answer modes • compromise equalization • RS-232C interface.

Features/Options • auto redial; keyboard memory; alternate voice/data; auto-answer.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ Digi-Path 212A Model 300

Compatibility • AT&T 212A modem.

Application • same as 212A Model 200 • see above.

Packaging • standalone.

Operating Parameters • same as 212A Model 200 • see above.

Features/Options • same as 212A Model 200 • see above, plus proprietary hardware ID for security.

Diagnostics/Indicators • same as 212A Model 200 • see above.

Cost/Service • contact vendor.

■ DYNATECH DATA SYSTEMS

7644 Dynatech Court, Springfield, VA 22153; 703-569-9000 • Canadian Distribution: Glentronix Ltd, 160 Duncan Mill Road, Don Mills, ON M3B 1Z5; 416-444-8497.

☐ Dynatech Modem Eliminator ME-1 & ME-1R

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 100 feet.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.5 or 50 milliseconds • RS-232C interface.

Features/Options • two 25-pin female EIA connectors.

Diagnostics/Indicators • digital loopback • front-panel LEDs for a visual display of data, clock, and carrier control signals.

Cost/Service • contact vendor.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Dynatech Limited-Distance Modem Model LDM-22

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-wire unloaded, twisted-pair metallic circuit; at distances up to 13 miles.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.5, 50 milliseconds • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • digital and analog loopback • status indicators for receive data, clear to send, transmit data, transmit clock, request to send and receive clock.

Cost/Service • contact vendor.

■ ELECTRODATA, INC

23020 Miles Road, Bedford Heights, OH 44128; 216-663-3333 • Canadian Headquarters: R-O-R Associates Ltd, 21 Rolark Drive, Scarborough, ON M1R 3B1; 416-291-7121.

☐ Electrodata Modem Eliminator/Driver Model ME2

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 400 feet.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 30 milliseconds • RS-232C interface.

Features/Options • female 25-pin connectors; internal crystal clock can disable asynchronous operations • optional switch selectable for carrier control, RTS/CTS, ring indicator.

Diagnostics/Indicators • digital loopback • status indicators.

Cost/Service • standalone: $350 single-unit purchase price • factory service.

■ F-TEC

15 Seeley Avenue, Piscataway, NJ 08854; 201-562-1100 • Canadian Distribution: none.

☐ F-TEC 4848 Modem

Compatibility • CCITT V.32.

Application • point-to-point or multipoint operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 4800/2400/1200 bps • DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • answer/disconnect; echo cancellation • optional asynchronous-to-synchronous conversion.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; test pattern generator • visual indicators for line quality/signal level.

Cost/Service • standalone: $3,500 single-unit purchase price • rackmount: prices available on request.

■ FAIRCHILD DATA CORPORATION

350 Hayden Road, Scottsdale, AZ 85257-4692; 602-949-1155 • SJI Corporation, 5950 6th Avenue S, Suite 101, Seattle, WA 98108; 206-763-8981.

☐ Fairchild GB-56 Groupband Modem

Compatibility • unspecified.

Application • point-to-point operation over the base groupband channel of a wideband Group 2 carrier network.

Packaging • rackmount; up to 4 units per enclosure, consisting of modulator card and demodulator card for each modem and 1 or 2 power supplies.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • quadrature phase shift keying (QPSK) modulation • CCITT V.35/V.36 interface.

Features/Options • switch-selectable CCITT V.35 scrambling/descrambling; redundant power supply; passes 3 full-duplex control signals, including external clock signals • optional components for Dutch PTT network.

Diagnostics/Indicators • baseband and RF loopback testing • visual indicators for loss of power, loss of modulator/demodulator signal.

Cost/Service • rackmount: $6,850 single-unit purchase price; chassis and power supply(s) extra • quantity discounts range from 2.4 percent for 6 to 11 units to 12 percent for 100 or more units • 1-year warranty • factory service.

☐ Fairchild GB-200 Groupband Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over the base groupband channel of a Wideband Group 2 carrier network.

Packaging • rackmount.

Operating Parameters • full-duplex; synchronous for up to 3 channels at data rates of 56K bps; 1 channel at 112K bps or 1 channel at 168K bps • QPSK modulation • CCITT V.35; RS-449/-422, or MIL-188/-114 interface.

Features/Options • switch selectable CCITT V.35 scrambling/descrambling; integral 3-channel multiplexer; strap-selectable constant or polling carrier mode; internal/external clock source.

Diagnostics/Indicators • same as GB-56 • see above.

Cost/Service • rackmount: single-unit purchase price • quantity discounts range from 2.4 percent for 6 to 11 units to 12 percent for quantities over 100 • 1-year warranty • factory service.

☐ Fairchild M505 Broadband Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-way broadband coaxial cable.

Packaging • same as GB-56 • see above.

Operating Parameters • full-duplex; synchronous at data rates of 56K to 3.088M bps; 3.088M to 6.5M bps; or 6.5M to 10M bps depending on speed option • screw-adjustable RTS/CTS delay of 0.1 to 1.0 seconds (V.35 or RS-449 interface only) • QPSK/QAM equalized with scrambling modulation • AT&T T1, T2; CCITT V.35; RS-449/-422; MIL-188/-114 interface.

Features/Options • RF carriers from 5 to 440 MHz; data density of 1.4 bits per Hz; internal/external clock source • optional strap-selectable constant carrier or polling.

Diagnostics/Indicators • RF loopback test; test points for 1-eye pattern, Q-eye pattern and power supply • 2 visual indicators for carrier detect; receive data.

Cost/Service • rackmount: $4,750 single-unit purchase price; $500 per interface adapter; chassis and power supply(s) extra • quantity discounts range from 2.4 percent for 6 to 11 units to 12 percent for over 100 units • 1-year warranty • factory service.

☐ Fairchild SM220A Satellite Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation via satellite.

Packaging • rackmount.

Operating Parameters • simplex, full-duplex; synchronous at data rates up to 6M bps • QPSK modulation • RS-485 interface.

Features/Options • sequential or threshold decoding; M&C

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

interface allows remote programming via computer; computer-to-computer and PBX traffic • optional RS-422 compatible when only one modem must be controlled.

Diagnostics/Indicators • same as GB-56 • see above.

Cost/Service • rackmount: $14,950 single-unit purchase price • quantity discounts range from 2.4 percent for 6 to 11 units to 12 percent for over 100 units • 1-year warranty • factory service.

■ FIBRONICS INTERNATIONAL INC

325 Stevens Street, Hyannis, MA 02601; 617-778-0700 • Canadian Distribution: Electronetics Systems Ltd, 785 Arrow Road, Weston, ON M9M 2L4; 416-745-2999.

☐ Fibronics FM 1600 Series

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a fiber-optic, coaxial, twinax cable or metallic wire.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • dual controller; automatic back-up; supports IBM 3270/System 34/36/38/3250/5080/5220, ITT Courier 2700/3300, Raytheon 2078/3287, Wang VS Series, Memorex systems.

Diagnostics/Indicators • transmit, receive/fault.

Cost/Service • standalone: $1,000 to $4,960 single-unit purchase price • factory/field service.

■ FUJITSU AMERICA, INC

3055 Orchard Drive, San Jose, CA 95134-2017; 408-946-8777 • Canadian Distribution: S.P. Baudin & Associates, Inc, 123 Place, Frontenac, Pointe Claire, PQ H9R 4Z7; 516-697-7697.

☐ Fujitsu M1911L

Compatibility • AT&T 212A modem; CCITT V.22.

Application • DDD network via DAA • point-to-point operation over a 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps • QAM modulation • RS-232C/CCITT V.28 interface.

Features/Options • automatic calling/answering; pulse/tone dial; integral call progress monitoring.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $1,095 single-unit purchase price.

☐ Fujitsu M1915L

Compatibility • CCITT V.27 bis/ter.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 50 milliseconds • PSK modulation • automatic adaptive digital equalization • RS-232C/CCITT V.28 interface.

Features/Options • internal/external clock.

Diagnostics/Indicators • automatic test; LED testing including CCITT V.54 Loops 1, 2, 3, 4; eye pattern generator • LED and LCD indicators.

Cost/Service • standalone: $1,495 single-unit purchase price.

☐ Fujitsu M1921L

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • QAM modulation • automatic adaptive digital equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional built-in 4-channel multiplexer.

Diagnostics/Indicators • same as M1915L • see above.

Cost/Service • standalone: $1,995 single-unit purchase price.

☐ Fujitsu M1923L Fast-Poll Modem

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 0 milliseconds • QAM modulation • automatic equalization • RS-232C interface.

Features/Options • fast-poll • optional 4-channel multiplexer.

Diagnostics/Indicators • self-test;local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $2,875 single-unit purchase price.

☐ Fujitsu M1926L

Compatibility • CCITT V.29 at 9600 bps.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 14.4K/9600/7200/4800 bps • RTS/CTS delay of 253, 433, 1333 milliseconds • QAM modulation • automatic equalization • RS-232C/CCITT V.28 interface.

Features/Options • built-in 6-port TDM multiplexer• optional Trellis coded.

Diagnostics/Indicators • local digital and analog loopback.

Cost/Service • standalone: $5,950 single-unit purchase price.

☐ Fujitsu M1935L

Compatibility • AT&T 212A; CCITT V.22.

Application • DDD network via DAA • point-to-point operation over a 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400/1200 bps • QAM (at 2400 bps); PSK (at 1200 bps) modulation • RS-232C/CCITT V.28 interface.

Features/Options • automatic fallback; automatic calling/answer; pulse/tone dial; integral call progress monitoring.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $895 single-unit purchase price.

■ GANDALF DATA INC

1019 South Noel Avenue, Wheeling, IL 60090; 312-541-6060 • Canadian Distribution: Gandalf Data Ltd, Gandalf Plaza, 9 Slack Road, Nepean, ON K2G 0B7; 613-225-0565.

☐ Gandalf SM 9600 Super Modem II

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire Type 3002 voice channel; D-1 conditioning recommended • complies with

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

AT&T Publication 41004.

Packaging • standalone or rackmount; up to 4 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at 9600 bps; D1 conditioning required for optimum performance • RTS/CTS delay of 0, 8, 50, 130 milliseconds • proprietary modulation scheme featuring high bit rate, low baud rate • RS-232C interface.

Features/Options • multiport option multiplexes 2, 3, or 4 data streams at various combinations of 2400, 4800, or 7200 bps for an aggregate 9600 bps • optional manual dual dial backup.

Diagnostics/Indicators • loopback • status LED indicators.

Cost/Service • standalone: $2,800 single-unit purchase price • rackmount: $2,700 single-unit purchase price• quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service.

☐ Gandalf LDS 100C

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 10 miles using AWG #26.

Packaging • standalone.

Operating Parameters • half-/full-duplex; a synchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • strap option; constant or controlled carrier.

Diagnostics/Indicators • "ready" light on when both data sets are operational.

Cost/Service • standalone: $225 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 101

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 10 miles using AWG #26.

Packaging • rackmount; up to 11 PC cards per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • redundant PS911 power supply reduces capacity to 8 PC cards.

Diagnostics/Indicators • status indicators.

Cost/Service • rackmount: $400 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 120 & RM 3120

Compatibility • Gandalf LDS 121 modems.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 5.5 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 14 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • constant or controlled carrier • provides 20-mA current loop for supporting teletype directly from LDS 120.

Diagnostics/Indicators • digital loopback • status indicators.

Cost/Service • standalone: $300 single-unit purchase price • rackmount: $250 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 121

Compatibility • Gandalf LDS 120 modem.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 5 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • rackmount; up to 4 units per enclosure; PC board.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • constant or controlled carrier • received data/received carrier • 20-mA current loop provided for direct teletype connection to LDS 121 • no DC continuity required.

Diagnostics/Indicators • space indicator.

Cost/Service • rackmount: $440 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 140 & RM 3140

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 25 miles using AWG #19.

Packaging • standalone or rackmount; up to 14 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • constant or controlled carrier • DC continuity not required • TTY output • power and mode switch.

Diagnostics/Indicators • local digital loopback; • status indicators.

Cost/Service • standalone: $450 single-unit purchase price • rackmount: $350 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 260

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 2.5 miles using AWG #26.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 56K bps • RTS/CTS delay of 2.6 milliseconds at 50K bps or 2.3 milliseconds at 56K bps • RS-232C/V.28, RS-422/V.11, RS-423/V.10, MIL-188C, CCITT V.35 interface.

Features/Options • internal or external clocking.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $786 to $886 single-unit purchase price • rackmount with RS-232C/V.35 interface: $655 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 309A

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 17 miles using AWG #22 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 2, 8, 55 milliseconds • RS-232C/V.28 interface.

Features/Options • phase lock loop • data scrambler • signal monitor • controlled or continuous carrier operation • internal/external clocking.

Diagnostics/Indicators • self-test; local digital and analog loopback • status and mode indicators.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Cost/Service • standalone: $635 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDM 454

Compatibility • unspecified.

Application • point-to-point operation or multipoint over a an unconditioned dedicated Type 3002 voice channel; at distances up to 200 miles using AWG # 26.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 4800 bps • RS-232C/V.28 interface.

Features/Options • constant or controlled carrier operation • 8.5 milliseconds fast poll.

Diagnostics/Indicators • local digital and analog loopback; remote command loopback • status indicators • long/short line.

Cost/Service • standalone: $1,495 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDM 444

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned dedicated Type 3002 voice channel; at distances up to 200 miles using AWG #26.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • RS-232C/V.28 interface.

Features/Options • same as Gandalf LDM 454 • see above.

Diagnostics/Indicators • local digital and analog loopback; remote command loopback • status indicators • long/short line.

Cost/Service • standalone: $1,350 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf FA 1

Compatibility • unspecified.

Application • point-to-point operation over fiber optic transmission link; at distances up to 3,300 feet.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates 0 to 100K bps • RTS/CTS delay at 0, 8, 60, 150 milliseconds • RS-232C/V.28 interface.

Features/Options • not available.

Diagnostics/Indicators • local/remote tests • status indicators.

Cost/Service • standalone: $500 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf FS 1

Compatibility • unspecified.

Application • point-to-point operation over fiber optic transmission link; at distances up to 3,300 feet.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 256K bps • RTS/CTS delay of 0, 8, 60, 150 milliseconds • RS-232C/V.28 interface.

Features/Options • internal clocking • constant carrier • optional external clocking.

Diagnostics/Indicators • local/remote tests • status indicators.

Cost/Service • standalone: $600 single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf RM 3309H & RM 3309L

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 17 miles using AWG #22 • complies with AT&T Publication 43401.

Packaging • rackmount; up to 14 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps (3309H); up to 9600 bps (3309L) • RTS/CTS delay of 2, 8, 55 milliseconds • RS-232C/V.28 interface.

Features/Options • phase lock loop • data scrambler • internal/external clocking • strap for analog loopback through artifical line.

Diagnostics/Indicators • self-test • local and remote analog loopback; remote digital loopback • status indicators.

Cost/Service rackmount: $610/560 (3309H/3309L)single-unit purchase price • available for lease • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf ME-2 Modem Eliminator/Simulator

Compatibility • unspecified.

Application • point-to-point operation over a private cable ; at distances up to 100 feet • can be used with ME-4 Modem Multiplier to support 2 or more polled terminals.

Packaging • standalone portable.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 16, 50, 100 milliseconds • RS-232C interface.

Features/Options • constant or controlled carrier; portable size 8 x 7.75 x 2.375 inches; 2.5 pounds; 117 VAC.

Diagnostics/Indicators • none available.

Cost/Service • standalone: $400 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf ME-922 Dual Active Modem Eliminator

Compatibility • unspecified.

Application • module with 2 independent modem eliminators; supports point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • rackmount card module.

Operating Parameters • each of 2 channels supports asynchronous data rates up to 50K bps; or synchronous at data rates up to 38.4K bps • RTS/CTS delay of 0, 8, 50 milliseconds • RS-232C interface per channel.

Features/Options • internal clocking • controls on front panel for clock speeds • optional external clocking.

Diagnostics/Indicators • front-panel indicators for DCD and RxD signals in each direction of business machine location.

Cost/Service • card module: $450 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf Line Miser DOV 1150/1152

Compatibility • unspecified.

Application • simultaneous voice and data communication in local area/PBX network; point to point operation over unloaded 2-wire metallic circuit; at distances up to 18,000 feet using AWG #24, requires DC continuity • FCC certified.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps; optional synchronous operations at 75 to 9600 bps • FSK modulation • RS-232C interface.

Features/Options • data over voice supports data transmission at higher frequencies than voice.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $295 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDS 122 Asynchronous Limited-Distance Data Set

Compatibility • Gandalf LDS 120, 121, RM 3120.

Application • point-to-point operation over an unloaded 4-wire metallic circuit; at distances up to 4 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone, compact unit plugs directly into DTE device.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 0 milliseconds • automatic equalization • RS-232C interface.

Features/Options • DC continuity not required • derives power from DTE device data and control devices.

Diagnostics/Indicators • none available.

Cost/Service • standalone: $95 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDM 409 Medium-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a loaded or unloaded 4-wire twisted pair or 4-wire dedicated Type 3002 voice channel; at distances up to 10 miles.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 or 4800 bps • RTS/CTS delay of 0, 35, 100, 150 milliseconds • QAM modulation • automatic equalization; digital adaptive equalization • RS-232C/V.28 interface.

Features/Options • constant carrier/split channel operations.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • test pattern generator and error detector.

Cost/Service • standalone: $895 single-unit purchase price • rackmount: $825 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf SAM 24

Compatibility • AT&T 103/212 modems; CCITT V.22 bis modems at 2400 bps.

Application • point-to-point operation over a 2-wire DDD network or dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps; 300 bps optional • QAM/DPSK/FSK (2400/1200/300 bps) modulation • automatic adaptive equalization • RS-232C/V.28 interface.

Features/Options • auto answer; auto dial • optional 300 bps, compatible with AT&T 103 modems.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status LEDs • test pattern for generator with error detector.

Cost/Service • standalone: $795 single-unit purchase price • rackmount: $725 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf SAM 201

Compatibility • AT&T 201C/CCITT V.26 option B or A, in synchronous mode; another Gandalf SAM 201 in asynchronous mode.

Application • point-to-point or multipoint operation over an unconditioned Type 3002 voice channel or 2- or 4-wire voice-band private line or DDD network.

Packaging • standalone or rackmount.

Operating Parameters • simplex, half-/full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • DPSK modulation • RS-232C/V.26 interface.

Features/Options • built-in auto answer and manual dial DAA for use on DDD network; can be used with 801 type auto-dialer or with an external DAA.

Diagnostics/Indicators • self-test; digital and analog loopback; voice/data • power on, test mode, DTR, modem ready, CTS, carrier detect, send/receive data, error indicators.

Cost/Service • standalone: $725 single-unit purchase price • rackmount: $650 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf SmLDS 349

Compatibility • line compatible with LDS 309.

Application • point-to-point operation over two non-loaded cable pairs; at distances up to 6 miles at 2400 bps; 5 miles at 4800 bps; 4 miles at 9600 bps; 3 miles at 19.2K bps • complies with AT&T Publication 43401 and Bell Canada.

Packaging • standalone, compact unit plugs directly into DTE device.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 8.5 milliseconds • auto equalization • RS-232C interface.

Features/Options • derives power from DTE device data and control signals • available with female or male connectors • switch selectable external/internal clock and data scrambler.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $195 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ Gandalf LDM 408 & RM 3408

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire Type 3002 voice channel • complies with AT&T Publication 41004; 43401.

Packaging • standalone or rackmount; up to 14 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates at 4800 bps • RTS/CTS delay of 0, 15, 50, 150 milliseconds • QAM modulation • automatic digital adaptive equalization • RS-232C/V.28 interface.

Features/Options • split channel capability allows two 2400 bps links per standalone modem.

Diagnostics/Indicators • front-panel switch selectable; analog loopback; local and remote digital loopback • test pattern generator and error detector.

Cost/Service • standalone: $895 single-unit purchase price • rackmount: $825 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Gandalf LDM 418 & RM 3418

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire Type 3002 voice channel • complies with AT&T Publication 41004; 43401.

Packaging • standalone or rackmount; up to 14 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 4800 bps • RTS/CTS delay of 0, 15, 50, 150 milliseconds • QAM modulation • automatic digital adaptive equalization • RS-232C/V.28 interface.

Features/Options • same as Gandalf LDM 408 & RM 3408 • see above.

Diagnostics/Indicators • same as Gandalf LDM 408 & RM 3408 • see above.

Cost/Service • standalone: $895 single-unit purchase price • rackmount: $825 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service.

☐ Gandalf LDM 419 & RM 3419

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire Type 3002 voice channel • complies with AT&T Publication 41004; 43401.

Packaging • standalone or rackmount; up to 14 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 15, 50, 150 milliseconds • QAM modulation • automatic digital adaptive equalization • RS-232C/V.28 interface.

Features/Options • same as Gandalf LDM 408 & RM 3408 • see above.

Diagnostics/Indicators • same as Gandalf LDM 408 & RM 3408 • see above.

Cost/Service • standalone: $1,095 single-unit purchase price • rackmount: $1,025single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ **Personal Computer Modems** • SAM 212A.

■ GENERAL DATACOMM INDUSTRIES INC

Rte 63, Middlebury, CT 06762-1299; 203-574-1118 • Canadian Distribution: General DataComm Industries Ltd, 2255 Shephard Ave E, Suite W410, Willowdale, ON M2J 4Y3; 416-498-5100.

☐ DataComm Model 201-7 Series

Compatibility • AT&T 201B/C modems; CCITT V.26 Type B.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps • RTS/CTS delay of 0, 7.1, 150 milliseconds • DPSK modulation; 1800 Hz carrier • RS-232C interface.

Features/Options • automatic answer • optional remote digital loopback.

Diagnostics/Indicators • self-test; local digital and analog loopback.

Cost/Service • standalone: $725 single-unit purchase price • rackmount: $650 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic center in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 202S/T Series

Compatibility • AT&T 202S/T modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3003 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps (DDD) or 1800 bps (dedicated) • RTS/CTS delay of 8, 30, 60, 180 milliseconds • FSK modulation; 1200-Hz and 2200-Hz carriers • compromise equalization • RS-232C interface.

Features/Options • optional 5 bps reverse channel.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for test mode, error condition and interface signal status.

Cost/Service • standalone: $445/$395 (S/T) single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 202-9D Series

Compatibility • AT&T 202C/D modems.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps (DDD); 1800 bps (dedicated) • FSK modulation • RS-232C interface.

Features/Options • manual dial backup.

Diagnostics/Indicators • self-test; local and remote analog loopback • visual indicators for test modem and interface signal status.

Cost/Service • standalone: $395 single-unit purchase price • rackmount: $300 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 212A Series

Compatibility • AT&T 212A modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; asynchronous/synchronous at data rates up to 300 or 1200 bps • FSK (at 300 bps); DPSK (at 1200 bps) modulation • RS-232C interface.

Features/Options • automatic answer.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for test mode, error condition, interface signal status, and high-speed mode.

Cost/Service • standalone: $880 single-unit purchase price • rackmount: $780 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 2400 ASM Series

Compatibility • AT&T 201B/C modems; CCITT V.26, Type B.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates of 300 to 2400 bps; synchronous at 2400 bps • DPSK modulation, 1800-Hz carrier • RS-232C interface.

Features/Options • variable data formats; character-oriented asynchronous buffer.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $825 single-unit purchase price • rackmount: $735 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 9600 Series

Compatibility • CCITT V.29.

Application • point-to-point operation over a conditioned 4-wire dedicated Type 3002 voice channel or M1040 circuits.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 bps; C2 conditioning required • RTS/CTS delay of 15, 253.5 milliseconds • 8-phase, 4-amplitude QAM modulation, 1700-Hz carrier • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • DataCommonality high-density packaging allows side-by-side insertion of analogous printed circuit cards in rackmount nest; automatic retrain; antistreaming • optional supports for GDC Netcon 6 Network Management diagnostic functions.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for line quality/signal level, test mode, error condition, interface signal statue and fallback.

Cost/Service • standalone: $3,200 single-unit purchase price • rackmount: $3,110 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 9600 QP Series

Compatibility • CCITT V.29.

Application • point-to-point operation over a conditioned 4-wire dedicated Type 3002 voice channel or M1040 circuits.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates from 4800 to 9600 bps; C2 conditioning required • RTS/CTS delay of 25 milliseconds • 8-phase, 4-amplitude QAM per CCITT V.29 modulation, 1700-Hz carrier • automatic adaptive equalization • Rs-232C/CCITT V.28 interface.

Features/Options • Quickpoll operation; antistreaming; automatic re-equalization allows remote slave units to alert master modem of last synchronization; DataCommonality packaging.

Diagnostics/Indicators • same as 9600 Series • see above.

Cost/Service • standalone: $3,095 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in DanburyCT and Santa Ana, CA.

☐ DataComm Model 9600 EP Series

Compatibility • CCITT V.29.

Application • same as 9600 QP • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200 bps; 7200/4800 fallback • RTS/CTS delay of 1.7 seconds plus 10 milliseconds • 8-phase, 4-amplitude QAM per CCITT V.29 modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • line-break holdover 1 second; DataCommonality packaging allows insertion of analogous printed circuit cards in rackmount nest • optional plug-in compromise equalizer for continuous operations during modem failure; extended range through carrier sections via additional fixed equalizer; support for GDC Netcon 6 Network Management diagnostic functions.

Diagnostics/Indicators • self-test; local and remote digital loopback • LED status indicators.

Cost/Service • standalone: $2,815 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 4827 Series

Compatibility • CCITT V.27 bis.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; • RTS/CTS delay of 25 milliseconds • 8-phase DPSK modulation • RS-232C/CCITT V.28 interface.

Features/Options • Quickpoll operation; DataCommonality packaging; automatic re-equalization; antistreaming.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for test mode, error condition, interface signal status, and speed mode.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: $1,595 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 4800 Series

Compatibility • AT&T 208A modem and CCITT V.27 bis.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; asynchronous multiport option via ASC-2 or GDC DataComm 1209 • 8-phase DPSK modulation • RS-232C interface.

Features/Options • Quickpoll operation; DataCommonality packaging allows insertion of analougous printed circuit cards in rackmount nest; auto-detection of AT&T/GDC training sequence • optional supports for GDC Netcon 6 network management/diagnostic functions.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $1,575 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 208A/B Series

Compatibility • AT&T 208A/B modems; AT&T 801A/C-type automatic calling units; GDC 801A/C automatic calling units.

Application • DDD network via direct connection; FCC certified

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

• point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • RTS/CTS delay of 25 milliseconds • 8-phase DPSK modulation • RS-232C interface.

Features/Options • signal quality auto-abort function; auto-detection of AT&T/GDC training sequence; operational over satellite circuits; Quickpoll operation.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for error condition and interface signal status.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: $1,495 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 201C Series

Compatibility • AT&T 201C/L1C/L1D; GDC DataComm 201C-M Series; CCITT V.26 B and bis compatible.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 0, 7.1 milliseconds at 1200 bps • DPSK modulation • compromise equalization • RS-232C interface.

Features/Options • DataCommonality packaging allows insertion of analougous printed circuit cards in rackmount nest; receiver squelch at 100, 5 milliseconds; operates over satellite or half-hop satellite switched network circuits; operates with 801A/C auto-call unit.

Diagnostics/Indicators • self-test; local and remote analog loopback • visual indicators for line quality/signal level, test mode, and interface signal status.

Cost/Service • standalone: $935 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 2020 DataSet Series

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unloaded 2- or 4-wire local area data channel (LADC) or private cable • complies with AT&T Publication 41028.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 8, 16, 32 milliseconds • data encoding; differential di-phase modulation • automatic equalization • RS-232C interface.

Features/Options • DC continuity not required for data transmission; DC continuity is required to activate remote digital loopback.

Diagnostics/Indicators • self-test; local and remote digital loopback; analog loopback • status indicators.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm Model 9604 Series

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned or C2 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates from 2400 to 9600 bps • 8-phase, amplitude QAM modulation, 1700-Hz carrier • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • integral 4-channel full-duplex TDM multiplexer.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for line quality/signal level, test mode, error condition, interface signal status, and fallback.

Cost/Service • standalone: $4,200 single-unit purchase price • rackmount: prices available on request • quantity discounts: $3,795 for 2/3 units • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA .

☐ DataCom Series Model LCM 1010/LCM 1020 Modems

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a twisted pair cable; at distances up to 6.5/4 (1010/1020) miles using AWG #26 • 1010 complies with AT&T Publication 41028.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 19.2K bps • switch-selectable equalization • RS-232C interface.

Features/Options • selectable short, medium, or long wire line applications; fast receiver acquisition • optional carrier detect control verifies link integrity.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • visual indicators for test and status.

Cost/Service • standalone: $325/$295 (1010/1020) single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory/on-call service; hot-line diagnostic centers in Danbury, CT, and Santa CA.

☐ DataComm Model FLM 2447 Diagnostic Series

Compatibility • unspecified.

Application • multipoint operation over a 4-wire dedicated Type 3002 unconditioned line.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 1200/2400 bps • 4-phase DPSK modulation • automatic adaptive equalization for amplitude and delay distortion • RS-232C interface.

Features/Options • diagnostic channel at 75 bps, asynchronous, FSK modulation; automatic calling/answering; automatic retrain; pre-equalization; field upgradeable to 4800 bps data rate; integral diagnostic extensions; extended dynamic range maintains VF loop integrity • optional support for DDC Netcon 6 network management/diagnostic functions.

Diagnostics/Indicators • local diagnostics; end-to-end circuit test; terminal loop auto-bypass; VF bypass; wrap unit test; terminal/loop modem test; terminal bypass; failure isolation; fail-safe bypass of modem upon power failure • status LEDs for modem operation; Netcon responses and dial backup progress.

Cost/Service • standalone: $1,895 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT and Santa Ana, CA.

☐ DataComm 500A/56K

Compatibility • unspecified.

Application • direct connection to DDS termination.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • RTS/CTS delay of 0.02 milliseconds • CCITT V.35 interface.

Features/Options • eliminates need for external CSU interface; DataCommonality packaging allows insertion of analogous printed circuit cards in rackmount nest.

Diagnostics/Indicators • self-test; line loopback; remote terminal loopback; remote digital loopback.

Cost/Service • standalone: $1,050 single-unit purchase price • rackmount: $960 single-unit purchase price • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot-line diagnostic centers in Danbury, CT, and Santa Ana, CA.

☐ **Personal Computer Modems** • 103J-M Series; 212M Series.

■ HALCYON COMMUNICATIONS, INC/A Tortel Company

2121 Zanker Road, San Jose, CA 95131; 408-293-9970 • Canadian Distribution: none.

☐ Halcyon H414

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K/9600/7200/4800 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • built-in 6-channel TDM multiplexer • optional multipoint ability; proprietary FJ modulation technique with trellis coded error correction scheme.

Diagnostics/Indicators • operator diagnostics for failure isolation and ease of installation • front-panel programmable LCD status display.

Cost/Service • standalone: $3,995 single-unit purchase price • quantity discounts available.

☐ Halcyon H96

Compatibility • CCITT V.29.

Application • same as H414 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • optional 4-channel TDM multiplexer.

Diagnostics/Indicators • same as H414 • see above.

Cost/Service • standalone: single-unit purchase price • quantity discounts available.

☐ Halcyon H48

Compatibility • CCITT V.27 bis.

Application • same as H414 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as H96 • see above.

Diagnostics/Indicators • same as H414 • see above.

Cost/Service • standalone: single-unit purchase price • quantity discounts available.

☐ Halcyon H24

Compatibility • CCITT V.22 bis.

Application • same as H414 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/1200 bps • QAM (at 2400 bps); PSK (at 1200 bps) modulation • RS-232C interface.

Features/Options • autodialer.

Diagnostics/Indicators • same as H414 • see above.

Cost/Service • standalone: single-unit purchase price • quantity discounts available.

■ HEWLETT-PACKARD CO

1501 Page Mill Road, Palo Alto, CA 94305; 415-856-1501 • Canadian Distribution: Hewlett-Packard (Canada) LTD, 6877 Goreway Drive, Mississauga, ON L4V 1M8; 416-678-9430.

☐ HP 37212A Intelligent Modem

Compatibility • AT&T 103/212 modems.

Application • DDD network via direct dial; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 300/1200 bps • RS-232C/CCITT V.28 interface.

Features/Options • auto-speed detect; auto-dial; tone dial; auto-answer; non-volatile storage of up to 128 telephone numbers/log-on strings of 64-characters each.

Diagnostics/Indicators • local digital and analog loopback from front-panel or RS-232C interface.

Cost/Service • standalone: $1,046 single-unit purchase price • quantity discounts available.

☐ HP 37213A System Modem

Compatibility • AT&T 212 modems; CCITT V.22.

Application • DDD network via direct connection to HP 1000 computer.

Packaging • single-board modem insertion in for 37214A card cage.

Operating Parameters • full-duplex; synchronous at data rates of 300/1200 bps • RS-232C interface.

Features/Options • auto-dial; auto answer.

Diagnostics/Indicators • digital and analog loopback; line connect/ ringing indicators; port for diagnostic terminal.

Cost/Service • standalone: $1,125 single-unit purchase price • factory service.

☐ **Personal Computer Modems** • HP 3722A Integral Modem.

■ INFINET INC

Six Shattuck Road, Andover, MA 01810; 617-681-0600 • Canadian Distribution: none.

☐ Infinet DMX1200

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 1200 bps • RTS/CTS delay of 0, 8, 30, 60, 225 milliseconds • FSK modulation • statistical equalization • RS-232C interface.

Features/Options • optional EMS II and NIS 90/15 network control support via UDC840 Test Card; fault tolerant model includes internal spare modem and switch.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • local and remote digital and analog loopback • status indicators for line quality/signal level; test mode; error condition; and interface signal status.

Cost/Service • standalone: $1,460 single-unit purchase price • rackmount: $1,325 single-unit purchase price.

☐ Infinet DMX2400

Compatibility • CCITT V.26.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • RTS/CTS delay of 0, 9.5, 26.5, 72.5 milliseconds • 2-/4-phase DPSK modulation • statistical equalization • RS-232C interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • same as DMX1200 • see above.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: $1,540 single-unit purchase price.

☐ Infinet DMX4800

Compatibility • CCITT V.27 bis.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 0, 10, 25, 50 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • same as DMX1200 • see above.

Cost/Service • standalone: $2,750 single-unit purchase price • rackmount: $2,600 single-unit purchase price.

☐ Infinet DMX9600

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps • RTS/CTS strap-selectable delay of 0, 15 (constant carrier); 25, 253 (switched carrier) milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • same as DMX1200 • see above.

Cost/Service • standalone: $4,675 single-unit purchase price • rackmount: $4,350 single-unit purchase price.

☐ Infinet DMX14400

Compatibility • unspecified.

Application • point-to-point operation over a D1 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 14.4K bps • RTS/CTS strap selectable delay of 0, 15 (constant carrier); 25, 253 (switched carrier) milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • same as DMX1200 • see above.

Cost/Service • standalone: $7,950 single-unit purchase price • rackmount: $7,350 single-unit purchase price.

☐ Infinet SLD 1920

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 20 miles using AWG #19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 2400 bps; synchronous up to 19.2K bps • RTS/CTS delay of 8, 16, 33, 66 milliseconds • delay modulation, Miller code • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as DMX1200 • see above.

Cost/Service • standalone: $700 single-unit purchase price • rackmount: prices available on request.

☐ Infinet ISN 500

Compatibility • unspecified.

Application • direct connection to DDS.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • EIA loopback; DDS loopback; test pattern generator.

Cost/Service • standalone: $925 single-unit purchase price.

☐ Infinet ISU 556

Compatibility • unspecified.

Application • same as ISN 500 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • CCITT V.35 interface.

Features/Options • same as DMX1200 • see above.

Diagnostics/Indicators • same as ISN 500 • see above.

Cost/Service • standalone: $1,090 single-unit purchase price.

■ INFOTRON SYSTEMS

Cherry Hill Industrial Center, Cherry Hill, NJ 08003; 609-424-9400 • Canadian Distribution: Infotron Canada Ltd, 755 The Queensway E, Unit 107, Mississauga, ON L4Y 4C5; 416-275-3888.

☐ Infotron DL 212B

Compatibility • AT&T 103/113B/212 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • rackmount; up to 12 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300/1200 bps; synchronous at 1200 bps • FSK (at 300 bps); PSK (at 1200 bps) modulation • RS-232C interface.

Features/Options • auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for line quality/signal level, test mode, error condition.

Cost/Service • rackmount: $825 single-unit purchase price • quantity discounts: $815 for 2 to 9 units; $800 for 10 to 24 units; $780 for 25 to 49 units; $750 for 50 to 99 units; $715 for 100 and over units • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Infotron DSM/Triple Modem

Compatibility • AT&T 103/212 modems; Racal-Vadic 3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • answer-only mode • FSK/PSK modulation • RS-232C interface.

Features/Options • character lengths: 9/10 bits AT&T 212 mode; 8/9/10/11 bits Racal-Vadic 3400 mode; auto-answer; single setting "standard options" mode sets all DIP switches for most applications.

Diagnostics/Indicators • local digital and analog loopback; responds to remote digital loopback command • 3 LED status indicators.

Cost/Service • rackmount: $855 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

☐ Infotron DL201C

Compatibility • AT&T 201C modem.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3003 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • RTS/CTS delay of 8 milliseconds • DPSK modulation • fixed compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • low power consumption (3.5 watts); MTBF greater than 35,000 hours; internal/external clock.

Diagnostics/Indicators • self-test; digital and analog loopback • 4 LED status indicators.

Cost/Service • standalone: $1,020 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

☐ Infotron DL 96/V.29 Bandsplitting Modem

Compatibility • AT&T 201C/208A modems at lower speeds; Infotron DL68/9600 modem; CCITT V.29.

Application • same as DL201C • see above.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/7200/9600 bps • RTS/CTS delay of 253.5 milliseconds • 8-phase, 4-level QAM modulation; 1700-Hz carrier • automatic adaptive equalization • RS-232C interface.

Features/Options • multiport option multiplexes 2, 3, 4 data streams in various combinations of 2400/4800/7200 bps for an aggregate of 9600 bps; manual dual dial backup.

Diagnostics/Indicators • self-test; local and remote digital and analog loopback • visual indicators for line quality/signal level, test mode, error condition, and interface signal status.

Cost/Service • standalone: $4,950 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

☐ Infotron LD210 AS

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 18 miles using AWG #19 or #26 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.5, 50 milliseconds • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • digital and analog loopback • LED status indicators.

Cost/Service • standalone: $230 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

☐ Infotron LD210 SA

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 18 miles using AWG #19 or #26 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • same as LD210 AS • see above.

Features/Options • none supported.

Diagnostics/Indicators • same as LD210 AS • see above.

Cost/Service • standalone: $385 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service; third party service; hot-line diagnostic center at headquarters.

■ INTERACTIVE SYSTEMS/3M

3920 Varsity Drive, Ann Arbor, MI 48104; 313-973-1500 • Canadian Distribution: none.

☐ Interactive Models 921/922 Modems

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-way broadband coaxial cable.

Packaging • standalone: central-site (921); remote-site (922).

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 10K bps; synchronous from 600 to 9600 bps • RTS/CTS delay of 0.35, 8, 55 milliseconds • NFSK modulation • RS-232C interface.

Features/Options • transmits on CATV channels T7, J, K and receives on T9, T10, T11; requires 80-KHz channel spacing; error rates less than 1 in 10 billion bits.

Diagnostics/Indicators • RF loopback test • 7 LED status indicators.

Cost/Service • standalone: $890 single-unit purchase price • quantity discounts range from 5 percent for 5 to 99 units; up to 20 percent for 1,000 or more units • factory service; on-call service. warranty • factory service.

☐ Interactive Models 925/926 RF Data Modems

Compatibility • unspecified.

Application • same as Models 921/922 • see above.

Packaging • same as Models 921/922 • see above.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 500 milliseconds • NFSK modulation • RS-232C interface.

Features/Options • transmits on CATV channels T7, J, K and receives on T9, T10, T11; requires 80-KHz channel spacing; switched or continuous carrier modes.

Diagnostics/Indicators • same as Model 921/922 • see above.

Cost/Service • standalone: $590 single-unit purchase price • rackmount: $565 single-unit purchase price • quantity discounts:

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

range from 5 percent for 50 to 99 units; up to 20 percent for 1,000 or more units • factory service; on-call service.

☐ Interactive Models 961/962 Synchronous RF Data Modems

Compatibility • unspecified.

Application • same as 921/922 • see above.

Packaging • same as 921/922 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates from 1200 to 75.8K bps • RTS/CTS delay of 0.03, 10, 40 milliseconds • NFSK modulation • RS-232C interface.

Features/Options • transmits on CATV channels J, K, L, M and receives on channels T10, T12, T13, T14; requires 800-KHz channel spacing; switched or continuous carrier modes • optional 1500 to 19.2K bps data rates.

Diagnostics/Indicators • same as 921/922 • see above.

Cost/Service • standalone: $980 single-unit purchase price • quantity discounts: range from 5 percent for 5 to 99 units; up to 20 percent for 1,000 or more units • factory service; on-call service.

☐ Interactive Models 965/966 Synchronous RF Data Modems

Compatibility • unspecified.

Application • same as 921/922 • see above.

Packaging • same as 921/922 • see above.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • RTS/CTS delay of 0.03, 8, 55 milliseconds • NFSK modulation • CCITT V.35 interface.

Features/Options • same as 961/962 • see above except optional 48/50/100K bps data rates.

Diagnostics/Indicators • same as 921/922 • see above.

Cost/Service • standalone: $1,190 single-unit purchase price • quantity discounts: range from 5 percent for 5 to 99 units; up to 20 percent for 1,000 or more units • factory service; on-call service.

■ INTERNATIONAL BUSINESS MACHINES (IBM) CORPORATION/Information Systems Group

National Accounts Division; 1133 Westchester Avenue, White Plains, NY 10604; 914-696-1900 • National Marketing Division; 4111 Northside Parkway, Atlanta, GA 30327; 404-238-2000 • Canadian Distribution: IBM Canada Ltd, 3500 Steels Avenue E, Markham, ON L3R 2Z2; 416-474-2111,

☐ IBM 3863 Model 1

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 8.5 milliseconds • DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • modem diagnostic functions supported by Network Problem Determination Application (NPDA) program product under NCCF; automatic remote speed select • optional RTS/CTS delay of 25 milliseconds; Tail Circuit Attachment allow 3863, Model 1 to be attached to 3865 Model 1 equipped with data multiplexer for extended network; manual dial backup with auto-answer; Fan Out allows 3 DTEs to share a common modem; extended diagnostic card (required for both remote and local modems on same line) alerts modem to "power-off" condition at remote modem.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for line quality/signal level, test mode, and carrier detect.

Cost/Service • standalone: $2,685 single-unit purchase price; $96 per month rental • quantity discounts available beginning at 6 percent for 5 or more units • 90-day warranty • on-call service; nationwide service organization.

☐ IBM 3863 Model 2

Compatibility • unspecified.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 1200/2400 bps • RTS/CTS delay of 150 milliseconds • DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • modem diagnostic functions supported by Network Problem Determination Application (NPDA) program product under NCCF; auto-answer • optional RTS/CTS delay of 75 milliseconds.

Diagnostics/Indicators • same as 3863 Model 1 • see above.

Cost/Service • standalone: $2,935 single-unit purchase price; $103 per month rental • quantity discounts available beginning at 6 percent for 5 or more units • 90-day warranty • on-call service; nationwide service organization.

☐ IBM 3864 Model 1

Compatibility • unspecified.

Application • same as 3863 Model 1 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800 bps • RTS/CTS delay of 24 milliseconds • 4-phase DPSK at 2400 bps; 8-phase 2-level QAM at 4800 bps modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • modem diagnostic functions supported by Network Problem Determination Application (NPDA) program product under NCCF; automatic remote speed select; selectable anti-streaming feature kills transmission from terminal after 30-second RTS • optional RTS/CTS delay of 40 milliseconds; Tail Circuit attachment allows 3864 Model 1 to be attached to 3865 Model 1 equipped with data multiplexer for extended network; manual dial backup with auto-answer; Fan Out allows 3 DTEs to share a common modem; Extended Diagnostic card (required for both remote and local modems on the same line) alerts local modem to "power-off" condition at remote modem.

Diagnostics/Indicators • same as 3863 Model 1 • see above.

Cost/Service • standalone: $3,715 single-unit purchase price; $166 per month rental • quantity discounts available beginning at 6 percent for 5 or more units • 90-day warranty • on-call service; nationwide service organization.

☐ IBM 3864 Model 2

Compatibility • unspecified.

Application • same as 3863 Model 2 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • same as 3864 Model 1 • see above.

Features/Options • modem diagnostic functions supported by Network Problem Determination Application (NDPA) program product under NCCF; auto-answer • optional RTS/CTS delay of 50 milliseconds.

Diagnostics/Indicators • same as 3863 Model 1 • see above.

Cost/Service • standalone: $3,925 single-unit purchase price; $176 per month rental • quantity discounts available beginning at 6 percent for 5 or more units • 90-day warranty • on-call service; nationwide service organization.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ IBM 3865 Models 1 & 2

Compatibility • unspecified.

Application • point-to-point (Model 1) or multipoint (Model 2) operation over a C1 or D2 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 4800/9600 bps • RTS/CTS delay of 24 milliseconds • 4-/8-phase DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • Modem diagnostic functions supported by Network Problem Determination Application (NPDA) program product under NCCF; selectable anti-streaming feature kills transmission from terminal after 30-second RTS; optional RTS/CTS delay of 40 milliseconds; Model 1 multiport option multiplexes 2, 3, 4 data streams in various combinations of 2400/4800 bps for an aggregate 9600 or 4800 bps; manual dial backup with auto-answer; Fan Out allows 3 DTEs to share a common modem; Extended Diagnostic card (required for both remote and local modems on same line) alerts local modem to "power-off" condition at remote modem.

Diagnostics/Indicators • same as 3863 Model 1 • see above.

Cost/Service • standalone: $5,885 single-unit purchase price; $264 per month rental • quantity discounts available beginning at 6 percent for 5 or more units • 90-day warranty • on-call service; nationwide service organization.

■ INTERNATIONAL DATA SCIENCES

7 Wellington Road, Lincoln, RI 02865; 401-333-6200 • Canadian Distribution: Tele-Radio Systems, 121 Hanlan Road, Woodbridge, ON L4L 3P5; 416-851-2231.

☐ IDS Models 6000L & 6000H Limited-Distance Modems

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel or metallic circuit; at distances up to 23 miles using AWG #19 • complies with AT&T Publication 41004; 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • synchronous at data rates of 2400/4800/9600 bps (6000L) or 4800/9600/19.2K bps (6000H) • baseband modulation • compromise equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; local analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $550 single-unit purchase price • rackmount: $450 single-unit purchase price • factory service.

☐ IDS Model 6100 Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at external clock data rates • equalization • RS-232C interface.

Features/Options • single unit eliminates back-to-back modems.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $710 single-unit purchase price • factory service.

☐ IDS Model 6110 Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a private cable; at distances up to 100 feet.

Packaging • standalone or rackmount; up to 3 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at external clock data rate • RS-232C interface.

Features/Options • same as IDS 6100 • see above.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $370 single-unit purchase price • factory service.

☐ IDS Model 6200 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 20 miles using AWG #19.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • asynchronous at data rates up to 19.2K bps • baseband modulation • compromise equalization • RS-232C interface.

Features/Options • optional 20-mA current loop interface.

Diagnostics/Indicators • local analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $250 single-unit purchase price • rackmount: $210 single-unit purchase price • factory service.

☐ IDS Model 6220 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a metallic circuit; at distances up to 16 miles using AWG #19; 5 miles using AWG # 26 • complies with AT&T Publications 43401, 41004, 41028.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • asynchronous at data rates up to 9600 bps • RTS/CTS delay of 8.5, 25 milliseconds • RS-232C interface.

Features/Options • optional 20-mA current loop interface.

Diagnostics/Indicators • front-panel analog loopback • front-panel LEDs for ready carrier.

Cost/Service • standalone: $300 single-unit purchase price • rackmount: $250 single-unit purchase price • factory service.

☐ IDS Model 6240 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a loaded or non-loaded metallic circuit; at distances up to 22 miles using AWG #19; 12 miles using AWG #26 • complies with AT&T Publications 43401 and 41004 and Bell Canada requirements.

Packaging • standalone or rackmount.

Operating Parameters • asynchronous at data rates up to 4800 bps over loaded lines; up to 9600 bps over non-loaded lines • RS-232C interface.

Features/Options • optional 20-mA current loop interface.

Diagnostics/Indicators • front-panel digital and analog loopback • front-panel LEDs for ready, carrier • international 127-bit pseudo-random pattern for data integrity or for initial equalization adjustment.

Cost/Service • standalone: $400 single-unit purchase price • rackmount: $350 single-unit purchase price • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ IDS Model 533 OZ Guardian Security Modem

Compatibility • AT&T 103, 103J, 212A.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 1200 bps • FSK/PSK modulation • originate, answer, auto-dial, auto-answer modes • RS-232C interface.

Features/Options • provides virtual private line security in public network; prevents unauthorized access and calling; security features; expanded dial number directory up to 250 phone numbers.

Diagnostics/Indicators • self-test; analog loopback; local and remote digital loopback.

Cost/Service • standalone: $750 single-unit purchase price • • 1-year warranty • factory service.

☐ IDS Model LS56K Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 3+ miles using AWG #22 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 56K bps • proprietary bi-phase modulation • CCITT V.35 interface.

Features/Options • can supersede DDS circuits or tail circuit DDS link, allowing communication within a building via private wire.

Diagnostics/Indicators • rear-panel loopback • LED status indicators for carrier detect, transmit/receive data, test, and power.

Cost/Service • standalone: $650 single-unit purchase price • 1-year warranty • factory service.

☐ IDS LVS76.8 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 11 miles using AWG #22 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates from 1200 to 76.8K bps • modulation • RS-232C interface.

Features/Options • same as IDS LS56K • see above.

Diagnostics/Indicators • local and remote loopback • LED status indicators for carrier detect, transmit/receive data, test, and power.

Cost/Service • standalone: $650 single-unit purchase price • 1-year warranty • factory service.

☐ IDS Password 300 Auto Dial Modem

Compatibility • AT&T 103/113 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 300 bps • RS-232C interface.

Features/Options • integral speaker; DTR override; RJ11C jack; autodial/auto answer; automatic speed and mode selection; error automatic detection.

Diagnostics/Indicators • LED status indicators.

Cost/Service • standalone: $159 single-unit purchase price • 2-year warranty • factory service.

☐ IDS Password 212A Auto Dial Modem

Compatibility • AT&T 103/113/212A modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 1200 bps • RS-232C interface.

Features/Options • same as IDS Password 300 • see above.

Diagnostics/Indicators • same as IDS Password 300 • see above.

Cost/Service • standalone: $335 single-unit purchase price • 2-year warranty • factory service.

☐ IDS Model 224 Data Modem

Compatibility • AT&T 212A modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • QAM (DPSK in fallback mode) modulation • automatic and adaptive equalization • RS-232C interface.

Features/Options • automatic answer.

Diagnostics/Indicators • digital and analog self-test; internal test pattern generator and checker.

Cost/Service • standalone: $845 single-unit purchase price • 2-year warranty • factory service.

■ INTERNATIONAL MINICOMPUTER ACCESSORIES CORP (INMAC)

2465 Augustine Drive, Santa Clara, CA 95051; 408-727-1970 • Canadian Distribution: none.

☐ INMAC 300-Baud Modem

Compatibility • AT&T 103 modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • manual originate and answer modes • FSK modulation • RS-232C interface.

Features/Options • powered by 9-volt battery • remains in answer mode until carrier is detected, then automatically switches to originate mode.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $125 single-unit purchase price • 1-year warranty • factory service.

☐ INMAC 300-Baud Acoustic Coupler

Compatibility • AT&T 103 modem.

Application • DDD network via acoustic coupler.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • manual originate or answer mode • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test of modem circuitry • LEDs for power, ready (carrier).

Cost/Service • standalone: $179 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ INMAC EIA Line Driver

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

circuit; at distances up to 15 miles.

Packaging • standalone; acoustic coupler.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps up to 4 miles; up to 1200 bps up to 15 miles • RS-232C interface.

Features/Options • automatically adjusts data rate of the DTE.

Diagnostics/Indicators • loopback test • 3 LED status indicators.

Cost/Service • standalone: $195 single-unit purchase price • quantity discounts available • factory service.

☐ INMAC 1200-Baud Modem

Compatibility • AT&T 212A modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 300 and 1200 bps • FSK, PSK modulation • RS-232C interface.

Features/Options • operating power derived from the telephone line.

Diagnostics/Indicators • status indicator for modem on/off.

Cost/Service • standalone: $495 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ INTERNATIONAL TELEPHONE & TELEGRAPH CORPORATION (ITT)/Data Equipment & Systems Division

20 Mayfield Avenue, Edison, NJ 08837; 201-225-6121 • Canadian Distribution: none.

☐ ITT Data Modem 2088

Compatibility • CCITT V.27 bis/ter.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 50 milliseconds • 8-/4-phase PSK modulation • digital auto adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • manual or automatic fallback to 2400 bps; automatic dial backup; 200 bps secondary channel • optional multiplexer allows use of two full independent 2400 bps channels; RTS/CTS delay of 28 milliseconds in multipoint network.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback; error rate test; half-duplex polling test; eye pattern generator • 15 LED status indicators; 4-digit display for bit error tests.

Cost/Service • contact vendor.

☐ ITT Modem 2089F

Compatibility • CCITT V.29.

Application • same as 2088 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 30, 253 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • automatic data rate recognition; voice adapter; dial backup over 2 switched lines • optional 4-channel TDM multiplexer.

Diagnostics/Indicators • same as 2088 • see above.

Cost/Service • contact vendor.

☐ ITT Data Modem 2182B

Compatibility • CCITT V.23.

Application • DDD network via DAA.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200 bps • FSK modulation • RS-232C/CCITT V.28 interface.

Features/Options • 75 bps secondary channel; automatic answering in accordance with CCITT V.54; manual origination; phone to data switching; ring signal detection • optional interspeeder module.

Diagnostics/Indicators • LED indicators.

Cost/Service • contact vendor.

☐ ITT Data Modem 2184

Compatibility • CCITT V.26 & V.26 bis.

Application • point-to-point or multipoint operation over a 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/1200 bps • RTS/CTS delay of 0, 1, 6, 6.7, 8.33, 9, 30, 90, 148.3, 220, 800 milliseconds • 4/2-phase differential modulation • RS-232C/CCITT V.28 interface.

Features/Options • manual or automatic fallback; scrambler/descrambler; automatic answer • optional 75 bps secondary channel; address selector/decoder.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • contact vendor.

☐ ITT Modem 2284 V.22 bis

Compatibility • CCITT V.22 bis.

Application • DDD network via DAA • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 2400/1200 bps • QAM modulation • RS-232C/CCITT V.28 interface.

Features/Options • auto-dial.

Diagnostics/Indicators • LED indicators.

Cost/Service • contact vendor.

☐ ITT Modem DCB 19200 Mk2

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a loaded or unloaded metallic circuit; at distances up to 31 miles.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • PFSK modulation • compromise equalization • RS-232C/CCITT V.28 interface.

Features/Options • "fast sync" facility synchronizes unit on first data bit.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; integral 511-bit test pattern generator, error detector • 7 LED status indicators; line quality indicator.

Cost/Service • contact vendor.

■ KIDDE AUTOMATED SYSTEMS INC/Computrol Division

15 Ethan Allen Highway, Ridgefield, CT 06877; 203-544-9371 • Canadian Distribution: none.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Computrol Modem Model 30-0078-1/30-0078-2/30-0088-3

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a a coaxial cable; at distances up to 50,000 feet.

Packaging • rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 0.5M/1M/2M bps • FSK modulation • TTL interface.

Features/Options • carrier filter rejects low band noise.

Diagnostics/Indicators • none supported.

Cost/Service • rackmount: $235 single-unit purchase price • quantity discounts: $200 for 10 to 24 units; $190 for 25 to 49 units; $180 for 50 to 99 units • 1-year warranty • factory service.

☐ Computrol Modem Model 30-0080

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a broadband coaxial cable; at distances up to 27,000 feet.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 1.544M bps; or asynchronous at 3.0M bps • TTL interface.

Features/Options • carrier filter rejects low band noise • AC coupling grounds each modem at cable point • optional single point ground.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $360 single-unit purchase price • quantity discounts: $305 for 10 to 24 units; $290 for 25 to 49 units; $270 for 50 to 99 units • 1-year warranty • factory service.

■ LOCKHEED/Getex Division

1100 Circle 75 Parkway, Suite 945, Atlanta, GA 30339; 404-951-0878 • Canadian Distribution: none.

☐ Lockheed GTX-100

Compatibility • unspecified.

Application • DDD network via direct dial; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates of 300/1200 bps • originate/answer modes • RS-232C interface.

Features/Options • security modem; auto-dial; auto-answer; battery backup • optional Remote-On features allows power up of computer from remote location once security has been cleared.

Diagnostics/Indicators • analog loopback • front-panel indicators.

Cost/Service • standalone: $795 single-unit purchase price • 2-year warranty • factory service.

■ MADZAR CORPORATION

37490 Glenmoor Drive, Fremont, CA 94536; 415-794-7400 • Canadian Distribution: none.

☐ Madzar Z9600 Series

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 10 miles; requires DC continuity.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • baseband modulation • RS-232C/CCITT V.28 interface.

Features/Options • passes 1 full-duplex control signal (TD/RD); automatic speed adjustment • optional carrier detect; lightning protection.

Diagnostics/Indicators • self-test • 3 LED status indicators.

Cost/Service • standalone: $137 single-unit purchase price • quantity discounts: $127 for 20 to 49 units; $117 for 50 or more units; $97 for 100 or more units • 2-year warranty • factory service.

Personal Computer Modem • Z212A.

■ LIGHTWAVE COMMUNICATIONS, INC

650 Danbury Road, Ridgefield, CT 06877; 203-438-3591 • Canadian Distribution: none.

☐ Lightwave FO-232

Compatibility • unspecified.

Application • point-to-point operation over a fiber-optic cable; at distances up to 1.25 miles.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 100K bps • RS-232C interface.

Features/Options • requires 50 or 100 micron-core cable.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $140 single-unit purchase price.

☐ Lightwave FO-232E

Compatibility • unspecified.

Application • point-to-point operation over a fiber-optic cable.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • requires 1,000 micron-core cable.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $90 single-unit purchase price.

☐ Lightwave FO-232S

Compatibility • unspecified.

Application • point-to-point operation over a fiber-optic cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 12.5, 25, 50, 100 milliseconds • RS-232C interface.

Features/Options • requires 50 or 100 micron-core cable; transparent to the host • optional TTL compatibility; custom pin configurations; additional control lines/secondary data lines.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $575 single-unit purchase price.

☐ Lightwave FO-422

Compatibility • unspecified.

Application • point-to-point operation over a fiber-optic cable; at distances up to 1.25 miles.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 100K bps • RS-232C interface.

Features/Options • requires 50 or 100 micron-core cable; immune to electrical interference.

Diagnostics/Indicators • LEDs.

Cost/Service • standalone: $300 single-unit purchase price.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

■ MATH ASSOCIATES, INC

2200 Shanes Drive, Westbury, NY 11590; 516-334-6800 • Canadian Distribution: none.

☐ Math XR-1000A

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire fiber-optic cable; at distances up to 2 miles.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 100K bps • RS-232C interface.

Features/Options • requires 100 micron-core fiber cable • passes 5 EIA control signals between DTE and local modem.

Diagnostics/Indicators • self-test • front-panel LEDs.

Cost/Service • standalone: $350 single-unit purchase price • 1-year warranty • factory service.

☐ Math XR-1100

Compatibility • unspecified.

Application • same as XR-1000A • see above.

Packaging • standalone, wallmount or rackmount; up to 10 units per enclosure.

Operating Parameters • same as XR-1000A • see above.

Features/Options • palm-sized standalone unit; requires 100 micron-core fiber cable.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $235 single-unit purchase price • 1-year warranty • factory service.

☐ Math XR-1150/55

Compatibility • unspecified.

Application • same as XR-1000A • see above.

Packaging • 2x1-inch unit plugs into an RS-232C mated-half connector.

Operating Parameters • same as XR-1000A • see above.

Features/Options • requires 100 micron-core fiber cable.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $175 single-unit purchase price • 1-year warranty • factory service.

■ MICOM SYSTEMS, INC

4100 Los Angeles Avenue, Simi Valley, CA 93062-8100; 805-583-8600 • Canadian Distribution: Signatel Ltd, 195 Riveria Drive, Markham, ON L3R 2L6; 416-477-9977.

☐ Micom M400 Asynchronous Line Driver

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 15 miles using AWG #19 or #26.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • none supported.

Diagnostics/Indicators • local and remote digital and analog line loopback.

Cost/Service • standalone: $220 single-unit purchase price • rackmount: $150 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M401 Asynchronous Local Data Set

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 40 miles using AWG #19 or # 26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • none supported.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • standalone: $250 single-unit purchase price • rackmount: $180 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M402 Smart Asynchronous Local Data Set

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 37 miles using AWG # 19 to #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • dial-up emulation.

Diagnostics/Indicators • same as M402 • see above.

Cost/Service • standalone: $330 single-unit purchase price • rackmount: $260 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M420 MP Synchronous Multipoint Line Driver

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 18 miles using AWG #19 to #26.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • none supported.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • standalone: $370 single-unit purchase price • rackmount: $300 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M430 Asynchronous Line Driver

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 18 miles using AWG #19 to #24.

Packaging • pocket-size; standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C/CCITT V.28 interface.

Features/Options • directly connects to the terminal.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • standalone: $85 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Micom M431 Asynchronous Local Data Set

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 18 miles using AWG #19 to #24 • complies with AT&T Publication 43401.

Packaging • same as M430 • see above.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RS-232C/CCITT V.28 interface.

Features/Options • connects directly to the terminal.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • $95 standalone: single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M4024 & 4024 Asynchronous

Compatibility • AT&T 201B/C; CCITT V.26 A/B modems.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200 bps • RTS/CTS delay of 8, 25, 150 milliseconds • PSK modulation • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • none supported.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • $895 standalone: single-unit purchase price • rackmount: $795 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M4048/V.27 +

Compatibility • CCITT V.27 bis

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • RTS/CTS delay of 0, 15 milliseconds for point-to-point; 9, 50 milliseconds for multipoint • DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • anti-streaming • optional integral dial backer.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • standalone: $2,595 single-unit purchase price • rackmount: $2,350 single-unit purchase price • $3,295 with integral dialbacker • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M4096/V.29 +, M4296/V.29 +

Compatibility • CCITT V.29.

Application • same as M4048/V.27 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 0, 15 milliseconds for point-to-point; 9, 50 milliseconds for multipoint; 75, 100 milliseconds for speed shift • QAM modulation • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • anti-streaming.

Diagnostics/Indicators • same as M400 • see above.

Cost/Service • standalone: $2,450 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M4096/4 + Multiport Modem

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps • RTS/CTS delay of 0, 12, 60, 160 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • optional multiport operation; integral TDM 4-channel multiplexer; integral dial backer.

Diagnostics/Indicators • same as MP 400 • see above.

Cost/Service • standalone: $3,150 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M5596/24

Compatibility • AT&T 201; CCITT V.26B modems.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400/1200 bps • optimized for C2 conditioned lines • DPSK modulation • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • integral asynchronous to synchronous converter; reconstructs data stream at opposite end of link; local copy; channel speed feature; CRC-16 and ARQ error detection/correction; XON/XOFF or CTS flow control • optional 2 stop bits.

Diagnostics/Indicators • same as M 400 • see above.

Cost/Service • standalone: $1,500 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M5596/48

Compatibility • CCITT V.27.

Application • same as M5596/24 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 4800 bps • optimized for C2 conditioned lines • DPSK modulation • RS-232C/CCITT V.28 interface; 25-pin connector.

Features/Options • same as M5596/24 • see above.

Diagnostics/Indicators • same as M 400 • see above.

Cost/Service • $3,450 standalone: single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom M5596/96

Compatibility • CCITT V.29.

Application • same as M5596/24 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps • optimized for C2 conditioned lines • QAM modulation • RS-232C/CCITT V.28 interface.

Features/Options • same as M5596/24 • see above.

Diagnostics/Indicators • same as M 400 • see above.

Cost/Service • standalone: $4,000 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3012

Compatibility • AT&T 212A/103 modems.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • FSK, DPSK modulation • RS-232C interface.

Features/Options • manual originate/answer; auto-answer • permissive connection arrangement with second RJ11 jack for use of optional telephone.

Diagnostics/Indicators • power-up self-test; local digital and analog loopback; remote digital loopback • test pattern generator • 4 front-panel LEDs: low speed, high speed, modem ready/carrier detect, off-hook.

Cost/Service • standalone: $495 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3212

Compatibility • AT&T 212A/103 modems

Application • DDD network via direct connection; FCC certified.

Packaging • rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • FSK, DPSK modulation • RS-232C interface.

Features/Options • manual originate/answer, auto-answer • permissive connection arrangement.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • rackmount: $445 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3012TA

Compatibility • AT&T 212A/103; Racal-Vadic VA3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • FSK, DPSK modulation • RS-232C interface.

Features/Options • manual answer, auto-answer; permissive, programmable, fixed loss loop connection arrangements; RJ45 jack for Telco connection; RJ11 jack for optional telephone.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • standalone: $695 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3212TA

Compatibility • AT&T 212A/103; Racal-Vadic VA3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps • FSK, DPSK modulation • RS-232C interface.

Features/Options • manual answer, auto answer; permissive, programmable, fixed loss loop connection arrangements; RJ45 jack for Telco line connection.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • rackmount: $645 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3024

Compatibility • AT&T 212 modem at 1200 bps; CCITT V.22 bis at 2400 bps.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400/1200 bps • DPSK, QAM modulation • RS-232C interface.

Features/Options • manual originate/answer, auto-answer; permissive, programmable, fixed loop connection arrangements; RJ45 jack for Telco line connection and RJ11 jack for optional telephone.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • standalone: $795 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3224

Compatibility • same as M3024 • see above.

Application • same as M3024 • see above.

Packaging • rackmount; up to 16 units per enclosure.

Operating Parameters • same as M3024 • see above.

Features/Options • manual originate/answer, auto-answer; permissive, programmable, fixed loop connection arrangements.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • rackmount: $745 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3012+

Compatibility • same as M3012 • see above.

Application • same as M3012 • see above.

Packaging • same as M3012 • see above.

Operating Parameters • same as 3012 • see above.

Features/Options • same as M3012 • see above • plus 20 number storage, dialed from keyboard or directory using number address or 7-digit name, or last number dialed buffer; least cost routing; 9 redial attempts; security; password protection; directory and configuration retained in EEPROM; no battery back-up required; operates in terminal controlled modem (TCM) mode for use with ASCII terminals or personal computers operating in terminal emulation mode • computer controlled modem (CCM) mode available.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • standalone: $595 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3212+

Compatibility • same as M3212 • see above.

Application • same as M3212 • see above.

Packaging • same as M3212 • see above.

Operating Parameters • same as M3212 • see above.

Features/Options • same as M3012+ • see above.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • rackmount: $545 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3012T+

Compatibility • same as M3012T • see above.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Application • same as M3012T • see above.

Packaging • same as M3012T • see above.

Operating Parameters • same as M3012T • see above.

Features/Options • same as 3012+ • see above.

Diagnostics/Indicators • same as 3012 • see above.

Cost/Service • standalone: $795 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3212T +

Compatibility • same as M3212T • see above.

Application • same as M3212T • see above.

Packaging • same as M3212T • see above.

Operating Parameters • same as M3212T • see above.

Features/Options • same as 3012+ • see above.

Diagnostics/Indicators • same as 3012 • see above.

Cost/Service • rackmount: $745 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3024 +

Compatibility • same as M3024 • see above.

Application • same as 3024 • see above.

Packaging • same as 3024 • see above.

Operating Parameters • same as 3024 • see above.

Features/Options • same as M3012+ • see above.

Diagnostics/Indicators • same as 3012 • see above.

Cost/Service • standalone: $895 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

☐ Micom DialNet3000 M3224 +

Compatibility • same as M3024 • see above.

Application • same as M3024 • see above.

Packaging • same as M3224 • see above.

Operating Parameters • same as M3024 • see above.

Features/Options • same as M3012+ • see above.

Diagnostics/Indicators • same as M3012 • see above.

Cost/Service • rackmount: $845 single-unit purchase price • quantity discounts available • 1-year warranty • factory service; on-call service.

■ MOTOROLA INFORMATION SYSTEMS LTD

9445 Airport Road, Brampton, ON L6S 4J3 • 416-492-5308.

☐ Motorola Model 96SP.V.29

Compatibility • CCITT V.29.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 9600 bps; 16-position switch sets independent transmit and receive modes • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • multiport option multiplexes 2, 3, or 4 data streams for an aggregate 9600 bps.

Diagnostics/Indicators • self-test;local digital and analog loopback; optional eye pattern generator • visual indicators for test mode, error condition and interface signal status.

Cost/Service • contact vendor • factory service.

☐ Motorola Model 96SP-209A

Compatibility • AT&T 209A modem.

Application • same as 96SP.V.29 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps (ESE DDD mode); 9600 bps (209A mode) • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 96SP.V.29 • see above.

Diagnostics/Indicators • same as 96SP.V.29 • see above.

Cost/Service • contact vendor • factory service.

☐ Motorola Model 96SP.V.29/209A

Compatibility • AT&T 209A/CCITT V.29 modems.

Application • same as 96SP.V.29 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at selectable data rates of 4800/7200/9600 bps; 16-position switch sets independent transmit and receive modes; modem operates at 9600 bps only in 209A mode • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 96SP.V.29 • see above.

Diagnostics/Indicators • same as 96SP.V.29 • see above.

Cost/Service • contact vendor • factory service.

☐ Motorola 96 CM/V.29 Data Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps; 4800 and 7200 bps fallback rates • QAM modulation • automatic adaptive equalization • CCITT V.29 interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; digital and analog loopback.

Cost/Service • contact vendor • factory service.

■ MUIRHEAD, INC

1101 Bristol Road, Mountainside, NJ 07902; 201-233-6010 • Canadian Headquarters: Muirhead Systems Ltd, 50 Galaxy Blvd, Unit 4, Rexdale, ON M9W 4Y5; 416-675-7450.

☐ Muirhead H153 Group Data Modem

Compatibility • unspecified.

Application • point-to-point operation over a 60K to 108 KHz groupband channel of a wideband Group 1 and 5 or Group 2, 3, and 4 carrier network.

Packaging • rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 144K, 153.6K, 168K bps • multi-amplitude PAM modulation • adaptive equalization • CCITT V.35 interface (RS-232C controls).

Features/Options • automatic resynchronization after loss of bit integrity • optional 2-channel multiplexer; optional 64-bit elastic store buffer; optional voice channel for use of data rates at 153.6K bps or less.

Diagnostics/Indicators • self-test; local digital loopback • eye-pattern generator • status indicators for data activity and receive asynchronous/synchronous detection • strap-selectable alarm current generation for loss of input activity/output activity/receive signal; excessive error rate.

Cost/Service • contact vendor.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

■ MULTI-TECH SYSTEMS, INC

82 Second Avenue SE, New Brighton, MN 55112; 612-631-3550 • Canadian Distribution: none.

☐ Multi-Tech FM30

Compatibility • AT&T 103/113 modems.

Application • DDD network via acoustic coupling.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate-only mode • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $225 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Multi-Tech FM31

Compatibility • AT&T 103/113 modems.

Application • same as FM30 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as FM30 • see above.

Cost/Service • standalone: $265 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Multi-Tech MT 113D

Compatibility • AT&T 103/113 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • answer-only mode • FSK modulation • RS-232C interface.

Features/Options • auto-answer.

Diagnostics/Indicators • local analog loopback • status indicators.

Cost/Service • standalone: $275 single-unit purchase price • rackmount: $225 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Multi-Tech MT 201B

Compatibility • AT&T 201B modem.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • originate and answer modes • PSK modulation • RS-232C interface.

Features/Options • switchable 2- or 4-wire interface.

Diagnostics/Indicators • local digital and analog loopback • status indicators.

Cost/Service • standalone: $695 single-unit purchase price • rackmount: $570 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Multi-Tech MT 202T

Compatibility • AT&T 202D/202T modems.

Application • same as MT 201B • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • originate and answer modes • FSK modulation • RS-232C interface.

Features/Options • 2- or 4-wire leased line.

Diagnostics/Indicators • local digital and analog loopback • status indicators.

Cost/Service • standalone: $345 single-unit purchase price • rackmount: $230 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Multi-Tech MT 212AD

Compatibility • AT&T 212A modem; Hayes Smartmodem 1200.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps; half-duplex; synchronous at 1200 bps • originate/answer modes • FSK at 0 to 300 bps; PSK at 1200 bps modulation • RS-232C interface.

Features/Options • auto-dial; manual dial; busy and dial tone detection; stores 10 to 31 phone numbers; linking.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: $695 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ **Personal Computer Modems** • MT 103H; MT 212AH; MT 212C; MT 212PC; MultiModem IIe; MultiModem 224.

■ NCR CORPORATION

1700 S. Patterson Blvd, Dayton, OH 45479; 512-445-2000 • Canadian Distribution: NCR Canada Ltd, 6865 Centure Avenue, Mississauga, ON L5N 2E2; 416-826-9000.

☐ NCR 7120 Asynchronous Modem

Compatibility • AT&T 202C/S/T modems.

Application • DDD network via DAA • point-to-point operation over an unconditioned conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200/1800 bps; C2 conditioning required at 1800 bps • FSK modulation • delay and amplitude equalization • RS-232C/CCITT V.28 interface.

Features/Options • squelch; variable delay; soft carrier tone • optional manual or auto-call interface; manual auto-answer.

Diagnostics/Indicators • local loopback; local diagnostics turnaround • visual indicators for line quality/signal level and error condition.

Cost/Service • standalone: $755 single-unit purchase price; $36 per month 1-year rental • quantity discounts: $665 for 10 units to $506 for 100 units, respectively • 90-day warranty • factory service; on-call service; nationwide service organization.

☐ NCR 7121 Synchronous Modem

Compatibility • AT&T 201C; NCR 2400 bps modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • DPSK modulation • delay and amplitude equalization • RS-232C/CCITT V.28 interface.

Features/Options • manual dial backup; squelch; variable delay; soft carrier tone • optional manual or auto-call interface; manual or auto-answer.

Diagnostics/Indicators • same as 7120 • see above.

Cost/Service • standalone: $1,315 single-unit purchase price; $60 per month • quantity discounts: $1,158 for 10 units to $882 for 100 units, respectively • 1-year warranty • factory service; on-call service; nationwide service organization.

☐ NCR Comten 7164-0100 Commander Modem

Compatibility • IBM 386X modems.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 4800/2400 bps; 1200 bps diagnostic mode • RTS/CTS delay of 24, 50, 58 milliseconds • DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • 32-character LCD front-panel display; compatible with IBM's NPDA software for in-band diagnostics/monitors • optional fan-out; switched network backup (SNBU); dial backup.

Diagnostics/Indicators • self-test; local analog loopback; remote digital loopback loop/transmit test; transmit test/receive test • visual indicators for line quality/signal level; test mode; error condition; and interface signal status.

Cost/Service • standalone: $3,700 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 100-day warranty • factory/depot/field/own service.

☐ NCR Comten 7164-0200 Commander Modem

Compatibility • IBM 386X modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; synchronous at data rates of 4800/2400 bps • DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 7164-0100 • see above.

Diagnostics/Indicators • same as 7164-0100 • see above.

Cost/Service • standalone: $3,850 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 100-day warranty • factory service.

☐ NCR Comten 7165 Commander Modem

Compatibility • IBM 386X modems; CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/4800 bps; 2400 bps diagnostic mode • RTS/CTS delay of 60, 24 milliseconds multipoint version • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 7164-0100 • see above.

Diagnostics/Indicators • same as 7164 • see above.

Cost/Service • standalone: $5,800 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 100-day warranty • factory/depot/field/own service.

■ NEC AMERICA/Data Communications Products Department

1012 Stewart Drive, Sunnyvale, CA 94086; 408-737-7711 • Canadian Distribution: none.

☐ NEC Data Modem 1200

Compatibility • AT&T 202R modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; asynchronous at data rates up to 1200 bps • FSK modulation • RS-232C interface.

Features/Options • auto-answer; abort timer; single-line phone operation • 5 bps reverse channel

Diagnostics/Indicators • self-test; local and remote loopbacks.

Cost/Service • standalone: $585/$520 (with/without reverse channel) single-unit purchase price • rackmount: $535/$450 (with/without reverse channel) single-unit purchase price.

☐ NEC Data Modem 1800

Compatibility • AT&T 202T modem.

Application • point-to-point or multipoint operation over an unconditioned or C2 conditioned 2- or 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1800 bps with C2 conditioning; up to 1400 bps on unconditioned lines; up to 1200 bps with reversed channel • FSK modulation • RS-232C interface.

Features/Options • anti-streaming • optional 5 bps reverse channel.

Diagnostics/Indicators • same as Data Modem 1200 • see above.

Cost/Service • standalone: $485/$420 (with/without reverse channel) single-unit purchase price • rackmount: $425/$350 (with/without reverse channel) single-unit purchase price.

☐ NEC Data Modem 2400M N201C

Compatibility • AT&T 201C modem.

Application • same as Data Modem 1800 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • RS-232C interface.

Features/Options • anti-streaming.

Diagnostics/Indicators • self-test; local and remote loopbacks • status indicators.

Cost/Service • standalone: $810 single-unit purchase price • rackmount: $740 single-unit purchase price.

☐ NEC Data Modem 2400 N201CR

Compatibility • AT&T 201CR modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • originate/answer modes • RS-232C interface.

Features/Options • anti-streaming; abort timer; single-line phone operation.

Diagnostics/Indicators • self-test; local and remote analog loopbacks.

Cost/Service • standalone: $845 single-unit purchase price • rackmount: $775 single-unit purchase price.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ NEC DSP 4800 RII

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; 2400 bps fallback • RTS/CTS delay of 50, 708 milliseconds • PSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote digital and analog loopback; pattern generator; error detector • front-panel LED indicators.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: $1,565 single-unit purchase price.

☐ NEC DSP 9600 RI

Compatibility • CCITT V.27/V.29.

Application • point-to-point operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800/2400 bps • RTS/CTS delay of 15, 20, 25, 30, 70 milliseconds • QAM/PSK modulation • automatic equalization • RS-232C interface.

Features/Options • fast polling.

Diagnostics/Indicators • self-test local and remote digital and analog loopback • polling tests • integral test pattern generator; integral bit error detector; integral interface display.

Cost/Service • standalone: $5,300 single-unit purchase price.

☐ NEC DSP 9600 RII

Compatibility • unspecified.

Application • same as DSP 9600 RI • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • PSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • same as DSP 4800 RII • see above.

Cost/Service • standalone: $2,100 single-unit purchase price • rackmount: $1,970 single-unit purchase price.

☐ NEC Data Modem 300 Originate or Answer

Compatibility • AT&T 113 modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • originate-only or answer-only modes • FSK modulation • RS-232C interface.

Features/Options • may be installed with 500/2500 or 503/2503 telephones • optional originate-only or answer-only.

Diagnostics/Indicators • self-test; local loopbacks.

Cost/Service • standalone: $455 single-unit purchase price • rackmount: $385 single-unit purchase price.

☐ NEC N4810

Compatibility • AT&T 208A/B modems.

Application • same as Data Modem 2400 N201CR • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • PSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • system test and fault isolation via 9 monitoring lamps and 4 control switches.

Cost/Service • standalone: $1,550 single-unit purchase price • rackmount: $1,420 single-unit purchase price.

☐ NEC DSP 2420

Compatibility • AT&T 103/113/212A modems in fallback mode.

Application • same as 300 Originate or Answer • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 300/1200/2400 bps • adaptive equalization • RS-232C interface.

Features/Options • automatically detects whether incoming mode is AT&T 103/113 or 212A and adapts speed and modulation accordingly.

Diagnostics/Indicators • local and remote loopbacks • bit error test; built-in test pattern • front-panel error indicators.

Cost/Service • standalone: $950 single-unit purchase price • rackmount: $820 single-unit purchase price available.

☐ NEC SPN 9600/4800/2400-V Series Modems

Compatibility • unspecified.

Application • same as DSP 4800 RII • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/4800/2400 bps • RTS/CTS delay of 15/7 (9600,4800/2400) milliseconds • RS-232C interface.

Features/Options • fast polling • network monitoring, control, and diagnostic tests from control modem front panel or CRT keyboard.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $7,000/$3,500/$2,000 (SPN 9600/4800/2400-V) single-unit purchase price.

☐ NEC DSP 14400 M

Compatibility • unspecified.

Application • same as DSP 4800 RII • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 14.4K bps • RS-232C interface.

Features/Options • integral 6-channel multiplexer.

Diagnostics/Indicators • local and remote loopback; bit error rate and polling tests • built-in test pattern generator • front-panel error display.

Cost/Service • standalone: $6,200 single-unit purchase price.

☐ NEC DSP19200M

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire D1 conditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 19.2K/16.8K/14.4K/12K/9600 bps • QAM modulation with trellis coded error correction scheme • automatic adaptive equalization • RS-232C interface.

Features/Options • built-in 8-channel multiplexer • optional asynchronous-to-synchronous converter.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • self-test local digital and analog loopback; remote digital loopback; polling tests, bit error rate test • status indicators.

Cost/Service • standalone: $12,000 single-unit purchase price.

■ NETWORK PRODUCTS

4020 Stirrup Creek Drive, Research Triangle Park, NC 27709; 919-544-8080 • Canadian Distribution: none.

☐ Network XP2400

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned 4-wire Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400 bps; 1200 bps fallback • automatic adaptive equalization • RS-232C interface.

Features/Options • optional 2-call dial backup; eye pattern generator; analog extension interface.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $895 single-unit purchase price • 1-year warranty • factory service.

☐ Network XP4800

Compatibility • unspecified.

Application • same as XP2400 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 4800 bps; 2400 bps fallback • automatic adaptive equalization • RS-232C interface.

Features/Options • optional 4-channel multiplexer; 2-call dial backup; eye pattern generator; analog extension interface.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $1,795 single-unit purchase price • 1-year warranty • factory service.

☐ Network XP9600

Compatibility • CCITT V.29.

Application • same as XP2400 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 9600 bps; 7200/4800/2400 bps fallback • automatic adaptive equalization • RS-232C interface.

Features/Options • same as XP4800 • see above.

Diagnostics/Indicators • same as XP2400 • see above.

Cost/Service • standalone: $2,300 single-unit purchase price • 1-year warranty • factory service.

■ NOAKES DATA COMMUNICATIONS

3330 Stovall Street, Irving, TX 75061; 214-790-1050 • Canadian Distribution: none.

☐ Noakes N76/5-1/N765-2

Compatibility • AT&T 103/113 modems.

Application • DDD network via acoustic coupling.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback.

Cost/Service • standalone: $175 to $195 single-unit purchase price.

☐ Noakes IDS 3343/3334

Compatibility • AT&T 103/113 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes • FSK modulation • TTL interface.

Features/Options • automatic originate/answer; stores 5 numbers plus 1500-character message buffer with line edit capability.

Diagnostics/Indicators • none available.

Cost/Service • standalone: $275 single-unit purchase price.

☐ Noakes N-103-4

Compatibility • AT&T 103 modems.

Application • same as 3343/3334 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • automatic answer; integral handset with keypad dialer; BRK restraint • optional answerback.

Diagnostics/Indicators • none available.

Cost/Service • standalone: $395 single-unit purchase price.

☐ Noakes IDS 3300

Compatibility • AT&T 103/113/202 modems.

Application • same as 3343/3334 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200/300 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • automatic answer; stores 10 telephone numbers plus canned messages; answerback; selectable 103 or 202 modes • optional reverse channel.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

■ NOKIA-KINEX

6950 Bryan Dairy Road, Largo, FL 33543; 813-541-6404 • Canadian Distribution: none.

☐ Nokia-Kinex Model 2400/FDX

Compatibility • CCITT V.26 ter.

Application • DDD network via DAA • point-to-point or multipoint operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400 bps • QAM modulation • automatic equalization • RS-232C interface.

Features/Options • auto-speed detection; automatic answer/disconnect; digital line quality indicator • optional voice mode.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; built-in bit error rate tester • status indicators.

Cost/Service • standalone: $1,695 single-unit purchase price.

☐ Nokia-Kinex 48/208AB Model 1

Compatibility • AT&T 208A/B modem.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 7.5, 8, 50, 150, 600 milliseconds • 8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data • optional eye pattern generator.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • status indicators for line quality/signal quality.

Cost/Service • standalone: $1,365 single-unit purchase price • rackmount: $1,365 single-unit purchase price.

☐ Nokia-Kinex 48/208AB Model 2

Compatibility • AT&T 208A/B; 201C modems.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 7.5, 8, 50, 150, 600 milliseconds • 8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • AT&T 201C fallback operation at 2400 bps; echo protect; call message for operator coordination • optional eye pattern generator.

Diagnostics/Indicators • same as 48/208AB Model 1 • see above.

Cost/Service • standalone: $1,725 single-unit purchase price • rackmount: $1,725 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex Model 9600/M

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over a domestic or international 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/7200/9600 bps • RTS/CTS delay of 10, 55, 110, 285 milliseconds • 16-point QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • built-in 4-channel multiplexer multiplexes various combinations of two, three, or four 2400 bps data streams; independent simulation of control carrier for each port • optional eye pattern generator.

Diagnostics/Indicators • same as 48/208AB Model 1 • see above.

Cost/Service • standalone: $2,285 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex Model 9600/FP

Compatibility • CCITT V.29.

Application • point-to-point fast poll operation over a domestic or international unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/7200/9600 bps • RTS/CTS delay of 25 milliseconds • QAM modulation • RS-232C interface.

Features/Options • automatic retrain on remote modems; automatic anti-streaming; alternate voice/data.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback; addressable remote controlled digital loop, polling test, and network polling test • status indicators for line quality/signal level.

Cost/Service • standalone: $2,575 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex Model 14400/M

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a domestic or international unconditioned 4-wire dedicated voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/12K/14.4K bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • built-in 4-channel multiplexer.

Diagnostics/Indicators • same as 48/208AB Model 1 • see above.

Cost/Service • standalone: $1,725 single-unit purchase price • rackmount: $1,725 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex 48/208AB Model 3

Compatibility • AT&T 208A/B; 201C modems.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2- or 4-wire dedicated voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 7.5, 8, 50, 150 600 milliseconds • 8-phase QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as 48/208AB Model 2 • see above.

Diagnostics/Indicators • same as 48/208AB Model 2 • see above.

Cost/Service • standalone: $1,875 single-unit purchase price • rackmount: $1,875 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex Model 48/27

Compatibility • CCITT V.27 bis/ter.

Application • same as 48/208AB Model 3 • see above.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 4800 bps • RTS/CTS delay of 27, 50, 708 milliseconds • 4-/8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data; auto-answer; echo protection.

Diagnostics/Indicators • same as 48/208AB Model 2 • see above.

Cost/Service • standalone: $1,650 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex Model 9600/29

Compatibility • CCITT V.29.

Application • same as 9600/FP • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

rates up to 9600 bps • RTS/CTS delay of 253 milliseconds • 16-point QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data • optional integral 4-channel multiplexer.

Diagnostics/Indicators • same as 48/208AB Model 2 • see above.

Cost/Service • standalone: $3,575 single-unit purchase price • rackmount: prices available on request • quantity discounts available.

☐ Nokia-Kinex SAB 2X4

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 15.6 miles.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates of 600/1200/2400/4800/9600/19.2K bps • baseband modulation • advanced line equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as 48/208AB Model 2 • see above.

Cost/Service • standalone: $500 single-unit purchase price • quantity discounts available.

☐ Nokia-Kinex 24/201C

Compatibility • AT&T 201C modem; CCITT V.26; CCITT V.26 bis.

Application • same as 48/208AB Model 3 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 2400 bps • QAM modulation • fixed compromise equalization • RS-232C interface.

Features/Options • automatic answer.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; built-in error rate test • status indicators.

Cost/Service • contact vendor.

■ NORTHERN TELECOM/Spectron Division

8000 Lincoln Drive, E, Marlton, NJ 08053; 609-596-2500 • Canadian Distribution: Northern Telecom Canada Ltd, 105 Laurenteir Blvd, St. Laurent, PQ H4M 4Y7; 514-747-5551.

☐ Northern Telecom MER-810 Modem Eliminator Repeater

Compatibility • unspecified.

Application • point-to-point operation over a cable between business machines; at distances up to 100 feet apart.

Packaging • standalone or rackmount; up to 6 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 10, 50 milliseconds • RS-232C interface.

Features/Options • eliminates back-to-back modems.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $565 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Northern Telecom MER-835 V.35 Modem Eliminator

Compatibility • unspecified.

Application • same as MER-810 • see above.

Packaging • rackmount.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates from 18K to 460.8K bps • CTS delay of 0, 10, 50 milliseconds • RS-232C interface.

Features/Options • same as MER-810 • see above.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $565 single-unit purchase price • 1-year warranty • factory service.

☐ Northern Telecom MER-6 Modem Interface Repeater

Compatibility • unspecified.

Application • modem eliminator for point-to-point operation over a cable between business machines; at distances up to 300 feet apart or beyond 300 feet using low-capacitance cable.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • AC power • RS-232C interface.

Features/Options • passes 6 full-duplex EIA control signals: receive/send data; receive/send clock; and 2 user-specified leads at time of order.

Diagnostics/Indicators • front-panel LED indicates power status.

Cost/Service • standalone: $450 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Northern Telecom MIS-3400 & MIS-3404

Compatibility • unspecified.

Application • multiple connections to a single RS-232C interface.

Packaging • standalone or rackmount.

Operating Parameters • half-duplex; asynchronous/synchronous at data rates up to 50 bps • RS-232C signals regenerated before delivery to receiving devices.

Features/Options • controlled access feature • MIS-3404 has streamguard and tail circuit.

Diagnostics/Indicators • front-panel LEDs indicate activity (green) or error (red).

Cost/Service • standalone: $750/$850 (3400/3404) single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ NU DATA CORPORATION

32 Fairview Avenue, P.O. Box 125, Little Silver, NJ 07739; 201-842-5757 • Canadian Distribution: Comtest Instruments Ltd, 80 Colonnade Road, Nepean, ON K2E 7L12; 613-226-3210.

☐ Nu Data Model 108 Series Modems

Compatibility • AT&T 108 modem.

Application • point-to-point operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure; Model 108A available in standalone only.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes (108A); originate-only (108D/P); answer-only (108E/P) • FSK modulation • RS-232C interface.

Features/Options • active filtering phase lock loops • optional 20/60-mA current loop interface.

Diagnostics/Indicators • self-test local digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $265 single-unit purchase price • rackmount: prices available on request • quantity discounts available • factory service.

☐ Nu Data Limited-Distance Modem Model SLDM-144A

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

dedicated Type 3002 voice channel or metallic circuit; at distances up to 2.5 miles using AWG #22 at 19.2K bps • complies with AT&T Publication 43401 at 1200 bps.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 10, 100 milliseconds • bi-phase (IBM 3270 standard); Manchester modulation • RS-232C/CCITT V.28 interface.

Features/Options • multi-drop controlled carrier, supporting IBM 3270 type polled cluster operation; internal/external clock.

Diagnostics/Indicators • status indicators for transmit/receive data; transmit/receive clock; carrier detect.

Cost/Service • standalone: $325 single-unit purchase price • rackmount: prices available on request • quantity discounts available • factory service.

☐ Nu Data Limited-Distance Modem Model 160-L

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 6 miles at 9600 bps or 3 miles at 19.2K bps.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RS-232C/CCITT V.28 interface.

Features/Options • EIA to loop isolation; FDX/HDX field converter • optional DTE/DCE connections; 20-/60-mA current loop interface.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $125 single-unit purchase price • rackmount: prices available on request • quantity discounts: $120 for 10 to 24 units • 90-day warranty • factory service.

■ OPTELECOM INC

15940 Luanne Drive, Gaithersburg, MD 20877; 301-948-4232 • Canadian Distribution: Laser Fiberoptics; 230 Brittany Drive, Ottawa, ON K1K 0R6; 613-746-9079.

☐ Optelecom Model 4110

Compatibility • unspecified.

Application • point-to-point operation over dielectric fiber optic (dual fiber) cables; at distances up to 1 kilometer.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 100K bps • RS-232C interface; 8 EIA pin assignments for common handshaking signals.

Features/Options • does not require special optical connectors; cable attaches directly to the modem; greater transmission distances can be achieved using 4110s in tandem as repeaters; the data stream can be tapped at these locations for local area networking • optional MIL-188C interface; other interfaces available on special request • DB25 connector; power can be optionally derived from host equipment through the DB25.

Diagnostics/Indicators • 3 LED indicators for power on, transmit data, and receive data.

Cost/Service • standalone: $160 single-unit purchase price, including power supply • quantity discounts: $125 for 100 to 500 units; $100 for over 1,000 units • 1-year warranty • factory service.

☐ Optelecom Model 4120

Compatibility • unspecified.

Application • same as 4110 • see above.

Packaging • standalone.

Operating Parameters • same as 4110 • see above.

Features/Options • optional AMP or Amphenol 905/906 Series optical ports.

Diagnostics/Indicators • same as 4110 • see above.

Cost/Service • standalone: $160 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Optelecom Model 4131/32

Compatibility • unspecified.

Application • same as 4110 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • RS-232C interface standard; 8 EIA pin assignments for common handshaking signals.

Features/Options • same as 4120 • see above.

Diagnostics/Indicators • same as 4110 • see above.

Cost/Service • standalone: $100 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Optelecom Model 4133

Compatibility • unspecified.

Application • same as 4110 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 19.2K bps • RS-232C interface standard; 8 EIA pin assignments for common handshaking signals.

Features/Options • optional AMP Optimate optical port.

Diagnostics/Indicators • same as 4110 • see above.

Cost/Service • standalone: $75 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ PARADYNE CORPORATION

8550 Ulmerton Road, Largo, FL 33540; 813-530-2000 • Canadian Distribution: Paradyne Canada Limited, 200 Consumers Road, Suite 504, Willowdale, ON M2J 4R4; 416-494-0453.

☐ Paradyne MP48/208B

Compatibility • AT&T 208B modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-duplex; synchronous at data rates of 4800 bps • RTS/CTS delay of 50, 150 milliseconds • 8-phase DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • optional alternate voice/data; eye pattern generator.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for line quality/signal level; test mode; error condition; and interface signal status.

Cost/Service • standalone: $2,200 single-unit purchase price • $75 per month 2-year lease; $20 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne MPX2400

Compatibility • CCITT V.26.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps; fallback 1200 bps • RTS/CTS delay of 9, 26, 65, 148 milliseconds • 4-/8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • optional diagnostic control (DMC) for ANALYSIS 5500/5530 or older 4400 series systems; 110 bps secondary channel.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; eye pattern generator • status indicators.

Cost/Service • standalone: $950/$1,450 single-unit purchase price • $35/$54 per month 2-year lease; $10/$15 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne MPX4800

Compatibility • CCITT V.27.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 4800 bps; fallback 2400 bps • RTS/CTS delay of 25, 50, 709 milliseconds • 4-/8-phase DPSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as MPX2400 • see above.

Diagnostics/Indicators • same as MPX2400 and integral 4-channel multiplexer • see above.

Cost/Service • standalone: $2,000/$2,600/$2,600/$3,200 single-unit purchase price • $65/$85/$85/$105 per month 2-year lease; $20/$25 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne MPX9600

Compatibility • CCITT V.29.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps; fallback 7200/4800 bps • RTS/CTS delay of 20, 253 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as MPX4800 • see above.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $3,400/$4,000/$4,200/$4,800 single-unit purchase price • $120/$145/$140/$160 per month 2-year lease; $25 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne Challenger 2400

Compatibility • CCITT V.26.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400 bps; fall back 1200 bps • RTS/CTS delay of 9, 26, 65, 148 milliseconds • 4-/8-phase modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • optional 2-call dial backup; eye pattern generator; analog extension interface; front-panel strapping.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $700 single-unit purchase price • $30 per month 2-year lease; $10 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne Challenger 4800

Compatibility • CCITT V.27.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 4800 bps; fallback 2400 bps • RTS/CTS delay of 25, 33, 50, 67, 709, 943 milliseconds • 4-/8-phase modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as Challenger 2400 • see above.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $1,500 single-unit purchase price • $65 per month 2-year lease; $15 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne Challenger 9600

Compatibility • CCITT V.29.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600 bps; fallback 7200/4800 • RTS/CTS delay of 20, 253, 726 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • integral 4-channel multiplexer and same as Challenger 2400 • see above.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $2,300/$3,090 single-unit purchase price • $110/$135 per month 2-year lease; $20/$25 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne Challenger 14.4K

Compatibility • CCITT V.29.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 14.4K bps; fallback 12K/9600 bps • RTS/CTS delay of 253, 2, 6 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $4,800 single-unit purchase price • $200 per month 2-year lease; $25 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne Challenger 16.0K

Compatibility • CCITT V.29 and other Paradyne 16.0K modems.

Application • same as MPX2400 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 16.0K bps;14.4K/12K/9600/800/7200 bps • RTS/CTS delay of 253, 2, 6 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $8,300 single-unit purchase price • $327 2-year lease; $30 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne VHS 14.4K

Compatibility • unspecified.

Application • point-to-point operation over D1 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • full-duplex; synchronous at data rates of 14.4K bps; fallback 12K/9600 bps • RTS/CTS delay of 253, 2, 6 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • optional diagnostic control (DMC) for ANALYSIS 5500/5530 or for point-to-point or multipoint operation on older 4400 series systems; integral 6-/8-/16-channel multiplexer or DMC and 8-/16-channel multiplexer.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone $10,200/$12,400 and $12,600/$14,820/$15,000 and $15,800/$18,240 single-unit purchase price • $472/$575/$583/$686/$694/$805/$733/$844 per month 2-year lease; $25/$35/$35/$45/$55/$75/$65/$85 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne VHS 16.8

Compatibility • CCITT V.24/V.28.

Application • same as VHS 14.4 • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 16.8K bps; fallback 14.4K/12K bps • RTS/CTS delay of 253, 2, 6 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as VHS 14.4K • see above.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $11,520/$13,740 and $13,920/$16,140/$16,320/$18,720 and $17,610/$19,560 single-unit purchase price • $533/$636/$644/$747/$755/$867/$794/$905 per month 2-year lease; $25/$35/$35/$45/$55/$75/$65/$85 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne VHS 19.2K

Compatibility • CCITT V.24/V.28.

Application • same as VHS 14.4K • see above.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 19.2K bps; fallback 16.8K/14.4K • RTS/CTS delay of 253, 2, 6 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • same as VHS 14.4K • see above.

Diagnostics/Indicators • same as MPX2400 • see above.

Cost/Service • standalone: $12,960/$15,180 and $15,360/$17,850/$17,760/$20,160 and $18,600/$21,00 single-unit purchase price • $600/$600/$711/$814/$822/$933/$861/$972 per month 2-year lease; $25/$25/$35/$45/$55/$75/$65/$85 per month maintenance • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne HDX 12000

Compatibility • AT&T 801 ACU; type 500 and 2500 telephones and exclusion key phones.

Application • point-to-point operation over a 2-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 12 units per enclosure.

Operating Parameters • half-duplex; synchronous at data rates up to 12K bps • RTS/CTS delay of 2, 20 milliseconds • automatic adaptive equalization • RS-232C interface.

Features/Options • integral auto-dialer; stored telephone numbers for single key calling; accommodates host/terminal, dial-out applications.

Diagnostics/Indicators • front-panel indicators.

Cost/Service • standalone: $3,600 single-unit purchase price • quantity discounts:$3,570 for 5 to 10 units; $3,535 for 11 to 20 units; $3,480 for 21 to 30 units • 90-day warranty • factory/on-call service; nationwide service organization.

☐ Paradyne DS-500A/DS-556A

Compatibility • unspecified.

Application • direct connection from the user's premises to the DDS.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps (500A); 56K bps (556A) • RS-232C interface.

Features/Options • not specified.

Diagnostics/Indicators • DTE/DDS loopback; DSU self-test; end-to-end transmit/receive tests • front-panel indicators.

Cost/Service • standalone: $1,520/$1,625 single-unit purchase price • quantity discounts available • 90-day warranty • factory/on-call service; nationwide service organization.

■ PENRIL DATACOMM

207 Perry Parkway, Gaithersburg, MD 20877-2197; 301-921-8600 • Canadian Distribution: none.

☐ Penril 96A Short Haul Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 35 miles using AWG #19.

Packaging • standalone or rackmount; up to 11 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 8.5 milliseconds • digital driver modulation • manual equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $250 single-unit purchase price • dual-modem rackmount: $395 single-unit purchase price • quantity discounts available • standalone: $14/$10 per month 2/3 year-lease; rackmount: $21/$16 per month 2/3-year lease • monthly maintenance: $4.00 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 1800 DED Data Modem

Compatibility • AT&T 202D/R modems.

Application • DDD network via DAA; point-to-point operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1800 bps; C1 conditioning required at 1400 bps; C2 at 1800 bps • RTS/CTS delay of 8.5 or 200 milliseconds • FSK modulation • automatic equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $375 single-unit purchase price • rackmount: $275 single-unit purchase price • quantity discounts

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

available • standalone: $20/$15 per month 2/3 year lease; rackmount $15/$11 per month 2/3 year lease • monthly maintenance $8 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 2024 Data Modem

Compatibility • CCITT V.22 bis (2400 bps); AT&T 212A (1200 bps).

Application • same as 1800 DED Data Modem • see above.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 2400 bps; 1200 bps fallback • originate/answer modes • QAM/PSK (2400/1200) modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • synchronous transmission permits clocking via modem internal clock, data terminal clock, or the transmit clock slaved to the receive clock • automatic dial; up to 32-digit storage; abort timer.

Diagnostics/Indicators • analog loopback; remote digital loopback.

Cost/Service • standalone: $895 single-unit purchase price • quantity discounts available • $48/$35 per month 2/3 year lease • monthly maintenance $8 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 2127 Modem

Compatibility • CCITT V.27 bis/ter.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • 8-phase DPSK modulation • automatic equalization • RS-232C interface.

Features/Options • automatic answer; audible data quality alarm • optional dial back-up; optional reverse channel.

Diagnostics/Indicators • automatic testing; secondary channel for use with remote diagnostics • front-panel switches for strapping configurations.

Cost/Service • standalone: $1,695 single-unit purchase price • rackmount: $1,596 single-unit purchase price • quantity discounts available • standalone: $90/$67 per month 2/3 year lease; rackmount: $85/$63 per month 2/3 year lease • monthly maintenance $17 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 2129 Modem

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • QAM modulation • automatic equalization • RS-232C interface.

Features/Options • audible data quality alarm • optional reverse channel.

Diagnostics/Indicators • automatic testing.

Cost/Service • standalone: $2,595 single-unit purchase price • $2,495 rackmount: single-unit purchase price • quantity discounts available • standalone: $138/$103 per month 2/3 year lease; rackmount: $132/$98 per month 2/3 year lease • monthly maintenance $18 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 8192 Modem

Compatibility • AT&T LADS.

Application • point-to-point operation over a metallic circuit; at distances up to 7 miles using AWG #22 or 26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • automatic equalization • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • self-test; digital and analog loopback;

Cost/Service • standalone: $535 single-unit purchase price • rackmount: $435 single-unit purchase price • quantity discounts available • standalone: $29/$21 per month 2/3 year lease; rackmount: $23/$18 per month 2/3 year lease • monthly maintenance $8 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 8201-DN

Compatibility • AT&T 201C modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/1200 bps • 4-phase PM modulation • compromise equalization • RS-232C interface.

Features/Options • automatic answer • talk/data switch on front-panel.

Diagnostics/Indicators • self-test; local loopback.

Cost/Service • standalone: $795 single-unit purchase price • rackmount: $735 single-unit purchase price • quantity discounts available • standalone: $43/$32 per month 2/3 year lease; rackmount: $39/$29 per month 2/3 year lease • monthly maintenance $10 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 8201-PL Modem

Compatibility • AT&T 201 modem.

Application • point-to-point operation over a dedicated 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates of 2400 bps; 1200 bps fallback • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; digital and analog loopback.

Cost/Service • standalone: $795 single-unit purchase price • rackmount: $735 single-unit purchase price • quantity discounts available • standalone: $43/$32 per month 2/3 year lease; rackmount: $39/$29 per month 2/3 year lease • monthly maintenance $6 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril 8208/AB Modem

Compatibility • AT&T 208A/B modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a dedicated 2- or 4-wire Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 4800 bps• originate/answer mode • 8-phase PM modulation • automatic equalization • RS-232C interface.

Features/Options • automatic answer • alternate voice/data.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • self-test; remote and local loopback.

Cost/Service • standalone: $1,750 single-unit purchase price • rackmount: $1,650 single-unit purchase price • quantity discounts available • standalone: $93/$69 per month 2/3 year lease; rackmount: $83/$62 per month 2/3 year lease • monthly maintenance $15 • $125 installation • 1-year warranty • factory service; on-call service; service contracts available.

☐ Penril Datalinx 227

Compatibility • AT&T 208 modem; CCITT V.27 bis/ter.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; fallback 2400 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • 75 bps secondary channel; automatic dial backup.

Diagnostics/Indicators • in accordance with CCITT V.54.

Cost/Service • contact vendor.

☐ Penril Datalinx 229

Compatibility • CCITT v.29.

Application • same as Datalinx 227 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600 bps; fallback 7200/4800/2400 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • same as Datalinx 227 • see above.

Diagnostics/Indicators • same as Datalinx 227 • see above.

Cost/Service • contact vendor.

Personal Computer Modems • Model 300/1200; Model AD 300/1200.

■ PRENTICE CORPORATION

266 Caspian Drive, Sunnyvale, CA 94088-3544; 408-734-9810 • Canadian Distribution: Louis Albert & Associates, 5411 Canotec Road, Gloucester, ON K1J 8R5; 613-748-9751.

☐ Prentice P201C Modem

Compatibility • AT&T 201B/C modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • originate/answer modes • RTS/CTS delay of 0, 8.5, 25, 150 milliseconds • 4-phase DPSK modulation; 1800 Hz carrier • RS-232C/CCITT V.28 interface.

Features/Options • alternate voice/data; auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback • status indicators.

Cost/Service • standalone: $745 single-unit purchase price; $49 per month 1-year rental • rackmount: $645 single-unit purchase price; $44 per month 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice P212 Modem

Compatibility • AT&T 103/212 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK/PSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • automatic self-test in idle mode; local digital and analog loopback; remote digital loopback • error and status indicators.

Cost/Service • standalone: $495 single-unit purchase price; 39 per month 1-year rental • rackmount: $395 single-unit purchase price; $34 per month 1-year rental • 1-year warranty • factory service; nationwide service charge.

☐ Prentice P202T Modem

Compatibility • AT&T 202T modem.

Application • point-to-point or multipoint operation over a conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 1800 bps • RTS/CTS delay of 8, 30, 60, 180 milliseconds • FSK modulation • RS-232C interface.

Features/Options • optional RTS/CTS delay; carrier detection timing; soft carrier turn off timing; receiver squelch; transmitter output level.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for test mode, error condition, interface signal status.

Cost/Service • standalone: $395 single-unit purchase price; $17 per month 1-year rental • rackmount: $295 single-unit purchase price; $15 per mont 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice ALD/1 Asynchronous Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over a 2- or 4-wire metallic circuit; at distances up to 21 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 2, 9, 40 milliseconds • Polar NRZ-L modulation • compromise equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for test mode and interface signal status.

Cost/Service • standalone: $300 single-unit purchase price; $22 per month 1-year rental • rackmount: $200 single-unit purchase price; $20 per month 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice HSLD/1 Synchronous Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 19 miles using AWG #26 • complies with AT&T Publication 43401/41028.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 2, 9, 40 milliseconds • delay modulation • RS-232C interface.

Features/Options • optional data rates of 2400/4800/7200/9600/28.8K bps.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for line quality/signal level, test mode, interface signal status.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Cost/Service • standalone: $490 single-unit purchase price; $36 per month 1-year rental • rackmount: $390 single-unit purchase price; $33 per month 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice Trimodem

Compatibility • AT&T 103/212; Racal-Vadic 3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; a synchronous at data rates up to 300/ 1200 bps • FSK/PSK modulation • RS-232C interface.

Features/Options • auto-answer; automatic recognition of AT&T 103/212 and Racal-Vadic 3400 protocols.

Diagnostics/Indicators • self-test; local digital and analog loopback.

Cost/Service • $950 standalone: single-unit purchase price; $54 per month 1-year rental • rackmount: $850 single-unit purchase price; $49 per month 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice P208A/B/4800 Modems

Compatibility • AT&T 208A/B modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 4800 bps • originate/answer modes • RTS/CTS delay of 8.5, 50, 150 milliseconds • RS-232C interface.

Features/Options • alternate voice/data; auto-answer.

Diagnostics/Indicators • self-test; local digital and analog loopback • status indicators.

Cost/Service • standalone: $1,395 single-unit purchase price; $100 per month 1-year rental • 1-year warranty • factory service; nationwide service support.

☐ Prentice 9629/9600 Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates of 9600 bps; 7200/4800 bps fallback • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • unspecified.

Cost/Service • standalone: $1,695 single-unit purchase price • 1-year warranty • factory service; nationwide service support; fast factory dispatch plan available.

☐ Prentice P-V.22 Modem

Compatibility • CCITT V.22 or AT&T 212 modems when optioned for mode II.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-duplex; asynchronous at data rates of 300/600/1200 bps; synchronous at 600/1200 bps • PSK modulation • RS-232C interface.

Features/Options • Alternative A, B, C modes i-v of V.22 recommendation; built-in voice/data switch • several power supply options.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • visual indicators for error condition and interface signal status.

Cost/Service • standalone: $795 single-unit purchase price • rackmount: $695 single-unit purchase price • 1-year warranty • factory service; nationwide service support; fast factory dispatch plan available.

☐ Prentice 9600A/B

Compatibility • CCITT V.29.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps • automatic equalization • RS-232C interface.

Features/Options • alternate voice/data; automatic answer.

Diagnostics/Indicators • self-test; local and remote digital and analog loopbacks.

Cost/Service • contact vendor • 1-year warranty • factory service; nationwide service support.

☐ Personal Computer Modem • 212TCM.

■ RACAL-MILGO INFORMATION SYSTEM INC

1601 North Harrison Parkway, Sunrise, FL 33323; 305-475-1601 • Canadian Distribution: Electronetic Systems Limited, 785 Arrow Road, Weston, ON, M9M 2L4; 416-745-2999.

☐ Racal-Milgo CMS 12

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • RTS/CTS delay of 8.5, 65, 200 milliseconds • FSK modulation • statistical equalization • RS-232C/CCITT V.28 interface.

Features/Options • performs monitoring, diagnostic, and reconfiguration functions as part of the CMS 1000 and 2000 Network Management Systems; integral control logic monitors digital and analog parameters for abnormal conditions, executes diagnostic tests and performs remedial functions including streaming disable, hot spare modem switching, dual dial backup and spare line or terminal switching in response to commands sent over the secondary channel from the central site CMS1000/ 2000 Network Management Systems; 75 bps secondary channel for diagnostic control via CMS1000/2000 • optional manual or auto-dial backup; 1200 bps synchronous adapter.

Diagnostics/Indicators • self-test; local digital and analog loopback • visual indicators for test mode; error condition; and carrier detect.

Cost/Service • standalone: $1,900 single-unit purchase price • $68 per month 2-year lease • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plains, IL; and Keyport, NJ.

☐ Racal-Milgo CMS 24

Compatibility • unspecified.

Application • same as CMS 12 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates 2400 bps • 4-phase DPSK modulation 1800 Hz carrier • statistical equalization • RS-232C/CCITT V.28 interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • same as CMS 12 • see above.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $2,200 single-unit purchase price • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plains, IL; and Keyport, NJ.

☐ Racal-Milgo Modem 56K-Group Band Modem

Compatibility • unspecified.

Application • point-to-point operation over the base groupband channel of a wideband carrier multiplex system.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 56K bps • 4-phase DPSK double sideband modulation • statistical equalization • CCITT V.35 interface.

Features/Options • optional 120-bit elastic buffer for satellite transmission.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $8,000 single-unit purchase price • $236 per month 2-year lease • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plains, IL; Keyport, NJ.

☐ Racal-Milgo Modem 112K-Group Band Modem

Compatibility • unspecified.

Application • same as Modem 56K • see above.

Packaging • standalone or rackmount; up to 1 unit per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 112K bps • statistical equalization • CCITT V.35 interface.

Features/Options • multiport option multiplexes two 5600 bps data streams; 120-bit elastic buffer for satellite transmission.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $16,500 single-unit purchase price • $580 per month 2-year lease • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plains, IL; Keyport, NJ.

☐ Racal-Milgo COM-LINK 7

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 25 miles using AWG # 19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.8, 17.1 milliseconds • delay modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $685 single-unit purchase price • $22 per month 2-year lease • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

☐ Racal-Milgo COM-LINK 7S

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 18 miles using AWG # 19 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8.8, 17.1 milliseconds • FSK modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $1,185 single-unit purchase price • $42 per month 2-year lease • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plains, IL; Keyport, NJ.

☐ Racal-Milgo Omnimode 48

Compatibility • CCITT V.27.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel; International Type 1040 or equivalent lines.

Packaging • standalone or rackmount; up to 3 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps; fallback 2400 bps • RTS/CTS delay of 19.2, 50 milliseconds • 8-phase DPSK modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • performs monitoring, diagnostic and reconfiguration functions as part of the Racal-Milgo CMS 1000/2000 Network Management Systems; front-panel information and control center; complete modem line and interface status through diagnostic testing; full control of all modem configuration and option parameters; password access for network security; Remote Modem Control (RMC) performs remedial functions including streaming disable, modem/terminal failure, receive line fault, external alarm, multiple alarms; • optional multiport multiplexes two 2400 bps data streams; Omnimode Central Site (CS) permits control of up to 64 remote site modems operating at data rates of 4800/9600 bps from a single Master Panel.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $2,050 single-unit purchase price • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

☐ Racal-Milgo Omnimode 96

Compatibility • CCITT V.27.

Application • same as Omnimode 48 • see above.

Packaging • standalone or rackmount; up to 3 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600 bps; fallback 4800 bps • RTS/CTS delay of 19.2, 50 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as Omnimode 48 • see above.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $3,470 single-unit purchase price • $68 per month 2-year lease; $25 per month maintenance • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

☐ Racal-Milgo Omnimode 14.4

Compatibility • unspecified.

Application • point-to-point operation over a D1 conditioned Type 3002 voice channel.

Packaging • standalone or rackmount; up to 3 units per enclosure.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K bps; fallback 12K bps • RTS/CTS delay of 1.33 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as Omnimode 48 • see above, plus optional 4- or 6-channel multiplexer.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $8,000 single-unit purchase price • $260 per month 2-year lease; $35 per month maintenance • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

☐ Racal-Milgo Omnimode 1614

Compatibility • unspecified.

Application • same as Omnimode 14.4 • see above.

Packaging • standalone or rackmount; up to 3 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates 16.8K bps; fallback 14.4K/12K bps • RTS/CTS delay of 1.33 milliseconds • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as Omnimode 14.4 • see above.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $10,000 single-unit purchase price • $333 per month 2-year lease; $35 per month maintenance • quantity discounts available • 1-year warranty • factory/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

☐ Racal-Milgo Mark 48 & Mark 96

Compatibility • Omnimode and MPS families; CCITT V.27 bis/V.29.

Application • point-to-point or multipoint operation over an unconditioned Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates 4800/9600 (48/96) bps • RTS/CTS delay of 19/30 (48/96) milliseconds • automatic adaptive equalization • RS-232C interface.

Features/Options • designed for integration with existing networks.

Diagnostics/Indicators • same as CMS 12 • see above.

Cost/Service • standalone: $1,500/$2,500 single-unit purchase price • quantity discounts available • 1-year warranty • factory-/on-call service; nationwide service organization; hot line diagnostic centers in Atlanta, GA; Los Angeles, CA; Richardson, TX; Des Plaines, IL; Keyport, NJ.

■ RACAL-VADIC INC

1525 McCarthy Blvd, Milpitas, CA 95035; 408-946-2227 • Canadian Distribution: Canadian General Electric, 396 Atwell Drive, Rexdale, ON M9W 5C3; 416-675-7500.

☐ Racal-Vadic VA315

Compatibility • AT&T 103/113 modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • originate/answer modes • RS-232C interface.

Features/Options • auto-answer.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • LED status indicators.

Cost/Service • standalone: $375 single-unit purchase price • 1-year warranty • factory service; hot-line diagnostic centers in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic VA3467 Triple Modem

Compatibility • AT&T 103/212A; Racal-Vadic 3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300/1200 bps; synchronous at 1200 bps • originate-only or answer-only modes • FSK/QAM modulation • RS-232C interface.

Features/Options • auto-answer.

Diagnostics/Indicators • local digital and analog loopback; • visual indicators for interface signal status.

Cost/Service • standalone: $750 single-unit purchase price • rackmount: prices available on request • 1-year warranty • factory service; hot-line diagnostic center in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic VA1244

Compatibility • unspecified.

Application • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • modem card fits VA1601/VA1604 standalone enclosure.

Operating Parameters • half-duplex; asynchronous at data rates up to 1200 bps • FSK modulation • RS-232C interface.

Features/Options • echoes data back to DTE for local printout • optional integral local copy.

Diagnostics/Indicators • local analog loopback • test mode; circuit quality; EIA interface signal activity.

Cost/Service • standalone: $400 single-unit purchase price • 1-year warranty • factory service; hot-line diagnostic centers in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic VA1251

Compatibility • AT&T 202 modem.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • FSK modulation • RS-232C interface.

Features/Options • same as VA1244 • see above.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; integral bit pattern generator and error detector generates simple start/stop pattern for integral self-test only;test mode; circuit quality • EIA interface signal activity.

Cost/Service • standalone: $425 single-unit purchase price • 1-year warranty • factory service; hot-line diagnostic center in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic VA2440

Compatibility • AT&T 201 modem.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • modem card fits VA1601/1604/1680 standalone enclosures.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Operating Parameters • half-duplex; synchronous at data rates of 2400/1200 bps • DPSK modulation • 2-level compromise (statistical) equalization • RS-232C/CCITT V.28 interface.

Features/Options • same as VA1244 • see above.

Diagnostics/Indicators • local analog loopback; integral bit pattern generator and error detector, generates simple start/stop pattern for integral self-test only; test mode; circuit equality • EIA interface signal activity.

Cost/Service • standalone: $575 single-unit purchase price • 1-year warranty • factory service; hot-line diagnostic centers in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic VA2450

Compatibility • AT&T 201 modem.

Application • same as VA1251 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • DPSK modulation • RS-232C interface.

Features/Options • same as VA2440 • see above.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • generates an uppercase "U" pattern for end-to-end or internal self-tests; test mode; circuit quality; EIA interface signal activity.

Cost/Service • standalone: $795 single-unit purchase price • 1-year warranty • factory service; hot-line diagnostic centers in California, Illinois, Massachusetts, Texas, and Maryland.

☐ Racal-Vadic 2400PA Modem

Compatibility • AT&T 103/212A modems; CCITT V.22 bis.

Application • DDD network via direct connection; FCC certified• point-to-point operation over a Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 300/1200/2400 bps • QAM/FSK/differential PSK modulation • automatic adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • stores up to 15 phone numbers or 60 I.D. names or log-on sequences; automatic dial; automatic log-on to computer and tandem dialing allows access to SPRINT or MCI; built-in modem manager.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ **Personal Computer Modems** • VA103 Modemphone, VA355, VA212, VA212LC, VA3451 Triple Modem, VA4401 Quad Modem, VA3481, VA4840 Series.

■ RFL INDUSTRIES, INC/Dowty Group Companies/Communications Division

Powerville Road, Boonton, NJ 07005-0239; 201-334-3100 • Canadian Distribution: CD Nova Ltd, 217 East 16th Avenue, Vancouver BC V5T 2T5; 604-872-8106.

☐ RFL 6385A

Compatibility • AT&T 202D modem.

Application • point-to-point operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 18 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 1200/1800 bps; C2 conditioning required at 1800 bps • RTS/CTS delay of 7.3 milliseconds • FSK modulation, 1700 Hz carrier • RS-232C interface.

Features/Options • optional DTL/TTL, HTL, CMOS and positive neutral interfaces.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $438 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ RFL 6860A Speech/Data Processor

Compatibility • unspecified.

Application • point-to-point operation over a C1 conditioned 4-wire dedicated voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates of 1200 bps • RTS/CTS delay of 140 milliseconds • FSK modulation • RS-232C interface.

Features/Options • simultaneous voice/data.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $4,080 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ ROCKWELL INTERNATIONAL CORPORATION

P.O. Box C, Newport Beach, CA 92660; 714-833-4600 • Canadian Distribution: Rockwell International, 2 Burlington Woods Drive, Burlington, MA 01803; 617-272-5645.

☐ Rockwell Model R24 Integral Modem

Compatibility • AT&T 201B/C modems; CCITT V.26.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • Printed Circuit board.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates of 1200/2400 bps • originate-only mode or answer-only mode • 2-/4-phase DPSK modulation • fixed compromise equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote digital and analog loopback.

Cost/Service • standalone: $395 single-unit purchase price • quantity discounts: $360 for 10 to 24 units; $335 for 25 to 49 units • 1-year warranty • factory service.

☐ Rockwell R24DC Direct Connect Modem

Compatibility • AT&T 201C modem; CCITT V.26.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2-wire dedicated Type 3002 voice channel.

Packaging • single printed circuit board.

Operating Parameters • half-duplex; synchronous at data rates of 1200/2400 bps • DPSK modulation • strap selectable compromise equalization • RS-232C/CCITT V.26 interface.

Features/Options • auto-call/answer; scrambler/descrambler.

Diagnostics/Indicators • self-test; local analog loopback.

Cost/Service • standalone: $450 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Rockwell V/27P/1 Modem

Compatibility • CCITT V.27/T.30.

Application • same as R24 • see above.

Packaging • single printed circuit board.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 2400/4800 bps • QAM modulation • automatic adaptive equalization • RS-232C/CCITT V.27 interface.

Features/Options • none supported.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • analog loopback.

Cost/Service • standalone: $1,000 single-unit purchase price • 1-year warranty • factory service.

☐ Rockwell V96P/1 Modem

Compatibility • CCITT V.27.

Application • same as R24 • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 2400/4800 bps • QAM modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • analog loopback.

Cost/Service • standalone: $1,200 single-unit purchase price • available • 1-year warranty • factory service.

☐ Rockwell R1212DS

Compatibility • AT&T 103/212A modems; CCITT V.22A/B.

Application • DDD network via direct connection; FCC certified.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps; synchronous at 1200 bps; fallback 600 bps • adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • auto/manual answer/dial; tone/pulse dial • optional busy out.

Diagnostics/Indicators • local analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ Rockwell R2424DS

Compatibility • AT&T 103/212A modems; CCITT V.22/V.22 bis.

Application • same as R1212DS • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400/1200/600/300 bps • adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • same as R1212DS • see above.

Diagnostics/Indicators • local analog loopback; remote digital loopback; eye pattern generator.

Cost/Service • contact vendor.

☐ Rockwell R24DP

Compatibility • AT&T 201C; CCITT V.26; plug compatible with Rockwell R96DP, R49DP, R96FT modems.

Application • DDD network via DAA • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • automatic adaptive and compromise equalization • RS-232C interface.

Features/Options • programmable tone generation.

Diagnostics/Indicators • local analog loopback; remote digital and analog loopback; telephone line monitoring statistics.

Cost/Service • contact vendor.

☐ Rockwell R1212

Compatibility • AT&T 103/212A; CCITT V.22A/B.

Application • DDD network via direct connection; FCC certified.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 1200/600 bps • adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • same as R1212DS • see above.

Diagnostics/Indicators • self-test; local analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ Rockwell R1212U

Compatibility • AT&T 103/212A; CCITT V.22A/B.

Application • same as R1212 • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 1200 bps • adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • same as R1212DS • see above.

Diagnostics/Indicators • same as R1212 • see above.

Cost/Service • contact vendor.

☐ Rockwell R2424

Compatibility • same as R1212U • see above.

Application • same as R1212 • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates of 2400 bps • adaptive and fixed compromise equalization • RS-232C interface.

Features/Options • same as R1212DS • see above.

Diagnostics/Indicators • same as R1212 • see above.

Cost/Service • contact vendor.

☐ Rockwell R4875

Compatibility • CCITT V.27 ter.

Application • DDD network via direct connection; FCC certified involving videotex transmission.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800 bps • automatic adaptive compromise equalization • RS-232C interface.

Features/Options • 75 bps secondary channel; videotex transmission.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

☐ Rockwell R96DP

Compatibility • CCITT V.27 bis/ter; CCITT V.29.

Application • DDD network via direct connection;FCC certified • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800/2400 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • programmable tone generation.

Diagnostics/Indicators • local analog loopback; remote digital and analog loopback.

Cost/Service • contact vendor.

☐ Rockwell R96FT/Sec

Compatibility • same as R96DP • see above.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Application • same as R96DP • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800/2400 bps • RTS/CTS delay of 22, 21 milliseconds • automatic adaptive and compromise equalization • RS-232C interface.

Features/Options • 75 bps secondary channel.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback; telephone line quality monitoring statistics; programmable output level.

Cost/Service • contact vendor.

☐ Rockwell R144

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • same as V27P/1 • see above.

Operating Parameters • full-duplex; synchronous at data rates of 14.4K/9600/7200/4800 bps • RTS/CTS delay of 50, 22 milliseconds • automatic adaptive equalization • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • diagnostics in accordance with CCITT V.54 Levels 2/3/4; network control diagnostics.

Cost/Service • contact vendor.

☐ Rockwell R208 A/B

Compatibility • AT&T 208 A/B; CCITT V.27 bis/ter; plug compatible with R96P, R48DP, R96FT.

Application • DDD network via DAA • point-to-point operation over an unconditioned dedicated Type 3002 voice channel.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates 4800/2400 bps • automatic adaptive equalization • RS-232C interface.

Features/Options • programmable tone generation.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ Rockwell R96 FAX

Compatibility • CCITT V.27 bis/ter; CCITT V.29.

Application • same as R 208A/B • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-duplex; synchronous at data rates of 9600 bps • automatic adaptive and compromise equalization • RS-232C interface.

Features/Options • programmable tone generation/detection.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

☐ Rockwell R96FT

Compatibility • CCITT V.29.

Application • same as R 208A/B • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 253 milliseconds • automatic adaptive and compromise equalization • RS-232C interface.

Features/Options • programmable tone generation.

Diagnostics/Indicators • local and remote analog loopback; remote digital loopback.

Cost/Service • contact vendor.

☐ Rockwell R48DP

Compatibility • CCITT V.27 bis/ter.

Application • same as R 208A/B • see above.

Packaging • same as V27P/1 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 4800/2400 bps • automatic adaptive and compromise equalization • RS-232C interface.

Features/Options • programmable tone generation.

Diagnostics/Indicators • same as R96FT • see above.

Cost/Service • contact vendor.

■ S.I.TECH

P.O. Box 609, Geneva, IL 60134; 312-232-8640 • Canadian Distribution: none.

☐ s.i. Tech Model 2001 Asynchronous Optical Bit-Driver

Compatibility • unspecified.

Application • point-to-point operation over fiber optic duplex cable; at distances up to 6,000/13,120/23,000/32,800 feet (2001/2001L/2001XL/2001UL).

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 56K bps • RTS/CTS delay of 15 milliseconds • RS-232C Type D interface.

Features/Options • requires 2 amp or SMA fiber optic connector for interfaces with fiber optic cables • constant or controlled carrier.

Diagnostics/Indicators • digital and analog loopback • status indicators with logic probe.

Cost/Service • standalone: $150/$400/$700/$2,850 (2001/2001L/2001XL/2001UL) single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2004 Optical Bit-Driver

Compatibility • unspecified.

Application • point-to-point operation over fiber optic duplex cable; at distances up to 5,600 feet.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; synchronous at data rates up to 19.2K bps; external clocked rates to 56K bps • RS-232C Type D interface.

Features/Options • requires 2 amp or SMA fiber optic connector receptacle for interfaces with fiber optic cables • DIP switch-selectable data rates.

Diagnostics/Indicators • same as 2001 • see above.

Cost/Service • standalone: $275 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2005 Optical Bit-Driver

Compatibility • unspecified.

Application • same as 2004 • see above.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 56K bps • RS-232C Type D interface.

Features/Options • requires 2 amp or SMA fiber optic connector receptacles for interfacing with fiber optic cable.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Diagnostics/Indicators • same as 2001 • see above.

Cost/Service • standalone: $245 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2024 Metallic Bit-Driver

Compatibility • unspecified.

Application • point-to-point operation over balanced 2-pair metallic circuit; at distances up to 20,000 feet.

Packaging • standalone.

Operating Parameters • simplexfull-duplex; synchronous at data rates up to 19.2K bps; external clocking to 56K bps • RS-232C Type D interface.

Features/Options • transmission line protected at 8 volts up to 50 amp pulses • selectable data rates.

Diagnostics/Indicators • same as 2001 • see above.

Cost/Service • standalone: $245 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2025 Metallic Bit-Driver

Compatibility • unspecified.

Application • same as 2024 • see above.

Packaging • standalone.

Operating Parameters • same as 2005 • see above.

Features/Options • null modem operation when computer and terminal are provided with direct connect • transmission line protected at 8 volts up to 50 amp pulses.

Diagnostics/Indicators • status LEDs; logic probe connected to LEDs (2).

Cost/Service • standalone: $230 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2105 Loop Design Bit-Driver

Compatibility • unspecified.

Application • same as 2004 • see above.

Packaging • standalone.

Operating Parameters • same as 2004 • see above.

Features/Options • optional TTL interface.

Diagnostics/Indicators • not specified.

Cost/Service • standalone: $210 single-unit purchase price • • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2505 Mini Optical Asynchronous Bit-Driver

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable; at distances up to 5,000 feet.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 56K bps • RTS/CTS delay of 0 milliseconds • RS-232C Type D interface.

Features/Options • connects directly to a terminal.

Diagnostics/Indicators • not specified.

Cost/Service • standalone: $150 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2524 Synchronous Metallic Mini Bit-Driver

Compatibility • CCITT V.24/V.28.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 3 miles at 19.2K bps; 6 miles at 2400 bps • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; synchronous at data rates up to 19.2K bps • auto equalization • RS-232C interface.

Features/Options • DC continuity not required; external/internal clock and data scrambler; transmitter and receiver are transformer coupled.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $315 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ s.i. Tech Model 2525 Asynchronous Mini Bit-Driver

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 4 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • simplex, full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 0 milliseconds • auto equalization • RS-232C interface.

Features/Options • DC continuity not required; transmitter and receiver are transformer coupled.

Diagnostics/Indicators • status indicators.

Cost/Service • standalone: $125 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

■ SCIENTIFIC-ATLANTA, INC

4311 Communications Drive, Atlanta, GA 30348; 404-441-4100 • Canadian Distribution: Scientific-Atlanta, 1640 Bonhill Road, Unit 6, Mississauga, ON L5T 1C8; 416-677-6555.

☐ Scientific-Atlanta Broadband Models 6402/6403/6403M

Compatibility • unspecified.

Application • point-to-point operation over a 2-way broadband coaxial cable or terrestrial microwave links (6403M).

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 1.544M bps • QASK-16 modulation • RS-449/AT&T DS1 T1/CCITT V.35 interfaces.

Features/Options • frequency agile bandwidth efficient.

Diagnostics/Indicators • digital and baseband loopback testing.

Cost/Service • standalone: $4,700/$5,400/$6,200 (6402/6403/6403M) single-unit purchase price • quantity discounts available • factory service.

■ SYMPLEX COMMUNICATIONS CORPORATION

5 Research Drive, Ann Arbor, MI 48103; 313-995-1555 • Canadian Distribution Electronetic Systems Ltd, 785 Arrow Road, Weston, ON M9M 2L4; 416-745-2999.

☐ Symplex Quantum 9.6

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • 4-channel multiplexer which utilizes dynamic bandwidth allocation; each channel can simultaneously multiplex a different half-/full-duplex communications protocol at an independent rate; it can divide its 19.2K bps throughput rate into two 9600 bps channels or four 4800 bps channels; it

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

can accept one 19.2K bps input or allow all 4 channels to be set to 9600 bps resulting in an aggregate input of 38.4K bps; auto dial backup; automatic link intelligence (ALI); leased line restoral (LLR); error correction; non-protocol dependent; user transparent.

Diagnostics/Indicators • not specified.

Cost/Service • standalone: $7,450 single-unit purchase price • rackmount: $7,200 single-unit purchase price • quantity discounts: $7,050/$6,850 (standalone/rackmount) for 10 to 24 units.

☐ Symplex Quantum 14.4

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 24K bps • Trellis encoded modulation • RS-232C interface.

Features/Options • 4-channel multiplexer which utilizes dynamic bandwidth allocation, each channel can simultaneously multiplex a different half-/full-duplex protocol at an independent rate, it can divide its 24K bps throughput rate into any combination of input rates, such as one channel at 14.4K, one at 9600 bps or two at 9600, one at 4800 bps, or will accept one 19.2K bps input or all 4 channels at 9600 bps resulting in an aggregate input of 38.4K bps; auto dial backup; ALI; LLR; non-protocol dependent; user transparent.

Diagnostics/Indicators • not specified.

Cost/Service • standalone: $9,950 single-unit purchase price • rackmount: $9,750 single-unit purchase price • quantity discounts: $9,450/$9,200 (standalone/rackmount) for 10 to 24 units.

☐ Symplex Quantum DSU/CSU

Compatibility • unspecified.

Application • point-to-point operation over a digital leased lines.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • built-in 4-channel multiplexer allows simultaneous multiplexing of different half-/full-duplex protocols at independent rates, it can divide its 19.2K bps throughput rate into two 9600 bps or four 4800 bps channels

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • standalone: single-unit purchase price • rackmount: single-unit purchase price • quantity discounts available • warranty • factory service.

■ TEK-COM, INC

2142 Paragon Drive, San Jose, CA 95131; 408-263-7400 • Canadian Distribution: none.

☐ Tek-Com TC 5100 Leased Line Modem

Compatibility • AT&T 202C/D/E/R/T.

Application • point-to-point or multipoint operation over an unconditioned or conditioned 2- or 4-wire dedicated Type 3002 voice channel; at distances of 10 to 12 miles depending on wire facility.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1800 bps; C2 conditioning required at 1800 bps • RTS/CTS delay of 8, 30, 60, 180 milliseconds • FSK modulation • RS-232C/CCITT V.28 interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for interface signal status.

Cost/Service • standalone: $385 single-unit purchase price • quantity discounts available • factory service.

☐ Tek-Com ALD & ALDXR Limited Distance Modems

Compatibility • unspecified.

Application • point-to-point operation over a loaded or unloaded 2- or 4-wire metallic circuit; at distances up to 4/6 (ALD/ALDXR) miles at 9600 bps or 10/15 (ALD/ALDXR) miles at 1200 bps • ALD complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 2, 3, 9, 40 milliseconds • RS-232C interface.

Features/Options • lightning protection varistors provided for transmit and receive VF phone lines.

Diagnostics/Indicators • front-panel controls for test modes • status indicators.

Cost/Service • standalone: $300/$325 (ALD/ALDXR) single-unit purchase price • rackmount: $200/$235 (ALD/ALDXR) single-unit purchase price • quantity discounts available • factory service.

☐ Tek-Com SLD MKII Limited Distance Modem

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2- or 4-wire metallic circuit; at distances up to 3 miles at 19.2K bps or 8.5 miles at 2400 bps using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • simplex, half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 1 to 40 milliseconds • delay modulation • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • self-test; front-panel test modes • status indicators.

Cost/Service • standalone: $480 single-unit purchase price • rackmount: $380 single-unit purchase price • quantity discounts available • factory service.

☐ Tek-Com Star Acoustic Modem Models 103-232A & V.21-232A

Compatibility • AT&T 103/113 modem and CCITT V.21.

Application • DDD network via acoustic coupling.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • AC adapter; terminal connector.

Diagnostics/Indicators • transmit/receive data, carrier ready, test indicators.

Cost/Service • standalone: $199/$249 (103/V.21) single-unit purchase price • quantity discounts available • factory service.

Personal Computer Modems • TC3001; TC3002; TC3006; TC3012; P113D; P202S; P202T; P212A; P212C.

■ TELE-SIGNAL CORPORATION

185 Oser Avenue, Hauppauge, NY 11787; 516-273-3939 • Canadian Distribution: none.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Tele-Signal Model 883P Voiceband Modem

Compatibility • AT&T 201A/B modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-duplex; synchronous at data rates 0f 1200/2400 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $800 single-unit purchase price • 1-year warranty • factory service.

■ TELEBYTE TECHNOLOGY, INC/Remark Datacom Division

148 New York Avenue, Halesite, NY 11743; 516-423-3232 • Canadian Distribution: CD Nova, 95 Glen Comeron Road, Thornhill, ON L3T 1N9; 416-731-6043.

☐ Remark Model 71 Short Haul Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 10 miles at 600 bps; 1 mile at 19.2K bps • complies with AT&T Publication 3081.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C; 25-pin male or female interface.

Features/Options • power derived from host.

Diagnostics/Indicators • transmit/receive LEDs.

Cost/Service • standalone: $87 single-unit purchase price • quantity discounts available.

☐ Remark Model 72 Short Haul Modem

Compatibility • unspecified.

Application •same as Model 71 • see above.

Packaging • standalone.

Operating Parameters • same as Model 71 • see above.

Features/Options • contains separate power supply.

Diagnostics/Indicators • same as Model 71 • see above.

Cost/Service • standalone: $125 single-unit purchase price • quantity discounts available.

☐ Remark Model 75 Short Haul Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 10 miles at 1200 bps; 2 miles at 9600 bps • complies with AT&T Publication 3081.

Packaging • rackmount; 2 modems packaged per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • DTE/DCE selectable • DC continuity required.

Diagnostics/Indicators • analog loopback.

Cost/Service • standalone: $165 single-unit purchase price (82.50 per modem • quantity discounts available • factory service.

☐ Remark Model 81 Short Haul Modem

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 3 miles at 9600 bps.

Packaging • rackmount; up to 2 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • same as Model 75 • see above.

Diagnostics/Indicators • none supported.

Cost/Service • rackmount: $77 single-unit purchase price • quantity discounts available • factory service.

■ TELEPROCESSING PRODUCTS, INC

4565 East Industrial Street, Station 7K, Simi Valley, CA 93063; 805-522-8147 • Canadian Distribution: none.

☐ Teleprocessing Model TP-232 Modem Simulator

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 1,000 feet; with Remote Interface Extender TP-2002 for up to 2,000 feet.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • optional dial-up; 56K bps operation.

Diagnostics/Indicators • loopback testing • status indicators.

Cost/Service • standalone: $395 single-unit purchase price • rackmount: $260 single-unit purchase price • quantity discounts available for over 10 units • 1-year warranty • factory service.

☐ Teleprocessing Model TP-500 Data Service Unit

Compatibility • AT&T DSU-500.

Application • DSU operation on point-to-point or multidrop links.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400/4800/9600 bps • standard EIA cable interface to the data terminal.

Features/Options • converts the bipolar pulses used in the DDS network to the standard EIA signals required for most computers and terminals; connection to the telco-provided CSU via special cable assembly furnished with the TP-500 DSU.

Diagnostics/Indicators • line and business equipment loopbacks; built-in test pattern generator • front-panel controls and indicators.

Cost/Service • standalone: $650 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Teleprocessing TP-501 CSU/DSU Digital Termination Unit

Compatibility • unspecified.

Application • DDS in point-to-point or multipoint applications

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800/9600 bps externally selectable by rear panel DIP switches • RS-232C interface.

Features/Options • internal/external timing; DDS slave timing • optional Level One Network Management; system status; circuit assurance; permanent RTS; frame ground optional connected to signal ground.

Diagnostics/Indicators • AT&T defined Remote Terminal loopback (DTE); local loopback (DDS) available from front-panel • 6 front-panel status indicators; pseudo random test pattern generator/detector.

Cost/Service • standalone: $1,025 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Teleprocessing TP-550/TP-551 Channel Service Unit

Compatibility • unspecified.

Application • same as TP-501 • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 2400/4800/9600 bps (550); 19.2K/56K bps (551) • RS-232C/CCITT V.35 interface.

Features/Options • channel interface between the four wire telephone termination and the Data Service Unit (DSU) required for conversion to an EIA interface; primary function is to recover, amplify and automatically equalize the bipolar pulses from the telephone company's central office and then provide a clean signal to the DSU; also to respond to commands from the telephone company's test center to provide loopback capabilities for testing.

Diagnostics/Indicators • manual loopback testing • power and test indicators.

Cost/Service • standalone: $540/$625 (550/551) single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Teleprocessing TP-556 Data Service Unit

Compatibility • unspecified.

Application • same as TP-500 • see above.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates of 19.2K/56K bps • CCITT V.35 interface.

Features/Options • converts the bipolar pulses used in the DDS network to the standard V.35 signals required for most computers and terminals operating at higher data rates.

Diagnostics/Indicators • same as TP-500 • see above.

Cost/Service • standalone: $750 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

☐ Teleprocessing TP-557 CSU/DSU Digital Termination Unit

Compatibility • same as TP-501 • see above.

Application • same as TP-501 • see above.

Packaging • same as TP-501 • see above.

Operating Parameters • half-/full-duplex; synchronous at data rates of 19.2K/56K bps • CCITT V.35 interface.

Features/Options • same as TP-501 • see above.

Diagnostics/Indicators • same as TP-501 • see above.

Cost/Service • standalone: $1,095 single-unit purchase price • rackmount: prices available on request • quantity discounts available • 1-year warranty • factory service.

■ TIMEPLEX, INC

400 Chestnut Ridge Road, Woodcliff Lake, NJ 07675; 201-391-1111 • Canadian Distribution: Timeplex Canada Inc, 90 Nolan Court, Unit 44, Markham, ON L3R 4L9; 416-475-1961.

☐ Timeplex SLDM-1

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 17 miles using AWG #22; 13 miles using AWG #26 • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 14.4K bps • RTS/CTS delay of 8.5, 50 milliseconds • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local and remote loopbacks • internal CCITT 511 test pattern generator and receiver for system testing.

Cost/Service • standalone: $895 single-unit purchase price.

☐ Timeplex A2400 Advanced Intelligent Modem (AIM)

Compatibility • CCITT V.26.

Application • point-to-point operation over a 4-wire dedicated unconditioned Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates 2400/1200 bps • RTS/CTS delay of 0, 8.3, 15, 30 milliseconds • DPSK modulation • RS-232C interface.

Features/Options • asynchronous to synchronous converter with RS-232C • optional Series 2400 Modem/Series II Microplexer combination • optional RS-449/MIL-188/-114 interface • ARQ.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • visual indicators for ready; request and clear to send; send or receive; off-hook; carrier detect; ring; power on; test.

Cost/Service • standalone: $1,050 single-unit purchase price • rackmount: $900 single-unit purchase price.

☐ Timeplex A4800 Advanced Intelligent Modem (AIM)

Compatibility • CCITT V.27.

Application • same as A2400 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates 4800/2400 bps • RTS/CTS delay of 0, 15, 50, 708 milliseconds • DPSK modulation • RS-232C interface.

Features/Options • two-channel TDM multiplexer; asynchronous to synchronous converter with RS-232C • optional RS-449/MIL-188/-114 interface • ARQ.

Diagnostics/Indicators • same as A2400 • see above.

Cost/Service • standalone: 1,850 single-unit purchase price • rackmount: $1,600 single-unit purchase price.

☐ Timeplex A9600 Advanced Intelligent Modem (AIM)

Compatibility • CCITT V.29.

Application • same as A2400 • see above.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • RTS/CTS delay of 0, 15, 253 milliseconds • QAM modulation • RS-232C interface.

Features/Options • two- or four-channel TDM multiplexer • asynchronous to synchronous converter with RS-232C • optional RS-449/MIL-188/-114 interface • ARQ.

Diagnostics/Indicators • same as A2400 • see above.

Cost/Service • standalone: $2,000 single-unit purchase price • rackmount: $1,750 single-unit purchase price.

☐ Timeplex Modem 14.4 Advanced Intelligent Modem (AIM)

Compatibility • unspecified.

Application • point-to-point operation over D1 conditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 14.4K/9600/7200/4800 bps • QAM modulation; 1700 Hz carrier • adaptive equalization • RS-232C interface.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Features/Options • multiport option multiplexes 2, 3, 4, 5, or 6 data streams in various combinations of 2400, 4800, 7200, and 9600 bps for an aggregate 14.4K bps • optional eye pattern generator • optional MIL-188 interface.

Diagnostics/Indicators • same as A2400 • see above.

Cost/Service • standalone: $7,500 single-unit purchase price • quantity discounts available.

☐ Timeplex V.29 Plus Multiport Modem

Compatibility • CCITT V.29.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps • QAM modulation • RS-232C interface.

Features/Options • 4-channel TDM multiplexer accepts input from up to 4 channels with aggregate speeds up to 9600 bps ; flexible speed configurations include selections with 1200 bps channel• front-panel channel activity display • user-selectable fallback speeds up to 39 configurations.

Diagnostics/Indicators • same as A2400 • see above.

Cost/Service • standalone: $3,675 single-unit purchase price • rackmount: $3,175 single-unit purchase price.

■ TRI-COMMUNICATIONS INDUSTRIES, INC

69 Jefferson Street, Stamford, CT 06902; 203-348-8033 • Canadian Distribution: none.

☐ Tri-Communications MEM-1/MEM-2 Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire private cable; at distances up to 200 feet (MEM-1) or 1,000 feet (MEM-2).

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 19.2K bps • RS-232C (MEM-1); CCITT V.35 (MEM-2) interface.

Features/Options • eliminates back-to-back modems.

Diagnostics/Indicators • data activity indicator.

Cost/Service • standalone: $305/$595 single-unit purchase price • rackmount: prices available on request available • factory service.

☐ Tri-Communications ALD-I/ALD-II Asynchronous Line Driver

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 3 miles.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 56K bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • manual local digital and analog loopbacks (ALD-II); clear to send and carrier detect indicators (both models).

Cost/Service • standalone: $135/$165 single-unit purchase price • rackmount: prices available on request • factory service.

☐ Tri-Communications ASCI-I

Compatibility • unspecified.

Application • asynchronous communication through a synchronous modem.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local loopbacks, overflow indicator.

Cost/Service • standalone: $315 single-unit purchase price • factory service.

☐ Tri-Communications ALD-III

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 5 miles.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • DC continuity not required; power derived from terminal.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $99 single-unit purchase price • factory service.

☐ Tri-Communications ALD-IV

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 5 miles.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • manual local digital and analog loopback • SD, RD, CTS, CF indicators.

Cost/Service • standalone: $185 single-unit purchase price • factory service.

☐ Tri-Communications SLD-II

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire unloaded metallic circuit; at distances up to 8 miles.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 19.K bps • RS-232C interface.

Features/Options • DC continuity not required.

Diagnostics/Indicators • manual local digital and analog loopback; automatic remote digital loopback • RD, SD, CTS, CF, local test indicators.

Cost/Service • standalone: $495 single-unit purchase price • factory service.

☐ Tri-Communications MSU-I

Compatibility • unspecified.

Application • modem sharing unit for up to 4 terminals.

Packaging • standalone.

Operating Parameters • full-duplex communications for up to 4 terminals with a local modem • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • manual disable each port RTS/CTS indicators each port, RD, SD, RTS, CTS, DSR, CF, RC, SC indicators modem interface.

Cost/Service • standalone: $895 single-unit purchase price • factory service.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

☐ Tri-Communications MSU-II

Compatibility • unspecified.

Application • modem sharing unit for up to 8 terminals.

Packaging • standalone.

Operating Parameters • full-duplex communications for up to 8 terminals with local modem • RS-232C interface.

Features/Options • anti-streaming.

Diagnostics/Indicators • RTS/CTS indicators each port, RD, SD, RTS, CTS, DSR, CF, RC, SC indicators modem interface.

Cost/Service • standalone: $895 single-unit purchase price • factory service.

■ TUCK ELECTRONICS

3654 Industrial Park Road, Camp Hill, PA 17011; 717-761-4354 • Canadian Distribution: Mart-Mache Sales & Marketing Ltd, 34 Deerbrook Trail, Scarborough, ON N1W 1V4; 416-362-2451.

☐ Tuck Model 1530

Compatibility • AT&T 103A/113B modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 11 units per enclosure.

Operating Parameters • full-duplex; a synchronous at data rates up to 300 bps • originate and answer modes • FSK modulation • RS-232C interface.

Features/Options • optional auto-call interface • optional auto-answer.

Diagnostics/Indicators • local digital loopback • visual indicators for interface signal status.

Cost/Service • contact vendor rackmount • 90-day warranty • factory service.

☐ Tuck Models 1540 & 1542

Compatibility • AT&T 103A/E and 113B modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over a 2-wire dedicated Type 3002 voice channel. distances up to miles.

Packaging • standalone or IBM 2741/Teletype mount; Model 1542 originate mode PC board with TTL interface for DEC LA-36/-37 or equivalent.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 300 bps • originate-only mode or answer-only mode • FSK modulation • RS-232C interface.

Features/Options • 1542 for use with DECwriter LA-35/-37.

Diagnostics/Indicators • front-panel indicators.

Cost/Service • contact vendor • 90-day warranty • factory service.

☐ Tuck 1600 Series Acoustic & Dedicated Modems

Compatibility • AT&T 202C/D/R/S/T modems.

Application • DDD network via acoustic coupling (1651) point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel (1530/1636/1640/1650/1651/1652/1653).

Packaging • standalone (1650/1652/1651/1652/1653) or rackmount (1630/1631); up to 11 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps (all models); or 1800 bps (1631/1652) • RTS/CTS delay of 50 or 200 milliseconds (1630/1631); 30, 60, 200 millisecond (all other models) • FSK modulation • RS-232C interface.

Features/Options • not available.

Diagnostics/Indicators • local digital and analog loopback (1653); local digital loopback (1630/1631/1650/1652/) • visual indicators for interface status.

Cost/Service • contact vendor price • 90-day warranty • factory service.

☐ Tuck Models 1610 & 1611 Data Sets

Compatibility • AT&T 202C/D/R/S/T modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone or rackmount; up to 11 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • originate/answer modes • RTS/CTS delay of 50 or 200 milliseconds • FSK modulation • RS-232C interface.

Features/Options • alternate voice/data • 5 bps reverse channel • auto-call interface • optional auto-answer.

Diagnostics/Indicators • local digital and analog loopback (1611); remote digital loopback • visual indicators for test mode and interface signal status.

Cost/Service • contact vendor • 90-day warranty • factory service.

☐ Tuck Model 1655A Dedicated Line Modem

Compatibility • AT&T 202T modem.

Application • point-to-point or multipoint operation over a 4-wire dedicated Type 3002 voice channel.

Packaging • P.C. card.

Operating Parameters • full-duplex; asynchronous at data rates at 1200 bps • RTS/CTS delay of 2, 30 milliseconds • Rs-232C/TTL interface.

Features/Options • one-to-one or polling environments.

Diagnostics/Indicators • full LED readout.

Cost/Service • contact vendor • 90-day warranty • factory service.

☐ Tuck Model 1800 Series Data Sets

Compatibility • AT&T 100 Series modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone (1822/1823/1830/1840/1842/1844/1850/1852) or rackmount (1824/1825/1826/1831/1841/1843/1845/1851/1853/3390); up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • FSK modulation (1840/1845/1853/3390) • RS-232C interface.

Features/Options • replacement for AT&T 403/407 data sets.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback • status indicators.

Cost/Service • contact vendor • 90-day warranty • factory service.

☐ Tuck 2120 Series Short Haul Modems

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 9 miles.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • baseband modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local digital and analog loopback • visual indicators for interface signal status.

Cost/Service • contact vendor • 90-day warranty • factory

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

service.

☐ Tuck Models 2140/2141

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 3 miles.

Packaging • standalone or rackmount.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 9600 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • local loopback testing.

Cost/Service • contact vendor • 90-day warranty • factory service.

■ UNIVERSAL DATA SYSTEMS

5000 Bradford Drive, Huntsville, AL 35805-1953; 205-837-8100 • Canadian Distribution: Universal Data Systems 200 Consumer Road, Suite 200, Willowdale, ON M2J 4R4; 416-495-0008.

☐ UDS 108

Compatibility • AT&T 103 modem.

Application • point-to-point or multipoint operation over an unconditioned 2-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • full-duplex; asynchronous at data rates up to 300 bps • FSK modulation • compromise statistical equalization • RS-232C interface.

Features/Options • alternate voice/data.

Diagnostics/Indicators • self-test; local digital and analog loopback • status indicators.

Cost/Service • standalone: $295 single-unit purchase price • rackmount: $195 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 201B/C

Compatibility • AT&T 201B/C modems.

Application • DDD network via direct connection; FCC certified (201C); or via DAA (201B) • point-to-point operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates at 2400 bps • answer-only mode • RTS/CTS delay of 9, 25, 150 milliseconds • DPSK modulation; 1800 Hz carrier • RS-232C interface.

Features/Options • alternate voice/data; auto-answer; antistreaming; mini box packaging • optional auto-call interface for 201C.

Diagnostics/Indicators • same as 108 • see above.

Cost/Service • standalone: $685 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202 LP

Compatibility • AT&T 202 modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-duplex; asynchronous at data rates up to 1200 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • alternate voice/data • powered from telephone line.

Diagnostics/Indicators • front-panel LED for data on.

Cost/Service • standalone: $195 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202S

Compatibility • AT&T 202 modem.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1200 bps • answer-only mode • RTS/CTS delay of 8.3, 33.2, 59.9, 219.6 milliseconds • FSK modulation • RS-232C interface.

Features/Options • alternate voice/data; auto-call interface; auto-answer • satellite option.

Diagnostics/Indicators • local/remote self-test; local analog loopback • status indicators.

Cost/Service • standalone: $475 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202S/D

Compatibility • AT&T 202S modem.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-duplex; asynchronous/synchronous at data rates up to 1200 bps • automatic/manual originate/answer modes • RTS/CTS delay of 200 milliseconds • FSK modulation • RS-232C interface.

Features/Options • automatic dial/answer; keyboard dial or from stored in memory, up to 30-digits; pulse/tone dial.

Diagnostics/Indicators • analog loopback • status indicators.

Cost/Service • standalone: $495 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202S LP

Compatibility • same as 202 LP • see above.

Application • same as 202 LP • see above.

Packaging • same as 202 LP • see above.

Operating Parameters • half-duplex; asynchronous at data rates up to 1200 bps • automatic/manual answer mode • FSK modulation • RS-232C interface.

Features/Options • same as 202 LP • see above.

Diagnostics/Indicators • same as 202 LP • see above.

Cost/Service • standalone: $195 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202 S/SS

Compatibility • AT&T 202 Series modems.

Application • DDD network via direct connection; FCC certified • point-to-point or multipoint operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 1200 bps • FSK modulation • compromise equalization • RS-232C interface.

Features/Options • alternate voice/data; automatic answer; internal clock • satellite option.

Diagnostics/Indicators • self-test; local analog loopback • status indicators.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Cost/Service • standalone: $550 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202 S/5

Compatibility • AT&T 202 modem.

Application • same as 202 S/SS • see above.

Packaging • standalone.

Operating Parameters • same as 202 S/SS • see above.

Features/Options • 5 bps reverse channel; alternate voice/data; automatic answer; internal clock.

Diagnostics/Indicators • remote self-test; local analog loopback • status indicators.

Cost/Service • standalone: $550 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 202 S/150

Compatibility • AT&T 202 modem.

Application • same as 202 S/SS • see above.

Packaging • standalone.

Operating Parameters • same as 202 S/SS • see above.

Features/Options • 150 bps secondary channel; alternate voice/data; automatic answer; internal clock.

Diagnostics/Indicators • same as 202 S/5 • see above.

Cost/Service • standalone: $620 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 208A/B

Compatibility • AT&T 208A/B modems.

Application • same as 202 S/SS • see above.

Packaging • standalone or rackmount; up to 8 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates at 4800 bps • RTS/CTS delay of 8.5, 50, 150 milliseconds • 8-phase DPSK modulation 1800 Hz carrier • automatic adaptive equalization • RS-232C interface.

Features/Options • alternate voice/data; auto-answer; anti-streaming.

Diagnostics/Indicators • self-test local and remote digital and analog loopback • visual indicators for error condition and interface signal status.

Cost/Service • standalone: $1,450 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 9600

Compatibility • CCITT V.29.

Application • point-to-point or multipoint operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates at 9600/7200/4800 bps; rear-panel fallback switch • RTS/CTS delay of 100 milliseconds • QAM modulation; 8-phase 4 amplitude per CCITT V.29 • RS-232C interface.

Features/Options • alternate voice/data; LSI and microprocessor design.

Diagnostics/Indicators • local digital and analog loopback; remote digital loopback.

Cost/Service • standalone: $650 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 9600 A/B

Compatibility • CCITT V.29.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • half-/full-duplex (DDD network half-duplex only); synchronous at data rates of 9600/7200/4800 bps; rear-panel fallback rate switch • CTS delay of 30, 50, 150 milliseconds, 2-wire mode • QAM modulation; 8-phase, 4 amplitude per CCITT V.29 • RS-232C interface.

Features/Options • alternate voice/data; anti-streaming; automatic answer • 9600 bps over dial-up lines.

Diagnostics/Indicators • same as 108 • see above.

Cost/Service • standalone: $1,995 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 9600 FP

Compatibility • CCITT V.29.

Application • same as 9600 • see above.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 9600/7200/4800 bps; rear-panel fallback switch • RTS/CTS delay of 8 milliseconds • QAM modulation; 8-phase 4 amplitude per CCITT V.29 • automatic adaptive equalization • RS-232C interface.

Features/Options • train on data; mixed rate network operation; anti-streaming; LSI and microprocessor design.

Diagnostics/Indicators • same as 9600 • see above.

Cost/Service • standalone: $1,995 single-unit purchase price • 1-year warranty • factory service.

☐ UDS 14.4 Trellis Modem

Compatibility • unspecified.

Application • point-to-point operation over an unconditioned 4-wire dedicated Type 3002 voice channel.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates of 14.4K/12K/9600 bps • CTS delay of 2 milliseconds • double sideband, quadrature carrier trellis coded modulation • automatic adaptive equalization • RS-232C interface.

Features/Options • multiple data rates; microprocessor design.

Diagnostics/Indicators • digital and analog loopback; remote activated digital and analog loopback • status indicators • generation checking.

Cost/Service • standalone: $3,950 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ UDS LDM A/S 9.6 Limited-Distance Modem

Compatibility • unspecified.

Application • point-to-point operation over unloaded 2- or 4-wire metallic circuit; at distances up to 20,000 feet using AWG #19 or 13,000 feet using AWG #26 at 9600 bps • complies with AT&T Publication 43401.

Packaging • standalone.

Operating Parameters • simplex, half-/full-duplex; asynchronous/synchronous at data rates up to 9600 bps • RTS/CTS delay of 0, 8, 50 milliseconds • RS-232C interface.

Features/Options • optional transmit/receive clock.

Diagnostics/Indicators • digital loopback • status indicators.

Cost/Service • standalone: $425 single-unit purchase price • 1-year warranty • factory service.

☐ UDS LD A/19.2 Line Driver

Compatibility • unspecified.

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 5 miles at 2400 bps or 0.5 miles at 19.2K bps.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RS-232C interface.

Features/Options • plugs directly into DTE; compact packaging.

Diagnostics/Indicators • none supported.

Cost/Service • standalone: $365 single-unit purchase price • 1-year warranty • factory service.

☐ UDS DDS-56

Compatibility • unspecified.

Application • direct connection from the user's premises to the DDS.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/4800/2400 bps • CCITT V.35 interface.

Features/Options • none supported.

Diagnostics/Indicators • self-test; local line loopback; remote terminal loopback.

Cost/Service • contact vendor.

☐ UDS DDS 9.6

Compatibility • unspecified.

Application • same as DDS-56 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates of 9600/4800/2400 bps • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • same as DDS-56 • see above.

Cost/Service • contact vendor.

☐ **Personal Computer Modems** • 103 LP, 103J LP, 212A, 212AD, 212LP, FasTalk 300, FasTalk 1200, FasTalk 1200 PC.

■ VEN-TEL, INC

2342 Walsh Avenue, Santa Clara, CA 95091; 408-727-5721 • Canadian Distribution: Electronetic Systems, 785 Arrow Road, Weston, ON M9M 2L4; 416-745-2999.

☐ Ven-Tel MD201-1/2

Compatibility • AT&T 201A/B/C modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates at 2400 bps • originate/answer modes • PSK modulation • RS-232C interface.

Features/Options • manual dial via ordinary single line telephone; automatic/manual answer.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • front-panel LEDs for monitoring, test mode, error condition, interface signal status.

Cost/Service • standalone: $800 single-unit purchase price • rackmount: $730 single-unit purchase price • quantity discounts available • 1-year warranty • factory service on an immediate replacement basis.

☐ Ven-Tel MD201-3/4

Compatibility • AT&T 201 modem.

Application • point-to-point operation over a 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates of 2400 bps • RS-232C interface.

Features/Options • LSI design.

Diagnostics/Indicators • same as MD201-1/2 • see above.

Cost/Service • standalone: $350 single-unit purchase price • rackmount: $280 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Ven-Tel MD202-1/2

Compatibility • AT&T 202S/T modems.

Application • DDD network via direct connection; FCC certified • point-to-point operation over an unconditioned 2- or 4-wire dedicated Type 3002 voice channel.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 1800 bps • originate/answer modes • FSK modulation • RS-232C interface.

Features/Options • LSI design.

Diagnostics/Indicators • same as MD 201-1/2 • see above.

Cost/Service • standalone: $380 single-unit purchase price • rackmount: $310 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Ven-Tel ALD-1EC

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire metallic circuit; at distances up to 20 miles using AWG #22.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-duplex; asynchronous at data rates up to 9600 bps • RTS/CTS delay of 2, 9, 40 milliseconds • polar Rz modulation • RS-232C interface.

Features/Options • LSI design.

Diagnostics/Indicators • same as MD 201-1/2 • see above.

Cost/Service • standalone: $275 to $320 single-unit purchase price • rackmount: $205 to $250 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Ven-Tel-1EC

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 4-wire metallic circuit; at distances up to 20 miles using AWG #22.

Packaging • standalone or rackmount; up to 16 units per enclosure.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • RTS/CTS delay of 0 milliseconds • phase-encoded pulse modulation • RS-232C interface.

Features/Options • LSI design.

Diagnostics/Indicators • same as MD201-1/2 • see above.

Cost/Service • standalone: $450 single-unit purchase price • rackmount: $380 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ **Personal Computer Modems** • AC103-1; AC103-3; MD 103-2; MD212; MD212 Plus; PC Modem Plus 300.

■ VERSITRON, INC

6310 Chillum Place, NW, Washington, DC 20011; 202-882-8464

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

• Canadian Distribution: Tempa Security Integrators (TSI), 1750 Court Wood-CR, Ottawa, ON, K2C 2B5; 613-226-3227.

☐ Versitron Nodem I Modem Eliminator

Compatibility • unspecified.

Application • point-to-point operation over a 4-wire cable between systems located up to 3 miles apart.

Packaging • standalone.

Operating Parameters • full-duplex; asynchronous at data rates up to 19.2K bps • RTS/CTS delay of 0, 8, 50, 150 milliseconds • RS-232C interface.

Features/Options • eliminates back-to-back modems.

Diagnostics/Indicators • local digital and analog loopback • status indicators.

Cost/Service • standalone: $500 single-unit purchase price • quantity discounts available • 1-year warranty • factory service.

☐ Versitron FOM 9207 Fiber Optic Modem

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable; at distances up to 2 kilometers.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 76.8K bps • RS-232C/MIL-188C interface.

Features/Options • transmit/receive clocks; appears fully transparent in both directions.

Diagnostics/Indicators • status indicators.

Cost/Service • contact vendor.

☐ Versitron FOM 9208 Fiber Optic Modem

Compatibility • unspecified.

Application • same as FOM 9207 • see above.

Packaging • standalone or rackmount; up to 10 units per enclosure.

Operating Parameters • full-duplex; asynchronous/synchronous at data rates up to 76.8K bps • RS-449/MIL-188C interface.

Features/Options • same as FOM 9207 • see above.

Diagnostics/Indicators • same as FOM 9207 • see above.

Cost/Service • contact vendor.

☐ Versitron 907 Series Fiber Optic Link

Compatibility • unspecified.

Application • point-to-point operation over a fiber optic cable; at distances up to 2 kilometers.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; isochronous; asynchronous/synchronous at data rates up to 38.4K bps • RS-232C/MIL-188C interface.

Features/Options • external/internal clock.

Diagnostics/Indicators • passes 4 EIA control signals over the main link; DSR/DTR, DCD alarm indicators.

Cost/Service • contact vendor.

☐ Versitron 908 Series Fiber Optic Links

Compatibility • unspecified.

Application • same as 907 Series • see above.

Packaging • standalone or rackmount.

Operating Parameters • full-duplex; synchronous at data rates up to 56K/64K bps • RS-449/MIL-188C interface.

Features/Options • same as 907 Series • see above.

Diagnostics/Indicators • same as 907 Series • see above.

Cost/Service • contact vendor.

■ WANG LABORATORIES, INC

One Industrial Avenue, Lowell, MA 01851; 617-459-5000 • Canadian Distribution: Wang Canada, 225 Duncan Mill Road, Don Mills, ON M3B 3K9; 416-449-2175.

☐ Wang WA3451

Compatibility • AT&T 103J/212A; Racal-Vadic VA3400 modems.

Application • DDD network via direct connection; FCC certified.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous/synchronous at data rates up to 1200 bps • originate/answer modes • FSK/PSK modulation • RS-232C interface.

Features/Options • unspecified.

Diagnostics/Indicators • self-test; local digital and analog loopback; remote digital loopback • visual indicators for interface signal status.

Cost/Service • standalone: $1,050 single-unit purchase price • quantity discounts available for 25 or more units • standard Wang warranty • factory; on-call service.

☐ Wang Fixed-Frequency Modem (FFM) 9600

Compatibility • unspecified.

Application • point-to-point or multipoint operation over a 2-way broadband coaxial cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates of 9600 bps; synchronous from 1200 to 9600 bps • RTS/CTS delay of 10 to 20 milliseconds, depending on data rate and operating mode • 2-level FSK modulation • RS-232C/CCITT V.28 interface.

Features/Options • switched/continuous carrier; 30 KHz channel separation; internal/external clock source.

Diagnostics/Indicators • local and remote loopback testing activated manually or from the DTE • 6 LED status indicators.

Cost/Service • standalone: $850 single-unit purchase price • standard Wang warranty • factory; on-call service.

☐ Wang Fixed-Frequency Modem (FFM) 64000

Compatibility • unspecified.

Application • same as FFM 9600 • see above.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data rates up to 64K bps; synchronous from 4800 to 64K bps • RTS/CTS delay of 1.4 to 3 milliseconds, depending on data rate and operating mode • 2-level FSK modulation • RS-449/CCITT V.35 interface.

Features/Options • switched/continuous carrier; 187.5KHz channel separation; internal/external clocking.

Diagnostics/Indicators • same as FFM 9600 • see above.

Cost/Service • standalone: $1,200 single-unit purchase price • standard Wang warranty • factory; on-call service.

☐ Wang Frequency-Agile Modem (FAM) 9600

Compatibility • unspecified.

Application • dial-up, point-to-point or multipoint operation over a 2-way broadband coaxial cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; asynchronous at data

Data Circuit Terminating Equipment (DCE) & Associated Devices

ACUs, CSUs, DSUs, MSUs, Acoustic Couplers, Short (LDMs)/Long-Haul Modems & Line Drivers/Modem Eliminators

rates up to 9600 bps; synchronous from 1200 to 9600 bps • FM modulation • RS-366/CCITTV.24/V.28 interface.

Features/Options • RS-366/CCITT V.35 interface supports DTE-initiated automatic dialing; supports Wang Switched Interconnect Band channel; includes the FAM keypad unit to manually initiate calls; responds to calls, and monitors call progress or status conditions; 20 KHz channel separation; audible speaker/monitor.

Diagnostics/Indicators • 6 LED status indicators.

Cost/Service • standalone: $1,250 single-unit purchase price • standard Wang warranty • factory; on-call service.

■ ZETA LABORATORIES INC

3265 Scott Blvd, Santa Clara, CA 95051; 408-727-6001 • Canadian Distribution: none.

☐ Zeta Model Z9

Compatibility • unspecified.

Application • point-to-point operation over a wideband cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 9600 bps • FSK modulation • RS-232C interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

☐ Zeta Model Z19

Compatibility • unspecified.

Application • point-to-point operation over a wideband cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 19.2K bps • DPSK modulation • no equalization • RS-232C interface.

Features/Options • optional alternate voice/data.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

☐ Zeta Model Z56

Compatibility • unspecified.

Application • point-to-point operation over a wideband cable.

Packaging • standalone.

Operating Parameters • half-/full-duplex; synchronous at data rates up to 56K bps • RS-232C/449 interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

☐ Zeta Model ZT1

Compatibility • unspecified.

Application • point-to-point operation over a wideband cable.

Packaging • standalone.

Operating Parameters • full-duplex; synchronous at data rates up to 1.544M bps • QAM modulation • compromise equalization • DS 1 terminal interface.

Features/Options • none supported.

Diagnostics/Indicators • none supported.

Cost/Service • contact vendor.

• END

Multiplexers

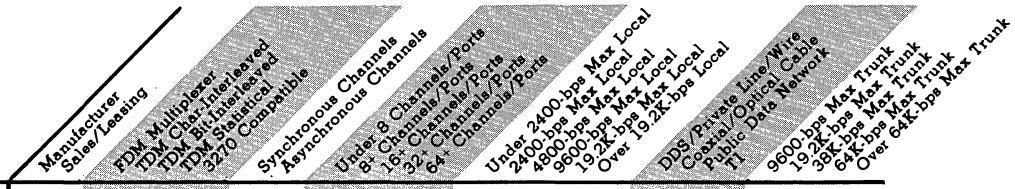
This Product Survey presents the salient characteristics of multiplexers marketed by manufacturers and sales/leasing firms for general-purpose data transmission applications, plus models designed specifically to multiplex data between IBM 3270 display terminals/printers and associated control units. The models presented in this survey utilize conventional voice-grade, wideband, DDC (Dataphone Digital Circuits), or T1 common carrier facilities, and private facilities provided by either the user or telephone company, which can include metallic circuits, coaxial cable, or the more recently introduced fiber optic cable. In addition, some models defined as PADs (Packet Assembler/Disassemblers) interface users to private or public X.25 data networks such as Tymnet or Telenet. Please refer to the **Modems & Multiplexers Technology Report** for a comprehensive tutorial on multiplexers; also refer to the **T1 Multiplexer Survey** for comprehensive details on models used with T1 (1.544M bps) transmission facilities. This edition of the Survey presents specifications on some **184 multiplexer models that are produced by 58 vendors.** In addition, the product lines of 23 dealers and distributors are listed and keyed to the originating vendor's models.

Listings in the Survey are arranged alphabetically by vendor name, and then by specific multiplexer model. Each model entry is further divided into seven logical categories that define multiplexer type and application, data channel parameters, composite link parameters, buffer parameters (STDM only), diagnostics capabilities and visual indicators, features and options, and pricing and service support. Specific topic areas within each section are further delineated with a solid dot (•). The Multiplexer Outline below serves as a quick reference guide to vendors whose product parameters match specific user requirements. The Multiplexer Outline parameters define the multiplexer type, the type, number, and maximum data rate of the local channels/ports, and the applicable transmission facility and maximum data rate of the composite network trunk/port.

MULTIPLEXER OUTLINE

COMPANY	Manufacturer Sales/Leasing	FDM Multiplexer	TDM Char-Interleaved	TDM Bit-Interleaved	TDM Statistical	3270 Compatible	Synchronous Channels	Asynchronous Channels	Under 8 Channels/Ports	8+ Channels/Ports	16+ Channels/Ports	32+ Channels/Ports	64+ Channels/Ports	Under 2400-bps Max Local	2400-bps Max Local	4800-bps Max Local	9600-bps Max Local	19.2K-bps Max Local	Over 19.2K-bps Local	DDS/Private Line/Wire	Coaxial/Optical Cable	Public Data Network	T1	9600-bps Max Trunk	19.2K-bps Max Trunk	38K-bps Max Trunk	64K-bps Max Trunk	Over 64K-bps Max Trunk
Amdahl Comm Sys Div	•			•			•				•								•				•					•
Applied Delta Systems		•																										
Ark Electronic Products	•		•					•			•			•						•								
Astrocom Corp	•					•	•	•			•								•									•
AT&T Information Systems	•				•		•	•			•								•						•			
Avanti Communications	•			•			•	•					•						•		•							•
Aydin Monitor Systems	•			•			•	•											•		•							•
Bayly	•			•			•	•					•						•				•					•
Belden Elec Wire & Cable	•			•			•	•			•							•			•							•
Buckeye Telephone & Supply		•																										
Canoga Data Systems	•			•			•	•				•	•						•		•							•
David Jamison Carlyle		•																										
C.G. Datacom		•																										
Centel Communications		•																										
Cermetek Microelectronics	•				•			•		•					•							•						
Chung Communications	•				•			•		•					•							•						
Coastcom	•			•			•	•			•								•				•					•
Codex Corp	•			•	•		•	•		•		•			•	•	•		•					•		•		•
Coherent Communications Sys	•		•		•			•			•		•	•	•				•									
Com Data Corp	•		•					•			•			•					•									

Multiplexers



COMPANY
Com Design, Inc
Complexx Systems
Compre Comm, Inc
Computer Associates
Continental Resources
Continental System Supply
Data Access Systems
Data-Control Systems
DataComm Mgmt Sciences
Datagram Corporation
Datalink Ready Inc
Dataproducts N.E.
Datatel, Inc
Datec Inc
Denco Data Equipment
Digital Comm Assoc
Digital Equip Corp (DEC)
Dynatech Packet Tech
EDA Instruments
Electronetic Systems Ltd
Electrorent Corp
Ethom Associates
Fibronics International
Friedman Associates
Gandalf Data
General DataComm Ind
GTE/Communications Sys
GTE/Telenet
Halcyon Communications
Infotron Systems
Int'l Business Machines
Leasametric
Lincoln Tel Svc & Supply
M/A Comm DCC Inc
Memotec
Micom Systems
MTI
Network Products
North Supply
Optelecom, Inc
Paradyne Corp
Phalo Corp
Prentice Corp
Racal-Milgo
Racal-Vadic
RFL Industries
Rixon, Inc
Rotelcom Supply Div
Scitec Corp
SJI Corporation

Multiplexers

COMPANY	Manufacturer Sales/Leasing	FDM Multiplexer	TDM Char-Interleaved	TDM Bit-Interleaved	TDM Statistical	3270 Compatible	Synchronous Channels	Asynchronous Channels	Under 8 Channels/Ports	8+ Channels/Ports	16+ Channels/Ports	32+ Channels/Ports	64+ Channels/Ports	Under 2400-bps Max Local	2400-bps Max Local	4800-bps Max Local	9600-bps Max Local	19.2K-bps Max Local	Over 19.2K-bps Local	DDS/Private Line/Wire	Coaxial/Optical Cable	Public Data Network	T1	9600-bps Max Trunk	19.2K-bps Max Trunk	38K-bps Max Trunk	64K-bps Max Trunk	Over 64K-bps Max Trunk
Solana Electronics	●		●			●		●								●				●								●
Southern Telephone Supply		●																										
Sterling Telecom		●																										
Symplex Communications Corp	●				●		●	●									●			●								●
Tellabs	●				●			●									●			●								●
Teltone	●			●				●				●						●		●								●
Timeplex	●		●		●		●	●			●	●			●	●			●	●			●	●			●	●
Ungermann Bass	●			●			●					●							●		●							●
Versitron	●			●			●	●			●							●		●	●							●

MULTIPLEXER FEATURES

TYPE/APPLICATION

This Features Section defines the multiplexing technique, composite link arrangement, link transmission technique, maximum composite, link rate, and transmission facility. Specific topic fields covered within the section include the following:

Multiplexer Type • defines the multiplexing technique as frequency division (FDM), time division (TDM), or statistical time division (STDM). Each technique combines data from multiple channels on the composit network link in a different manner to satisfy different needs.

FDM is the earliest and least sophisticated form of multiplexing. Applicable to low-speed telegraph and data transmissions as well as voice, FDM divides the bandwidth of a voiceband line into multiple frequency bands or derived chanels. A narrow band of frequencies called a guard band is required to separate adjacent channels to prevent signal interference between channels. Data transmission is FSK (frequency shift keyed) modulated. FSK employs a pair of frequencies (mark and space tones) to correspond to a binary "one" and binary "zero." The sending and receiving multiplexer channels can use the same set of frequencies for full-duplex operation over 4-wire lines. Full-duplex operation on 2-wire lines requires a different pair of frequencies for sending and receiving.

The maximum number of channels that can be supported on a voice-grade channel using the FDM technique is limited by the data rate of each channel. Bandwidth is proportional to data rate; higher data rates require greater bandwidth, reducing the available bandwidth for additional channels. The guard bands between channels further reduce the available bandwidth. The FDM technique is, therefore, a practical solution to combining transmissions from low-speed devices such as teleprinters that do not exceed 1200 bps.

The FDM technique offers several advantages. No modem is required for the composite link since the multiplexer composite output consists of modulated analog signals, not digital bit streams such as with TDMs and STDMs. Full-duplex operation can be achieved on a 2-wire line, although only half the bandwidth of a 4-wire line is available. Individual channels can be dropped at remote sites to support a single device. Voice and data can be mixed, and the FDM technique is the most economical due to its lack of sophistication.

The TDM technique sequentially scans all channels; each is sampled for a fixed time interval. The sampling result is assembled into a frame with time slots equivalent to the per-channel sampling time. The frame, equivalent to a complete scan of all channels, is transmitted over the composite link as it is assembled, and the cycle is repeated.

The TDM multiplexing process is reversed when a frame is received from the composite link. Demultiplexing extracts data from the frame and distributes it to the individual channels. The process by which one unit of data is extracted from each channel to complete a frame is called interleaving. Conventional TDMs interleave data on a character (byte) or bit basis. Each frame is composed of a character or bit from each of the scanned channels. Bit interleaving is advantageous to synchronous transmission and is less expensive. Transmission delay through the multiplexer is substantially reduced since each bit is transmitted as it is received from the channel, and synchronization is faster. Character interleaving is advantageous to asynchronous transmission. A full character including start and stop bits is assembled in a buffer, and its start and stop bits are stripped for transmission efficiency. The demultiplexing process reinserts the start/stop bits. Character interleaving is somewhat more expensive and increases transmission delay through the multiplexer.

The STDM multiplexer eliminates the intrinsic limitation of the TDM technique (i.e., the transmission of empty time slots as a result of inactive channels). The statistical multiplexer dynamically allocates time slots only to active channels to most effectively utilize the composite link. According to statistics, not all channels are active simultaneously. In many cases, only a few channels are active at any given time. The statistical multiplexer can, therefore, accommodate many more channels than can be effectively handled by a conventional TDM. The STDM buffers its channels to prevent the loss of data should more channels become active than the device can handle, and also to provide error recovery should an error occur during frame transmission over the composite link. Each transmitted frame remains buffered until the remote multiplexer acknowledges that the received frame is error free; if not, the frame is retransmitted in reponse to a negative acknowledgement.

Communication Arrangement • the composite link communications path is specified as point-to-point, multipoint, or multidrop. Point-to-point, the simplest arrangement, is defined as a communications path between two points. Multipoint communications is defined as non-concurrent communications between any two of three or more points on a single communications link. Multidrop is synonomous with multipoint, however, this survey report uses the term "multidrop" to specify single-channel drops or termination points on an FDM composite link.

Multilink communications is defined as point-to-point communications between a multiplexer and two or more multiplexers in a multinode network. Each link is a composite path between two multiplexers.

Transmission Facility • the facility or medium employed by the multiplexer as a composite communications link is specified as a dedicated Type 3002 voice channel, wideband channel, AT&T

Multiplexers

Dataphone Digital Circuit (DDC), TI carrier facility, coaxial line, fiber optic cable, or metallic circuit.

Dedicated Type 3002 Voice Channel • the AT&T tariff classification for a leased 2- or 4-wire private line that supports point-to-point or multipoint, half- or full-duplex communications. The bandwidth or signal handling capacity of a voiceband line is 3000 Hz which supports data rates up to 9600 bps using current modem technology. A few leading manufacturers of high-speed modems have extended the data rate limit over a voiceband channel to 14.4K bps, and at least one has pushed it to 19.2K bps.

Line Conditioning • a service provided by the telephone company to improve the quality (electrical characteristics) of leased voiceband lines. Conditioning improves the frequency response and signal-to-noise ratio of a line to accommodate high-speed transmission, and is required by some modems to provide error free performance without signal degradation. The telephone company offers five standard conditioning levels from minimum to maximum—C1, C2, C4, D1, and D2. Conditioning is not available for the DDD network.

Wideband Channel • an analog transmission facility that supports data rates in excess of 19.2K bps and is available from AT&T as Series 8000 Wideband Service. The point-to-point service has a 48K Hz bandwidth equivalent to 12 voice channels, and is offered at 19.2K bps, 40.8K bps, and 50K bps. Wideband facilities are also available from independent carriers.

ACCUNET Digital Services • digital transmission facilities provided by AT&T Communications, known under different labels prior to divestiture • **Accunet Reserved 1.5 or 3.0** (formerly High-Speed Switched Digital Service), are part-time, leased two-way digital services composed of hybrid terrestrial and satellite circuits with a bandwidth of 1.5 MHz and 3.0 MHz, respectively • **Accunet T1.5** (formerly High-Capacity Terrestrial Digital Service, or just T1) is a full-time digital carrier PCM system with a bandwidth of 1.5 MHz, equivalent to 24 48 KHz voice channels and supporting data rates up to 1.544M bps • **Dataphone Digital Circuit**, or DDC (formerly Dataphone Digital Service, or DDS) is a leased-line data service allowing transmission speeds at 2400, 4800, 9600, and 56K bps. A Data Service Unit (DSU) connects the data terminal equipment to the DD network in place of a modem. Introduced in 1974, the service is gaining in popularity and breadth of service with a total of 10 U.S. cities providing DDC access • **Accunet Packet Service** (formerly BPSS) is an X.25 data network that switches packets of data at 9600 or 56K bps.

Coaxial Cable • consists of an inner metallic conductor surrounded by an insulating material and a metallic shield. It supports higher transmission rates than does twisted wire cable and eliminates crosstalk or signal interference from adjacent circuits, a problem with twisted wire pairs. Typically installed in the user premise to support local data distribution.

Metallic Circuits • a term applied to private lines installed on the user premises or supplied by the telephone company for local data distribution over a limited distance. Modems designed for use over metallic circuits are called short haul or limited distance modems. The transmission distance typically ranges up to 30 miles, but is limited by transmission speed and wire size of the conductors in the twisted pair. Distance increases with increased conductor diameters and decreases with increased transmission rates. Wire size (conductor diameter) is specified by American Wire Gauge (AWG) numbers. Conductor diameter diminishes as the numbers become larger. Typical wire size of metallic circuits ranges from AWG #19 through #26. AT&T has established specifications for modem transmission over private line metallic circuits under AT&T Technical Reference Publication 43401.

Fiber Optic Cable • a cable containing fiberglass tubes that act as light guides for the transmission of light between source and destination equipment. The cable is required by modems designed for optical communications. Typically used for local data distribution, fiber optic transmission is a viable alternative to transmission over metallic circuits.

CHANNELS

This Features Section specifies the multiplexer's channel configuration, operating parameters, and electrical channel interface. The section defines synchronization transmission mode, bandsplitting, and electrical interface under the following topic fields:

Channel Configuration • specifies the minimum and maximum number of channels the multiplexer accommodates and the increment by which channels can be added. Multiplexers are available as either a fixed-configuration package that contains all channel adapters and link modules, or as separate components that include a base unit, separate channel adapters and link modules, and expansion units. The base unit is a card frame that contains power supply and control logic and accommodates channel adapters and link modules. Channel adapters provide the electrical interface for connection to data terminal equipment (DTE) or data circuit terminating equipment (DCE), and are available with one, two, or more channel ports. A link module provides the connection between a multiplexer and a composite link; one is required for each link. An expansion unit is a card frame similar to the base unit, and is used to accommodate additional channel adapters and link modules. One or more expansion units may be required to accommodate the full complement of channel adapters and link modules supported by a multiplexer.

Multiplexers that accommodate both synchronous and asynchronous channels may allow any mix of both types of channel adapters, or may accommodate mixing according to specific configuration rules.

Bandsplitter • multiplexes one or more synchronous channels with the multiplexer composite output via the TDM technique. Bandsplitter channels are allocated a portion of the composite link bandwidth and usually accommodate selectable data rates of 0.25, 0.50, or 0.75 times that of the composite link data rate. The feature eliminates transmission delay through the STDM but limits the throughput of STDM channels.

Transmission Mode • the direction that data is transmitted over a communications link is defined as simplex, half-duplex, or full-duplex.

Simplex • defines one-way transmission between two points.

Half-Duplex • defines two-way transmission between two points, but in only one direction at a time.

Full-Duplex • defines two-way simultaneous transmission between two points. Full-duplex transmission generally requires a 4-wire communications path, unless a split-frequency modem such as AT&T 103 and 113 series modems is used; this transmission technique supports full-duplex operation at data rates up to 1200 bps over a 2-wire line such as the DDD network.

Synchronization • data is transmitted asynchronously or synchronously.

Asynchronous Transmission • also referred to as start-stop transmission; frames each transmitted character with a start bit and one or two stop bits. The interval between successive characters can vary in time without effecting the transmission, but the interval between successive bits within a character must be identical. Synchronization between transmitting and receiving devices is achieved on a character-by-character basis by each character's start and stop bits, which define the beginning and end of data.

Asynchronous data characters each contain 5, 6, 7, or 8 data bits depending on transmission code—Baudot, BCD, ASCII, or EBCDIC. Asynchronous channel adapters are usually designed to handle characters with 5 through 8 data bits; some only accommodate 7- or 8-bit characters. Still others are totally code transparent, which means any number of data bits per character is acceptable.

The number of stop bits per asynchronous character is also usually transparent to a channel adapter, although some multiplexer channel adapters restrict the number of stop bits a character can contain.

Parity is selectable as odd, even, or no parity, or as a mark or space on most vendors' channel adapters. Several channel adapters are totally parity transparent, which means the parity bit position is ignored.

Synchronous Transmission • transmits data in a continuous

Multiplexers

stream; the time interval between successive bits within a character and successive characters is constant. Synchronization between transmitting and receiving devices is achieved through synchronization bits or characters at the beginning of each transmission.

Electrical Interface • the connection between data terminal equipment (DTE) and data circuit terminating equipment (DCE) (i.e., the modem or multiplexer). The interface passes digital data and control signals between the devices, but can differ electrically depending on the application. Multiplexers are available with the following electrical interfaces: EIA Standard RS-232C, EIA Standard RS-449, CCITT Recommendation V.24, MIL STD 188C, or current loop.

EIA Standard RS-232C • the most common electrical interface standard used throughout the industry; however, **exact conformation** to the standard is **typically not followed** by vendors because most vendor products use only the connections necessary for operation and because some connections are used for functions that differ among vendor products. The RS-232C interface supports transmission at data rates up to 20K bps at distances up to 50 feet between DTE and DCE; a 25-pin connector is used to connect DTE to DCE. The interface is designed around EIA standard **RS-423** an unbalanced voltage digital interface circuit.

EIA Standard RS-449 • an improved interface standard that supercedes the EIA Standard RS-232C. The RS-449 Standards is compatible with RS-232C, but supports higher data rates at greater distances. The RS-449 interface supports transmission at data rates up to 2M bps at distances up to 200 feet between DTE and DCE; separate 37-pin and 9-pin connectors are used to cable-connect DTE to DCE. The additional connections provided by RS-449 implement more control functions. The improved operating parameters of EIA Standard RS-449 are the result of improved circuit interface standard **RS-422**; a balanced voltage digital interface circuit, RS-449 also supports the optional use of the unbalanced interface circuit standard, RS-423 at data rates of 20K bps and below in place of RS-422.

CCITT Recommendation V.24 • an international interface specification established by CCITT international standards committee. The specification is closely compatible with the EIA Standard RS-232C.

CCITT Recommendation V.28 • electrical characteristics for unbalanced double-current interchange circuits operating at data rates below the limit of 20K bps.

CCITT Recommendation V.35 • an international interface specification established by CCITT for data transmission rates above 20K bps, specifically 48K bps; for wideband modems.

MIL STD 188C • an electrical interface standard for military equipment.

Current Loop • an electrical interface that employs telegraph technology. Data is transferred in the form of current pulses at rates up to 150 bps. Two signaling standards exist: neutral or unipolar in which signaling is performed by switching DC current on or off; and polar or bipolar in which signaling is performed by positive or negative DC current pulses. Signal current standards are 20 or 60 milliamperes. Current transmission has been traditionally used for message communications via teletypewriters such as those produced by Teletype.

AT&T 301/303 • a wideband electrical interface compatible with AT&T 300 series modems.

COMPOSITE LINK

This Features Section specifies the parameters of the composite network link (i.e., the high-speed side of the multiplexer). It is not applicable to FDM multiplexers because the link side of an FDM is an analog signal comparable to a modem.

Composite Link • specifies the number of composite links supported by the multiplexer. Multilink models support multinode networks. Each link communicates with a discrete network node.

Synchronization • specifies asynchronous or synchronous transmission over the composite link. Most multiplexers support synchronous transmission for communications efficiency. Some support asynchronous transmission for reduced cost or to satisfy specific user needs. The terms asynchronous and synchronous are defined under the section CHANNELS.

Link Protocol • specifies the communications protocol used by a statistical multiplexer for communications over a composite link. Includes SDLC, modified SDLC, modified HDLC, CCITT X.25 Level I, II, or III, etc. Some vendors of statistical multiplexers use a unique protocol proprietary to the vendor. The main advantage of link protocol is that it supports error detection and correction procedures between multiplexers. It also provides compatibility with other communication environments such as IBM SDLC and X.25-compatible packet switching.

Error Detection & Correction • specifies the method by which a statistical multiplexer detects and corrects transmission errors on the composite link. Most use CRC 16 cyclic redundancy checking to maintain data transmission integrity, and ARQ (Automatic Retransmission Request) procedure to initiate retransmission of the block received in error. The CRC 16 error detection technique employs a 17-bit polynomial to calculate CRC characters from the transmitted data; the CRC characters are appended to the transmission and compared with recalculated CRC characters at the receiving end to detect an error. The CRC 16 checking method reduces the undetected error rate to one in 10 trillion bits and is considered to be one of the best techniques for error detection.

Frame sequencing detects duplicate or missing transmission frames by comparing the frame number of the received transmission with an anticipated number at the receiving end.

Link Electrical Interface • see Electrical Interface under the section DATA CHANNELS for a definition of each interface type.

BUFFER PARAMETERS

This Features Section specifies the buffer parameters and overflow protection and recovery technique employed by a statistical multiplexer. This section is not applicable to TDM or FDM multiplexers. Specific topic fields include:

Buffer Capacity • specifies the capacity or available range of capacities of the data buffer; includes incremental capacity when applicable.

Overflow Protection • specifies the method used to prevent buffer overflow as a result of prolonged aggregate channel rates that exceed the link rate. Protection methods attempt to regulate the flow of data from data terminal equipment or data circuit terminating equipment to the channels by controlling the Clear-To-Send (CTS) signal on the channel interface and/or by sending device on/off control characters to appropriate channels. Flow suspension and resumption thresholds are established at a specified percentage of total buffer utilization or at a specified percentage of buffer utilization per channel. Flow control on a channel basis prevents one or more high traffic volume channels from dominating all other channels.

Overflow Recovery • specifies the method used to recover from buffer overflow resulting from ignored attempts to control data flow. These methods include call disconnection or sending a data lost message to appropriate terminals from the slave or master multiplexer, or by some other means.

DIAGNOSTICS/INDICATORS

Diagnostic test functions provided by a specific multiplexer for isolating failures at the local or remote multiplexer, local or remote channels, composite link modems, or composite link are detailed in this section along with visual indicators for operating status and related multiplexer functions. Provisions for these functions are defined under the following topic fields:

Self Test • a performance test conducted by the multiplexer on its channels, link modules, and controller logic. The test is usually conducted by introducing a pseudo random bit pattern from an internal generator into each of the multiplexer channel and link circuits and looping the circuits back to a comparator for bit error detection.

Channel Loopback Testing • a diagnostic procedure used with bit error rate testing to determine the integrity of the local or remote data channels. Testing is performed by establishing

Multiplexers

loopback paths between the channel input and output, by introducing a bit pattern to the channel output, and by comparing the looped-back pattern for bit errors. A remote channel loopback test conducted by a local multiplexer also tests the integrity of the composite link and its modems.

Composite Link Loopback Testing • a diagnostic procedure used with bit error rate testing to determine the integrity of the local or remote link modules, the composite link, and both modems. Local testing is performed by establishing a loopback path at the digital input/output of the local link module, by introducing a bit pattern to the link output, and by comparing the looped back pattern for bit errors. Remote testing is performed by establishing a loopback path at the digital input/output of the remote link module and by conducting a bit error rate test from the local multiplexer to determine the integrity of the link and modems. A failure within the link, link modems, or link modules can be isolated by conducting a composite link loopback test from each end.

Visual Indicators • front panel indicator lamps or LEDs that present a visual indication of operating performance and status.

Channel Interface Signal Status • indicates operating status of electrical interface signals, such as Request-To-Send (RTS), Clear-To-Send (CTS), Carrier Detect (DCD), Data Set Ready (DSR), Data Terminal Ready (DTR), Busy, and Ring Indicator (RI).

FEATURES/OPTIONS

Features and options associated with a specific multiplexer are presented in this Section. Topic fields include:

Automatic Speed Detection for DDD Channels • regulates the channel data rate to the data rate of a dial-up line; employs carriage return character or Memorex control character to specify data rate; for rates up to 1200 bps. Eliminates the need for separate dedicated lines for different data rates.

Echoplex • loops the received transmission to the channel output; typically used by teleprinters or CRT terminals operating in the full-duplex mode and is used to verify reception of the transmission at the multiplexer.

Data Compression • eliminates repetitious spaces, blanks, numbers, or letter combinations from transmission to increase communications efficiency. The eliminated characters are inserted at the receive end. Although some multiplexers offer the data compression feature, there is little demand for it since it is usually a terminal provided feature.

Master/Slave Configuration • the operating mode established at local and remote multiplexers. Transmission parameters established at the master multiplexer, which is usually located at a central site, are automatically transmitted (downline loaded) to the remote or unattended multiplexer.

Downline Loadable Operating Parameters • the capability of a master multiplexer to transmit selected operating parameters to an unattended slave multiplexer; eliminates the need to coordinate operating parameters with a remote site multiplexer.

Bandsplitter • defined under the section CHANNELS.

Integral Composite Link Modem • an integral modem that interfaces the composite link side of a multiplexer with a communications facility.

Integral Data Channel Modem • an integral modem that interfaces a channel adapter with a communications facility.

Network Management via Supervisory Console • a method for monitoring operating performance, conducting diagnostic tests, and altering operating parameters via an attached operator console such as a CRT terminal or teleprinter.

Priority Control • lets the user assign priority to critical channels for immediate processing. Priority/no priority selection per channel is a limited form of priority control that assigns the same level of priority to all selected channels. The disadvantage to this is that less critical channels can override the more critical channels. Several levels of priority are necessary to assign different priorities to channels that differ in importance.

Data Rate Conversion • performs data rate conversion between a channel at the remote multiplexer and the same channel at the local multiplexer to compensate for different transmission rates at each end. Parameters are selectable.

Split Data Rates • supports different data rates on the input and output ports of a channel.

COST/SERVICE

This Feature Section provides single-unit pricing and monthly charges under a one- or two-year lease, which usually includes maintenance. Pricing is for a basic unit without options. Base unit (card frame without channels) and individual channels are priced separately where applicable. The base unit is a card frame equipped with power supply and controller logic that provides empty slots for insertion of individual channel adapters. Link modules are also priced separately when not included in base unit price. Fixed-configuration multiplexers with non-removable channels do not show separate channel pricing. Service is defined as on-call or on-site (contracted) service, factory service, third party service, and nationwide service. Installation charges and hot line diagnostic centers are mentioned where applicable. Warranty is specified in days, months, or years.

MULTIPLEXER LISTINGS

■ AMDAHL COMMUNICATIONS SYSTEM DIVISION

2500 Walnut Avenue, Marina Del Rey, CA 90291 • 213-822-3202

□ Amdahl 2200 Series TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 1.544M or 2.048M bps over 4-wire Type 3002 voice channel/wideband facility/DDC/4-wire metallic circuit/T1 carrier facility

Channels • up to 44 asynchronous or synchronous channels • half- or full-duplex • asynchronous data rates up to 19.2K bps • synchronous data rates up to 460.8 bps • 2.048M-bps maximum aggregate channel data rate • soft-configured channels parameters • EIA RS-232C/CCITT V.24; CCITT V.35; MIL-STD 188-114; AT&T 301/303 electrical channel interface

Composite Link • single composite link standard • synchronous up to 2.048M bps • external clocking • EIA RS-232C/CCITT V.24; CCITT V.35; AT&T 301/303; AT&T Pub 41451; MIL-STD-188-114 electrical interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local and remote channel loopback testing • local and remote composite link loopback testing • remote alarms • status indicators for each channel

Features/Options • redundant control logic and power supply optional, but logic reduces data channel capacity by 2 card slots • alternate routing with redundant control logic • optional 8K-bit buffer to compensate for satellite delay variations • conforms to DS-1 unframed format

Cost/Service • up to $22,000 purchase price • rental prices not released • own-service organization; about $150 per month typical maintenance fee

■ APPLIED DELTA SYSTEMS

(sales/leasing company)
101 Kor Center East, Bellmawr, NJ 08031 • 609-931-3100

□ **Racal-Milgo Complete Product Line** • see Racal-Milgo Information Systems for features and pricing

□ **Symplex Datamiser** • see Symplex CommCorp for features and pricing

Multiplexers

■ ARK ELECTRONIC PRODUCTS/Subsidiary of Paradyne

325 West Hibiscus Boulevard, Melbourne, FL 32901 • 305-724-5260

☐ Ark 8105 8-Channel & 1105 Single-Channel FDMs

Type/Application • FDM multichannel central site unit and single-channel remote unit for data only • point-to-point; multipoint; 4-wire unconditioned Type 3002 voice channel

Channels • 1 to 25 asynchronous channels in single-channel increments; 25 at 75 bps; 18 at 110 bps; 12 at 150 bps; 9 at 220 bps; 8 at 225 bps; 6 at 300 bps; 4 at 440/450 bps; 3 at 600 bps; 1 at 1200 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 2 status indicators per channel; analog loopback on composite link; digital loopback on data channels

Cost/Service • 8-channel rackmount base unit $364 purchase price • $414 purchase price single-channel adapter • factory service • installation charge • one-year warranty

■ ASTROCOM CORPORATION

120 West Plato Boulevard, St. Paul, MN 55107 • 612-227-8651

☐ Astrocom Squeeziplexer

Type/Application • time division multiplexer strictly for 3270 to 3274 controllers for local transmission over terminal to controller coaxial cable

Channels • 8 to 32 asynchronous or synchronous channels in 8-channel increments • 2.3587M-bps maximum aggregate channel rate

Composite Link • single composite link • 2.3587M-bps maximum aggregate composite link data rate

Buffer Parameters • not applicable

Diagnostics/Indicators • individual channel indicators • status indicator lights

Features/Options • connects to IBM 3278, 3279, 3287, 3289, or equivalent terminals and/or printers

Cost/Service • contact vendor

■ AT&T INFORMATION SYSTEMS

100 Southgate Parkway, Morristown, NJ 07960 • 201-898-8326

☐ AT&T DATAPHONE Multiplexer

Type/Application • statistical multiplexer • multilink; point-to-point • asynchronous or synchronous transmission up to 9600 or 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • up to 24 asynchronous or synchronous channels in single- or dual-channel increments • asynchronous/synchronous data rates up to 19.2K bps • 5 through 8 bits per character • 1, 1.5, or 2 stop bits • 230.4K-bps maximum aggregate channel data rate • independently selecable parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449 electrical channel interface

Composite Link • single or dual composite links • synchronous at 9600 bps for each link or a dual link of 19.2K bps • CCITT X.25 Level II link protocol • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL-STD 188C electrical link interface

Buffer Parameters • 48K- to 112K-byte buffer capacity • programmable traffic flow control • ARQ error detection and retransmission

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; downline loadable operating parameters; supervisory port • optional autobaud

Cost/Service • contact vendor

■ AVANTI COMMUNICATIONS

Aquidneck Industrial Park, Newport, RI 02840 • 401-849-4660

☐ Avanti Ultramux

Type/Application • time division multiplexer with bit interleaving • multilink; point-to-point • synchronous transmission up to 10M bps over a fiber optic cable; up to 2.048M bps over twisted pair or coaxial cable

Channels • up to 128 asynchronous, or 64 synchronous channels • 4 channels per asynchronous card; 2 channels per synchronous cards • channel parameters soft-configured • asynchronous data rates from 75 bps to 9600 bps; synchronous data rates from 2400 bps to 8.2M bps • half-/full-duplex, local echo, autobaud to 2400 bps; ASCII format; transmits 8 interface control signals in either direction; configured DTE/DCE • EIA RS-232C asynchronous electrical channel interface; CCITT V.24/V.28; CCITT V.10/V.11/V.35; RS-449/422; MIL STD-188-114 synchronous electrical channel interface • up to 64 voice channels; 2 channels per card • employs CVSD; 16K, 32K, 64K, and 128K bps • full-duplex; transmits 2 network and 1 inband control signals • 2- or 4-wire E&M interfaces

Composite Link • up to 3 composite links • synchronous data rates from 56K bps to 2.048M bps on coaxial cable and twisted-pair wiring; 1M bps to 10M bps on Manchester, fiber optic cable • EIA RS-449/442; CCITT V.11 or V.35; MIL STD-188-114 electrical composite link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote channel loopback testing • local or remote composite link loopback testing • remote alarms • local or remote modem loopback • aggregate error rate management • power failure and low battery voltage indicators

Features/Options • redundant control logic; power supply and modem optional • 12K-bps transmit/receive buffer on each asynchronous channel card • 64K-bit transmit and 16K-bit receive buffer on each asynchronous channel card • bandwidth contention • DS-1 unframed format

Cost/Service • $20,000 purchase price • rental prices not released • own service organization • $270 installation cost; about $55 per month typical maintenance fee

■ AYDIN MONITOR SYSTEMS

502 Office Center Drive, Fort Washington, PA 19034 • 215-646-8100

☐ Aydin 6223 N Multiplexer

Type/Application • time division multiplexer with bit interleaving • point-to-point • variable synchronous transmission up to 1.544M bps over wideband facility; DDS; T1 carrier facility; coaxial line; fiber optic cable

Channels • 2 to 24 asynchronous or synchronous channels in 1-channel increments including 5 to 120 synchronous subchannels in 5-channel increments; synchronous channels multiplexed with composite link; standard time division multiplexer • full-duplex • synchronous data rates up to 768K bps • 600- to 1.544M-bps aggregate channel data rate • user-programmable channel density • EIA RS-232C; CCITT V.24/V.28; EIA RS-449 electrical channel interface

Composite Link • 1 composite link standard; synchronous up to 1.544M bps • external clocking at aggregate rate • EIA RS-232C; CCITT V.24/V.28; CCITT V.35 electrical link interface

Diagnostics/Indicators • local data channel loopback testing • local composite link loopback testing • status indicators for each channel

Features/Options • mixed voice and data communications; data rates 8000x2 to the N power bps; 1200x2 to the N power bps; toll quality voice encoding at 32K bps or 64K bps; uses only bandwidth which is required; redundancy of common multiplex cards and power supply

Cost/Service • 24-channel base unit $11,341 • $1,000 per synchronous channel • $1,050 per 5 synchronous channels • factory service • 1-yr warranty

Multiplexers

■ BAYLY ENGINEERING LIMITED

167 Hunt Street, Ajax ONT, L1S 1P6 • 416-683-8200

☐ Bayly Omniplexer

Type/Application • time division multiplexer with bit interleaving • point-to-point, bypass, and drop-and-insert • synchronous transmission up to 1.544M bps (T1), or 3.152M bps (T1C), 6.312M bps (T2), or 2.048M bps (CCITT)

Channels • 1 to 288 asynchronous, synchronous, or voice channels • dual-channel synchronous/asynchronous channel card; parameters set, by switches • half-/full-duplex; ASCII format; transmits 4 interface control signals • asynchronous data rates from 150 bps to 19.2K bps; synchronous data rate is 56K bps • EIA RS-232C; CCITT V.35 electrical channel interface • dual-channel voice channel card • PCM or CVSD quantization; 64K bps (PCM) or 32K bps (CVSD) channel bandwidth • full-duplex • 4-wire audio and E&M signaling interfaces

Composite Link • single composite link • synchronous data rate of 1.544M bps, 2.048M bps, 3.152M bps or 6.312M bps • CCITT V.35 electrical composite link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote channel loopback testing • local or remote composite link loopback testing • remote alarms • transmit or receive data and DSR/CTS signals indicated • duplicated data addresses within same VF slot alarm

Features/Options • redundant control logic and power supply • performs drop-and-insert and bypass without back-to-back demultiplexing/multiplexing • conforms to unframed and framed DS-1 formats

Cost/Service • $18,000 purchase price • lease and monthly maintenance prices not available • vendor or distributor service

■ BELLDEN ELECTRIC WIRE & CABLE

2000 South Batavia Avenue, Geneva, IL 60134 • 312-232-8900

☐ Bit Driver

Type/Application • time division multiplexer with bit interleaving • asynchronous or synchronous transmission up to 19.2K bps over a fiber optic cable to 6,500 feet

Channels • up to 8 asynchronous or synchronous channels • full-duplex • asynchronous/synchronous data rates up to 19.2K bps • 160K-bps maximum aggregate channel data rate • RS-232C electrical channel interface

Composite Link • single composite link • asynchronous or synchronous up to 3.05M bps • EIA RS-232C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • front-panel LEDs; local and remote loopback testing • activity indicators • main link continuity

Features/Options • fiber optic transmission at distances up to 6,500 feet

Cost/Service • under $250 per channel

■ BUCKEYE TELEPHONE & SUPPLY

(sales/leasing company)
1800 Arlingate Lane, Columbus, OH 43228 • 614-276-8131

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ CANOGA DATA SYSTEMS

6740 Eton Avenue, Canoga Park, CA 91303 • 213-888-2003

☐ Canoga CMX-100

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • asynchronous or synchronous transmission up to 56K bps over a fiber optic cable up to 2 miles

Data Channels • 2 to 16 asynchronous or synchronous channels in 2-channel increments • full-duplex • 1 through any bits per character • 1, 1.5, or 2 stop bits • selectable parity • asynchronous data rates 1200 bps through 57.6K bps • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL STD 188C; current loop; WE 301/303 electrical channel interface

Composite Link • 1 composite link standard • integral optical electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local data channel loopback testing • status indicators for each data channel; TX Data, RX Data control

Features/Options • automatic speed detection for DDD data channels; integral modem for composite link; integral optical modem for composite link; no system programming required

Cost/Service • 16-channel unit $9,000 prch • own service; factory service • one-year warranty

☐ Canoga CMX-320

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • asynchronous transmission up to 19.2K bps over a fiber optic cable

Channels • 16 to 32 asynchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • 1 through any bits per character • 1, 1.5, or 2 bits • selectable parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • integral optical modem electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators; synchronous loss indicators

Features/Options • automatic speed detection for DDD data channels; integral modem for composite link

Cost/Service • 16-channel unit $2,000 prch • own service; factory service • 1-yr warranty

☐ Canoga CMX-808

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • asynchronous transmission up to 19.2K bps over a fiber optic cable

Channels • 8 asynchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • 1 through any bits per character • 1, 1.5, or 2 stop bits • selectable parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • integral optical composite modem electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators • synchronous loss indicators

Features/Options • automatic speed detection for DDD data channels; integral modem for composite link

Cost/Service • 8-channel unit $1,200 prch • own service; factory service • 1-yr warranty

☐ Canoga CMX-808T1

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous transmission up to 1.544M bps over a T1 carrier facility

Channels • 8/16 asynchronous or synchronous channels • full-duplex • asynchronous data rates at 19.2K bps; synchronous data rates at 2400 to 76.8K bps • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • asynchronous up to 1.544M bps • EIA RS-232C electrical composite link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • loopback testing • status indicators

Features/Options • asynchronous multiplexer for use with CMX-4T1 Mux for local network

Cost/Service • contact vendor

Multiplexers

☐ Canoga CMX-832 Series Fiber Optic TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a fiber optic cable up to 3,000 feet (1km) or 9,000 feet (3km) optional

Channels • 8 to 32 asynchronous or synchronous channels in 8-channel increments • full-duplex • transparent to character length/parity/stop bits • selectable synchronous data rates at 1200/2400/4800/9600/19.2K bps • all synchronous channels independently clocked at selected data rate • channels selected as asynchronous or synchronous in groups of 4

Composite Link • 1 composite link standard • asynchronous or synchronous up to 307.2K bps • optical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators for each channel

Features/Options • automatic speed detection for asynchronous DDD data channels

Cost/Service • 8-channel master unit $2,700 prch • own service; factory service • one-year warranty

☐ Canoga CMX-816

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • asynchronous or synchronous transmission up to 19.2K bps over a fiber optic cable

Channels • 8 to 16 asynchronous or synchronous channels • full-duplex • asynchronous data rates up to 100K bps • 1 through any bits per character • 1, 1.5, or 2 stop bits • synchronous data rates at 0 to 76.8K bps • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; RS-422 V.35; MIL STD-188C; WE 301/303 electrical channel interface

Composite Link • 1 composite link • integral optical modem electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local data channel loopback testing • status indicators, synchronous loss indicators

Features/Options • automatic speed detection for DDD data channels; integral modem for composite link

Cost/Service • contact vendor

☐ Canoga CMX-4T1

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous transmission up to 6.176M bps over a fiber optic cable

Channels • up to 4 T1 channels • asynchronous or synchronous data rates up to 1.544M bps • DS 1/T1 interface

Composite Link • 1 composite link • asynchronous or synchronous up to 6M bps • fiber optic interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local and remote loopback testing • status indicators

Features/Options • multiplexes four T1 circuits onto a single data stream and CAD/CAM terminals

Cost/Service • $6,650 purchase price • own service; factory service • one-year warranty

■ THE DAVID JAMISON CARLYLE CORP

(sales/leasing company)
Two Century Plaza, 30th Floor, 2049 Century Park East, Los Angeles, CA 90067 • 213-410-9250

☐ **Codex Complete Multiplexer Line** • see Codex for features and pricing

☐ **GDC Complete Multiplexer Line** • see GDC for features and pricing

☐ **Micom Complete Multiplexer Line** • see Micom for features and pricing

☐ **Prentice Complete Multiplexer Line** • see Prentice for features and pricing

■ CG DATACOMM, INC

(sales/leasing company)
106 Rochester Road, Pittsburgh, PA 15229 • 412-366-5056

☐ **Infotron Systems 380** • see Infotron Systems for features and pricing

☐ **Infotron Systems Supermux 480** • see Infotron Systems for features and pricing

☐ **Infotron Systems Supermux 680** • see Infotron Systems for features and pricing

■ CENTEL COMMUNICATIONS

(sales/leasing company)
770 North Cotner Street, Lincoln, NE 68508 • 402-467-5283

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ CERMETEK MICROELECTRONICS, INC

1308 Borregas Avenue, Sunnyvale, CA 94089 • 408-734-8150

☐ Cermetek Mux-Mate

Type/Application • statistical multiplexer • point-to-point • asynchronous transmission up to 2400 bps over the DDD (public dial) network

Channels • 2 2400-bps asynchronous channels • full-duplex • asynchronous data rates at 300/1200/1800/2400 bps • 9 or 10 bits per character • odd, even, or no parity RS-232C electrical channel interface

Composite Link • 1 composite link • asynchronous up to 2400 bps • ARQ error control • EIA RS-232C electrical composite link interface

Buffer Parameters • 60K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow

Diagnostics/Indicators • local and remote loopback testing • status indicators

Features/Options • supports smart auto-dialing and automatic answering modems; slave-mode operation; manual support also

Cost/Service • $695 purchase price • one-year warranty

■ CHUNG TELECOMMUNICATIONS

4046 Ben Lomond Drive, Palo Alto, CA 94306 • 415-858-2456

☐ Chung Turbo-MUX-2

Type/Application • statistical multiplexer • point-to-point • asynchronous transmission up to 1200 bps over the DDD (public dial) network

Channels • 2 1200-/2400-bps asynchronous channels • full-duplex • asynchronous data rates at 1200/2400 bps • 7 bits per character • 1/2 stop bits • selectable odd, even, mark, space, or no parity • 4800 aggregate channel data rates • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • asynchronous up to 1200; requires AT&T 212A, Vadic 3450, or compatible link modems • ARQ error control • EIA RS-232 electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses RTS/CTS, XON/XOFF • ARQ for error detection

Diagnostics/Indicators • local and remote loopbacks • front panel switches

Features/Options • integral data compression

Cost/Service • contact vendor

■ COASTCOM

2312 Stanwell Drive, Concord, CA 94520 • 415-825-7500

☐ Coastcom D/I Mux

Type/Application • time division multiplexer with bit interleaving • point-to-point, bypass, and drop-and-insert •

Multiplexers

synchronous transmission of 1.544M bps or 2.048M bps

Channels • 1 to 24 channels which can accommodate up to 168 terminal devices, depending on speed; each channel slot 64K bps • half-/full-duplex • asynchronous data rates to 19.2K bps; synchronous data rates from 56K bps to 1.544M bps • all channel parameters set by switches • EIA RS-422 electrical channel interface for asynchronous; EIA RS-422/CCITT V.35 electrical channel interface for synchronous • 1 to 24 voice channels • employs PCM at 64K bps; full-duplex • 2- or 4-wire E&M interfaces

Composite Link • 1 composite link • synchronous up to 1.544M bps • EIA RS-422/CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote channel loopback testing • local or remote composite link loopback testing • remote alarm • VF level drop • data/clock loss; out-of-frame

Features/Options • redundant control logic and power supply opt • performs drop-and-insert and bypass without back-to-back demultiplexing/multiplexing • dual high-speed link opt • CVSD voice channel due in 1984 • conforms to DS-1 format

Cost/Service • $16,000 purchase price • lease and monthly maintenance prices not available • vendor service

■ CODEX CORPORATION/Subsidiary of Motorola Inc

20 Cabot Street, Mansfield, MA 02048 • 617-364-2000

□ Codex Model 604 & 605 TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDS

Channels • 4 synchronous channels; bandwidth allocated to synchronous channels in composite link selectable at 0.25/0.50/0.75/1.0 composite data rate • full-duplex • 19.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24 electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps via external clocking • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote (Model 605 only) composite link loopback testing • status indicators for each data channel

Features/Options • Model 605 passes 4 EIA control signals per channel in full-duplex mode

Cost/Service • 4-channel unit $1,650 prch; $105 mo 1-yr rental • lease price includes maintenance • own service via nationwide service organization; on-call service $140 minimum per mo; factory service • installation charge $132 • one-year warranty

□ 670 Series Multidrop STDM

Type/Application • statistical multiplexer • multipoint • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDS

Channels • 4/8/16 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 110/300/600/1200/1800/2400/4800 bps • 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 38.4K-bps (master unit); 19.2K-bps (slave unit) maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • asynchronous at 1200/1800/2400 bps; synchronous up to 9600 bps • Codex polling link protocol • CRC 16/ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 1.5K to 14K • overflow protection uses CTS; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • fox message • terminal-activated channel test • status indicators for system and each data channel

Features/Options • automatic speed detection for DDD data channels opt; master/slave configuration; asynchronous composite link

Cost/Service • 2-channel slave unit $1,350 prch; $95 mo 1-yr rental • 4-channel master/slave unit $2,150 prch; $145 mo 1-yr rental • 8-channel master/slave unit $3,100 prch; $205 mo 1-yr rental • 16-channel master unit $5,300 prch; $345 mo 1-yr rental • own service via nationwide service organization; on-call service $142 minimum per mo; • installation charge $142 • one-year warranty

□ Codex 6001 STDM Intelligent Network Processor

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 14.4K bps over a 4-wire Type 3002 voice channel/DDS

Channels • 4 or 8 asynchronous channels • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 76.8-bps maximum aggregate channel data rate; 76.8K-bps aggregate burst • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 14.4K bps • external clocking up to 14.4K bps • modified HDLC CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K bytes buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 25 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • fox message • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; flyback delay; integral 4800-bps or 9600-bps modem for composite link opt; rackmount option; passes 6 EIA RS-232C control signals per channel

Cost/Service • 4-channel unit $1,500 prch; $105 mo 1-yr rental • 8-channel unit $2,350 prch; $160 mo 1-yr rental • own service via nationwide service organization; swap-out or on-site service $38/$54 mo; factory service • installation charge $138 • one-year warranty

□ Codex 6002 STDM Intelligent Network Processor

Type/Application • statistical multiplexer with character interleaving • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 4 to 16 asynchronous channels in 4-channel increments • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600/19.2K bps • 5 through 9 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity plus clocked asynchronous data • 307.2K-bps aggregate channel data rate, 153.6K-bps aggregate burst • independently selectable channel parameters; 12 channel parameter combinations • EIA RS-232C; CCITT V.24/V.28; WE 301/303 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 19.2K bps • modified HDLC CCITT X.25 Level II • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K bytes buffer capacity • overflow protection uses CTS; user specified characters suspend or resume data channel flow • flow suspension threshold at user set percent total buffer utilization or user set percent per data channel • user set garble characters

Multiplexers

Diagnostics/Indicators • self-test; local or remote channel loopback testing • local or remote composite link loopback testing • use control port to list complete system status; online terminal activated tests; online control port activated tests

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; network management via supervisory console; split speeds on asynchronous data channels

Cost/Service • 4-channel base unit $1,900; $150 mo 1-yr rental • $1,000 per 4 asynchronous channels; $55 mo 1-yr rental • $50 per 4 split asynchronous channels • nationwide service organization; on-call service $38 mo; factory service • installation charge $138; one-year warranty

☐ Codex 6005 STDM Intelligent Network Processor

Type/Application • statistical multiplexer with character interleaving • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 4 to 16 asynchronous or synchronous channels in 4-channel increments • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600/19.2K bps • 5 through 9 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity plus clocked asynchronous data • synchronous data rates up to 19.2K bps • 307.2K-bps aggregate channel data rate, 153.6K-bps aggregate burst • independently selectable channel parameters; 12 channel parameter combinations • EIA RS-232C; CCITT V.24/V.28; WE 301/303 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 19.2K bps • modified HDLC CCITT X.25 Level II • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K bytes buffer capacity • overflow protection uses CTS; user specified characters suspend or resume data channel flow • flow suspension threshold at user set percent total buffer utilization or user set percent per data channel • user set garble characters

Diagnostics/Indicators • self-test; local or remote channel loopback testing • local or remote composite link loopback testing • use control port to list complete system status; online terminal activated tests; online control port activated tests

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; network management via supervisory console; split speeds on asynchronous data channels; 14 binary synchronous protocols supported, opt

Cost/Service • 4-channel base unit $3,300; $240 mo 1-yr rental • $1,000 per 4 asynchronous channels; $55 mo 1-yr rental • $750 per 16 synchronous channels; $40 mo 1-yr rental • $50 per 4 split asynchronous channels • nationwide service organization; on-call service $38 mo; factory service • installation charge $138; one-year warranty

☐ Codex 6010 STDM Intelligent Network Processor

Type/Application • statistical multiplexer • point-to-point or multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDS

Channels • up to 30 asynchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/2400/4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 19.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; optional MIL STD 188C; optional current loop electrical channel interface

Composite Link • 1 composite link standard; synchronous at 1200/2400/3600/4800/7200/9600 bps • external clocking up to 9600 bps • modified HDLC CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical link interface

Buffer Parameters • 4K-byte buffer capacity • overflow protection uses CTS; XON/XOFF; DTR to suspend or resume data channel flow • flow suspension threshold at 85 percent total buffer utilization; flow resumption threshold at 65 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting; control signal monitoring • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; master/slave configuration; downline loadable operating parameters; control terminal option; flyback control feature inserts printer pad character; standalone option; optional non-standard data rates

Cost/Service • 30-channel base unit $3,500 prch; $180 mo 1-yr rental • $300 prch per 2 asynchronous channels; $15 mo 1-yr rental • own service via nationwide service organization; on-call service • installation charge $166 • one-year warranty

☐ Codex 6030 STDM Intelligent Network Processor

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDS

Channels • 28/60/92/124 asynchronous SDLC or BSC synchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates at 75/150/300/600/1200/2400/4800 bps • BSC synchronous data rates at 1200/2400/3600/4800/7200/9600 bps • 1K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; optional MIL STD 188C; optional current loop electrical channel interface

Composite Link • 1 composite link standard plus 1 optional link • synchronous up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical link interface

Buffer Parameters • 16K- or 32K-byte buffer capacity • overflow protection uses DSR; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • restart test; statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; data compression, master/slave configuration; downline loadable operating parameters; network statistics and performance monitoring via operator console or optional control terminal; report logging option; processor options for 1 or 2 additional processors; optional non-standard data rates; HDLC/SDLC terminal support option; optional multiplexer port modules each accommodate 1 Codex 6000 Intelligent Network Processor at synchronous data rates to 9600 bps

Cost/Service • 28-channel base unit $6,000 prch; $300 mo 1-yr rental • 60-channel base unit $8,400 prch; $420 mo 1-yr rental • 92-channel base unit $10,300 prch; $520 mo 1-yr rental • 124-channel base unit $11,700 prch; $585 mo 1-yr rental • operator console $850 prch; $40 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service • installation charge $246 • one-year warranty

☐ Codex 6035 STDM Intelligent Network Processor

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 28/60/92/124 asynchronous, SDLC, or BSC synchronous channels in 2-channel increments • full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/2400/4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • BSC synchronous data rates at 1200/2400/3600/7200/9600 bps • 19.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; optional MIL STD-188C; optional current-loop

Multiplexers

electrical channel interface

Composite Link • supports multiple composite links; number of links application dependent • synchronous rates up to 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; MIL STD-188C electrical link interface

Buffer Parameters • 16K- or 32K-byte buffer capacity • overflow protection uses DSR, XON, XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization, flow resumption threshold at 50 percent total

Diagnostics/Indicators • self-test local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; network statistics and performance monitoring via operator console or optional control terminal; report logging options; processor options for 1 to 5 additional processors; optional non-standard data rates; optional HDLC/SDLC terminal support; optional multiplexer port modules each accommodate 1 Codex 6000 Intelligent Network Processor at synchronous data rates at 9600 bps

Cost/Service • 28 channel base unit with 8 channels included $4,000 prch; $280 mo 1-yr rental • operator console $850 prch; $40 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service • one-year warranty

☐ Codex 6040 STDM Intelligent Network Processor

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDS

Channels • 24/56/88/120/152/184/216/248 asynchronous SDLC or BSC synchronous channels in 2-channel increments • full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/2400/4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • BSC synchronous data rates at 1200/2400/3600/7200/9600 bps • 19.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; optional MIL STD 188C; optional current-loop electrical channel interface

Composite Link • 2 composite links standard plus 1 or more optional links • synchronous rates up to 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical link interface

Buffer Parameters • 16K- or 32K-byte buffer capacity • overflow protection uses DSR; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; network statistics and performance monitoring via operator console or optional control terminal; report logging options; processor options for 1/2/3 additional processors; optional non-standard data rates; optional HDLC/SDLC terminal support; optional multiplexer port modules each accommodate 1 Codex 6000 Intelligent Network Processor at synchronous data rates to 9600 bps

Cost/Service • 24-channel base unit $14,800 prch; $745 mo 1-yr rental • 88-channel base unit $19,000 prch; $960 mo 1-yr rental • 152-channel base unit $23,400 prch; $1,150 mo 1-yr rental • 248-channel base unit $29,600 prch; $1,455 mo 1-yr rental • operator console $850 prch; $40 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service • installation charge $282 • one-year warranty

☐ Codex 6050 STDM Distributed Communications Processor

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 19.2K bps or 64K bps over a 4-wire Type 3002 voice channel/wideband facility/DDS

Channels • up to 250 asynchronous or synchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600/19.2K bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates up to 19.2K bps • 20K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 8 composite links • synchronous up to 19.2K bps or 64K bps • external clocking up to 64K bps • modified HDLC link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; WE 301/303 electrical link interface

Buffer Parameters • 48K-byte/4-channel buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 85 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • online diagnostics • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; downline loadable operating parameters; optional diskette controller port for up to 4 dual-drive double-sided drives; network statistics and performance monitoring via operator console or optional control terminal; report logging opt; HDLC/SDLC/ADCCP transparent support to 9600 bps for data channels; optional multiplexer port modules each accommodate 1 Codex 6010, 6030, or 6040 Intelligent Network Processor at synchronous data rates to 9600 bps; requires appropriate software module

Cost/Service • Central site base unit $32,500 prch; $1,500 mo 1-yr rental • Remote site base unit $27,500 prch; $1,300 mo 1-yr rental • $1,650 per 4 asynchronous channels; $85 mo 1-yr rental • $1,750 per 4 synchronous channels; $90 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service; third-party service • installation charge $400 • one-year warranty

☐ Codex 8000 Group Band TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 64K bps over a wideband facility/DDS

Channels • up to 20 asynchronous or synchronous channels in single-channel increments • half- or full-duplex • synchronous data rates at 2400/4800/7200/9600/14.4K/19.2K bps plus any 2400 bps multiple up to 38.4K bps • 64K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 48K/50K/56K/64K bps • external clocking up to 64K bps • WE 301/303; CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite loopback testing • status indicators for each data channel

Cost/Service • 20-channel base unit $4,750; $380 mo 1-yr rental • $125 prch per synchronous channel; $11 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service; third-party service • installation charge $166 • one-year warranty

■ COHERENT COMMUNICATIONS SYSTEMS

60 Commerce Drive, Hauppauge, NY 11788 • 516-231-1550

☐ Coherent FSM-86 Single-Channel LSI FDM Subset

Type/Application • FDM; single-channel remote unit for data only • point-to-point or multidrop operation over a 4-wire

Multiplexers

unconditioned Type 3002 voice channel

Data Channels • 1 of 38 asynchronous channels at data rates to 600 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 5 status indicators per channel

Features/Options • not indicated

Cost/Service • single-channel unit $535 prch • factory service $35; third-party service • one-year warranty

☐ Coherent FSMA/FSMT FDM Terminal

Type/Application • multipoint FDM; multidrop operation over a 2-wire or 4-wire unconditioned Type 3002 voice channel

Channels • 3 to 38 asynchronous channels; 38 channels at 50/56 bps; 26 at 75 bps; 18 at 110 bps; 12 at 150 bps; 8 at 220/225 bps; 6 at 300 bps; 3 at 600 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 4 status indicators per channel; analog loopback on composite link; digital loopback on data channels

Features/Options • alarm option for carrier failure; modem option; telex interface option

Cost/Service • 12-channel base unit $4,560 prch • $306 prch per single-channel adapter • factory service $35; third-party service • one-year warranty

☐ Coherent SPMA-7 Series Speech Plus Telegraph FDM Data System

Type/Application • FDM; data and voice • point-to-point; multipoint; multidrop operation over a 2-wire or 4-wire unconditioned Type 3002 voice channel

Channels • 1 to 15 asynchronous channels in single-channel increments • voice plus 5 to 15 channels at 50 bps; voice plus 3 to 10 at 75 bps; voice plus 3 to 8 at 110 bps; voice plus 1 to 5 at 200 bps; voice plus 1 to 2 at 300 bps; voice plus 1 at 600 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 4 status indicators per channel

Features/Options • not indicated

Cost/Service • 10-channel base unit $1,856 prch • $306 prch per single-channel adapter • factory service $35; third-party service • one-year warranty

☐ Coherent TDM-95A Time Division Multiplexer

Type/Application • TDM with interleaving • over sampling technique • point-to-point • operates over twin coaxial cables

Channels • 12 asynchronous channels, each up to 19.2K bps, plus 12 asynchronous channels, each up to 2400 bps

Composite Link • 1 composite link • synchronous at 1.15M bps

Buffer Parameters • not applicable

Diagnostics/Indicators • LED diagnostics

Features/Options • not indicated

Cost/Service • $295; factory service; one-year warranty

■ COMDATA CORP

7900 N Nagle Avenue, Morton Grove, IL 60053 • 312-470-9600

☐ Comdata Series 200 FDM

Type/Application • FDM; data only or data and voice • point-to-point; multipoint; multidrop operation over a 2-wire or 4-wire conditioned Type 3002 voice channel

Channels • 1 to 25 asynchronous channels in single-channel increments; 18 to 25 at 75 bps; 13 to 18 at 110 bps; 9 to 12 at 150 bps; 4 or 5 at 300 bps; 2 at 600 bps • voice plus 4 to 11 at 75 bps; voice plus 3 to 8 at 110 bps; voice plus 1 or 2 at 300 bps; 1 at 600 bps • requires C1, C2, or C4 line conditioning for 20 or more channels at 75 bps; C1, C2, C4 for 15 or more channels at 110 bps; C1, C2, C4 for 10 or more channels at 150 bps; C1, C2 for 5 channels at 300 bps; C1 or C2 for 2 channels at 600 bps • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C; DTL/TTL; current-loop electrical channel interfaces

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 6 status indicators per channel; analog loopback on composite link; digital loopback on data channels

Cost/Service • base unit without channels $397 prch • $340 per single-channel adapter; FDM standalone modem for multidrop operation $425 prch • on-call service negotiable; factory service • one-year warranty

■ COMDESIGN, INC

751 South Kellog Avenue, Goleta, CA 93117 • 805-964-9852

☐ ComDesign TC-500 STDM

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDS; 4-wire metallic circuit up to 10 miles

Channels • 4 to 32 up to 9600 bps asynchronous or synchronous channels in 4-channel increments; including synchronous channels in 4-channel increments; synchronous channels multiplexed with composite link; optional bandsplitter feature with bandwidth allocated to synchronous data in composite link selectable at DYNAMIC PERCENTAGE • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2400/3600/4800/7200/9600 bps • 307K-bps aggregate channel data rate • independently selectable channel parameter • EIA RS-232C electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • asynchronous at 1200/1800/2400/3600/4800/7200/9600/19.2K bps; synchronous at 1200/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II • CRC 16; ARQ; error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 32- to 576K-byte buffer capacity in 16K-byte increments • 576K bytes buffer capacity • overflow protection uses CTS, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 75 percent per data channel; flow resumption threshold at 25 percent data channel • overflow recovery via data lost message to terminals from slave or master multiplexer; call disconnect; TC-500 also counts all overflow events per channel, produces periodic reports with overflow statistics

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • loopback test counts both transmit and receive errors and displays actual real-time percentage error rates • status indicators for each data channel per channel per end; 8 EIA signals; English display of transmit and receive data; percentage utilization statistics; framing error counts; buffer overflow counts; activity indicators

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; downline loadable operating parameters; bandsplitter opt; integral modem for composite link opt; network management via supervisory console opt; dual composite links; front panel with alphanumeric English display, 10-key keypad, and 11 LED indicators; non-interfering programming from either unit with auto-download and non-volatile store; HP ACK/ENQ interface

Cost/Service • 4-channel base unit $1,700 purchase price • $500 per asynchronous channel; $39 mo 1-yr rental • factory service • 1-yr warranty includes no-charge air-expressed

Multiplexers

next-day replacement unit

■ COMPLEXX SYSTEMS, INC

P.O. Box 12597, Huntsville, AL 35802 • 205-882-9734

☐ MX4

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous or synchronous transmission up to 9600 bps over 2- or 4-wire Type 3002 voice channel

Channels • 4 asynchronous or synchronous channels • half-/full-duplex • asynchronous data rates at 50 bps to 19.2K bps; synchronous data rates at 1200 bps to 19.2K bps • 5 through 8 bits per character • 57.6K maximum aggregate channel data rate • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • asynchronous or synchronous up to 19.2K bps • internal clocking to 19.2K bps • CCITT X.25 Level III • RS-232C composite link interface

Buffer Parameters • 16K-byte buffer capacity • definable buffer size per channel • selectable adaptive mode for buffer management

Diagnostics/Indicators • local or remote loopbacks; end-to-end "fox" test message transmission or user-defined; channel data rates, bandwidth utilization, error rates; time and date stamping; data, command, or monitor channel modes • 8 LED indicators

Features/Options • data compression; test pattern/message generator; statistical reports • network expansion

Cost/Service • contact vendor

☐ Mux 4/8

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous or synchronous transmission up to 19.2K bps over a 2- or 4-wire Type 3002 voice channel

Channels • 4 or 8 asynchronous or synchronous channels • half-/full-duplex • asynchronous data rates at 50 bps to 19.2K bps; synchronous data rates at 1200 bps to 19.2K bps • 5 through 8 bits per character • 96K-bps maximum aggregate channel data rate • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • asynchronous or synchronous up to 19.2K bps; isochronous 300 or 1200 bps • external clocking to 19.2K bps • CCITT X.25 Level III protocol • composite link inactive when integral modem selected • RS-232C electrical link interface

Buffer Parameters • 32K-byte buffer capacity • user-definable buffer size per channel • adaptive mode is selectable for buffer management

Diagnostics/Indicators • local or remote loopbacks; end-to-end transmission; either "fox" message or user-defined; channel data rates, bandwidth utilization, error rates; time and date stamping; data, command, or monitor channel modes • 8 LED indicators

Features/Options • integral composite link modem 2400 bps up to 76.8K bps • test pattern/message generator; network expansion

Cost/Service • contact vendor

■ COMPRE COMM INC

3200 Farber Drive, Champaign, IL 61821 • 217-352-2477

☐ Compre Comm Economux Series STDM

Type/Application • statistical multiplexer • asynchronous transmission up to 4800 bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 to 4 or 8 asynchronous channels • asynchronous data rates at 300/1200/2400/4800 bps • 7 or 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 1200/2400/4800/9600 bps; synchronous up to 9600 bps • external clocking up to 9600 bps • independently selectable channel parameters • address/character/block link protocol • ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 2K- to 4K-byte buffer capacity • overflow protection uses CTS, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite loopback testing

Features/Options • asynchronous composite link feature on 2- and 4-channel unit, rackmount available on 2-, 4-channel unit

Cost/Service • $895, 2-channel unit purchase price; $1,695 8-channel unit purchase price • factory service by swap out • installation charges • 2-yr warranty • extended warranty 5% of list price

☐ Compre Comm Data Express XL Series STDM

Type/Application • statistical multiplexer • point-to-point • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDS

Channels • 4 to 8 asynchronous channels • full-duplex • asynchronous data rates at 110/300/600/1200/1800/2400/4800/9600 bps • 1 or 2 stop bits • selectable odd, even, or no parity • independently selectable channel parameters • EIA RS-232C; CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous and synchronous up to 9600 bps • external clocking up to 9600 bps • independently selectable link parameters • ACB link protocol • ARQ error detection and correction • EIA RS-232C; CCITT V.24/V.28 electrical link interface

Buffer Parameters • 10K- to 19K-byte buffer capacity • overflow protection uses CTS, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • status indicators for each data channel; on 8-channel unit 4-channel network only

Features/Options • echoplex; asynchronous composite link standard on 4 channel unit

Cost/Service • $1,850 4-channel; $2,650 8-channel purchase price • 2-yr warranty

☐ Compre Comm Data Xchange (DX) STDM Series

Type/Application • statistical multiplexer • point-to-point • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDS

Channels • 4 to 16 asynchronous channels in 4-channel increments; up to 2 synchronous channels in 2-channel increments; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25, 0.50, 0.75 composite data rate • full-duplex • asynchronous data rates at 110/300/600/1200/1800/2400/4800/9600 bps • 7 through 8 bits per character • 1 stop bit • selectable odd, even, or no parity • synchronous data rates up to 9600 bps • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; CCITT V.24/V.28 electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • asynchronous up to 19.2K bps; synchronous at 1200/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps; ACB link protocol • other options TBA; ARQ and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 20K- to 56K-byte buffer capacity in 12K-byte increments • 56K buffer capacity • overflow protection uses CTS, opt DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • overflow recovery via individual buffer; overflow indicator per channel

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • automatic composite link testing during idle time; link down indication of display panel; network utilization; bar graph display, error correction count test MSD, RTS, CTS, DCD, Resound Data • status

Multiplexers

indicators for each channel • SD, RD, RTS, CTS, DCD, channel error, local flow control, remote flow control, buffer overflow

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; downline loadable operating parameters; bandsplitter; integral modem for composite link opt; front panel display

Cost/Service • $2,550 4-channel purchase price • $950 per 4 asynchronous channels • factory service by swap out • 2-yr warranty

☐ Compre Comm Bi-Link Series STDM

Type/Application • statistical multiplexer • asynchronous transmission up to 9600 bps, Model 2AS192, 2400 bps, Model 2AA24, over a 2-wire dial-up or private line; 4-wire Type 3002 voice channel; DDC

Channels • 2 asynchronous channels • asynchronous data rates at 300/1200/1800/2400 bps for Model 2AA24, data rates at 300/1200/1800/2400/4800/9600 bps for Model 2AS192 • 7 data bits per character • 1 stop bit • selectable odd, even, space parity • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 300, 1200, 1800, 2400 bps Model 2AA24 • synchronous up to 9600 bps Model 2AS192 • bi-link proprietary block link protocol • ARQ error detection and correction (selectable) • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • dynamic buffer allocation up to 3000 characters per port • overflow protection uses CTS, DC1/DC3, XON/XOFF, CTLS/CTLQ to suspend or resume data channel flow

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • status indicators for power on; test; status (port error, buffer full, network error, network down, loopback enabled)

Features/Options • port parameters down-line loadable, automatic pass thru mode • other data channel rates optional, HP ENQ/ACK optional

Cost/Service • $675 single-unit purchase price • own service; factory service with swap out • 2-year warranty; extended warranty $50 per yr

☐ Compre Comm Q-Link Series STDM

Type/Application • statistical multiplexer with asynchronous transmission up to 9600 bps over a 2-wire dial-up or private line; 4-wire Type 3002 voice channel; DDS

Channels • 4 asynchronous channels; asynchronous data rates 300/1200/1800/2400/4800/9600 bps • 7 data bits per character • 1 stop bit • selectable odd, even, space parity • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 1200, 1800, 2400, 4800, 9600 bps, Model 4AA24 • synchronous up to 9600 bps Model 4AS192 • independently selectable channel parameters • Q-Link proprietary block link protocol • ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • dynamic buffer allocation up to 3000 characters per port • overflow protection uses CTS, DC1/DC3, XON/XOFF, CTLS/CTLQ to suspend or resume data channel flow

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link • loopback testing • status indicators; power on, test, status (port error, buffer full, network error, network down, loopback enabled)

Features/Options • port parameters down-line loadable • automatic pass thru mode • other data channel rates optional • HP ENQ/ACK option

Cost/Service • $1,195 single-unit purchase price • own service, factory service, with swap out; 2-year warranty; extended warranty $75 per year

■ COMPUTER ASSOCIATES

(sales/leasing company)
8383 Stemmons, Suite 209, Dallas, TX 75204 • 214-634-1320

☐ **Datatel DCP9100** • see Datatel Inc for features and pricing

☐ **Infotron Systems 380** • see Infotron Systems for features and pricing

☐ **Infotron Systems Supermux 480** • see Infotron Systems for features and pricing

☐ **Infotron Systems 616** • see Infotron Systems for features and pricing

☐ **Infotron Systems Supermux 680** • see Infotron Systems for features and pricing

■ CONTINENTAL RESOURCES, INC

(sales/leasing company)
175 Middlesex Turnpike, Bedford, MA 01730 • 617-275-0850

☐ **General DataComm Complete Multiplexer Line** • see General DataComm for features and pricing

☐ **Micom Systems Complete Multiplexer Line** • see Micom Systems for features and pricing

■ CONTINENTAL SYSTEM SUPPLY

(sales/leasing company)
2580 Cumberland Parkway, NW, Atlanta, GA 30339 • 404-433-1838

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ DATA ACCESS SYSTEMS

(sales/leasing company)
Route 42 & Coles Road, Blackwood, NJ 08012 • 609-228-0700

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ DATA CONTROL SYSTEMS

1455 Research Boulevard, Rockville, MD 20850 • 301-279-8798

☐ CCM100/CCM200

Type/Application • FDM • point-to-point or multidrop operation over a coaxial cable

Channels • up to 6 asynchronous/synchronous channels • full-duplex • asynchronous or synchronous data rates up to 9600 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • local digital loopback; 5 status indicators per channel

Features/Options • proprietary cable drives • secondary supervisory channel opt

Cost/Service • contact vendor

☐ RAM 11

Type/Application • FDM • point-to-point, multipoint, or multidrop operation over AC power lines

Channels • up to 5 asynchronous/synchronous channels • full-duplex • asynchronous or synchronous data rates up to 9600 bps

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • local digital loopback; 5 status indicators per channel

Features/Options • uses AC power lines

Cost/Service • contact vendor

■ DATA COMM MANAGEMENT SCIENCES, INC

25 Van Zant Street East, East Norwalk, CT 06855 • 203-838-7183

Multiplexers

☐ Data Comm Data Pak

Type/Application • FDM data and voice • point-to-point or multipoint operation over 2- or 4-wire Type 3002 voice channel

Channels • up to 25 asynchronous channels; up to 25 at 75 bps; 6 at 300 bps or 1200 bps plus 2 at 300 bps • EIA RS-232C/MIL 188/20- or 60-mA current-loop electrical channel interface

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • local and remote channel loopbacks; 4 status indicators

Features/Options • synchronous adapter opt

Cost/Service • contact vendor

■ DATAGRAM CORPORATION

11 Main Street, East Greenwich, RI 02818 • 401-885-4840

☐ Datagram DM-900

Type/Application • statistical multiplexer with character interleaving • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 3 to 9 asynchronous channels; plus 1 synchronous channel opt • half-/full-duplex • asynchronous data rates 110 to 9600 bps • 5 through 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2400 bps • 76.8K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • asynchronous or synchronous up to 19.2K bps • external clocking up to 19.2K bps opt • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; implicit frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 16K bytes dynamically allocated • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via terminal message

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators 8 for each data channel; front panel LED switch selectable

Features/Options • automatic speed detection for DDD data channels; echoplex; downline loadable operating parameters; network management via DTE/DCE selectable jumper block

Cost/Service • 3-channel basic unit $1,550 • field upgradable • factory service • one-year warranty

☐ Datagram DM-1600

Type/Application • statistical multiplexer with character interleaving • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over 4-wire Type 3002 voice channel; DDS

Channels • 4 to 16 asynchronous channels; plus 2 synchronous channels opt • half-/full-duplex • asynchronous data rates 110 to 9600 bps • 5 through 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2400 bps • 54K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • asynchronous or synchronous up to 19.2K bps • external clocking up to 19.2K bps opt • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; implicit frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • dynamically allocated • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via terminal message

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators, 5 for each data channel; front panel LED switch selectable

Features/Options • automatic speed detection for DDD data channels; echoplex; downline loadable operating parameters; network management via DTE/DCE selectable jumper block

Cost/Service • 4-channel basic unit $2,600 • field upgradable • factory service • one-year warranty

☐ Datagram DM-4800

Type/Application • statistical multiplexer with character interleaving • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 4 to 48 asynchronous channels; plus 1 synchronous channel opt • half-/full-duplex • asynchronous data rates 110 to 9600 bps • 5 through 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2400 bps • 76.8K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • asynchronous or synchronous up to 19.2K bps • external clocking up to 19.2K bps opt • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; implicit frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • dynamically allocated • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via terminal message

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators, 5 for each data channel; front panel LED switch selectable

Features/Options • automatic speed detection for DDD data channels; echoplex; downline loadable operating parameters; network management via DTE/DCE selectable jumper block

Cost/Service • 4-channel basic unit $3,650 • field upgradable • factory service • one-year warranty

■ DATAPRODUCTS NEW ENGLAND, INC

Barnes Park North, Wallingford, CT 06492 • 203-265-7151

☐ Dataproducts Multichannel Crypto Controller

Type/Application • time division multiplexer with character interleaving • point-to-point • asynchronous or synchronous transmission up to 56K over DDS

Channels • 16 asynchronous or synchronous channels • full-duplex • asynchronous data rates up to 4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates up to 64K bps • 64K bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; MIL STD 188C compatible electrical channel interface

Composite Link • 1 composite link standard • synchronous at 64K bps • external clocking up to 64K bps • independently selectable link parameters • proprietary link protocol • EIA RS-232C; MIL STD 188C compatible electrical link interface

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • downline loadable operating parameters • designed for use with cryptics

Cost/Service • 4-channel unit without port cards $6,660 prch; 2-channel synchronous port card $450; 2-channel asynchronous port card $409 • on-call service for major problems; factory service • one-year warranty

Multiplexers

■ DATALINK READY INC

325 West Hibiscus Boulevard, Melbourne, FL 32901 • 305-676-0500

☐ Datalink AMX-1

Type/Application • time division multiplexer with character interleaving • asynchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDC

Channels • 2 asynchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • 7 or 8 bits per character • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • asynchronous up to 19.2K bps • EIA RS-232C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • not indicated

Features/Options • provides 2 asynchronous channels; per channel rate up to one-half 19.2K-bps link rate

Cost/Service • 2-channel unit $495 purchase price • one-year warranty

☐ Datalink SMX-1

Type/Application • time division multiplexer with character interleaving • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 asynchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • 7 or 8 bits per character • EIA RS-232C/CCITT V.24 electrical channel interface

Composite Link • 1 composite link • synchronous up to 19.2K bps • EIA RS-232C/CCITT V.24 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • not indicated

Features/Options • strap selectable thru-put channel • 2 synchronous channels, per channel rate up to one-half 19.2K-bps link rate

Cost/Service • 2-channel $335 purchase price • one-year warranty

☐ Datalink FMX

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • asynchronous or synchronous transmission up to 153.6K bps over a fiber optic cable

Channels • 32 to 128 asynchronous or synchronous channels in 32 channel increments; 8 to 32 asynchronous channels in 8 channel increments • full-duplex asynchronous/synchronous data rates from 9600 to 153.6K bps • EIA RS-232C/CCITT V.24 electrical channel interface

Composite Link • 1 composite link • integral optical electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • built-in local and remote loopbacks

Features/Options • selectable channel rates; synchronous clocks at all standard rates at or below 9600 bps

Cost/Service • contact vendor

☐ Datalink LD-TDM/8

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • up to 8 asynchronous channels • full-duplex • asynchronous data rates up to 9600 bps • maximum aggregate channel rate 76.8K bps • EIA RS-232C electrical channel interface

Composite Link • not specified

Buffer Parameters • not applicable

Diagnostics/Indicators • RTS/CTS; DTR/DSR; carrier detect indicators

Features/Options • no modem needed; 2,000-foot distance between multiplexers

Cost/Service • $495 single-unit purchase price • one-year warranty

■ DATATEL INC

1008 Astoria Boulevard, Cherry Hill, NJ 08034 • 609-424-4451

☐ Datatel DCP 5000

Type/Application • statistical multiplexer with bit interleaving • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 asynchronous channels • full-duplex • asynchronous data rates at 50/75/110/134.5/300/600/1200/2400/4800/9600 bps • 38.4K-bps aggregate channel data rate • EIA RS-232C; MIL STD 188C opt; RS-422 opt electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps • SDLC; CCITT X.25 Level II link protocol • CRC 16; ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 12K bytes buffer capacity • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; error protection; automatic speed recognition

Cost/Service • 4-channel unit $1,300; 2-channel unit $1,100; 2- to 4-channel upgrade $400 • on-call service; factory service • one-year warranty

☐ Datatel DCP 9100

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission rate of 1.544M bps over a T1 carrier facility

Channels • 1 to 48 synchronous channels in single-channel increments • full-duplex synchronous data rates from 300 to 19.2K bps with Type II channel adapter; 56K/112K/224K/448K bps with Type I channel adapter • 1.544M maximum aggregate channel rate • EIA RS-232C/CCITT V.35 • 2 to 48 voice channels • each voice card contains 2 ports • employs CVSD; 32K bps • full-duplex • 2- or 4-wire E&M signaling interfaces

Composite Link • 1 composite link • synchronous at 1.544M bps • EIA RS-232C/CCITT V.35; AT&T 301/MIL STD 188C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopbacks testing • bit-error generator on each channel card • LEDs indicate transmit/receive data and clock signals

Features/Options • relay-actuated loopbacks, single card for common logic, testing • redundant central logic and power supply opt

Cost/Service • $12,900 small configuration includes equipment nest and associated common logic and power supply, 10 Type I and 10 Type II channel adapters • $18,400 large configuration includes equipment nest and associated common logic and power supply, redundant common logic, redundant power supply, 10 Type I and 15 Type II channel adapters, 1 audible alarm and remote power monitor, and 1 standalone equipment rack • on-site maintenance through third party; cost typically 1 percent per month of value of installed equipment • factory repair of failed units base of $75 per component plus shipping costs • 1-year guarantee

Multiplexers

■ DATEC INCORPORATED

200 Eastowne Drive, Suite 116, Chapel Hill, NC 27514 • 919-929-2135

☐ Datec Datamux

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 2 asynchronous channels • half-/full-duplex • synchronous data rates at 110/134.5/150/300/1200/2400/4800/9600 bps • 5 through 8 bits per character • selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • synchronous up to 9600 bps • CRC 16/SDLC error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 1.5K-byte dynamically allocated buffer capacity • error detection and correction per SDLC protocol • menu-driven command mode

Diagnostics/Indicators • local and remote loopbacks on channels and composite link • front panel LEDs; operator console display

Features/Options • switch-selectable default configuration; menu-driven command mode

Cost/Service • $835 single-unit purchase price • factory maintenance; third party

■ DENCO DATA EQUIPMENT

(sales/leasing company)
25 Skippack Pike, Ambler, PA 19002 • 215-542-9876

☐ **Gandalf Data Complete Multiplexer Line** • see Gandalf Data for features and pricing

☐ **Network Products Inc Babymux** • see Network Products for features and pricing

■ DIGITAL COMMUNICATIONS ASSOCIATES (DCA)

303 Technology Park, Norcross, GA 30092 • 404-448-1400

☐ DCA System 105 STDM

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous transmission up to 9600 bps over Type 3002 voice channel; DDC

Channels • 2 to 4/6/8 asynchronous channels in 2-channel increments • half-/full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • 14.4K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 or 20-mA current-loop electrical channel interface • bandsplitter option accommodates 1 synchronous channel

Composite Link • 1 composite link • synchronous up to 9600 bps • external clocking • DDCMP link protocol • ARQ error detection and correction • EIA RS-232C/CCITT electrical link interface

Buffer Parameters • 2K-byte buffer capacity • overflow protection uses CTS; XON/XOFF (DC 1/DC 3) • flow suspension threshold at 66 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote composite link loopback testing • status indicators for each channel • opt supervisory port in conjunction with user-provided ASCII terminal provides composite link loopback testing from remote multiplexer

Features/Options • echoplex; data compression • automatic speed detection for DDD data channels opt; network management via supervisory console opt; bandsplitter/secondary channel opt

Cost/Service • 2-channel unit $1,500 purchase price; 4-channel unit $1,800 purchase price • factory repair, on-call service or telephone diagnostics • installation charge $300 • 90-day warranty

☐ DCA System 110 STDM/Network Processor

Type/Application • statistical multiplexer • point-to-point or multipoint • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 to 4/6/8 asynchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; current loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps • external clocking up to 19.2K bps • DDCMP link protocol • ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 2.0K- to 24K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote composite link loopback testing • status indicators for each data channel • individual channel testing

Features/Options • automatic speed detection for DDD data channels echoplex; data compression; master/slave configuration; downline loadable operating parameters; network management via supervisory console opt

Cost/Service • 2-channel unit $1,695 purchase price • 8-channel unit $2,850 purchase price • factory service; third-party service through RCA • installation charge $350 • 90-day warranty

☐ DCA System 120 STDM/Network Processor

Type/Application • statistical multiplexer • point-to-point or multipoint • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 to 32 asynchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates at 110/134.5/300/600/1200 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; current loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps • external clocking up to 19.2K bps • DDCMP link protocol • ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28; electrical link interface

Buffer Parameters • 20K- to 25K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; data compression; master/slave configuration; downline loadable operating parameters; network management via supervisory console opt

Cost/Service • 2-channel unit $2,695 • 16-channel unit $4,495; $200 mo 1-yr rental • 32-channel unit $8,195 prch • factory service; third-party service through Indeserv • installation charge $350 • 90-day warranty

☐ DCA System 125 STDM/Network Processor

Type/Application • statistical multiplexer • multipoint • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 to 32 asynchronous channels in 2-channel

Multiplexers

increments • half-/full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1, 1.5, or 2 stop bits • selectable odd, even, or no parity • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps • external clocking up to 19.2K bps • DDCMP link protocol • CRC 16; ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 20K- to 25K-byte buffer capacity • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression; master/slave configuration; downline loadable operating parameters; network management via supervisory console; multidrop master capable of supporting up to 15 slaves • overflow recovery via call disconnect opt

Cost/Service • 32-channel base unit $6,595 • $325 per 2 asynchronous channels • factory service pricing varies with channel capacity; third-party service through RCA • one-year warranty

☐ DCA System 325 Netswitch

Type/Application • statistical multiplexer • multinode, point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel

Channels • 32 to 1120 asynchronous channels in 16-channel increments • half-/full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1, 1.5, or 2 stop bits • selectable odd, even, or no parity • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; current-loop electrical interface

Composite Link • up to 11 composite links • synchronous up to 19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • DDCMP link protocol • CRC 16; ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 64K- to 1536K-byte buffer capacity • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration opt; downline loadable operating parameters; network management via supervisory console; allows connection of local and remote users to 1 or more hosts; host selection; port contention • overflow recovery via call disconnect opt

Cost/Service • base unit $12,560 • factory service price varies with channel capacity; third-party service through RCA

☐ DCA System 335 Network Processor

Type/Application • statistical multiplexer • multipoint, multinode, point-to-point • synchronous transmission up to 19.2K bps over a Type 3002 voice channel; DDS

Channels • 2 to 42 asynchronous channels in 2-channel increments • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; 20-mA current-loop electrical channel interface

Composite Link • up to 4 composite links • synchronous up to 19.2K bps • external clocking to 19.2K bps • independently selectable link parameters • CCITT X.25 Level III DDCMP link protocol opt • CRC 16; ARQ error detection and correction • EIA RS-232C CCITT V.24/V.28; current-loop electrical channel interface

Buffer Parameters • up to 44K-byte buffer capacity • CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 50 percent total buffer utilization; flow resumption

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • console for status monitoring

Features/Options • echoplex; data compression; master/slave configuration; supports X.25 interface to public network and X.25 packet mode hosts; master network processor; host selection; port contention • automatic speed detection for DDD data channels opt; downline loadable operating parameters opt; network management via supervisory console

Cost/Service • $6,795 base unit purchase price; $270 per month 1-year lease; $124 per month maintenace

☐ DCA System 355 Network Processor

Type/Application • statistical multiplexer • multinode, point-to-point, or multipoint • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDS

Channels • 2 to 126 asynchronous channels in 2-channel increments • half-/full-duplex • asynchronous data rates at 75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • up to 44 composite links • synchronous up to 19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level III and DDCMP link protocol • CRC 16; ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 64K- to 1472K-byte buffer capacity • CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • console for status monitoring • individual per-port testing

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression; master/slave configuration; downline loadable operating parameters; network management via supervisory console; supports X.25 interface to public network and X.25 packet mode hosts; master network processor; host selection; port contention

Cost/Service • base unit $9,995 • $325 per 2 asynchronous channels • factory service price varies with channel capacity; third-party service through RCA • 90-day warranty

☐ DCA INA Terminal Interface Processor

Type/Application • statistical multiplexer/PAD • point-to-point or multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDC

Channels • 2 to 32 asynchronous channels in 2-channel increments or available without channels • full-duplex • asynchronous data rates at 75 bps with 2 stop bits; 110 bps with 2 stop bits; 300 bps with 1 stop bit; 75/1200 bps (transmit/receive) with 1 stop bit; 1200 bps with 1 stop bit; 2400 bps with 1 stop bit; 4800 bps with 1 stop bit; 9600 bps with 1 stop bit • 7 or 8 bits per character, selectable odd, even, or no parity • 57.6K-bps maximum aggregate channel data rate • generates and reacts to 3 full-duplex EIA control signals • RS-232C/CCITT V.24/V.28 or 20-mA current-loop electrical channel interface

Multiplexers

Composite Link • composite link • central control module packaged link synchronous at 19.2K bps • external clocking • CCITT X.25 Level III LAP or LAPB link protocol; implements Datapac Standard Network Access Protocol (SNAP) • certified for use on Tymnet, Telenet, Uninet, and ADP Autonet in the U.S. • supports CCITT X.121 address coding • RS-232C/CCITT V.24/V.28/X.21 bis electrical interface • ARQ error detection and correction

Buffer Parameters • 25K-byte buffer capacity • CTS XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 66 percent total system utilization

Diagnostics/Indicators • self-test

Features/Options • automatic speed detection for DDD data channels; echoplex; integral modem control • does not support call answering

Cost/Service • $1,895 basic unit purchase price; $76 per mo 1-year lease; $32 mo maintenance • factory repair, on-call service or telephone diagnostics • installation charge $400 • 90-day warranty

☐ DCA T1 Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous transmission from 50 bps to 1.544M bps or 2.04M bps

Channels • 4 to 128 channels • no asynchronous channel card • synchronous channel cards contain 4 ports • channel parameters soft-configured • synchronous data rates from 50 to 256K bps, half-/full-duplex, four interface control signals passed in either direction; configured as DCE • RS-232C interface standard; RS-422, 423, and CCITT V.35 optional • each voice channel provides 4 ports; employs CVSD quantization; 16K-, 32K-, or 64K-bps channel bandwidth • employs 4-wire E&M signaling interface

Composite Link • 1 composite link • synchronous data rates from 50 bps to 1.544M bps or 2.048M bps • RS-232C interface standard; RS-422, 423, and CCITT V.35 interfaces optional • requires AT&T Model 306 modem (or equivalent) for attachment to AT&T Accunet T1.5 service

Buffer Parameters • not applicable

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • LEDs show channel activity, network synchronization, line data port activity, line clock/carrier detect, sync loss, and multiplexer bypass

Features/Options • redundant control logic and power supply optional • dynamic bandwidth contention allows channels to contend for available time slots • network statistics gathered and displayed • high-speed data transfers (e.g., CPU-to-CPU) may bypass the multiplexing process • up to 10 system configurations can be preprogrammed and initiated from terminal • employs 64-bit elastic buffer on each channel • both DS1 framed and unframed format due in 1984

Cost/Service • $20K purchase price • about $740 per month based on 3-year lease • $200 month typical maintenance fee • on-site vendor service; DCA also offers online remote diagnostics priced between one-third to one-half on-site service fees

■ DIGITAL EQUIPMENT CORPORATION (DEC)

Main Street, Marlboro, MA 01752 • 617-467-7068

☐ DEC DFM 04, 08, 12 & 16

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission up to 9600 bps over Type 3002 voice channel

Channels • 4/8/12/16 asynchronous or synchronous channels in 4-channel increments; optimized for DEC DDCMP sync protocols • asynchronous or synchronous data rates up to 9600 bps • statistically multiplexes any sync protocol with EIA flow control • 153.6K-bps aggregate channel rate • EIA RS-232C/RS-423 electrical channel interface

Composite Link • 1 composite link • synchronous up to 19.2K bps • internal/external clocking • EIA RS-232C/RS-423 electrical link interface

Buffer Parameters • up to 32K-byte buffer capacity • error detection and correction overflow

Diagnostics/Indicators • system channel and link test; broadcast messages • local and remote channel loopback testing • local and remote link testing • status indicators

Features/Options • supervisory command channels; unit supports switching and contention • expanders opt • optional support for synchronous channels in bandsplit fashion • integral 4800- or 9600-bps modem opt

Cost/Service • contact vendor

■ DYNATECH PACKET TECHNOLOGY (DYNAPAC)

6464 General Green Way, Alexandria, VA 22312 • 703-642-9391

☐ Dynapac Multi Plex.25

Type/Application • statistical multiplexer/PAD • point-to-point or multipoint • synchronous transmission up to 9600 bps over a packet switching network/DDS/4-wire Type 3002 voice channel

Channels • 4 or 8 asynchronous channels • full-duplex • asynchronous data rates at 110/150/200/300/600/1200/1800/2000/2400/4800/7200/9600 bps • 7 or 8 bits per character • 1 or 2 stop bits • selectable odd/even/no parity; parity transparency or auto-parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600 bps • external clocking up to 9600 bps • CCITT X.25 Level II/III BSC/HDLC link protocol • CRC 16, ARQ, frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 10K- to 39K-byte buffer capacity • overflow protection uses CTS; RTS; PTR; Busy; DC1/DC3; XON/XOFF; CTL S/CTL Q to suspend or resume data channel flow

Diagnostics/Indicators • local data channel loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; port switching; DTE or DCE operation; buffer expansion

Cost/Service • 4-channel unit $1,895 purchase price • 8-channel unit $2,695 purchase price • $1,200 per 4-channel upgrade • own service; on-call service; factory service • one-year warranty

☐ Dynapac DP-1000

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/packet switching network/DDS

Channels • 4 or 8 asynchronous channels • full-duplex • asynchronous data rates at 110/150/200/300/600/1200/1800/2000/2400/4800/7200/9600 bps • 7 or 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600 bps • external clocking up to 9600 bps • CCITT X.25 Level III; HDLC link protocol • CRC 16 error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link protocol

Buffer Parameters • 10K- to 39K-byte buffer capacity • overflow protection uses DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data flow

Diagnostics/Indicators • local data channel loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; port switching

Cost/Service • 4-channel unit $1,395; 8-channel unit $2,295 •

Multiplexers

own service; on-call service; factory service • one-year warranty

☐ Dynapac Multi-Pad X.25

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission over a 4-wire Type 3002 voice channel/packet switching network/DDS

Channels • 4 or 32 asynchronous channels • full-duplex • asynchronous data rates at 110/150/200/300/600/1200/1800/2000/2400/4800/9600/64K bps • 7 or 8 bits per character • 1 or 2 stop bits • selectable odd, even, or no parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 or 2 composite link(s) standard • synchronous at 9600 bps • external clocking up to 9600 bps upgradeable to 64K bps • CCITT X.25 Level II or III; BSC/HDLC link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 10K- to 39K-byte buffer capacity • overflow protection uses CTS; RTS; DTR; Busy; DC1/DC3; XON/XOFF; CTL S/CTL Q to suspend or resume data flow

Diagnostics/Indicators • local data channel loopback testing • status indicators for each channel

Features/Options • automatic speed detection for DDD data channels; port switching; DTE or DCE operation; buffer expansion; user messages expansion

Cost/Service • 4-channel unit $2,995; 8-channel unit $3,995 • $1,000 per 4-channel upgrade • own service; on-call service; factory service • one-year warranty

☐ Dynapac Multi-Switch X.25/Multi-Switch X.25/2

Type/Application • statistical multiplexer/PAD • point-to-point; multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/packet switching network/DDS

Channels • 4 to 8 synchronous channels • full-duplex • synchronous data rates 1200 to 9600 bps • 7 or 8 bits per character • selectable odd, even, or no parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters

Composite Link • 1 composite link standard • synchronous at 9600 bps • CCITT Level II or III; BSC/HDLC link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 10K- to 39K-byte buffer capacity • overflow protection uses CTS; RTS; DTR; Busy; DC1/DC3; XON/XOFF; CTL S/CTL Q to suspend or resume data channel flow

Diagnostics/Indicators • local data channel loopback testing • status indicators for each channel

Features/Options • automatic speed detection for DDD data channels; port switching; DTE or DCE operation; buffer expansion; battery backup; random access memory and additional memory opt

Cost/Service • 4-channel (X.25) unit $3,775; 8-channel (X.25) $5,350; 4-channel (X.25/2) $4,250; 8-channel (X.25/2) $6,350 • $1,000 per 4-channel upgrade • own service; on-call service; factory service • one-year warranty

■ EDA INSTRUMENTS

268 Galaxy Boulevard, Rexdale, Ontario M9W 5R8 • 416-425-7800

☐ EDA Micromux STDM/X.25 Pad

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDS/packet network

Channels • 2 to 4 asynchronous channels • half- or full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable space/mark/odd/even/no parity • 19.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • synchronous to 9600 bps • external clocking up to 9600 bps • SDLC/CCITT X.25 Level II/III/IV link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 8K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF and various special protocols to suspend or resume data channel flow

Diagnostics/Indicators • self-test; remote data channel loopback testing • statistics reporting at master site; online and off-line diagnostics; EIA port monitor • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; data compression; master/slave configuration; auto parity; various channel protocol options

Cost/Service • contact vendor • factory service; third-party service • installation charge $400 per day plus expenses • 90-day warranty

☐ EDA Minimux STDM/X.25 Pad

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDS/packet network

Channels • 8 to 16 asynchronous channels • half- or full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable space/mark/off/even/no parity • 19.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard; synchronous at 9600 bps • CCITT X.25 Level II/III/IV • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF and various special protocols to suspend or resume data channel flow • flow suspension threshold at 92 percent total buffer utilization; flow resumption threshold when another buffer is available • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • remote data channel loopback testing • statistics reporting at host site; online and off-line diagnostics; EIA port monitor • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; auto-parity detection at remote end; upgradable to maximum; various channel protocol options

Cost/Service • contact vendor • factory service; third-party service • installation charge $400 per day plus expenses • 90-day warranty

■ ELECTRONETIC SYSTEMS LTD

(sales/leasing company)
785 Arrow Road, Weston, Ontario M9M 2L4 • 416-745-2999

☐ **Racal-Milgo Information Systems Omnimux** • see Racal-Milgo Information Systems Omnimux for features • standalone: $2,350 to $15,380 (Canadian) prch (4 to 32 channels); 15% residual lease

■ ELECTRORENT CORPORATION

(sales/leasing company)
4131 Vanowen Place, Burbank, CA 91505 • 213-843-3131

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ ETHOM ASSOCIATES

(sales/leasing company)
3456 Hardee Road, Champlee, GA 30341 • 404-457-0161

☐ **Infotron Systems Complete Product Line** • see Infotron Systems for features and pricing

Multiplexers

☐ **Rixon Complete Product Line** • see Rixon for features and pricing

■ FIBRONICS INTERNATIONAL INC

218 West Main Street, Hyannis, MA 02601 • 617-778-0700

☐ Fibronics FM 818

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous transmission up to 64K bps over a fiber optic cable up to 6,600 feet (2 Km) or optionally up to 13,200 feet (4 Km)

Channels • 8 asynchronous or synchronous channels • full-duplex • synchronous data rates up to 64K bps, all synchronous channels independently clocked at selected data rate • asynchronous data rates up to 20K bps for eight-channel operation; 56K bps for four-channel operation • RS-232C/CCITT V.24

Composite Link • 1 composite link • asynchronous or synchronous up to 64K bps

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test local data channel loopback testing • automatic remote loopback and self-test link loopbacks • status indicators • fault detection indicators

Features/Options • different data rates permitted at each channel • transmission up to 2.5 miles (4 Km) opt; 16 asynchronous 19.2K-bps optional

Cost/Service • $3,300 8-channel purchase price

☐ Fibronics FM-832

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous transmission up to 64K bps over a fiber optic cable up to 2 miles; or coax cable up to 0.5 mile

Channels • up to 32 synchronous plus 64 auxiliary asynchronous channels with data rates up to 1200 bps; 64 asynchronous plus 64 auxiliary asynchronous channels up to 1200 bps; 128 voice channels plus signaling • full-duplex synchronous data rates up to 64K bps; asynchronous up to 19.2K bps • EIA RS-232C/CCITT V.24/V.35

Composite Link • 1 composite link • asynchronous or synchronous up to 2048M bps • external clocking up to 64K bps • RTS/CTS error detection and correction

Buffer Parameters • not applicable

Diagnostics/Indicators • 15 LEDs; remote loopback testing

Features/Options • transmission rate and clock mode selectable • telephone or intercom interface for voice channels • T1 module optional

Cost/Service • $10,000 purchase price includes chassis, power supply, selector card, and transceiver, RS-232C data module, link extender module, remote link extender with 4 or 8 fiber optic data channels, fiber optic telephone, dual channel cable, power supply and logic unit • T1 transceiver $1,000; coax remote link extender $2,300

☐ Fibronics FM 1600 Series

Type/Application • time division multiplexer with bit interleaving strictly for 3270 to 3274 controllers • point-to-point or multipoint • asynchronous transmission up to 2.3M bps over a fiber optic cable up to 1.9 miles

Channels • 1 to 32 channels; expandable in 4- or 8-channel increments • asynchronous data rates up to 2.3M • IBM 327X interface

Composite Link • 1 composite link • asynchronous up to 24M bps

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test • status indicators

Features/Options • interfaces with IBM System 34/36/38 control units and 5200-type terminals (FM-1608-1632 38/52); IBM 3271/72 or 3274 control units and Type B terminals (FM-1608-1632 72/77); IBM 3274 control units and Type A terminals (FM-1608/1632 74/78); ITT-Courier 7411, 7601, SEL/ITT 3284 control units (FM-1608-1632 84/87)

Cost/Service • contact vendor

■ FRIEDMAN ASSOCIATES

(sales/leasing company)
2424 Morris Avenue, Union, NJ 07083 • 201-964-6200

☐ **Datagram Complete Product Line** • see Datagram for features and pricng

☐ **Infotron Systems Complete Product Line** • see Infotron Systems for features and pricing

☐ **Prentice Corporation Complete Product Line** • see Prentice Corporation for features and pricing

■ GANDALF DATA

1019 South Noel Avenue, Wheeling, IL 60090 • 312-541-6060

☐ Gandalf GLM 504 Synchronous TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 56K bps over a 4-wire Type 3002 voice channel/wideband facility/DDS

Channels • 1 to 4 synchronous channels; bandwidth allocated to synchronous channels in composite link selectable at 0.125/0.25/0.50/0.75/1.0 composite data rate • half- or full-duplex • 56K-bps maximum aggregate channel data rate

Composite Link • 1 composite link standard • synchronous to 56K bps • external clocking up to 56K bps • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • remote data channel loopback testing • remote composite link loopback testing • status indicators for each data channel

Features/Options • passes 4 EIA control signals per channel in both directions

Cost/Service • 4-channel unit $1,550 purchase price; $16 per mo maint • own service; factory service • one-year warranty

☐ Gandalf FX-8 Fiber Optic TDM

Type/Application • time division multiplexer • asynchronous or synchronous transmission up to 240K bps over a fiber optic cable up to 3,300 feet (1km)

Channels • 8 asynchronous channels • full-duplex • asynchronous rates to 20K bps • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous to 240K bps • independently selectable link parameters • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators

Features/Options • full-duplex in all ports simultaneously

Cost/Service • 8-channel base unit $4,000 • nationwide service organization; factory service • one-year warranty

☐ Gandalf Pin 9101 EX.25 Multiplexer

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 8 to 16 asynchronous channels in 8-channel increments • half- or full-duplex • asynchronous data rates up to 9600 bps • 7 or 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 57.6K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 19.2K bps • external clocking up to 19.2K bps • CCITT X.25

Multiplexers

Level III link access balanced (LAPB) link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 12K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via audible warning

Diagnostics/Indicators • local data channel loopback testing • local composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; supports CCITT Recommendations X.3, X.29, and X.28; network management via supervisory console opt; Hewlett-Packard ENQ/ACK protocol support opt

Cost/Service • 4-channel unit $2,650 purchase price; $26.50 per month maintenance • own service, factory service • one-year warranty

☐ Gandalf Pin 9103 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/wideband facility/DDS

Channels • up to 32 asynchronous channels • half- or full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 76.8K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 19.2K bps • external clocking up to 19.2K bps • HDLC link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 12K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via audible warning

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; channel priority; supports 4 different connection protocols; Hewlett-Packard ENQ/ACK opt; network management via supervisory console opt

Cost/Service • contact vendor for pricing; delivery scheduled for first quarter 1982 • own service; factory service • one-year warranty

☐ Gandalf Pin 9106 Statistical Multiplexer

Type/Application • statistical multiplexer • point-to-point asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 2 or 4 asynchronous channels in 2-channel increments • half-/full-duplex • asynchronous data rates at 110/134.5/150/300/600/1200/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity or mark/space • 19.2K-bps maximum aggregate channel rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • synchronous or asynchronous up to 9600 bps • dedicated- or dial-line mode • external clocking • CRC; ARQ error recovery • EIA RS-232C electrical link interface

Buffer Parameters • 2K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel overflow • flow suspension threshold at 75 percent buffer utilization; flow resumption threshold at 50 percent total buffer utilization

Diagnostics/Indicators • local data channel loopback testing • local composite link loopback testing • status indicators

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; echoplex

Cost/Service • 2-channel unit $825 purchase price; $8.25 per mo maint; 4-channel unit $1,085 purchase price; $10.90 per mo maint • own service; factory service • one-year warranty

☐ Gandalf 3200 Series

Type/Application • time division multiplexer for 3270 to 3274 controller; supports local transmission between terminal and controller via coaxial cable

Channels • up to 32 channels • 2.358M-bps maximum aggregate channel rate

Composite Link • 1 composite link • 4.717M-bps maximum aggregate composite link data rate

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators

Features/Options • integral composite link modem

Cost/Service • contact vendor

■ GENERAL DATACOMM INDUSTRIES (GDC)

One Kennedy Avenue, Danbury, CT 06810 • 203-797-0711

☐ GDC 1150 Series FDM

Type/Application • FDM multichannel central site unit and single-channel remote unit for data only • point-to-point; multipoint; multidrop operation over a 2-wire or 4-wire conditioned or unconditioned Type 3002 channel

Channels • 1 to 37 asynchronous channels in single-channel increments; 37 channels at 50/56 bps; 29 at 75 bps; 19 at 110 bps; 14 at 150 bps; 6 at 300 bps; 3 at 600 bps • requires C2 line conditioning for up to 6 or more channels at 300 bps; C2 for 3 or more channels at 600 bps • EIA RS-232C electrical channel interface

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • analog loopback on composite link; digital loopback on data channels

Cost/Service • 16-channel base unit $850 prch; $42 mo 1-yr rental • $430 prch per single-channel adapter; $29 mo 1-yr rental; $500 single-channel drop; $24 mo 1-yr rental • factory service; on-call service • nationwide service organization • hot-line diagnostic centers in Danbury, CT and Santa Ana, CA • one-year warranty

☐ GDC 1202 TDM

Type/Application • time division multiplexer with character interleaving • point-to-point • transmission up to 72K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • up to 8/24/40/56/72/88/96 asynchronous channels in single-channel increments; plus up to 4 synchronous channels in 2-channel increments; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50 composite data rate • full-duplex • asynchronous data rates at 50/56.88/74.2/75/110/134.5/300/600/1200/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • odd/even/no parity • synchronous data rates up to 18K or 36K bps • 72K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C; current-loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 72K bps • EIA RS-232C/CCITT V.24/V.28; WE 303; CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Multiplexers

Diagnostics/Indicators • local or remote data channel loopback testing • channel failure detection and alarm • status indicators for each data channel

Features/Options • bandsplitter opt; integral modem for composite link opt; integral modem for data channels opt; manual or automatic rerouting over dial-up lines; common alarm for failure detection on any channel; test pattern generator and comparator; redundant power supply

Cost/Service • system purchase price $1,170; $56 mo 1-yr rental • 16-channel expansion shelf $550 prch; $26 mo 1-yr rental • $160 per asynchronous channel; $8 mo 1-yr rental • own service via nationwide service organization; maintenance contract; on-call service • one-year warranty

☐ GDC 1205 TDM

Type/Application • time division multiplexer with character interleaving • point-to-point • synchronous transmission up to 72K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • up to 14 asynchronous channels in single-channel increments; including up to 2 synchronous channels in single-channel increments • half- or full-duplex • asynchronous data rates up to 4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates up to 9600 bps • 72K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 72K bps • EIA RS-232C/CCITT V.24/V.28; WE 303; CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local data channel loopback testing • channel failure detection and alarm • status indicators for each data channel

Features/Options • bandsplitter opt; integral modem for data channels opt; test pattern generator opt

Cost/Service • 14-channel base unit $1,400 prch; $67 mo 1-yr rental • $160 prch per asynchronous channel; $8 mo 1-yr rental • own service via nationwide service organization; maintenance contract; on-call service • one-year warranty

☐ GDC 1208 TDM

Type/Application • time division multiplexer with character interleaving • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 2 or 4 asynchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates up to 9600 bps • 19.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • external clocking up to 19.2K bps • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local data channel loopback testing • local composite link loopback testing • status indicators for each data channel

Cost/Service • 4-channel base unit $900 prch; $43 mo 1-yr rental • own service; nationwide service organization; maintenance contract; on-call service • one-year warranty

☐ GDC 1209 Little Brown TDM

Type/Application • time division multiplexer with character interleaving • point-to-point • synchronous transmission up to 9.6K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 asynchronous channels • half- or full-duplex • asynchronous up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 9.6K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600 bps • external clocking up to 9600 bps • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; data channel loopback testing • local composite loopback testing • status indicators for each data channel

Cost/Service • 4-channel unit $995 purchase price; $42 mo 1-yr rental • own service via nationwide service organization; maintenance contract; on-call service • one-year warranty

☐ GDC 1253 TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 300K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 12 asynchronous or synchronous channels in single-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/560/1200/1800 bps • synchronous data rates at 1200/2400/4800/9600/19.2K bps • 300K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 300K bps • external clocking up to 300K bps • EIA RS-232C/CCITT V.24/V.28; WE 303; CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel; local or remote alarm to channel failures

Features/Options • optional monitor for composite link displays error rate

Cost/Service • 12-channel base unit $1,600 prch; $77 mo 1-yr rental • $190 prch per asynchronous channel; $9 mo 1-yr rental • $385 prch per synchronous channel; $18 mo 1-yr rental • own service via nationwide service organization; on-call service • one-year warranty

☐ GDC Megamux 1257 TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 300K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC/T1 carrier facility

Channels • up to 22/38/54 asynchronous or synchronous channels in single-channel increments • full-duplex • 15 asynchronous data rates from 50 to 9600 bps • 44 synchronous data rates from 150 to 256K bps • 300K- bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; MIL STD 188C; WE 303 electrical channel interface

Composite Link • 1 composite link standard • synchronous from 2400 bps to 300K bps • external clocking up to 300K bps • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; WE 303 CCITT V.35; MIL STD 188C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators and alarms for each data channel and common logic

Features/Options • redundant common logic opt; interface adapter panel opt; automatic framing opt; supervisory control monitor opt

Cost/Service • 22-channel base unit $3,200 prch; $153 mo 1-yr rental • 16-channel expansion shelf $700 prch $32 mo 1-yr • $190 prch per asynchronous channel; $9 mo 1-yr rental • $385 prch per synchronous channel; $18 mo 1-yr rental • own service via nationwide service organization; on-call service • one-year warranty

Multiplexers

☐ GDC Megamux 1258 TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 1.544M or 2.048M bps over a 4-wire Type 3002 voice channel/wideband facility/DDC/T1 carrier facility

Channels • up to 22/38/54 asynchronous or synchronous channels in single-channel increments • full-duplex • asynchronous data rates from 50 to 9600 bps • synchronous data rates from 150 bps to 1.024M bps • single-port voice channel • CVSD quantization; 32K bps • full-duplex • 4-wire E&M signaling interface • 2M-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; MIL STD 188C; WE 303 electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 1.544M or 2.048M bps • external clocking up to 2M bps • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; MIL STD 188C; WE 303 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators and alarms for each data channel and common logic • in/out of sync for local/remote units; loss of aggregate clock alarm • network statistics

Features/Options • redundant common logic opt; interface adapter panel opt; automatic framing opt; supervisory control monitor opt

Cost/Service • 22-channel base unit $4,700 prch; $227 mo 1-yr rental • 16-channel expansion shelf $700; $32 mo 1-yr rental • $230 prch per asynchronous channel; $11 mo 1-yr rental • $385 prch per synchronous channel; $18 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service • one-year warranty

☐ GDC GEN*NET 1261 Data Concentrator

Type/Application • statistical multiplexer • point-to-point • synchronous transmission rates up to 19.2K bps over Type 3002 voice grade channel

Channels • 4 or 8 asynchronous channels • half-/full-duplex • 15 asynchronous data rates from 50 to 9600 bps • EIA RS-232C/CCITT V.24/V.28 channel interfaces • auto-baud rate detection

Composite Link • 1 composite link standard • CCITT X.25 link protocol with ARQ • data rates to 19.2K bps dictated by the external clock rate (XMT and RCV) • standard EIA RS-232C interface

Buffer Parameters • base card memory consists of four EPROM (Erasable Programmable Read Only Memory) chips in 8K- or 4K-byte blocks, and three RAMS (Random Access Memory) in 2K- and 4K-byte blocks • additional 2K RAM located on the expansion card

Diagnostics/Indicators • 3-channel level diagnostics, local and remote loopbacks and self-test • 2 composite level loopbacks, local and remote • diagnostic and link status indicators

Features/Options • supports 4 EIA controls; in-band/out-of-band controls; local echoplex; switch-selectable channel configuration • downline loading • error message reporting to channels and buffer overflow

Cost/Service • 4-channel $1,400 purchase price; 4-channel 1-yr rental $60 per mo • 8-channel $2,200 purchase price; 8-channel 1-yr rental $95 per mo • own service via nationwide service organization; on-call service • one-year warranty

☐ GDC Pollkat MPM 1600 Master & RPM 200 Slave STDMs

Type/Application • polling statistical multiplexer • multipoint up to 16 drops/line; up to 7 and up to 8 drops/line each on 2 lines • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC/4-wire metallic circuit

Channels • 8 or 16 asynchronous channels • full-duplex • asynchronous data rates from 50 bps to 9600 bps • 8 bits per character • 1/2 stop bits • selectable/odd/even/no parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 or 2 composite links standard • asynchronous or synchronous up to 9600 bps • external clocking up to 9600 bps • GDC polling link protocol • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 256 bytes per channel master unit buffer capacity; 132 bytes per channel slave unit buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 95 percent buffer utilization per data channel; flow resumption threshold of 50 percent per data channel

Diagnostics/Indicators • self-test; remote data channel loopback testing • remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • echoplex; master/slave configuration; network management via supervisory console adjustable polling sequence; data logging and display via CRT console

Cost/Service • MPM 1600 8-channel master unit $2,150 prch; $102 mo 1-yr rental • 16-channel master unit $3,360 prch; $160 mo 1-yr rental • RPM 200 single-channel slave unit $895 prch; $38 mo 1-yr rental • own service via nationwide service organization; on-call service; factory service • one-year warranty

☐ GDC GEN*NET 1262 Data Concentrator

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 56K bps per link over Type 3002 voice-grade lines/DDC

Channels • 1262/08, 4 or 8 channels; 1262/24, 4 to 24 channels; expandable in 4-channel increments • asynchronous or IBM BSC; cascading up to 96 channels • 15 data rates; 50 to 19,200 bps • auto-baud, 6 rates to 1200 bps • RS-232C or RS-423, V.24/V.28 or V.10 interface

Composite Link • basic capacity 1 or 2 links, advanced 1 to 4 links • synchronous data rates up to 56K bps per link • CCITT X.25 Level II LAPB protocol • CRC, ARQ error detection/correction • RS-232C, RS-433 (V.10) or RS-422 (V.11) interfaces

Buffer Parameters • 0.125, 0.25, or 0.5 of available buffer per channel or open access to buffer • (maximum buffer capacity of 248 bytes XMT, 248 bytes RCV, per channel) • in-band/out-of-band flow control

Diagnostics/Indicators • 3 diagnostic modes: automatic, supervisory console initiated, and terminal initiated • 3 levels of diagnostics: internal memory test, link, and channel • alarms: self-test fail, link failure, buffer overflow, defective channel card or diagnostics engaged • front panel display: configuration, diagnostics, status, statistics

Features/Options • local echoplex$a05auto-baud rate detection • simple keyboard and display • supervisory port • local and remote status and statistical reports • non-volatile configuration memory • downline and upline reloading • in-service reconfiguration without active channel interruption • front panel operation of routines for configuration, diagnostics, status, and statistical reports

Cost/Service • 1262/08 single link $2,250, 1-yr rental $91 per mo • 1262/24 single link, $2,600, 1-yr rental $1,050 per mo • $1,000 per quad channel adapter • own service via nationwide service organization; on-call service • one-year warranty

☐ Timeplex Complete Multiplexer Line • see Timeplex Inc for features and pricing

■ GTE/COMMUNICATION SYSTEMS

sales/leasing company

1757 Winthrop Drive, Des Plains, IL 60018 • 312-299-6151

☐ **Timeplex Complete Multiplexer Line** • see Timeplex Inc for features and pricing

■ GTE/TELENET COMMUNICATIONS CORP

8229 Boone Boulevard, Vienna, VA 22180 • 703-442-1000

Multiplexers

☐ GTE Telenet TP3000 Series STDM Network Interface Processor

Type/Application • statistical multiplexer; X.25 concentrator/PAD • point-to-point • synchronous transmission up to 19.2K bps

Channels • up to 27 asynchronous channels in 8-channel increments; or up to 8 synchronous channels • full-duplex • asynchronous/synchronous data rates up to 9600 bps • 7 or 8 bits per character • 1/1.5/2 stop bits • selectable mark/space/odd/even parity • 38.4K-bps maximum aggregate channel data rate • HDLC; BSC protocols • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II or Level III; HDLC; BSC link protocol • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 40K-byte maximum buffer capacity; capacity varies according to operating software • overflow protection uses CTS; DC1/DC3; XON/XOFF to suspend or resume asynchronous data channel flow

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; network management via supervisory console opt; common logic redundancy option; direct memory access option

Cost/Service • contact vendor

☐ GTE/Telenet TP 4000 Series Network Interface Processor

Type/Application • statistical multiplexer; X.25 concentrator/PAD • point-to-point • synchronous transmission up to 56K bps

Channels • up to 128 asynchronous/synchronous channels • half-/full-duplex • asynchronous data rates up to 2400 bps; HDLC; BSC synchronous protocol; synchronous data rates up to 56K bps • 7 or 8 bits per character • 1/1.5/2 stop bits • selectable mark/space/odd/even parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 or 2 composite links • synchronous at 56K bps • CCITT X.25 Level III link protocol; EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • contact vendor

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters • network management via supervisory console opt; common logic redundancy opt; direct memory access opt

Cost/Service • contact vendor

■ HALCYON

1 Halcyon Plaza, 2121 Zanker Road, San Jose, CA 95131 • 408-293-9970

☐ Halcyon 4001 Series STDM Network System

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 19.2K bps over a 4-wire type 3002 voice channel/DDS

Channels • up to 32 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200 bps; 1800/2400/4800/9600 bps optional • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • EIA RS-232C; current-loop electrical channel interface

Composite Link • 1 composite link • synchronous at 19.2K bps for single link • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses XON/XOFF; EIA control signals to suspend or resume data channel flow • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for system; network; and each data channel

Features/Options • echoplex; data compression; assignable channel priorities; master/slave configuration; downline loadable operating parameters; remote alarm opt; dual power supply opt; automatic power failure recovery

Cost/Service • contact vendor • own service; on-call service; on-site fixed rate service • 90-day warranty

☐ Halcyon 4220 Series STDM Network System

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 19.2K bps over dual 4-wire Type 3002 voice channel/DDS

Channels • up to 60 asynchronous channels in 2-channel increments; or up to 16 synchronous channels in 2-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200 bps; 1800/2400/4800/9600 bps optional • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 2400/4800/7200/9600 bps; 600/1200 bps optional; synchronous protocols include IBM 3270, 2780, 3780; CDC 2004T; Sperry 4100/200 and 1004; Honeywell; VIP; Burroughs; and IPARS • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • up to 2 composite links • synchronous up to 9600 bps for each of 2 links or 19.2 bps for single link • SDLC link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • (see Model 4001)

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • remote diagnostic port • status indicators for system; network and each data channel; internal or external alarms signal failure of master/slave multiplexer or network link • statistics reporting

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; assignable channel priorities; downline loadable operating parameters; port contention and port switching features; remote alarm opt; dual power supply opt; support for special channel protocols; automatic power failure recovery

Cost/Service • contact vendor • own service; on-call service; on-site fixed rate service • 90-day warranty

■ INFOTRON SYSTEMS

Cherry Hill Industrial Center, Cherry Hill, NJ 08003 • 609-424-9400

☐ Infotron Timeline 280 Synchronous TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point or multipoint • synchronous transmission up to 64K bps over a wideband facility/DDC

Channels • 24 synchronous channels in single-channel increments • half- or full-duplex • synchronous data rates at 2400/4800/7200/9600/19.2K bps • 56K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28; CCITT V.35 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 40.8K/48K/50K/56K/64K bps • external clocking up to 64K bps • WE 301/303; CCITT V.35 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • optional channel speeds from 2400 bps to 50,400 bps at 2400 bps intervals; optional central logic and

Multiplexers

power supply redundancy

Cost/Service • 14-channel base unit $1,800 prch • $425 prch per synchronous channel • central logic $700 prch • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Timeline 290 Synchronous TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 2 to 4 synchronous channels in 2-channel increments • half- or full-duplex • synchronous data rates at 2400/4800/7200/9600 bps • 9600-bps maximum aggregate channel data rate • independently selectable channel parameters; 3 channel parameter combinations • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600 bps • external clocking up to 9600 bps • EIA RS-232C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • programmable for 0.50 or 0.25 speed on composite link and channels

Cost/Service • 4-channel unit $1,900 prch • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum per mo; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Supermux 380 Fully Featured STDM

Type/Application • statistical multiplexer • point-to-point • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 8 asynchronous channels in 4-channel increments, plus 1 synchronous channel; synchronous channel multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25, 0.50, 0.75 composite data rate • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 data bits • 1/1.5/2 stop bits • odd, even, or no parity • synchronous data rates at 2400/4800/7200 bps • 76.8K-bps aggregate channel rate • independently selectable channel parameters; 4 parameter combinations • EIA RS-232C/CCITT V.24/V.28 optional current-loop electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 300/1200/9600/19.2K bps; synchronous up to 19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • modified SDLC link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses CTS opt; DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 80 percent per data channel; flow resumption threshold at 60 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing opt • local or remote composite link loopback testing network management via supervisory console

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; bandsplitter; integral modem for composite link • Supermux 380 Basic version is no-frills model without optional equipment, at reduced cost

Cost/Service • 4-channel unit $1,750 purchase price; $17.50 per mo maint • 8-channel unit $2,650 purchase price; $26.50 per mo maint; $900 4 to 8 channel upgrade • nationwide service organization; on-call service 1% of purchase price; factory service; third-party service through Dow Jones • installation charge • one-year warranty

☐ Infotron Supermux 480 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Supermux 790

Channels • 4 or 8 asynchronous channels in 4-channel increments; including up to 2 synchronous channels; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50/0.75 composite data rate • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 76.8K-bps maximum aggregate channel data rate • EIA RS-232C; current-loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 9600 bps • SDLC CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K-byte increments • CTS; DC1/DC2; DC1/DC3; DC2/DC4 XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via data lost message to terminals

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; master/slave configuration; downline loadable operating parameters; terminal initiated diagnostics opt; bandsplitter opt; software demultiplexing

Cost/Service • 4-channel unit $1,900 prch • 8-channel unit $2,900 prch • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Supermux 600 Series STDM

Type/Application • statistical multiplexer • single or multilink; point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDS; up to 9600 bps over dual links

Channels • 4 to 16 or 4 to 32 asynchronous or synchronous channels in 4-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2000/2400/4800/9600 bps • 5 through 8 bits per character • 1, 1.5, or 2 stop bits • odd, even, or no parity • protocol transparent, or protocol sensitive synchronous channels (IBM BSC, GRTS/VIP, 4T200, Burroughs Bisync); synchronous data rates at 1200/2000/2400/4800/7200/9600 bps • 153.6K/307.2K-bps aggregate channel data rates • independently selectable channel parameters; 4 channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; opt current-loop electrical channel interface

Composite Link • 1 composite link standard; 2 optional • external clocking up to 19.2K bps • indepedently selectable link parameters • modified SDLC link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 96K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 60 percent per data channel; flow resumption threshold at 60 percent per data channel

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • supervisory console support • traffic statistics • status indicators

Multiplexers

Features/Options • channel switching/contention • traffic node bypass or alternate routing, dual-link models • automatic speed detection for DDD data channels opt; echoplex; master/slave configuration; downline loadable operating parameters; bandsplitter opt; integral modem for composite link opt

Cost/Service • 4-channel basic unit $2,500 purchase price; $25 per mo maint; 4-channel fully featured unit $3,500 purchase price; $35 per mo maint • $775 (basic unit) per 4 asynchronous channels; $900 (fully featured) per 4 synchronous channels • nationwide service organization; on-call service 1% of purchase price; factory service • installation charge • one-year warranty

☐ Infotron Supermux 680 S STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Supermux 790

Channels • up to 32 asynchronous or 16 synchronous channels or any combination of asynchronous and synchronous channels within imposed limits in 2-channel increments; plus up to 3 synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50/0.75 composite data rate • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 2000/2400/3600/4800/7200/9600 bps • 38.4K-bps maximum aggregate channel data rate • independently selectable channel parameters; 8 asynchronous and 6 synchronous channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600 bps • external clocking up to 9600 bps • modified HDLC CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via system reinitialization and operator notification of overflow

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; data compression opt; bandsplitter opt; integral modem for composite link opt; network management via opt supervisory console; assignable channel priority opt; software demultiplexing

Cost/Service • 16-channel base unit $3,000 purchase price • $350 purchase price per dual asynchronous channel • $800 purchase price per dual synchronous channel • own service; nationwide service organization; fixed price on-site service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Supermux 680 D STDM

Type/Application • statistical multiplexer multilink; point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Supermux 790

Channels • up to 26 asynchronous or 12 synchronous channels or any combination of asynchronous and synchronous channels with imposed limits in 2-channel increments; plus up to 3 synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50/0.75 composite data rate • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • 38.4K-bps maximum aggregate channel data rate • independently selectable channel parameters; 8 asynchronous and 6 synchronous channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 2 independent composite links standard; does not allow node bypass or alternate routing without reconfiguring • synchronous at 1200/2400/3600/4800/7200/9600 bps • external clocking up to 9600 bps • modified HDLC CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via system reinitialization and operator notification of overflow

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; data compression opt; bandsplitter opt; integral modem for composite link opt; network management via supervisory console; assignable channel priority opt; software demultiplexing

Cost/Service • 13-channel base unit $4,100 purchase price • $350 purchase price per dual asynchronous channel • $800 purchase price per dual synchronous channel • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Supermux 680 T STDM

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Supermux 790

Channels • up to 20 asynchronous or 12 synchronous channels or any combination of asynchronous and synchronous channels within imposed limits multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50/0.75 com posite data rate • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • 38.4K-bps maximum aggregate channel data rate • independently selectable channel parameters; 8 asynchronous or 6 synchronous channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 3 independent composite links standard; does not allow node bypass or alternate routing without reconfiguring • synchronous at 1200/2400/3600/4800/7200/9600 bps • external clocking up to 9600 bps • modified HDLC CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via system reinitialization and operator notification of overflow

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; data compression opt; bandsplitter opt;

Multiplexers

integral modem for composite link opt; network management via supervisory console; assignable channel priority opt; software demultiplexing

Cost/Service • 10-channel base unit $5,200 purchase price • $350 purchase price per dual asynchronous channel • $800 purchase price per dual synchronous channel • own service; nationwide service organization; fixed prices on-site service; $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron Supermux 780 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC • link compatible with 790 Network Concentrator

Channels • up to 128 dual asynchronous channels or up to 32 single synchronous channels in 1- or 2-channel increments; including up to 4 synchronous channels in single-channel increments; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.25/0.50/0.75 composite data rate • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • 38.4K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 1 composite link standard • synchronous up to 9600 bps or 19.2K bps optional bps • modified SDLC/CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; bandsplitter opt; data compression opt; control logic redundancy with automatic switchover; software demultiplexing

Cost/Service • 18-channel base unit $1,700 purchase price • $300 purchase price per dual asynchronous channel • $600 purchase price per synchronous channel • basic multiplexer central logic $3,500 purchase price • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron 790 Network Concentrator

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 72K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC • link compatible with some Supermux models

Channels • up to 640 asynchronous or synchronous channels in 2-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • supports bit-synchronous protocols in transparent (bandsplit) mode; protocol-sensitive BSC channel support (IBM 3270, 2780, 3780, 360/20 HASP); GRTS; UT200; VIP; Burroughs; ICL, DDCMP; synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • up to 15 composite links • synchronous up to 9600/19.2K/72K bps • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; CCITT V.35 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting feature

Features/Options • channel switching/contention opt; redundant logic, memory, and power opt • 2-channel inverse mux, opt; automatic speed detection for DDD data channels opt; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; network management via supervisory console opt

Cost/Service • $21,300 purchase price, small unit, includes 790CNR, power supply, cooling pack, 14 quad-channel (56 channels) CL790 link module; $665,090 purchase price; large unit includes 790/CRR, 10 DIM I/O modules, redundant power, redundant I/O nest power supplies, 4 expansion racks, redundant power expansion, redundant I/O nest power, 3 additional I/O nest per rack (4 total); 320 dual async adapters (640 channels), 7 CL710 link modules, redundant central logic, maintenance • own service; nationwide service organization; fixed price on-site service; on-call service $120 maximum plus parts; factory service; third-party service through Dow Jones • installation charge $200 • one-year warranty

☐ Infotron 792 Network Concentrator

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 72K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC • link compatible with some Supermux models

Channels • up to 52 asynchronous or synchronous channels in 2-channel increments • full-duplex • asynchronous data rates at 50/75/100/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps; synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • EIA RS-232C/CCITT V.24/V.28 20-/60-mA current-loop electrical channel interface

Composite Link • up to 15 composite links • synchronous up to 9600/19.2K/72K bps • CRC and ARQ error detection and correction • SDLC and CCITT X.25 Level 2 protocol • EIA RS-232C/CCITT V.24/V.28/V.35 electrical link interface

Buffer Parameters • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87.5 percent total buffer utilization; flow resumption threshold

Diagnostics/Indicators • see 790 Network Concentrator

Features/Options • see 790 Network Concentrator

Cost/Service • $6,700 purchase price for small unit, includes 792/CN base unit, 1 quad channel adapter, 1 link module • $37,280 purchase price for large unit, includes 792/CNR Redundant, 52 channels, 2 link modules, maintenance

☐ Infotron TMux

Type/Application • time division multiplexer with bit interleaving • point-to-point or multinode • asynchronous and synchronous transmission up to 1.544M bps over a T1 carrier facility

Channels • up to 24 asynchronous or synchronous channels in single-channel increments • full-duplex • synchronous data rates from 300 to 19.2K bps with Type II channel adapter; 56K/112K/224K/448K bps with Type I channel adapter • 1.544M maximum aggregate channel rate • EIA RS-232C/CCITT V.35 interface • 2 to 48 voice channels • each voice card contains 2 ports • employs CVSD; 32K bps • full-duplex • 2- or 4-wire E&M signaling interface

Composite Link • 1 composite link • synchronous at 1.544M bps • EIA RS-232C/CCITT V.35; AT&T 301/MIL STD 188C electrical link interface

Multiplexers

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopbacks testing • bit-error generator on each channel card

Features/Options • redundant central logic and power supply; integral diagnostic facilities on a per-channel-card basis; automatic restart; audible alarm/remote backup power monitor; rackmount capability

Cost/Service • 24 base unit $4,950 purchase price; $50 per mo maint • on-site maintenance; on-site service on time-and-material basis also available • opt service plan available • one-year warranty

■ INTERNATIONAL BUSINESS MACHINES (IBM) CORPORATION/Information Systems Group

National Accounts Division; 1133 Westchester Avenue, White Plains, NY 10604; 914-696-1900 • National Marketing Division; 4111 Northside Parkway, Atlanta, GA 30327; 404-238-2000

□ IBM 3299

Type/Application • time division multiplexer • point-to-point • connects category A terminals to 3274 Control Unit (except for 3274 Model 51C) over coaxial cable

Channels • connects up to 8 terminals to 3274 controller • EIA RS-232C channel interface

Composite Link • one composite link

Buffer Parameters • not applicable

Diagnostics/Indicators • not indicated

Features/Options • up to 4 3299s can be attached to any controller (except the 3274 Model 61C, which is limited to 2 3299s)

Cost/Service • $1,175 purchase price

■ LEASAMETRIC, INC

(rental/sales company)
1164 Triton Drive, Foster City, CA 94404 • 415-574-4441

□ **Timeplex Microplexer II** • see Timeplex for features and pricing

■ LINCOLN TELEPHONE SERVICE & SUPPLY

(sales/leasing company)
4900 Superior, Unit No 2, Lincoln, NE 68501 • 402-466-8337

□ **General DataCom Complete Multiplexer Line** • see GDC for features and pricing

□ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ M/A-COM, DCC INC

11717 Exploration Lane, Germantown, MD 20874 • 301-428-5600

□ M/A-COM DCC CM 9100 Concentrator/STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel

Channels • 4 to 32 asynchronous or optional BSC synchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 307.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard plus 1 optional link • synchronous at 300/600/1200/2400/4800/9600/19.2K bps • external clocking up to 19.2K bps • SDLC/HDLC/CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- or 32K-byte buffer capacity • overflow protection uses CTS; XON/XOFF or special control characters to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent • overflow recovery via data lost message to terminals from slave or call disconnect

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; reverse flow control

Cost/Service • 4-channel unit $1,700 purchase price • 16-channel unit $4,100 purchase price • 32-channel unit $7,250 purchase price • leasing terms available • factory service • installation charge • one-year warranty

□ M/A-COM DCC SM 9200 Switching STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 32 switchable asynchronous or optional BSC synchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2400/3600/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • over 307.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard plus 1 optional backup link • synchronous 300/600/1200/2400/4800/9600/19.2K bps • external clocking up to 19.2K bps • SDLC/HDLC/CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS; XON/XOFF special control characters to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via data lost message to terminals or call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; port contention for use of switched ports reduces number of necessary ports; automatic speed conversion between selected ports; supervisory port support for port status and disconnection

Cost/Service • 4-channel unit $2,200 purchase price • 16-channel unit $4,500 purchase price • 32-channel unit $7,700 purchase price • leasing terms available • factory service; third-party service through M/A Com (sister Co) • installation charge • one-year warranty

□ M/A-COM DCC LM 9500 Lightwave TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • 9M bps over a fiber optic cable up to 1.24 miles (2 km) or 1.86 miles (3 klm) optional

Channels • 8 to 16 asynchronous or synchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • synchronous data rates at 1200/2400/4800/9600/19.2K/56K/64K bps; up to 19.2K bps via external clock • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard plus 1 optional backup link • approximately 9M bps • optical interface via optical connector

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; remote data channel loopback testing • status indicators for each data channel

Multiplexers

Features/Options • opt redundant fiber optic cable; opt cable extension up to 1.86 miles (3 km); rackmount opt

Cost/Service • 8-channel unit $3,300 purchase price • 16-channel unit $4,300 purchase price • installation charge • one-year warranty

☐ M/A-COM DCC ACM 9100 Advanced Stat Mux/STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC/4-wire metallic circuit

Channels • 4 to 32 asynchronous or BSC synchronous channels in 4-channel increments; synchronous channels statistically multiplexed with composite link standard • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • BSC synchronous data rates at 1200/2000/2400/3600/4800/7200/9600 bps • 307.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard plus 1 optional backup link • asynchronous at 1200/2400/4800 bps; synchronous at 1200/2400/4800/9600/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS, XON/XOFF, CTLS/CTLQ to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization or 40 percent per data channel; flow resumption threhsold at 60 percent total or 30 percent per data channel • overflow recovery via data lost message to terminals from slave; reverse flow control; forward flow control and reverse flow control method independently selectable per port

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • network control port provides performance statistics, diagnositcs including loopbacks, EIA lead status, and data link performance, port configuration status • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; integral modem for composite link opt; network management via supervisory console

Cost/Service • 4-channel base unit $2,100 purchase price • one-year warranty

☐ M/A-COM DCC ASM 9200 Advanced Switching Mux/STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC/4-wire metallic circuit

Channels • 4 to 32 switchable asynchronous or BSC synchronous channels in 4-channel increments; synchronous channels statistically multiplexed with composite link standard • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • BSC synchronous data rates up to 1200/2000/2400/3600/4800/7200/9600 bps • 307.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard plus 1 optional link • asynchronous at 1200/2400/4800 bps; synchronous at 1200/2400/4800/9600/19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K-byte buffer capacity • overflow protection uses CTS, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization or 40 percent per data channel; flow resumption threshold at 60 percent total or 30 percent per data channel • overflow recovery via data lost message to terminals from slave or call disconnect; reverse flow control; forward flow control method and reverse flow control method independently selectable per port

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • network control port provides performance statistics diagnostics including loopbacks, EIA lead status, and data link performance port configuration status • status indicators for each data channel

Features/Options • channel contention and selection; automatic speed detection for DDD data channels; master/slave configuration; downline loadable parameters; network management via supervisory console; user defined connection groups; third-party connect and disconnect; data PBX operation

Cost/Service • 4-channel base unit $3,050 • leasing terms available • factory service • one-year warranty

■ MEMOTEC

4940 Fisher Street, Montreal, Quebec, CAN H4T 1J7 • 514-738-4781

☐ Memotec Statpac STDM

Type/Application • statistical multiplexer/PAD • multilink; point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 16 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates from 75 up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 38.4K bps; 56K-bps optional aggregate channel data rate • EIA RS-232C electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • synchronous up to 9600 bps • external clocking up to 9600 bps • CCITT X.25 Level III link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 16K- or 32K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF; CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold is dynamically allocated by different buffers • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; network management via supervisory console opt; supervisory command language (SCL) feature for programming packet switching and other applications; protocol support option for Hewlett-Packard and DEC terminals; upgrade option to packet-switching networks

Cost/Service • 4-channel unit $3,340 prch • 8-channel unit $3,980 prch • 16-channel unit $6,040 prch • on-call service $60 mo; factory service; third-party service through Electrohome • installation charge $500 • one-year warranty

☐ Memotec APAC 1600 STDM

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 16 asynchronous channels in 4-channel increments • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III

Multiplexers

link protocol • EIA RS-232C/CCITT V.24/V.28 electrical interface

Buffer Parameters • 16K- to 32K-byte buffer capacity in 16K-byte increments • 32K bytes buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; network management via supervisory console

Cost/Service • 4-channel unit $3,340; 8-channel unit $3,980; 12-channel unit $4,970; 16-channel unit $6,040 prch • nationwide service organization; $90 mo factory service; $60 per occurrence; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

☐ Memotec MPAC 2000/MPAC 3X STDM

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 64 asynchronous channels in 4-channel increments • full-duplex • asynchronous rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • 38.4 bps aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 4 composite links; 1 composite link standard plus 3 optional links • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III link protocol • frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- to 128K-byte buffer capacity in 16K-byte increments • 128K bytes buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • remote composite loopback testing • status indicators for each channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; network management via supervisory console

Cost/Service • 4-channel unit $6,130; 16-channel unit $8,470 • nationwide service organization $90 mo; factory service $60 per occasion; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

☐ Memotec MPAC 1000 STDM

Type/Application • statistical multiplexer/PAD • point-to-point • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 1 asynchronous channel • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III link protocol • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each channel

Features/Options • automatic speed detection for DDD data channels; echoplex; downline loadable operating parameters; network management via supervisory console

Cost/Service • $1,940 prch • nationwide service organization $60 mo; factory service $60; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

☐ Memotec MPAC 2500 STDM

Type/Application • statistical multiplexer/PAD • multinode, point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 8 synchronous channels in 4-channel increments • full-duplex • 56K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 8 composite links • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III link protocol • frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 32K- to 48K-byte buffer capacity in 16K-byte increments • 48K bytes buffer capacity • overflow protection uses X.25 RNR/RR XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • status indicators for each data channel

Features/Options • network management via supervisory console

Cost/Service • 4-channel unit $14,800; 8-channel unit $17,500 prch • nationwide service organization $90 mo; factory service $60 per occasion; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

☐ Memotec MPAC 4000 STDM

Type/Application • statistical multiplexer/PAD • point-to-point, multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 1 to 6 synchronous channels in 2-channel increments • full-duplex • synchronous data rates up to 9600 bps • 38.4K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III link protocol • frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- to 32K-byte buffer capacity in 16K-byte increments • 32K bytes buffer capacity • overflow protection uses IBM 3270 ACKO/ACKI-NAK to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; data channel loopback testing • local or remote composite link loopback testing • status indicators for each channel

Features/Options • network management via supervisory console opt

Multiplexers

Cost/Service • 1-channel unit $4,500; 2-channel unit $8,400; 6-channel unit $9,460 prch • $90 mo factory service; $60 per occasion; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

☐ Memotec MPAC 6000 STDM

Type/Application • statistical multiplexer • multinode, point-to-point multipoint • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 48 asynchronous channels in 4-channel increments; plus 2 to 6 synchronous channels in 2-channel increments • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates up to 9600 bps • 56K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • synchronous at 1200/2400/4800/9600 bps • external clocking up to 9600 bps • independently selectable link parameters • CCITT X.25 Level III link protocol • frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 48K- to 128K-byte buffer capacity in 15K-byte increments • 128K bytes buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q, IBM 3270 ACKO/ACKI NACK to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 80 percent total • overflow recovery via call disconnect

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; master/slave configuration; downline loadable operating parameters; network management via supervisory console

Cost/Service • configuration dependent • nationwide service organization $90 mo factory service; $60 per occasion; third-party service through Honeywell/Electro Home • installation charge $500 • one-year warranty

■ MICOM SYSTEMS

20151 Northoff Street, Chatsworth, CA 91311 • 213-998-8844

☐ Micom Micro 700 Series TDM Band Splitter

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 19.2K bps; 38.4K bps optional

Channels • 4 synchronous channels; bandwidth allocated to each synchronous channel selectable at 0.25/0.50/0.75 composite data rate • half- or full-duplex • 19.2K; 38.4K-bps opt maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard; synchronous up to 19.2K bps; 38.4K bps • optional external clocking up to 19.2K bps; 38.4K bps optional • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • master/slave configuration opt; downline loadable operating parameters opt; dynamic channel assignment option for high-speed utilization by active data channels; 38.4K-bps composite link opt; rackmount opt

Cost/Service • 4-channel unit $1,195 • own service; home office; St. Louis, MO; Woodbridge, NJ; Boston, MA; on-call service $45 per hour plus mileage; factory service • express swap-out service • one-year warranty

☐ Micom Micro 750 Series Wideband TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 250K bps over a 4-wire data channel/wideband facility/DDC

Channels • 8 or 38 synchronous channels in 1- or 2-channel increments • synchronous data rates up to 250K bps • 250K-bps maximum aggregate channel data rate; independently selectable channel parameters; 8-channel parameters combinations • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; AT&T 301/303 electrical channel interface

Composite Link • 1 composite link standard • synchronous to 250K bps • external clocking up to 250K bps • EIA RS-232C/CCITT V.24/V.28; CCITT V.35; RS-422; CCITT V.11 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • opt redundant common logic and opt redundant power supply; standalone opt; downline loadable operating parameters; opt buffer for satellite links; supports dial-up channel access and polled modems; synchronization from data channel

Cost/Service • 4-channel base unit $2,000 prch • 38-channel base unit $2,600 prch • $450 prch synchronous channel • $500 per dual synchronous channel • channel module V.35 interface $300 prch • own service; home office St. Louis, MO; Woodbridge, NJ; Boston, MA; on-call service $45 per hour plus mileage; factory service • one-year warranty

☐ Micom Micro 800/2 Series STDM Data Concentrator

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission rates up to 19.2K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 2/4/8/16 asynchronous channels including up to 2 optional synchronous channels in 2-channel unit or up to 4 optional synchronous channels in 4- to 16-channel unit; additionally, 1 or 2 synchronous channels multiplexed with composite link via optional bandsplitter feature; protocol-sensitive sync support for IBM BSC (EBCDIC or ASCII), SDLC, HDLC, UT200, VIP 7700, Uniscope, ICL C03 • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 9 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates at 1200/2400/4800/9600 bps • 38.4K-bps maximum aggregate channel data rate for no-frills models only; all channels up to 9600 bps on standard models • independently selectable channel parameters; 16 channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical link interface

Composite Link • 1 composite link standard • asynchronous at 1200/1800/9600 bps or synchronous at 9600 bps no-frills models; synchronous up to 19.2K bps standard models • external clocking on standard models up to 19.2K bps • modified HDLC link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 14K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 62 percent total • overflow recovery via data lost message to terminals from slave • selective flow control procedures inhibit only channels using the most buffer space

Diagnostics/Indicators • terminal activated channel test • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel; system indicators

Features/Options • automatic speed conversion; automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; network management via supervisory console; synchronous bandsplitter opt;

Multiplexers

protocol-sensitive sync channel opt; CPU auto-speed opt; split channel speed opt; dial backup opt; channel contention/selection via Micro 860 option; computer options provide special support for HP and Wang protocols

Cost/Service • 2-channel no-frills unit $1,050 prch; standard unit $1,450 prch • 4-channel no-frills unit $1,400 prch; standard unit $1,850 prch • 8-channel no-frills unit $2,200 prch; standard unit $2,750 prch • 12-channel standard unit $3,700 prch; • 16-channel standard unit $4,600 prch • own service; home office; St. Louis, MO; Woodbridge, NJ; Boston, MA; on-call service $45 per hour plus mileage; factory service • express swap-out service • one-year warranty

☐ Micro800/X.25 STDM Concentrator PAD

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission at rates up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4/8/12/16 asynchronous channels upgradeable in 4-channel increments • channel rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 6, 7, or 8 data bits per character, including or excluding parity • 1, 1.5, or 2 stop bits • 57.6K-bps maximum aggregate channel rate • operating parameters DIP-switch selected or keyed into user command port • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • synchronous data rates up to 19.2K bps, full-duplex • X.25 Level III link protocol (LAPB); Telenet, Tymnet, Uninet certified • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection according to CCITT X.3, parameter #12, or RTS/CTS method • detects and responds to XON/XOFF or user-defined flow control characters • flow suspension threshold at 87 percent buffer utilization; flow resumption at 62 percent

Diagnostics/Indicators • local/remote loopback testing (remote loopback via virtual circuit at local node); terminal-selected test feature with integral "fox" generator; command port; LED status display; traffic statistics with alarm/event reporting

Features/Options • auto-baud opt; split-channel rates opt; channel priorities; standard data compression; channel selection; switched virtual circuits; permanent virtual circuits; local switching (data PBX feature); supports CCITT Recommendations X.3, X.28, and X.29 plus 12 enhanced terminal handling functions

Cost/Service • $2,050 to $4,600, 4- to 16-channel purchase price • see Micro800/2 for service and warranty terms

☐ Instamux470 Multiplexing Line Driver

Type/Application • TDM multiplexer with bit over-sampling • integral line driver for transmission over 4-wire metallic circuits; 19.2K bps at distances up to 5,000 feet

Channels • 4/8 asynchronous channels, data rates from 0 to 19.2K bps • transparent to terminal operating speeds, number of start and stop bits, and character code • non-data channel passes a single full-duplex EIA control signal • 153.6K-bps maximum aggregate channel rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • integral modem operates over 4-wire, twisted or non-twisted metallic cable (19 to 26 gauge) • maximum range of 5,000 feet at 19.2K bps; longer ranges at lower rates • requires DC continuity • directed cable interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local/remote composite link loopback only • LED status display panel

Features/Options • rackmount opt; PC card version for insertion into Micro600 Data PBX

Cost/Service • $695/$1,050 purchase price (4/8 channels) • see Micro800/2 for service and warranty terms

☐ Micom Micro 8000 Series STDM Concentrator Modem

Type/Application • statistical multiplexer • point-to-point or multipoint • transmission up to 9600 bps over a 4-wire Type 3002 voice channel • integral modem

Channels • 2/4/8/12/16 asynchronous channels including up to 2 optional synchronous channels in 2-channel unit or up to 4 optional synchronous channels in 4- to 16-channel units; additionally 1 or 2 synchronous channels multiplexed with composite link via optional bandsplitter feature • half-/full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 9 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates at 1200/2400/4800/9600 bps • 38.4K-bps maximum aggregate channel data rate for no-frills models only; all channels up to 9600 bps on standard models • independently selectable channel parameters; 16 channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical link interface

Composite Link • 1 composite link standard • synchronous at 2400/4800/9600 bps • modified HDLC link protocol • CRC 16; ARQ; frame sequencing error detection and correction • integral modem link interface

Buffer Parameters • 14K-byte buffer capacity • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 62 percent total • overflow recovery via data lost message to terminals from slave • selective flow control procedures inhibit only channel using the most buffer space

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicator for each data channel

Features/Options • automatic speed conversion; automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; network management via supervisory console; special no-cost features support HP/DEC/DG/GE/PE and Wang terminals; computer options provide special support for HP and Wang protocols; several other options and features • integral 2400/4800/9600 bps modem for composite link

Cost/Service • 2-channel, 2400-bps Modem $2,050 prch • 4-channel 2400-bps Modem $2,450 prch • 8-channel, 2400-bps Modem $3,350 prch • 12-channel, 2400-bps Modem $4,300 prch • 16-channel, 2400-bps Modem $5,200 prch • own service; home office; St. Louis, MO; Woodbridge, NJ; Boston, MA; on-call service • express swap-out service • one-year warranty

☐ Micom Micro 900/2 Series Multidrop STDM Concentrator

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • up to 1/2/4/8/16 asynchronous channels • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5 through 9 bits per character • 1/1.5/2 stop bits • parity transparent • 76.8K bps master; 38.4K-bps slave aggregate channel data rate • independently selectable channel parameters; 8 channel parameter combinations • EIA RS-232C/CCITT V.24/V.28; current-loop electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 1200/1800/2400/4800/9600 bps; synchronous up to 9600 bps • external clocking up to 9600 bps • byte-oriented polling link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • buffer capacity 2.5K bytes on single-/2-channel units; 14K bytes on 4/8/16-channel units • CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization or 62 percent per data channel • overflow recovery via data lost message to terminals from slave

Diagnostics/Indicators • self-test; local data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel • command port for test, control, and statistics

Multiplexers

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression; assignable channel priorities; master/slave configuration; opt asynchronous composite link rates; unbalanced rates; channel busyout, dynamic channel priority; rackmount; special features support Wang computers; supervisory terminal support; split-channel rates opt

Cost/Service • 1-channel slave unit $900 purchase price • 2-channel slave unit $1,050 prch • 4-channel slave unit $1,750 prch • 8-channel master-slave unit $2,750 purchase price • 16-channel master unit $4,600 purchase price • own service; home office St. Louis, MO; Woodbridge, NJ; Boston, MA; on-call service $45 per hour plus mileage; factory service • express swap-out service • one-year warranty

■ MTI

(sales/leasing company)
38 Harbor Drive, Port Washington, NY 11050 • 516-621-6200

☐ **Micom Systems Complete Multiplexer Line** • see Micom Systems for features and pricing

■ NETWORK PRODUCTS, INC

P.O. Box 13239, Research Triangle Park, NC 27709 • 919-549-8210

☐ Network Products Babymux Multiplexer

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel

Channels • up to 8 asynchronous channels in 3-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2400/3600/4800/7200/9600/19.2K bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even or no parity • 38.4K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • asynchronous at 1200/1800/2400/3600/4800/7200/9600 bps; synchronous at 1200/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 8K- to 16K-byte buffer capacity in 4K-byte increments • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 87.5 percent per data channel; flow resumption threshold at 62.5 percent per data channel

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • Brown Fox Test Message, Automatic diagnostics on powerup • status indicators for the Unit—Unit Ready, Line Down, Buffer Full, Buffer Overflow, Transmit Error, Receive Error, Transmit Active, Receive Active, for the Composite Line—Line Utilization, Port Select, Data Transferred, and Error Rate

Features/Options • echoplex; data compression; master/slave configuration; downline loadable operating parameters; front supervisory panel used for configuration and status display

Cost/Service • 2-channel base unit $1,350 • 3 channel expander kit $475; up to 8 channels per unit • factory service • one-year warranty

☐ Network Products BABYNET Multiplexer

Type/Application • statistical multiplexer • point-to-point or multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • up to 22 master/host channels and up to 64 remote channels • half-/full-duplex • asynchronous rates at 50/75/110/134.5/150/300/600/1200/1800/2400/4800/9600 bps • 5 through 9 bits per character • 1/1.5/2 stop bits/parity transparent • 115.2K-bps master; 38.4K-bps node aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous to 9600 bps • external clocking to 9600 bps • byte-oriented polling link protocol • CRC 16 ARQ frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 8K- to 16K-byte buffer capacity in 4K-byte increments; overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, to suspend or resume data channel flow • flow suspension threshold at 87.5 percent per data channel; flow resumption threshold at 62.5 percent per data channel

Diagnostics/Indicators • self-test; local data channel loopback testing • local composite link loopback testing • "fox" test, automatic diagnostics on powerup • status indicators include: Unit Ready, Line Down, Buffer Full, Buffer Overflow, Transmit Error, Receive Error, Transmit Active, Receive Active, Line Utilization, Port Select, Data Transferred, and Error Rate

Features/Options • full switching and port contention at master • 1 to 1 matching between remote terminals and host computer not required • programming via front panel or non-dedicated command console • echoplex • data compression; master/slave configuration • auto-baud at 9600 all channels

Cost/Service • 2-channel base unit $1,450 • 3-channel expander kit $475; 8-channel master $2,400; 15-port master $4,800; 22-port master $7,200 • factory service • one-year warranty

☐ Network Products LocalMux Multiplexer

Type/Application • TDM • point-to-point • integral line driver supports composite speeds just under 1M bps over customer-owned twisted pairs up to 10,000 feet

Channels • up to 8 asynchronous or synchronous channels • full-duplex asynchronous channel rates up to 19.2K bps; synchronous rates of 4800/9600/19.2K/38.4K • aggregate channel rate at 307,200 bps • character transparent • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • contact vendor

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test, local channel loopback • remote channel loopback • status indicators-power, carrier, receive error receive/transmit activity indicator on a per channel basis

Features/Options • integral line driver for use on customer-owned twisted pairs up to 10,000 feet

Cost/Service • 8-channel unit $850 • factory service • one-year warranty

■ NORTH SUPPLY COMPANY

(sales/leasing company)
10951 Lakeview Avenue, Lenexa, KS 66219 • 913-888-9800

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ OPTELECOM INC

15940 Luanne Drive, Gaithersburg, MD 20877 • 301-948-4232

☐ Optelecom Model 4485

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous up to 9M bps over a fiber optic cable

Channels • 8 asynchronous or synchronous channels • full-duplex • asynchronous data rates up to 100K bps; synchronous data rates up to 153.6K bps • RS-232C/MIL 188C/CCITT V.24 electrical channel interface

Composite Link • 1 composite link • asynchronous/synchronous up to 9M bps • optical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test

Multiplexers

Features/Options • not specified

Cost/Service • contact vendor

☐ Optelecom Model 5100-8

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous up to 9M bps over a fiber optic cable

Channels • up to 32 asynchronous or synchronous channels • full-duplex • synchronous data rates up to 38.4K bps; asynchronous data rates up to 600 bps • RS-232C/MIL 188C/CCITT V.24 electrical channel interface

Composite Link • 1 composite link • asynchronous/synchronous up to 9M bps • optical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test

Features/Options • not specified

Cost/Service • contact vendor

■ PARADYNE CORPORATION

8550 Ulmerton Road, Largo, FL 33541 • 813-530-2000

☐ Paradyne DCX 725 Synchronous TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; wideband facility; DDC; 4-wire metallic circuit up to 20 miles

Channels • 4 synchronous channels multiplexed with composite link via standard time division multiplexer; bandwidth allocated to synchronous data in composite link selectable at any usable submultiple of composite data rate • half-/full-duplex • synchronous data rates at 1200/2000/2400/3600/4800/7200/9600 bps • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • modified HDLC link protocol • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for each data channel

Features/Options • master/slave configuration; downline loadable operating parameters; network management via supervisory console opt

Cost/Service • 4-channel base unit $4,000; $225 mo 3-yr rental • nationwide service organization; on-call service $50 mo; factory service • installation charge $250 • one-year warranty • worldwide sales/service via distributors and 5 Paradyne International subsidiaries

☐ Paradyne DCX 815/861 STDM

Type/Application • statistical multiplexer with character interleaving • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDC; 4-wire metallic circuit up to 20 miles

Channels • up to 8 asynchronous channels in 4-channel increments; bisynchronous channels multiplexed • half-/full-duplex • asynchronous data rates at 75/100/110/134.5/150/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 and 7 through 9 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • bisynchronous data rates at 1200/2400/3600/4800/7200/9600 bps • 38.4K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600/14.4K/16K/19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction per CCITT V.41 • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 5.5K-byte buffer capacity • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow • suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • internally generated channel or composite link validation test; link error rate computation and alarm; link utilization readout • status indicators for each data channel; indicators for data link status; indicator "memory" to trap intermittent conditions

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; network management via supervisory console opt; satellite operation standard feature; terminal flow control standard feature; split band rate and speed conversion standard features; terminal flyback delay standard feature • integral 9600-bps V.29 modem (861) • provides H-P "block mode" protocol assistance IBM bisync channels available for 3270/2780/3780 protocols, strappable for protocol selection opt

Cost/Service • 4-channel base unit $1,900; $105 mo 3-yr rental • $1,000 per 4 asynchronous channels • $4,000 per 4 synchronous channels; $225 mo 3-yr rental • nationwide service organization; on-call service $25 mo factory service • one-year warranty • worldwide sales/service via distributors and 5 Paradyne international subsidiaries; $2,900 purchase price; $131 per mo 3-year rental

☐ Paradyne DCX 825/871 Multinode/Sync STDM

Type/Application • statistical multiplexer with character interleaving • multinode, point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDC; 4-wire metallic circuit up to 20 miles

Channels • 4 to 32 asynchronous channels in 4-channel increments; plus up to 8 bisynchronous channels in 2-channel increments; synchronous channels multiplexed with composite link via optional time division multiplexer; bandwidth allocated to synchronous data in composite link selectable at any usable submultiple of composite data rate • half-/full-duplex • asynchronous data rates at 50/75/100/110/134.5/150/200/300/600/1200 bps • 5 and 7 through 9 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2000/2400/3600/4800/7200/9600 bps • 153.6K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600/14.4K/16K/19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing detection and correction per CCITT V.41; CCITT V.24/V.28; electrical link interface

Buffer Parameters • 5.5K- to 22K-byte buffer capacity in 5.5K-byte increments • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote link loopback testing • internally generated channel or composite link validation test; link error rate computation and alarm; link and buffer utilization readout • status indicators for each data channel; indicators for data link status; indicator "memory" to trap intermittent conditions

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; network management via supervisory console opt; optional "onward link" provides nodal routing of networks to reduce line costs; satellite operation standard feature; terminal flow control standard feature; split baud rate and speed

Multiplexers

conversion standard features; terminal flyback delay standard feature • 9600 bps V.29 integral modem (871) • H-P "block mode" protocol assistance • IBM bisync 3270, 2780, 3780 protocols strappable for protocol selection, optional.

Cost/Service • 32-channel base unit purchase price; $470 mo 3-yr rental • $1,000 per 4 asynchronous channels; $40 mo 3-yr rental; $8,890 32-channel purchase price • $521 per mo 3-year lease; $50 per mo maintenance • $2,100 per onward link; $70 mo 3-yr rental • nationwide service organization; on-call service $50 mo factory service • one-year warranty • worldwide sales/service via distributors and 5 Paradyne International subsidiaries

☐ Paradyne DCX 840 Multinode Switching STDM

Type/Application • statistical multiplexer with character interleaving • multinode or point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; wideband facility up to 72K bps; DDC; 4-wire metallic circuit up to 20 miles

Channels • 4 to 240 asynchronous channels in 4-channel increments; plus up to 45 bisynchronous channels in 3-channel increments; synchronous channels multiplexed with composite link via optional time division multiplexer; bandwidth allocated to synchronous data in composite link selectable at any submultiple of composite data rate • half-/full-duplex • asynchronous data rates at 75/110/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 and 7 through 9 bits per character • 1/1.5/2 stop bits • selectable at 1200/2000/2400/3600/4800/7200/9600 bps • 2M-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449 electrical channel interface

Composite Link • up to 15 composite links; synchronous at 1200/1800/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing error detection and correction per CCITT V.41 • EIA RS-232C/CCITT V.24/V.28; electrical link interface

Buffer Parameters • 16K- to 256K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF to suspend or resume data channel flow • flow suspension at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • internally generated channel or composite link validation test; link error rate computation and alarm, link and buffer utilization readout • status indicators for each data channel; separate indicators for status of each data link; indicator "memory" to trap intermittent conditions

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; network management via supervisory console opt; satellite operation standard feature; terminal flow control standard feature; split baud rate and speed conversion standard features; terminal flyback delay standard feature; in-operation network mapping change standard feature; battery backed-up configuration memory standard feature • provides H-P "block mode" protocol assistance; 9-bit data and flow control translation opt • opt bisync provides IBM 3270/2780/3780 protocols • optional monitor card on a local or remote mux channel provides a trap feature to monitor on selected data

Cost/Service •60-channel base-unit purchase price $5,600; $264 per mo 3-year rental • $750 per 4 asynchronous channels; $37 per mo 3-year rental • bisync option $1,200 per 2-channel card; monitor card $3,300 purchase price • nationwide service organization; on-call service $150 mo; factory service • $250 installation charge • one-year warranty • worldwide sales/service via distributors and 5 Paradyne International subsidiaries

☐ Paradyne DCX 850 Intelligent Switching STDM

Type/Application • statistical multiplexer with character interleaving • multinode, point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; wideband facility up to 72K bps; DDC; 4-wire metallic circuit up to 20 miles

Channels • 4 to 240 asynchronous channels in 4-channel increments; synchronous channels multiplexed with composite link selectable at any usable submultiple of composite data rate • half-/full-duplex • asynchronous data rates at 75/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 and 7 through 9 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates at 1200/2000/2400/3600/4800/7200/9600 bps • 2M-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449 electrical channel interface

Composite Link • up to 14 composite links • synchronous at 1200/1800/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing error detection and correction per CCITT V.41 • EIA RS-232C/CCITT V.24/V.28; CCITT V.35 electrical link interface

Buffer Parameters • 16K- to 256K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • internally generated channel or composite link validation test; link error rate computation and alarm; link and buffer utilization readout • status indicators for each channel; separate indicators for status of each data link; indicator "memory" to trap intermittent conditions

Features/Options • automatic speed detection for DDD data channels; master/slave configuration; downline loadable operating parameters; network management via supervisory console; all features as 840 plus user switching of ports or services; traffic balancing; automatic routing and rerouting; traffic management reports and control; roaming network supervisory capability; resource addressing; port contention • provides H-P "block mode" protocol assistance; 9-bit data and flor control translation opt

Cost/Service • 60-channel base unit $11,600; $575 mo 1-yr rental • $750 per 4 asynchronous channels; $37 per mo 3-yr rental • nationwide service organization; on-call service $175 mo; factory service • installation charge $400 • one-year warranty • worldwide sales/service via distributors and 5 Paradyne International subsidiaries

☐ Paradyne DCX-T1

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission up to 1.544M bps over a T1 carrier facility

Channels • 24 or 48 asynchronous or synchronous channels • full-duplex • asynchronous at 56/112/224/448 bps; synchronous at 300/600/1200/2400/7200/9600/14.4K/19.2K bps 8 bits per character • EIA RS-232C/CCITT V.35 electrical interface • 2 to 48 voice channels, 2 ports per voice card • quantization CVSD; 32K-bps channel bandwidth • full-duplex • 2- or 4-wire E&M interfaces

Composite Link • 1 composite link • synchronous data rates of 1.544M bps • CCITT V.35; RS-232C; AT&T 301/313; MIL STD-188

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • status indicators and alarms for each data channel

Features/Options • down-line loading of parameters

Cost/Service • $4,410 purchase price • nationwide service organization; on-call service; factory service • one-year warranty • worldwide sales/service via distributors and 5 Paradyne International subsidiaries

Multiplexers

■ PHALO CORP

9240 Deering Avenue, Chatsworth, CA 91311 • 213-998-3177

☐ Phalo OMX 5600/OMX 9600

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous/synchronous transmission up to 56K bps over a fiber optic cable

Channels • 2 to 64 asynchronous or synchronous channels • full-duplex • asynchronous data rates up to 9600 bps; synchronous data rates up to 56K bps • independently selectable channel parameters • EIA RS-232C, MIL 188, CCITT/V.24/V.35, RS-422 electrical channel interface

Composite Link • 1 composite link • asynchronous or synchronous up to 20M bps • external clocking • EIA RS-232C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • manual local loopback, programmable remote loopback • composite loopback

Features/Options • standard single voice channel, plug-in interface, battery backup memory • secondary optical channel and monitor output port opt

Cost/Service • contact vendor

■ PRENTICE

266 Caspian Drive, Sunnyvale, CA 94086 • 408-734-9810

☐ Prentice SNP-1100 STDM

Type/Application • statistical multiplexer • point-to-point or multipoint • asynchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDC; 4-wire metallic circuit up to 20 miles

Channels • up to 4 asynchronous channels • half-/full-duplex • asynchronous data rates at 110/150/300/1200/2400/4800/9600 bps • 7 through 8 bits per character • 1 or 1.5 stop bits • parity transparent • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous • external clocking up to 9600 bps • independently selectable link parameters • modified HDLC (variable block lengths) link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 1K-byte buffer capacity per channel dynamically allocated • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • remote data channel loopback testing • 4-channel unit also has self-test; local channel loop and composite link protocol

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; downline loadable operating parameters; channel output pacing from DTE using EIA-RTS, XON/XOFF, or HP-EnqACK; 4 FDX EIA signals passed over data channel

Cost/Service • single-channel unit $695 purchase price; $44 mo 1-yr rental • 2-channel unit $895 purchase price; $55 mo 1-yr rental • 4-channel unit $1,195; $75 mo 1-yr rental

☐ Prentice SNP 1200 STDM

Type/Application • statistical multiplexer • point-to-point or multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel; DDC; 4-wire metallic circuit up to 20 miles

Channels • 4 to 8 asynchronous channels; plus 1 synchronous channel multiplexed with composite link via optional bandsplitter feature; bandwidth allocated for synchronous data in composite link selectable at 0.25, 0.50, 0.75 composite data rate • half-/full-duplex • asynchronous data rates at 110/150/300/1200/2400/4800/9600 bps • 7 or 8 bits per character • 1 or 1.5 stop bits • parity transparent • synchronous data rates at 9600 bps • 19.2K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous • external clocking up to 9600 bps • independently selectable link parameters • modified HDLC (variable block length) link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 1K-byte buffer capacity per channel dynamically allocated • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization; flow resumption threshold at 60 percent total • overflow recovery via data lost message from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local composite link loopback testing • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; echoplex; data compression; master/slave configuration; downline loadable operating parameters; bandsplitter opt; channel output pacing from DTE using EIA-RTS, XON/XOFF or HP-EnqACK; 4 FDX EIA signals passed per channel

Cost/Service • 4-channel base unit $1,495; $89 mo 1-yr rental • 8-channel unit $1,995; $109 mo 1-yr rental • factory service

■ RACAL-MILGO INFORMATION SYSTEMS

8600 N.W. 41st Street, Miami, FL 33166 • 305-592-8600

☐ Racal-Milgo Omnimux 40 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Omnimux 80/160/320

Channels • 4 or 8 asynchronous channels • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5/7/8 bits per character • 1/1.5/2 stop bits • parity transparent • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200 bps to 9600 bps • external clocking up to 9600 bps • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 7K-byte buffer capacity • overflow protection uses CTS; XON/XOFF; CTL S/CTL Q; CTL R/CTL S to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization per data channel; flow resumption threshold at 55 percent per data channel

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators

Features/Options • automatic speed detection for DDD data channels opt; echoplex; printer flyback delays; downline loadable operating parameters; flow control; 4 EIA control signals passed per channel except for basic unit

Cost/Service • 4-channel unit $1,825 purchase price; $95 mo 1-yr rental • 8-channel unit $2,825 purchase price; $137 mo 1-yr rental • own service via nationwide service organization; on-call service $35 mo; factory service • one-year warranty

☐ Racal-Milgo Omnimux 80 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Omnimux 40/160/320

Multiplexers

Channels • 4 or 8 asynchronous or synchronous channels in 4-channel increment via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.125/0.25/0.50 composite data rate; bisynchronous data statistically multiplexed; protocol sensitive; IBM, Sperry, CDC, and Honeywell protocols supported; speeds at 0.125/0.25/0.50/1.00 composite data rate • 2 channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5/7/8 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates at 1200/2400/4800/9600 bps • 19.2K bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200 bps to 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • up to 32K bytes buffer capacity • overflow protection uses CTS; XON/XOFF; CTL S/CTL Q; CTL R/CTL S to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization per data channel • flow resumption threshold at 60 percent per data channel

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • fox message to selected channels • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; speed conversion; downline loadable operating parameters; control terminal; flow control opt; satellite delay compensation opt

Cost/Service • 4-channel unit $2,950 purchase price; $159 mo 1-yr rental • 8-channel unit $3,850 purchase price; $196 mo 1-yr rental • own service via nationwide service organization; on-call service $35 mo; factory service • installation charge $240 with purchased equipment • one-year warranty

☐ Racal-Milgo Omnimux 160 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Omnimux 40/80/320

Channels • up to 16 asynchronous channels in 4-channel increments; including up to 8 synchronous channels in 4-channel increments; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.125/0.25/0.50 composite data rate; bisynchronous data statistically multiplexed; protocol sensitive; IBM, Sperry, CDC, and Honeywell protocols supported; speeds at 0.125/0.25/0.50/1.00 composite data rate • 2 channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5/7/8 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates at 1200/2400/4800/9600 bps • 19.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous 1200 bps to 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • up to 32K bytes • overflow protection uses CTS; XON/XOFF; CTL S/CTL Q; CTL R/CTL S to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization per data channel; flow resumption threshold at 55 percent per data channel

Diagnostics/Indicators • local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • fox message to selected channels • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; speed conversion; downline loadable operating parameters; control terminal; flow control opt; satellite delay compensation opt

Cost/Service • 8-channel unit $4,350 purchase price; $221 mo 1-yr rental • 12-channel unit $5,250 purchase price; $233 mo 1-yr rental • 16-channel unit $6,150 purchase price; $270 mo 1-yr rental • $1,050 per 4-channel upgrade • own service via nationwide service organization; on-call service $35 mo; factory service • one-year warranty

☐ Racal-Milgo Omnimux 320 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC • link compatible with Omnimux 40/80/160

Channels • up to 32 asynchronous channels in 4-channel increments; including up to 8 synchronous channels in 4-channel increments; synchronous channels multiplexed with composite link via optional bandsplitter feature; bandwidth allocated to synchronous data in composite link selectable at 0.125/0.25/0.50 composite data rate; bisynchronous data statistically multiplexed; protocol sensitive; IBM, Sperry, CDC, and Honeywell protocols supported; speeds at 0.125/0.25/0.50/1.00 composite data rate • 2 channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2400/4800/9600 bps • 5/7/8 bits per character • 1/1.5/2 stop bits • parity transparent • synchronous data rates at 1200/2400/4800/9600 bps • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200 bps to 19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • up to 32K-byte buffer capacity • overflow protection uses CTS; XON/XOFF; CTL S/CTL Q; CTL R/CTL S to suspend or resume data channel flow • flow suspension threshold at 80 percent total buffer utilization per data channel; flow resumption threshold at 55 percent per data channel

Diagnostics/Indicators • local; remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • fox message to selected channels • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; speed conversion; downline loadable operating parameters; control terminal; flow control opt; satellite delay compensation opt

Cost/Service • 16-channel unit $6,315 purchase price; $295 mo 1-yr rental • 20-channel unit $6,700 purchase price; $306 mo 1-yr rental • 24-channel unit $7,300 purchase price; $343 mo 1-yr rental • 28-channel unit $7,400 purchase price; $380 mo 1-yr rental • 32-channel unit $8,500 purchase price; $417 mo 1-yr rental • own service via nationwide service organization; on-call service $35 mo; factory service • installation charge $240 with purchased equipment • one-year warranty

■ RACAL-VADIC

1525 McCarthy Boulevard, Milpitas, CA 95035 • 408-946-2227

☐ Racal-Vadic Scotsman III

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel

Channels • 2 to 8 asynchronous or synchronous channels • full-duplex • asynchronous data rates at 75/110/150/300/600/1200/2400/4800/7200/9600 bps; synchronous data rates at 1200/2400/4800/7200/9600/14.4K/16K/19.2K bps • 7 or 8 bits per character • 1, 1.5, or 2 stop bits • 19.2K-bps maximum aggregate channel data rate • selectable mark or odd, even, or no parity; fully transparent • independently selectable channel parameters • EIA RS-232C/CCITT V.24 electrical channel interface

Multiplexers

Composite Link • 1 composite link • synchronous at 1200/2400/4800/7200/9600 bps • CCITT X.25 Level II; HDLC; SDLC protocol • CRC 16 error detection and correction • EIA RS-232C/CCITT V.24 electrical link interface

Buffer Parameters • overflow protection uses CTS XON/XOFF DC1, DC3 to suspend or resume data flow

Diagnostics/Indicators • self-test local and remote channel loopback • local and remote aggregate loopback • operating status, speed, compression ratio; transmit/receive data; RTS/CTS/DSR/CXR

Features/Options • optional synchronous protocols compatible with IBM, Sperry, CDC, Honeywell, ICL, Burroughs BSC • end-to-end transparency • single or multiplexed 4-channel operation • 4 9600 bps BSC or 2 full-duplex 9600-bps lines can be compressed and transmitted over a single 9600-bps line

Cost/Service • $1,850 4-channel unit without modem; $4,700 4-channel asynchronous channel unit with 4800-bps modem

■ RFL INDUSTRIES/Communications Division

Boonton, NJ 07005 • 201-334-3100

☐ RFL Series 6850 VFCT FDM

Type/Application • FDM; data only or data and voice • point-to-point; multipoint; 2- or 4-wire conditioned or unconditioned Type 3002 voice channel

Channels • 2 to 24 asynchronous channels in single-channel increments; 24 channels at 50/75 bps; 18 at 110 bps; 12 at 100/150 bps; 6 at 200/300 bps; 2 at 600 bps • voice plus 3 to 10 at 50/75 bps; voice plus 3 to 8 at 110 bps; voice plus 1 to 5 at 100/150 bps; voice plus 1 or 2 at 200/300 bps • requires 3002 unconditioned line for all channels below 3000 Hz • EIA RS-232C; TTL; DTL; HTC CMOS; current-loop electrical channel interface

Composite Link • not applicable

Buffer Parameters • not applicable

Diagnostics/Indicators • 2 status indicators per channel

Features/Options • optional low-pass filters for speech plus data; front panel option

Cost/Service • 9-channel base unit $920 • $500 per single-channel adapter; factory service • one-year warranty

■ RIXON INCORPORATED

2120 Industrial Parkway, Silver Spring, MD 20904 • 301-622-2121

☐ Rixon DCX 725 Synchronous Multiplexer

Type/Application • time division with bit interleaving • point-to-point synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • up to 4 synchronous channels • half-/full-duplex • synchronous data rates at 1200/2400/4800/7200/9600 bps • parity transparent 19.2K-bps maximum aggregate channel rate • independently selectable channel parameters • RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • synchronous at 4800/7200/9600/14.4K/16K/19.2K bps • internal or external clocking • EIA RS-232C electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • self-test; local and remote channel and link loopbacks • status indicators

Features/Options • dynamically allocated bandwidths; channel priorities options are priority 1 (bandsplit), priority 2 (contention), and priority 3 (varispeed); channels 2, 3, and 4 can be assigned priority 1 or 2, channel 1 always priority 3; each priority 1 channel assigned exclusive use of portion of the composite link bandwidth

Cost/Service • $2,500 4-channel unit • nationwide service organization; on-call service; factory service • installation charges • one-year warranty

☐ Rixon DCX 815/Commux

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 8 asynchronous channels in 4-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • parity transparent • 19.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600 bps • external clocking up to 9600 bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 5.5K-byte buffer capacity • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for system and each data channel • digital display for composite link percentage utilization

Features/Options • automatic speed detection for DDD data channels; link down message to all channels; downline loadable operating parameters split data rates per channel; printer flyback delay; terminal flow control recognition • Commux includes integral link modem

Cost/Service • $1,400 minimum 4-channel configuration to $4,690 maximum 8-channel configuration • nationwide service organization; on-call service; factory service • installation charges • one-year warranty

☐ Rixon DCX 825 STDM

Type/Application • statistical multiplexer with character interleaving • point-to-point with onward linking capabilities • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel; DDC

Channels • 4 to 32 asynchronous channels in 4-channel increments; plus up to 4 synchronous channels; bandsplitter feature • half-/full-duplex • asynchronous data rates at 50/75/100/110/150/200/300/600/1200/1800/2000/2400/3600/4800/7RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600/14.4K/19.2K bps • external clocking up to 19.2K bps • independently selectable link parameters • modified HDLC; CCITT X.25 Level II link protocol • CRC 16; ARQ; error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 5.5K- to 22K-byte buffer capacity in 5.5K-byte increments • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminal from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for system and each data channel; digital display for composite link percentage utilization

Features/Options • automatic speed detection for DDD data channels; link down message to all channels; downline loadable operating parameters; bandsplitter opt; integral modem for data channels; split data rates per channel; printer flyback delay; terminal flow control recognition

Cost/Service • $3,755 minimum configuration includes RM80, main module and composite link • $10,755 maximum configuration includes RM80, 4 Main/Expander modules and

Multiplexers

composite link • nationwide service organization; on-call service; factory service • installation charges • one-year warranty

☐ Rixon DCX 836 STDM

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • up to 60 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/100/110/134.5/150/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • parity transparent • 144.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1200/2400/3600/4800/7200/9600/19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- to 64K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • status indicators for system and each data channel • digital display for composite link percentage utilization

Features/Options • automatic speed detection for DDD data channels; link down message to all channels; downline loadable operating parameters; split data rates per channel; printer flyback delay; terminal flow control recognition

Cost/Service • $4,940 minimum configuration includes card frame, Buffer II, LSC module and composite link • $16,915 maximum configuration includes card frame, 4 Buffer II's, 12 LSC modes, composite link, and standalone enclosure • nationwide service organization; on-call service; factory service • installation charge • one-year warranty

☐ Rixon DCX 840 Network STDM

Type/Application • statistical multiplexer • multilink; point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 240 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/100/110/134.5/150/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • parity transparent • 576K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 15 composite links • synchronous at 1200/2400/3600/4800/7200/9600/19.2 bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- to 256K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; DC1/DC2; DC1/DC3; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • network statistics reporting; error detection for 1 error in 100K bits or less; composite link utilization monitor; centralized network control and management • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; all features of the DCX 815 plus full network control and management

Cost/Service • $7,150 minimum configuration includes card frame, Buffer II, STC/MTP, LSC module, and ARQ • $66,750 maximum configuration includes card frame, 15 Buffer II's, STC/MTP, 48 LSC's, 12 ARQ's and 4 BEM/BTMs • nationwide service organization; on-call service; factory service • installation charge • one-year warranty

☐ Rixon DCX 850 Switching STDM

Type/Application • statistical multiplexer • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 240 asynchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates 50/75/100/110/134.5/150/200/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • parity transparent • 576K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • up to 14 composite links • synchronous at 1200/2400/3600/4800/7200/9600/19.2K bps • external clocking up to 19.2K bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 16K- to 64K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; XON/XOFF to suspend or resume data channel flow • flow suspension threshold at 75 percent total buffer utilization; flow resumption threshold at 50 percent total • overflow recovery via data lost message to terminals

Diagnostics/Indicators • local or remote data channel loopback testing • local composite link loopback testing • network statistics reporting; error detection for 1 bit error in 100K bits or less; composite link utilization monitor; centralized network control and management • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels; downline loadable operating parameters; network management via supervisory port; all features of the DCX 840 plus switching; port contention; short form addressing; automatic re-routing; traffic statistics and event log port

Cost/Service • $11,600 minimum configuration includes card frame, Buffer II, STC/MTP, USO, LSC, and ARQ • $71,875 maximum configuration includes card frame, 16 Buffer II's, STC/MTP, Mullinode VSO, 48 LSCs, 11 ARQs, 4 BEM/BTMs • nationwide service organization; on-call service; factory service • installation charge • one-year warranty

☐ Rixon X.25 PAD

Type/Application • statistical multiplexer/PAD • point-to-point • synchronous transmission up to 9600 bps over public or private packet-switched networks

Channels • 4/8 asynchronous channels in 4-channel increments • full-duplex • asynchronous data rates at 110/150/300/600/1200/1800/2400/4800/9600 bps • 76.8K-bps maximum aggregate channel data rate • channel parameters are configured via internal switches or keyed into a user terminal with diagnostic support (opt) for local multiplexer or downline loading • CR and LF padding • ASCII or 8-bit transparent characters • even, odd, transparent, or auto-parity • RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • synchronous up to 9600 bps • external clock • CCITT X.25 Level III link protocol; certified for Telenet, Tymnet, Uninet public data networks • EIA RS-232C V.24/V.28 electrical link interface

Buffer Parameters • 12K-byte buffer capacity • overflow protection uses CTS, XON/XOFF to suspend or resume data channel flow

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite testing • status indicators for system and each data channel • digital display for composite link percentage utilization

Features/Options • complies with CCITT X.3/X.28/X.29

Multiplexers

protocols to communicate with asynchronous terminals; completely transparent; direct connection to Telenet, Tymnet, Datapac, and Transpac • call transfer, slave hard copy, debug port and diagnostics, port busy out, predefined profiles and closed user groups opt

Cost/Service • $1,700 minimum configuration 4-channel unit • $3,750 maximum configuration unit includes 8-channel unit, expanded ROM/RAM and customized RAM option • nationwide service organization; on-call service; factory service • installation charges; one-year warranty

■ ROTELCOM SUPPLY DIVISION

(sales/leasing company)
106 Central Avenue, Cortland, NY 13045 • 607-756-7513

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ SCITEC CORPORATION

811 Equidneck Avenue, Middletown, RI 02840 • 401-849-4353

☐ Scitec Mux 25 Data Concentrator

Type/Application • statistical multiplexer with character interleaving • point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 asynchronous channels including 1 synchronous channel optional • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable parity • synchronous data rates up to 9600 bps • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • asynchronous up to 9600 bps; synchronous to 9600 bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C electrical link interface

Buffer Parameters • 8K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension/resumption threshold user setable • overflow recovery via notification and statistics

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing; 13 diagnostics can be run on each channel • status indicators activity, ARQ, transmit/receive for composite channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression opt; downline loadable operating parameters; network management via any port using access code and password

Cost/Service • 4-channel base unit $1,200 prch • $300 per asynchronous channel • factory service • 12-mo warranty; extended warranty available at 10% of purchase price per year • 800 dial-up number for trouble shooting

☐ Scitec CPX 25 Communications Processor

Type/Application • statistical multiplexer • multinode, point-to-point • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 32 asynchronous channels including up to 4 synchronous channels; synchronous channels multiplexed with composite link • full-duplex • asynchronous data rates up to 19.2K bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable parity • synchronous data rates up to 9600 bps • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • asynchronous up to 9600 bps • synchronous to 19.2K bps • independently selectable link parameters • CCITT X.25 Level II CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C; EIA RS-449 electrical link interface

Buffer Parameters • 8K- to 64K-byte buffer capacity in 8K-byte increments • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension/resumption threshold user selectable • overflow recovery via notification and statistics

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing; 13 diagnostics can be run on each channel • status indicators activity, ARQ, transmit/receive for composite channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression opt; downline loadable operating parameters; network management via any port using access code and password

Cost/Service • 4-channel base unit $1,850 prch • $900 per 4 asynchronous channels • $1,200 per 4 synchronous channels • factory service • 12-mo warranty; extended warranty available at 10% of purchase price per year • 800 dial-up number for trouble shooting

☐ Scitec CPX-25-GB

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 76K bps over a wideband facility/DDC

Channels • 4 to 8 asynchronous channels in 4-channel increments • full-duplex • asynchronous data rates up to 19.2K bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable parity • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • asynchronous up to 4800 bps; synchronous at 48K/50K/56K/72K bps • CCITT X.25 link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-449/V.35 electrical link interface

Buffer Parameters • 8K- to 16K-byte buffer capacity in 8K-byte increments • overflow protection uses CTS; DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension/resumption threshold user selectable • overflow recovery via notification and statistics

Diagnostics/Indicators • self-test; local or remote data channel loopback testing; 13 diagnostics can be run on each channel • status indicators activity, ARQ, transmit/receive for composite channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression opt; downline loadable operating parameters; network management via supervisory console via any port using access code and password

Cost/Service • 4-channel base unit $3,500 • 8-channel base unit $4,500 • factory service • 12-mo warranty; extended warranty available at 10% of purchase price per year • 800 dial-up number for trouble shooting

☐ Scitec NPX-25

Type/Application • statistical multiplexer • multinode, point-to-point • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4 to 32 asynchronous channels in 4-channel increments including 4 synchronous channels multiplexed with composite link • full-duplex • asynchronous data rates up to 19.2K bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable parity • synchronous data rates up to 9600 bps • independently selectable channel parameters • EIA RS-232C electrical channel interface

Composite Link • up to 2 composite links; 1 composite link standard plus 1 optional link • synchronous at 4800/7200/9600 bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing error detection and correction; 4-wire line; integral modems; EIA RS-232C electrical link interface

Buffer Parameters • 8K- to 64K-byte buffer capacity in 8K-byte increments • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension/resumption threshold user setable • overflow recovery via notification and statistics

Diagnostics/Indicators • self-test; local or remote data channel

Multiplexers

loopback testing • local or remote composite link loopback testing; 13 diagnostics can be run on each channel • status indicators for each data channel; activity, ARQ, transmit/receive for composite channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; data compression opt; downline loadable operating parameters; integral modem for composite links; network management via any port using code and password

Cost/Service • 4-channel base unit $4,350 • $900 per 4 asynchronous channels • $1,200 per 4 synchronous channels • factory service • 12-mo warranty; extended warranty available at 10% of purchase price per year • 800 dial-up number for trouble shooting

☐ Scitec BSP T1 Multiplexer

Type/Application • time division multiplexer with bit interleaving • point-to-point • synchronous transmission from 50 bps to 1.544M bps or 2.048M bps over a T1 facility

Channels • 4 to 128 channels • synchronous channel cards contain 4 ports • channel parameters soft-configured • half-/full-duplex; four interface control signals passed in either direction; configured as DCE • synchronous data rates from 50 to 256K bps • EIA RS-232C electrical channel interface standard; EIA RS-422, 423, and CCITT V.35 opt • 4-port voice channels with CVSD quantization, 16K-, 32K-, or 64K-bps channel bandwidth • 4-wire E&M interface

Composite Link • 1 composite link • synchronous from 50 bps to 1.544M bps or 2.048M bps EIA RS-232C interface standard; RS-422, 423, and CCITT V.35 interfaces opt • requires AT&T Model 306 or equivalent modem for attachment to AT&T Accunet T1.5 Service

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote channel loopback testing • local or remote composite link loopback testing • remote alarms • LEDs show channel activity, network synchronization, line data port activity, time clock/carrier detect, sync loss, and multiplexer bypass

Features/Options • redundant control logic and power supply opt • dynamic bandwidth contention allows channels to contend for available time slots • network statistics gathered and displayed • high-speed data transfer (e.g., CPLS-to-CPU) may bypass the multiplexing process • up to 10 system configurations can be programmed and initiated from terminal • employs 64-bit elastic buffer on each channel • both DS1 framed and unframed format due in 1984

Cost/Service • price data incomplete; prices should approximate those DCA T1 Mux • no data available on service

■ SJI CORPORATION

(sales/leasing company)
5950 6th Avenue South, Suite 101, Seattle, WA 98108 • 206-763-8981

☐ **Infotron Complete Multiplexer Line** • see Infotron for features and pricing

■ SOLANA ELECTRONICS

249 South Highway 101, Solana Beach, CA 92075 • 619-481-6384

☐ Solana Multiplexer Model 822

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous transmission up to 76.8K bps over 2 twisted-pair wires at distances up to 2,000 feet

Channels • up to 8 asynchronous channels • asynchronous data rates up to 9600 bps • maximum aggregate rate of 76.8K bps • EIA RS-232C electrical channel interface

Composite Link • 1 composite link • synchronous up to 78.6K bps • EIA RS-422 electrical composite link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • none

Features/Options • no modem required

Cost/Service • $495 single-unit purchase price

■ SOUTHERN TELEPHONE SUPPLY

(sales/leasing company)
1400 Cushman Drive, Lincoln, NE 68501 • 402-423-0584

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ STERLING TELECOM

(sales/leasing company)
1575 Wyoming Avenue, Forty Fort, PA 18704 • 717-288-7471

☐ **Rixon Complete Multiplexer Line** • see Rixon for features and pricing

■ SYMPLEX COMMUNICATIONS CORPORATION

2002 Hogback Road, Suite 17, Ann Arbor, MI 48107 • 313-973-1164

☐ Symplex Datamiser SDC-4

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 9600 bps over a Type 3002 voice channel/DDC

Channels • up to 4 asynchronous or synchronous channels • full-duplex • asynchronous data rates at 300/600/1200/1800/2400/4800/9600/19.2K bps; synchronous data rates at 1200/2400/3600/4800/7200/9600/19.2K bps • 38.4K-bps maximum aggregate channel rate • 7 or 8 character bits • odd, even, or no parity • EIA RS-232C; CCITT V.24/V.28 electrical channel interface

Composite Link • 1 composite link • synchronous up to 9600 bps • external clocking • EIA RS-232C; CCITT V.24/V.28 electrical link interface

Buffer Parameters • 14.5K-byte buffer capacity • overflow protection uses CTS/XON/XOFF to suspend or resume data flow

Diagnostics/Indicators • data compression • statistics and user programmable options

Features/Options • user transparent

Cost/Service • contact vendor

■ TECHNICAL ANALYSIS CORPORATION (TAC)—See DIGITAL COMM ASSOC

■ TELLABS, INC

4951 Indiana Avenue, Lisle, IL 60532 • 312-969-8800

☐ Tellabs 330 Dataplexer

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • addresses 128 nodes • synchronous transmission up to 76.8K bps over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 8/16/24/32 asynchronous channels • full-duplex • asynchronous data rates at 50/75/110/134.5/150/600/1200/1800/2400/4800/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • 4 control signals passed each direction per channel • 153.6K-bps maximum aggregate channel data rate per link • independently selectable channel parameters • EIA RS-232C/CCITT V.24 electrical channel interface

Composite Link • 1 or 2 composite links • synchronous up to 76.8 bps per link • SDLC/HDLC; CCITT X.25 Level II protocol • CRC 16 error detection and correction • RS-232C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 25K-byte buffer capacity • overflow protection uses CTS XON/XOFF to suspend or resume channel flow

Diagnostics/Indicators • self-test; local or remote channel loopback • indicators

Features/Options • plexerlink local digital line interface; CCITT V.35 wideband modem interface

Cost/Service • contact vendor • 2-year warranty

Multiplexers

☐ Tellabs 331 Xplexer

Type/Application • statistical multiplexer • multilink; point-to-point synchronous transmission up to 76.8K bps (per link) over a 4-wire Type 3002 voice channel/wideband facility/DDC

Channels • 8/16/24/32 asynchronous channels • full-duplex • asynchronous data rates at 50 to 9600 bps; synchronous data rates at 1200 to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • 307.2K-bps maximum aggregate channel data rate • EIA RS-232C/CCITT V.24 electrical channel interface • switched or dedicated channels

Composite Link • 2/6/10/14/18 composite links • synchronous up to 76.8K bps each • SDLC/HDLC; CCITT X.25 Level II protocol • CRC 16 error and correction • RS-2323C/CCITT V.24/V.28 electrical link interface

Buffer Parameters • 25K-byte buffer capacity • overflow protection uses CTS XON/XOFF to suspend or resume channel flow

Diagnostics/Indicators • self-test; local or remote channel loopbacks • LED indicators

Features/Options • user-initiated switching and network control features; transparent • BSC bit-oriented protocols supported on virtual circuits • authorized supervisory access from any network connection; user-defined broadcast message; log-in herald capability • optional integral digital line driver/receiver supports channels • integral CCITT V.29 link modem

Cost/Service • contact vendor • 2-year warranty

■ TELTONE

P.O. Box 657, Kirkland, WA 98033 • 206-827-9626

☐ Teltone M-825 TDM

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous transmission up to 19.2K bps over a 4-wire metallic circuit up to 1 mile, more with T1 repeaters

Channels • up to 32 asynchronous channels • full-duplex • asynchronous data rates up to 19.2K bps • 1.544M-bps aggregate channel data rate • EIA RS-232C electrical channel interface

Composite Link • 1 composite link standard • synchronous at 1.544M bps • fully transparent link protocol • T1 DSX-1 standard electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local data channel loopback testing • local composite link loopback testing • scrambler disable • status indicators Bipolar violation and framing error indicators for T1 link

Features/Options • integral T1 digital driver; single- bit error detection and correction; all channels fully transparent to maximum data rates at 19.2K bps; no speed or parity settings required; EIA status control single option available

Cost/Service • 32-channel base unit $3,200 prch • factory service • 12-mo warranty

☐ Teltone M-860

Type/Application • statistical multiplexer • point-to-point; multipoint • asynchronous or synchronous transmission up to 76.8K bps over a Type 3002 voice channel/wideband/DDC

Channels • up to 32 asynchronous or 8 synchronous channels • full-duplex asynchronous or synchronous data rates up to 9600 bps • 5 through 8 character bits • 1/1.5/2 stop bits • 307.2K-bps maximum aggregate channel rate • EIA RS-232C/CCITT V.24 electrical channel interface

Composite Link • 1 or 2 composite links • synchronous up to 76.8K bps each link • SDLC/HDLC protocol • CRC 16 error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical link interface; optional dual RS-232C/CCITT V.35 link interfaces

Buffer Parameters • 25K-byte buffer capacity • overflow protection uses CTS to suspend or resume data flow

Diagnostics/Indicators • self-test • local and remote channel loopback testing • local and remote link loopback testing • status indicators

Features/Options • options include local digital line driver interface; CCITT V.35 modem interface; 9600-bps V.29 modem interface; dual RS-232C/CCITT V.24/V.28 interface

Cost/Service • contact vendor

■ TIMEPLEX INC

One Communications Plaza, Rochelle Park, NJ 07662 • 201-368-1113

☐ Timeplex Timplexer T-4, T-16, T-20 TDMS

Type/Application • time division multiplexer with character interleaving • point-to-point or multipoint • synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 20 asynchronous/synchronous channels in 1-channel increments • full-duplex • asynchronous up to 2400 bps • 5 through 8 bits per character • 1/1.42/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates up to 9600 bps • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C; RS-423 electrical channel interface

Composite Link • 1 composite link standard • synchronous at 19.2K bps • independently selectable link parameters • EIA RS-232C/CCITT V.24/V.28; MIL 188C; RS-423 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local or remote data channel loopback testing • local composite link loopback testing • false start bit detection and correction • parity error detection and correction • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; data compression; integral modem for data channels opt; isochronous channel opt; strips start and stop bits to effect compaction; speed compensation

Cost/Service • basic unit from $2,400 • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex E/Series

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel

Channels • 4/8/12/16 asynchronous channels • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; EIA RS-449; MIL STD 188C electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600 bps • external clocking up to 9600 bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing and error detection and correction • EIA RS-232C; EIA RS-449; MIL STD 188C electrical link interface

Buffer Parameters • 16K-byte buffer capacity • overflow protection uses CTS Ring/Busy, XON/XOFF, programmable characters to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization or 90 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; integral modems for composite link

Cost/Service • $1,650 minimum 4-channel unit includes 16K-byte buffer; $5,225 maximum 4-channel unit includes 16K-byte buffer, integral single-channel synchronous

Multiplexers

bandsplitter, integral 9600-bps synchronous modem, expandable to 8, 12, or 16 channels • $4,000 minimum 16-channel unit includes 16K-byte buffer; $7,125 maximum 16-channel unit with 16K-byte buffer, integral-channel synchronous bandsplitter and integral 9600 bps synchronous modem

☐ Timeplex Series II Microplexer M4A STDM

Type/Application • statistical multiplexer • point-to-point • asynchronous or synchronous transmission up to 9600 bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 or 8 asynchronous channels in 4-channel increments • full-duplex • asynchronous data rates up to 2400/4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 19.2K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C; EIA RS-449; MIL STD 188C electrical channel interface

Composite Link • 1 composite link standard • asynchronous up to 9600 bps; synchronous at 9600 bps • external clocking up to 9600 bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C; EIA RS-449; MIL STD 188C electrical link interface

Buffer Parameters • 16K bytes buffer capacity • overflow protection uses CTS; Ring/Busy; XON/XOFF; programmable characters to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization or 90 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; integral modem for composite link opt; non-interruptible programming

Cost/Service • $1,800 4-channel minimum configuration includes 4 asynchronous channels and asynchronous composite link • $3,100 8-channel maximum configuration includes 8 asynchronous channels, synchronous composite link, supervisory port • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Series II Microplexer M8C STDM

Type/Application • statistical multiplexer • multilink; point-to-point • transmission up to 9600 bps or 19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 or 8 asynchronous or synchronous channels in 4-channel increments • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • 76.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL STD 188C electrical channel interface

Composite Link • 1 or 2 composite links • synchronous at 9600 bps for each link of dual link unit or 19.2K bps for single link • external clocking up ot 9600/19.2K bps • CCITT X.25 Level II link protocol • CRC 16; ARQ; frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL STD 188C electrical link interface

Buffer Parameters • 32K- or 48K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; Ring/Busy; XON/XOFF; user programmable characters to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization or 90 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; master/slave configuration; downline loadable operating parameters; network management via supervisory port and console opt; dual link opt; battery back-up feature; non-interruptible programming; synchronous data channels opt; network configurator opt; extended diagnostics opt; TSO/TCAM opt

Cost/Service • 8-channel minimum unit $1,625 purchase price supports any combination of up to 8 asynchronous/synchronous/SDLC channels and 19.2K synchronous composite link • $2,390 maximum unit supports any combination of up to 8 asynchronous/synchronous/SDLC channels in traffic balancing configuration, dual 9600 synchronous composite links, integral supervisory port • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Series II Microplexer M24C STDM

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 9600/19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 24 asynchronous or synchronous channels in 4-channel increments • full-duplex • asynchronous data rates up to 4800 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • odd/even/no parity • 38.4K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449 electrical channel interface

Composite Link • 1 or 2 composite links • synchronous at 9600 bps for each link of a dual link unit or 19.2K bps for single link unit • external clocking up to 9600/19.2K bps • CCITT X.25 Level II link protocol • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL STD 188C electrical link interface

Buffer Parameters • 32K- to 80K-byte buffer capacity in 16K-byte increments • overflow protection uses CTS; Ring/Busy; XON/XOFF; user programmable characters to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization or 90 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; downline loadable operating parameters; network management via supervisory console opt

Cost/Service • $2,655 minimum 24-channel unit supports any combination of up to 24 asynchronous/synchronous/SDLC channels includes 19.2K synchronous composite link and integral supervisory port • $3,680 maximum 24-channel unit supports any combination up to 24 asynchronous/synchronous/SDLC channels in traffic bypassing or alternate routing configuration, includes dual 14.4K-bps synchronous composite link and integral supervisory port • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Series II Microplexer M48C STDM

Type/Application • statistical multiplexer • multilink; point-to-point or multipoint • synchronous transmission up to 9600/19.2K bps over a 4-wire Type 3002 voice channel/DDC

Channels • 4 to 48 asynchronous or synchronous channels in 4-channel increments • half- or full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd/even/no parity • synchronous data rates at 1200/1800/2000/2400/3600/4800/7200/9600 bps • 40.8K-bps maximum aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; EIA RS-449; MIL STD 188C electrical channel interface

Composite Link • 1 or 2 composite links; synchronous at 9600 bps for each link of dual link unit or 19.2K bps for single link unit • external clocking up to 9600/19.2K bps • CCITT X.25 Level II link protocol • CRC 16/ARQ/frame sequencing error detection and correction • EIA RS-232C; EIA RS-449; MIL STD 188C electrical link interface

Buffer Parameters • 16K- to 208K-byte buffer capacity in

Multiplexers

16K-byte increments • overflow protection uses CTS; Busy/Ring; XON/XOFF; user programmable characters to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization or 90 percent per data channel • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • statistics reporting • status indicators for each data channel

Features/Options • automatic speed detection for DDD data channels opt; echoplex; master/slave configuration; special data channel protocol opt; network configurator opt; TSO/TCAM asynchronous handler opt; dual data link feature; supervisory port feature

Cost/Service • $3,375 minimum 24-channel unit supports up to 24 asynchronous/synchronous/SDLC channels includes 19.2K-bps synchronous composite link and integral supervisory port • $4,150 maximum 24-channel unit supports up to 24 asynchronous/synchronous/SDLC channels plus additional 24-channels via expander unit, includes dual 9600 synchronous composite links and integral supervisory port • $1,000 per 24 asynchronous/synchronous channel expander • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Wideband Microplexer

Type/Application • statistical multiplexer • point-to-point • synchronous transmission up to 72K bps over a wideband facility/DDC

Channels • 4 to 48 asynchronous channels in 4-channel increments; including up to 48 synchronous channels in 4-channel increments; synchronous channels multiplexed with composite link via statistical multiplexer • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates up to 9600 bps • 460.8K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical channel interface

Composite Link • 1 composite link standard • synchronous at 9600/19.2K/40.8K/48K/50K/56K/64K/72K bps • external clocking up to 72K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; selective retransmission of only faulty frames and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; V.35; MIL STD 188C; DDS electrical interface

Buffer Parameters • 224K-byte buffer capacity • overflow protection uses CTS, DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threshold at 89 percent total • overflow recovery via data lost message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • self-test of hardware and firmware; special test messages • status indicators

Features/Options • automatic speed detection for DDD data channels opt; echoplex; master/slave configuration; downline loadable operating parameters; network management via supervisory console; support password protected; data channel monitoring; real-time operating statistics; battery backup for configuration data; electronic patch panel; flyback buffering

Cost/Service • basic unit $6,025 • $750 per 4 asynchronous channels • $1,000 per 4 synchronous channels • $1,450 per 2 SDLC and 2 other channels • $1,750 per 4 SDLC synchronous channels • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Enhanced Switching Microplexer

Type/Application • statistical multiplexer • multinode, point-to-point • synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/wideband facility

Channels • 4 to 48 asynchronous or synchronous channels in 4-channel increments including 4 to 48 synchronous channels in 4-channel increments; synchronous channels multiplexed with composite link via statistical multiplexer • full-duplex • asynchronous data rates up to 9600 bps • 5 through 8 bits per character • 1/1.5/2 stop bits • selectable odd, even, or no parity • synchronous data rates up to 9600 bps • 460.8K-bps aggregate channel data rate • independently selectable channel parameters • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical channel interface

Composite Link • up to 2 composite links • synchronous at 9600 bps for each link of dual link or 19.2K bps for single link unit • external clocking up to 9600/19.2K bps • independently selectable link parameters • CCITT X.25 Level II link protocol • CRC 16; ARQ; and frame sequencing error detection and correction • EIA RS-232C/CCITT V.24/V.28; MIL STD 188C electrical link protocol

Buffer Parameters • 48K- to 208K-byte buffer capacity • overflow protection uses DC1/DC2, DC1/DC3, XON/XOFF, CTL S/CTL Q to suspend or resume data channel flow • flow suspension threshold at 90 percent total buffer utilization; flow resumption threhsold at 89 percent total • overflow recovery via data lost to message to terminals from slave or master multiplexer

Diagnostics/Indicators • self-test; local or remote data channel loopback testing • local or remote composite link loopback testing • test message generator; test patterns • status indicators

Features/Options • automatic speed detection for DDD data channels opt; echoplex opt; master/slave configuration; downline loadable operating parameters; network management via supervisory console; switching feature allows any synchronous terminal to request connection to any port, within limits set through supervisory port; supports closed groups, contention groups, camp-on, and other data PBX features

Cost/Service • $2,520 minimum configuration supports up to 8 asynchronous/synchronous channels, includes 19.2K-bps synchronous composite link • $4,420 maximum configuration supports any combination up to 24 asynchronous/synchronous channels, includes dual 9600-bps synchronous composite links • $1,250 24 asynchronous/synchronous channel expander unit • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Quad Switching Multiplexer

Type/Application • statistical multiplexer • point-to-point, multilink; multinode; multipoint • asynchronous or synchronous transmission up to 19.2K bps over a 4-wire Type 3002 voice channel/wideband/digital facility

Channels • up to 48 asynchronous and/or synchronous channels in 4-channel increments • full-duplex • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps; synchronous channels require Synchronous Protocol options; data rates protocol dependent • maximum aggregate channel rate of 460.8K bps • 5 through 9 bits per character • independently selectable parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 4 composite links • each link synchronous to 19.2K bps • CRC 16 and ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical composite link interface

Buffer Parameters • up to 224K-byte buffer capacity • CTS; XON/XOFF to suspend or resume data flow • flow suspension threshold at 87 percent total buffer utilization; flow resumption threshold at 80 percent total buffer utilization • terminal equipment controls data flow via control character recognized at channel port

Diagnostics/Indicators • same as Enhanced Switching Microplexer; see above

Features/Options • optional Network Manager (IBM PC with proprietary software) • optional automatic speed detection for DDD; successive dial-up requests; interactive terminal interface; echoplex; flyback control; supervisory port support • network configurator; communicator; extended diagnostics opt; alarm

Multiplexers

driver opt; priority control; TSO/TCAM asynchronous handler opt; integral modems (links or channels) opt

Cost/Service • $6,950 purchase per 20-channel base unit; $1,250 per 28-channel expander unit; $1,100 per 4-port asynchronous channel adapter to $1,750 per 4-port synchronous SDLC channel adapter • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Networking Microplexer

Type/Application • statistical multiplexer • point-to-point; multilink; multinode; multipoint • asynchronous or synchronous transmission up to 19.2K bps or 72K bps (point-to-point) over a 4-wire Type 3002 voice channel/wideband/digital facility

Channels • up to 96 or 144 asynchronous and/or synchronous channels in 4-channel increments • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps; synchronous requires Synchronous Protocol options; data rates protocol dependent • maximum aggregate channel rate of 1.382M bps • 5 through 9 bits per character • independently selectable parameters • EIA RS-232C/CCITT V.24/V.28 electrical channel interface

Composite Link • 6 composite links • each link synchronous to 19.2K bps or 72K bps point-to-point • CRC 16 ARQ error detection and correction • EIA RS-232C/CCITT V.24/V.28 electrical composite link interface

Buffer Parameters • same as Quad Switching Microplexer; see above

Diagnostics/Indicators • same as Enhanced Switching Microplexer; see above

Features/Options • same as Quad Switching Microplexer; see above

Cost/Service • $19,650 purchase per 96-channel unit; $30,200 per 144-channel unit; $1,100 per 4-port asynchronous channel adapter to $1,750 per 4-port synchronous SDLC channel adapter • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Microplexer X.25 PAD

Type/Application • statistical multiplexer/PAD • point-to-point; multinode; multilink • synchronous transmission up to 9600 bps over an X.25 packet data network such as Telenet, Tymnet, or Uninet or to an X.25-supported host computer in 4-channel increments

Channels • up to 8, 24, or 48 asynchronous channels in 4-channel increments • asynchronous data rates at 50/75/110/134.5/150/300/600/1200/1800/2000/2400/3600/4800/7200/9600 bps • 460.8K-bps maximum aggregate channel data rate • 5 through 8 bits per character plus parity • 1, 1.5, or 2 stop bits • EIA RS-232C/CCITT V.24/V.28; MIL-STD-188C-114 electrical channel interface

Composite Link • 1 or 2 composite links • synchronous to 9600 bps • CRC 16 and ARQ error detection and correction • CCITT X.25 Level III LAPB protocol • CCITT X.21 bis electrical link interface

Buffer Parameters • contact vendor

Diagnostics/Indicators • same as Enhanced Switching Microplexer; see above

Features/Options • automatic speed detection for DDD; echoplex; flyback control; supervisory port control • Network Configuration opt; Extended Diagnostics opt; Alarm Driver opt; Priority Control opt; TSO/TCAM Asynchronous Handler opt; EIA RS-423 opt; channel-attached and composite link modem options at 2400/4000/9600 bps

Cost/Service • $1,750 purchase for single-link 8-channel PAD to $5,165 for dual-link 48-channel PAD; $750 purchase per 4-port asynchronous channel adapter • own service; nationwide service organization; on-call service • one-year warranty

☐ Timeplex Link/1

Type/Application • time-division multiplexer with character interleaving • point-to-point • synchronous transmission rates from 4800 to 1.544M bps or 2.048M bps over a T1 carrier facility

Channels • 4 to 44 data channels • synchronous channel card contains up to 4 ports • channel parameters soft configured • half-/full-duplex; 7 control signals passed in either direction; configured as DTE/DCE • synchronous data rates from 75 bps to 512K bps • EIA RS-232C/CCITT V.24; RS-422, 423; CCITT V.111 MIL STD-188C and 188-114 electrical channel interface • 2-/4-port voice channels; CVSD quantization; 32K-bps channel bandwidth • 4-wire E&M electrical interface

Composite Link • 1 composite link • synchronous from 4800 to 1.544M bps or 2.048M bps • EIA RS-422/CCITT V.11 electrical link interface

Buffer Parameters • not applicable

Diagnostics/Indicators • local/remote loopback testing • local/remote composite link loopback testing • remote alarms • firmware self-tests • out-of-sync/sync • clock error • data activity channel and link

Features/Options • redundant control logic and power supply optional; fully redundant system supports only 32 I/O ports • redundant T-1 modem and link module optional • priority bandwidth assignment per user-class basis • alternate clock sources • automatic reconfiguration based on time of day • conforms to DS1 unframed format • asynchronous channel card, drop-and-insert, multiple data links all scheduled for 1984

Cost/Service • $20K purchase price • lease and monthly maintenance fees not available • own service; nationwide service organization; on-call service • one-year warranty

■ UNGERMANN-BASS INC

2560 Mission College Boulevard, Santa Clara, CA 95050 • 408-496-0111

☐ CMX Series

Type/Application • time division multiplexer with bit interleaving • point-to-point, multipoint • synchronous transmission up to 2.358M bps over a coaxial cable for 3274 device control units, local and remote

Channels • 1 to 32 channels • synchronous data rates to 2.3M bps • IBM Coax A interface

Composite Link • 1 composite link • asynchronous up to 2.358M bps • baseband coax interface

Buffer Parameters • not applicable

Diagnostics/Indicators • status indicators

Features/Options • supports IBM 3278, 3279, 3287, and Memorex 2078, 2079, and 2087 • field-upgradeable in 8-channel increments

Cost/Service • contact vendor

■ VERSITRON

6310 Chillum Place NW, Washington, DC 20011 • 202-882-8464

☐ Versitron LDM Local Distribution TDM-1

Type/Application • time division multiplexer with bit interleaving • point-to-point • asynchronous or synchronous transmission over fiber optic cable

Channels • chassis options for 14, 16, 30 cards • capability up to maximum to 60 data and 210 control channels • data rates 64K-bps asynchronous or 300/600/1200/2400/4800/9600 bps, 16K, 32K, 50K, 56K, 64K bps synchronous and asynchronization 10M-bps aggregate • interface EIA RS-232C, 449, V.35, voice and fiber optic DCE/DTE • customer interface available

Composite Link • dual fiber optic cable (100/140 micron fibers)

Buffer Parameters • not applicable

Diagnostics/Indicators • remote channel loopback and bit error testing • annunciator status and alarm indicator lights • alarm indicates bit error rate and/or loss of synchronization

Multiplexers

Features/Options • individual channel drop cards • transparent to clock, data, and control signals • RFI chassis available • redundant power supplies available • absolute synchronization

Cost/Service • TDM-1 card $1,900 • power supply $640 • TDM-14/16 housing $900 • TDM-C-30 housing $1,600 • RS-232C channel card $455 • factory service; 1-year warranty

• END

T1 Multiplexers

This Product Survey presents the salient characteristics of T1 multiplexers marketed by manufacturers for data transmission at rates up to 1.544M bps or 2.048M bps over domestic or foreign T-carrier facilities. This edition of the Survey presents specifications and pricing on **11 T1 multiplexer models** marketed by as many vendors. Eight of these products are produced by individual manufacturers; three are OEMed from these manufacturers. This survey does not include multiplexers offered as part of a commercially available network service such as AT&T's ACCUNET T1.5.

On June 30, 1982, AT&T filed Tariff 270 which defined a point-to-point dedicated digital service with a bandwidth of 1.544M bps called High Capacity Terrestrial Digital Service (HCTDS). This was the first public offering of a broadband digital facility for high-volume transmission. The facility to implement this service, designated T1 carrier, has been used by telephone companies since the early 1960s to support high-volume traffic, and now constitutes over one million circuit miles. HCTDS provided basic transport services for digital data between customer premises or between a customer premise and telephone company central office (CO). As of January 1, 1984, this service became part of a family of high-capacity digital services offered by AT&T Communications (formerly AT&T Long Lines) under the name ACCUNET. These services include:

- ACCUNET T1.5 Service—formerly HCTDS; a 1.5M-bps dedicated digital service composed of terrestrial circuits only.
- ACCUNET Reserved 1.5 or 3.0 Service—formerly HSSDS; a 1.5- or 3M-bps switched digital service composed of satellite and terrestrial circuits; primarily for teleconferencing.
- ACCUNET Packet Service—formerly BPSS/PTN; a packet-switching service available at rates of 9600 or 56K bps.
- Dataphone Digital Circuits—dedicated digital circuits available at synchronous rates of 2400, 4800, 9600, and 56K bps.

ACCUNET T1.5 Service spawned the need for T1 multiplexers which make effective use of the service's large 1.5M-bps bandwidth by slicing it into a number of segments to accommodate a diversity of resources. Two types of circuits are available under ACCUNET T1.5, a Total Service Circuit and a Transport Service.

The Total Service Circuit is a two-point dedicated line used for simultaneous two-way transmission of serial, bipolar, return-to-zero isochronous digital signals at a data rate of 1.544M bps. This circuit provides a very high level of data integrity, guaranteeing 95 percent error-free seconds of transmission measured over a continuous 24-hour period.

Total Service Circuits are provided between (1) two premises, (2) a premises and a serving office of access to a multiplexing secondary service function, (3) a premises and a serving office for connection to a high-capacity satellite digital service—SKYNET 1.5 Service (formerly HCSDS), or (4) two serving offices for connection to multiplexing secondary service functions. AT&T communications provides all the components required for a complete communication service and assures satisfactory overall circuit transmission from demarcation point to demarcation point. The customer must furnish the Channel Service Unit (CSU) functionality and is responsible for overall transmission over the connected assembly to the demarcation point.

The T1 multiplexers in this product survey are high-capacity time-division multiplexers (TDMs). Most use bit interleaving; at least one uses character interleaving. Unlike statistical multiplexers, the aggregate rate of all channels must not exceed the capacity (data rate) of the composite link. A T1 carrier facility (under the telco scheme) is divided into 24 channels each with a 64K-bps bandwidth. While this totals 1.536M bps, the remaining bandwidth is reserved for control bits.

All multiplexers connected to the ACCUNET T1.5 Service must conform to the unframed DS1 message format. This format requires that any 24-bit interval must have at least three 1's and no more than 15 consecutive zeros to retain carrier timing alignment. Multiplexers that do not conform to this format require an AT&T Model 306 (or equivalent) modem to establish compatibility. In addition to cost, the 306 reduces available bandwidth by 12.5 percent yielding an available bandwidth of 1.34M bps (versus 1.53M bps for a multiplexer that does conform).

By 1985, AT&T Communications will require an extended version called DS1 framed Extended Frame Format. The new format imposes a predetermined pattern on every 193rd bit position of the output data which is used by AT&T for framing, error detection, and transmission of network control information. Up to 8K bps of the available bandwidth are needed by the new format.

The number of channels and channel rates accommodated by a multiplexer depends on the technique used to subdivide each 64K-bps channel slot. While some vendor products do not subdivide channels, others make optimum use of the slot bandwidth to accommodate a large number of devices operating at different speeds.

With a few exceptions, the T1 multiplexers in this survey are single-line, point-to-point units. Some offer a

T1 Multiplexers

redundant link which automatically reroutes traffic should the primary link fail. Some also offer a channel bypass facility that lets data from City A pass through City B on its way to City C. Others go a step further by allowing data to be dropped and picked up at City B for transmission to City C. This technique, called drop-and-insert, is valuable to organizations with large decentralized offices that routinely send and receive data.

While the maximum data transmission rate is 1.544M bps or 2.048M bps, most vendors allow their multiplexers to operate at rates as low as 50 bps. This allows the product to be used in local private networks employing coaxial cable, twisted pairs, fiber optics, etc. The T1 multiplexer is also suitable to media such as microwave, digital radio, and infrared.

Listings in the Survey are arranged alphabetically by vendor name and then by specific multiplexer model. Each model entry is further divided into logical categories that define multiplexer type and application, data channel parameters, voice channel parameters, composite link parameters, diagnostics capabilities and visual indicators, features and options, and pricing and service support. Specific topic areas within each section are further delineated with a solid dot (•).

The T1 Multiplexer Outline below serves as a quick reference guide to vendors whose product parameters match specific user requirements. The T1 Multiplexer Outline parameters are defined as follows:

Redundant PS/CL • products can be equipped with redundant power supplies and/or central logic.

Hard Configuration • the products' operating parameters are configured via rotary switches, DIP switches, jumper cables, and/or a combination of all.

Soft Configuration • the products' operating parameters are configured via a supervisory terminal.

I/O Channels • the number of input/output channels that can be accommodated by the multiplexer.

Async Channel Card • a separate channel card accommodates asynchronous data.

Sync Channel Card • a separate channel card accommodates synchronous data.

Voice Channel Card • accommodates and digitizes an analog voice channel.

No. Trunks • indicates more than one T1 composite link (trunk) is supported.

Drop/Insert • adds and terminates channels at locations within a T1 network.

Bypass • routes data through intermediate nodes to destination node in a multinode network.

Trunk Speed Greater Than 1.544M bps • the composite link (trunk) rate can be set higher than the standard U.S. T1 link rate of 1.544M bps (e.g., 2,048M bps).

DS-1 Compatibility • the message frame format conforms to specifications permitting the multiplexer to be directly interfaced with ACCUNET T1.5 Service.

T1 MULTIPLEXERS OUTLINE

COMPANY/PRODUCT	Redundant PS/CL	Hard Configuration	Soft Configuration	I/O Channels Less Than 30	I/O Channels Less Than 60	I/O Channels Greater Than 60	Async Channel Card	Sync Channel Card	Voice Channel Card	No. Trunks Greater Than 1	Drop/Insert	Bypass	Trunk Speed Greater Than 1.544M	DS-1 Compatible
Amdahl Model 2211	•	—	•	—	—	•	•	•	—	—	—	—	•	•
Avanti Ultra Mux	•	—	•	—	—	•	•	•	•	•	•	•	•	•
Bayly Omniplexer	•	•	—	—	—	•	•	•	•	—	•	•	•	•
Coastcom D/I Mux	•	•	—	—	—	•	•	•	•	•	•	•	•	•
Datatel DCP 9100	•	•	—	—	•	—	—	•	—	—	—	—	—	•
Digital Comm Associates	•	—	•	—	—	•	—	•	•	—	—	—	•	—
General DataComm Megamux	•	•	•	—	•	—	•	•	•	—	—	—	•	•
Infotron Systems T Mux	•	•	—	—	•	—	—	•	•	—	—	—	—	•
Paradyne Corp DCX-T1	•	•	—	—	•	—	—	•	•	—	—	—	—	•
Scitec BSP T1	•	—	•	—	—	•	—	•	•	—	—	—	•	—
Timeplex Link/1	•	—	•	—	•	—	—	•	•	—	—	—	•	•

T1 Multiplexers

T1 MULTIPLEXERS FEATURES

TYPE/APPLICATION

This Features Section defines the multiplexing technique, composite link arrangement, link transmission technique, maximum composite link rate, and transmission facility. Specific topic fields within this section include the following:

Multiplexer Type • defines the multiplexing technique as time division (TDM). The TDM technique sequentially scans all channels; each is sampled for a fixed time interval. The sampling result is assembled into a frame with time slots equivalent to the per-channel sampling time. The frame, equivalent to a complete scan of all channels, is transmitted over the composite link as it is assembled, and the cycle is repeated.

The TDM multiplexing process is reversed when a frame is received from the composite link. Demultiplexing extracts data from the frame and distributes it to the individual channels. The process by which one unit of data is extracted from each channel to complete a frame is called interleaving. Conventional TDMs interleave data on a character (byte) or bit basis. Each frame is composed of a character or bit from each of the scanned channels. Bit interleaving is advantageous to synchronous transmission and is less expensive. Transmission delay through the multiplexer is substantially reduced since each bit is transmitted as it is received from the channel, and synchronization is faster. Character interleaving is advantageous to asynchronous transmission. A full character including start and stop bits is assembled in a buffer, and its start and stop bits are stripped for transmission efficiency. The demultiplexing process reinserts the start/stop bits. Character interleaving is somewhat more expensive and increases transmission delay through the multiplexer.

The T1 multiplexer is TDM designed for high channel rates with an aggregate rate equivalent to the T1 bandwidth or higher depending on the transmission medium it's designed to be used with. Many models support composite link rates at 2.048M bps, which makes them suitable for use on foreign T-carrier networks. Synchronous transmission is generally used since T1 circuits are clocked.

Communication Arrangement • the composite link communication path is point-to-point for T-carrier facilities. Some models support drop-and-insert arrangements, which means specific channels can be picked up and/or routed to locations along the link, a variation of multidropping which provides operating flexibility for cost-effective communication. Multilink models support point-to-point or multinode communication for communication between a location and multiple locations (star configuration) or alternate routing to recover from outages or avoid traffic congestion. Traffic bypass routes channels through locations between point of origin and destination. The communication medium between T1 multiplexers is typically a T1 service offered by a common carrier such as AT&T Communications ACCUNET T1.5; however, it could be a private network, fiber optic or coaxial cable, or twisted wire line.

DATA/VOICE CHANNELS

This Features Section specifies the multiplexer's channel configuration, operating parameters, and electrical channel interface. Also specified are the techniques used for digitizing voice inputs for transmission over the T1 link.

Channel/Multiplexer Configuration • configuring multiplexer operating parameters involves identifying channel types, speeds, timing, code structures, priority (where applicable), etc. This information is "sensed" by the control logic and is used to establish the message frame. The operating parameters of multiplexers in this survey are either software or hardware configured. A software-configured unit employs a simple ASCII terminal attached to a control channel with which the operator keys in the configuration parameters. The parameters are retained in a storage medium such as RAM or EAROM and are downline loaded to the remote multiplexer. Some terminals also employ a control panel to set parameters.

A hardware-configured multiplexer employs PROM and/or mechanical devices like rotary switches, DIP switches, or jumpers to configure the unit. With PROM-configured systems, the operating parameters are specified by the user and then burned into PROM. Any changes to the configuration require new PROMs. Such inflexibility can be expensive and is a considerable inconvenience; for that reason, few manufacturers still employ it.

Multiplexers using rotary switches or mechanical devices generally employ RAM to retain local and remote configuration parameters and support downline loading. For units employing RAM, it is important that batteries be used to retain the configuration in the event of a power failure. If this is not the case, check that some form of automatic reconfiguration is offered. Datatel, a vendor that employs the hardware approach and no battery backup, uses a simplistic approach to reconfigure. Its DCP 9100 requires that rotary and DIP switches be set on each channel to establish the operating parameters. After a power failure, the central logic reads the switch settings and reestablishes the configuration.

Terminal control employed with software configuring offers a number of advantages. Channels can be added or deleted, configurations changed, tests initiated, and systems monitored from one location. It also lets the multiplexer be placed at a remote (unattended) site. On the negative side, system checks involving the simultaneous testing of more than one channel are either difficult or impossible.

Hardware-configured multiplexers have a number of drawbacks. The ones employing card-mounted DIP switches and/or jumpers require that cards be removed from their slots and the parameters set manually. As already noted, those using PROMs require a PROM swap to change configurations. Multiplexers using rotary switches allow parameters to be established from the front panel of the card, but again the parameters must be set manually. Checking the channel configurations is also inconvenient with DIP switches and jumpers, unless the vendor provides some sort of terminal interface that "reads" the settings.

Some of the new products offer sophisticated facilities such as channel **priority assignment** and automatic reconfiguration based on time-of-day traffic considerations and communication requirements. For example, computer-to-computer transfers involving large amounts of data can be scheduled for off-peak hours and initiated automatically. Another form of priority assignment calls for some channels to receive fixed bandwidth, while others contend for available bandwidth on a first-come, first-served basis.

Asynchronous Transmission • all of these multiplexers will transmit asynchronous data, but not all provide a separate asynchronous channel card to do so. Some products use channel cards designed specifically to handle asynchronous inputs and convert them to a form suitable for synchronous multiplexing. Others are not equipped to handle asynchronous data, so the customer must use an asynchronous-to-synchronous converter or a sub-multiplexing device such as a statistical multiplexer. Although the latter unit increases systems costs and overhead, it also provides error-correcting facilities for asynchronous inputs. The synchronous data, of course, is protected by the protocol. The asynchronous data rates handled by the products in this survey range from 50 bps to 19.2K bps.

Synchronous Transmission • every vendor provides a separate channel card for interfacing synchronous data to a T1 multiplexer. Data rates range from 50 bps up to 1.544M bps on these channels.

Voice Transmission • two techniques are currently employed for digitizing voice. The first, called Pulse Code Modulation (PCM), divides the 4-KHz analog voice signal into 8-bit words and samples these at 8,000 times per second to produce the digitized output. This technique requires a 64K-bps bandwidth to accommodate the digitized voice. The second technique, called Continuously Variable Slope Delta (CVSD), samples at 32,000 times a second and only transmits the change between the current and last sampling. This form of modulation requires half the bandwidth of PCM or 32K bps, permitting two voice channels to share a single 64K-bps channel bank.

T1 Multiplexers

Another technique, which has yet to be adopted by the phone company, is called Adaptive Differential Pulse Code Modulation (ADPCM). Like PCM, it also samples at 8,000 times per second but only uses 4 bits to represent a word. ADPCM, therefore, also requires only 32K bps to accommodate voice, permitting two voice channels to share a single 64K-bps channel bank.

While the use of CVSD and ADPCM poses no technical problems for voice channels, data is another matter. Both are susceptible to phase shift problems which affect the more sophisticated PAM-type modems. Users planning to employ a channel for both dial-in voice and data should be aware that under CVSD the maximum data rate is 2400 bps, and 4800 bps with ADPCM.

Another word of caution. Due to the design and limitations of existing phone company channel bank handling facilities, any multiplexer voice channel that is to be switched by phone company equipment (at central offices) must employ PCM and, therefore, run at 64K bps. If the phone company adopts ADPCM—and it is considering it—then that scheme will become the de facto standard.

Electrical Interface • typical channel interfaces are EIA RS-232C, RS-449, RS-422, RS-423, CCITT V.24/V.28, V.10, V.11, V.35, MIL-Std-188-114, and AT&T 303. Most vendors mount the interface on the backplane, while some employ a technique whereby the interfaces plug into the backplane. The advantage of the latter is that interfaces can be easily interchanged without tampering with the backplane. Two vendors still employ the "dated" method of mounting the interfaces on the channel cards, requiring them to be screw-mounted to the backplane.

Logical Interface • most vendors allow the channels to be configured to appear as data circuit terminating equipment (DCE) or data terminal equipment (DTE). When configured as DCE, the channel appears as a modem for computer or terminal connection. If DTE, it is suitable for connection to a modem, data service unit, line driver, etc.

COMPOSITE LINK

This Section specifies the parameters of the composite network link (i.e., the high-speed side of the multiplexer), and discusses certain message frame restrictions.

Composite Link • specifies the number of composite links supported by the multiplexer. Each link communicates point-to-point with a network node.

Link Rate/Synchronization • specifies link data transmission rates and synchronization. All multiplexers connecting to the ACCUNET T1.5 service must produce a 1.544M-bps, serial, isochronous, bipolar return-to-zero output. Those connected to T1 facilities outside of the United States must transmit at 2.048M bps.

All multiplexer connections to T1.5 must use a Channel Service Unit (CSU) or its functional equivalent. The CSU performs signal balancing which line repeaters require, and also provides a loopback path for phone company tests.

Link Protocol • all multiplexers connected to the ACCUNET T1.5 Service must conform to the unframed DS1 message format. This format requires that any 24-bit interval must have at least three 1's and no more than 15 consecutive zeros to retain carrier timing alignment. Multiplexers that do not conform to this format require an AT&T Model 306 (or equivalent) modem to establish compatibility. In addition to cost, the 306 reduces available bandwidth by 12.5 percent yielding an available bandwidth of 1.34M bps (versus 1.53M bps for a multiplexer that does conform).

By 1985, AT&T Communications will require an extended version called DS1 framed Extended Frame Format. The new format imposes a predetermined pattern on every 193rd bit position of the output data which is used by AT&T for framing, error detection, and transmission of network control information. Up to 8K bps of the available bandwidth are needed by the new format.

Error Detection & Correction • synchronous data is protected by the error-detection facilities of the protocol. If statistical multiplexers are employed to interface asynchronous inputs, the error-detection and correction facilities of that multiplexer are employed for those inputs.

Link Electrical Interface • see Electrical Interface under Data/Voice Channels.

DIAGNOSTICS/INDICATORS

Diagnostic test functions provided by a specific multiplexer for isolating failures at the local or remote multiplexer, local or remote channels, composite link modems, or composite link are detailed in this section along with visual indicators for operating status and related multiplexer functions. Provisions for these functions are defined under the following topic fields:

Self-Test • a performance test conducted by the multiplexer on its channels, link modules, and controller logic. The test is usually conducted by introducing a pseudo-random bit pattern from an internal generator into each of the multiplexer channel and link circuits and looping the circuits back to a comparator for bit error detection.

Channel Loopback Testing • a diagnostic procedure used with bit error rate testing to determine the integrity of the local or remote data channels. Testing is performed by establishing loopback paths between the channel input and output by introducing a bit pattern to the channel output, and by comparing the looped-back pattern for bit errors. A remote channel loopback test conducted by a local multiplexer also tests the integrity of the composite link and its modems.

Composite Link Loopback Testing • a diagnostic procedure used with bit error rate testing to determine the integrity of the local or remote link modules, the composite link, and both modems. Local testing is performed by establishing a loopback path at the digital input/output of the local link module, by introducing a bit pattern to the link output, and by comparing the looped-back pattern for bit errors. Remote testing is performed by establishing a loopback path at the digital input/output of the remote link module and by conducting a bit error rate test from the local multiplexer to determine the integrity of the link and modems. A failure within the link, link modems, or link modules can be isolated by conducting a composite link loopback test from each end.

Visual Indicators • front-panel indicator lamps or LEDs that present a visual indication of operating performance and status.

Channel Interface Signal Status • indicates operating status of electrical interface signals, such as Request-To-Send (RTS), Clear-To-Send (CTS), Carrier Detect (DCD), Data Set Ready (DSR), Data Terminal Ready (DTR), Busy, and Ring Indicator (RI).

FEATURES/OPTIONS

Features and options associated with a specific multiplexer are presented in this Section. Topic fields include:

Redundant Control Logic • provides remedial recovery from failure of primary control logic.

Redundant Power Supply • provides remedial recovery from failure of primary power source.

Alternate Path Routing • a redundant composite link provides remedial recovery from failure of primary link.

Multilink Support • two or more composite links to provide point-to-point communication with multiple network nodes.

Bypass • routes assigned channels through a node to a destination node in a network configuration consisting of three or more nodes. Bypassed channels are inaccessible at bypassed nodes.

Drop & Insert • a variation of multidropping; assigned channels are added or terminated at locations between network end points.

T1 Multiplexers

T1 MULTIPLEXERS LISTINGS

■ AMDAHL COMMUNICATIONS SYSTEM DIVISION

2500 Walnut Avenue, Marina Del Rey, CA 90291 • 213-822-3202

☐ Amdahl 2211-01

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous up to 1.544M bps or 2.048M bps

Data Channels • 1 to 96 channels • soft-configured channel parameters • single-port asynchronous data channel card; dual-port synchronous channel card • soft-configured channel parameters • asynchronous data rates from 110 bps to 19.2K bps, half-/full-duplex; ASCII/EBCDIC formats; passes 4 interface control signals in either direction; port configured as DTE/DCE • synchronous data rates from 300 bps to 460.8K bps, half-/full-duplex; passes 4 interface control signals in either direction; port configured as DTE/DCE • RS-232C/CCITT V.24, V.35, AT&T 301/303, or MIL-Std-188-114 interface available with synchronous channels; RS-232C/CCITT V.24 or MIL-Std-188-114 available with asynchronous

Voice Channels • unavailable

Composite Link • single composite link • synchronous from 9600 bps to 1.544M bps or 2.048M bps • RS-232C/CCITT V.24, V.35, AT&T 301/303, or MIL-Std-188-114 interface

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • status indicators for each channel

Features/Options • optional redundant control logic and power supply; logic reduces data channel capacity by 2 card slots • alternate routing with redundant control logic • optional 8K-bit buffer compensates for satellite delay variations • conforms to DS1 unframed format

Cost/Service • $20,000 purchase price • rental prices unreleased • own service organization; $150 per month typical maintenance fee

☐ Amdahl 2211-03

Type/Application • same as 2211-01

Data Channels • same as 2211-01

Voice Channels • same as 2211-01

Composite Link • same as 2211-01

Diagnostics/Indicators • same as 2211-01

Features/Options • includes redundant control logic and power supply; all others same as 2211-01

Cost/Service • $22,000 purchase price • rental prices unreleased • own service organization; $165 per month typical service charge

■ AVANTI COMMUNICATIONS CORP

Aquidneck Industrial Park, Newport, RI 02840 • 401-849-4660

☐ Avanti Ultra Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point; bypass and drop-and-insert • synchronous up to 10M bps over fiber-optic cable; up to 2.048M bps over twisted-pair wire or coaxial cable

Data Channels • 1 to 128 asynchronous, or 64 synchronous • 4-port asynchronous card; dual-port synchronous card • soft-configured channel parameters • asynchronous data rates from 75 to 9600 bps, half-/full-duplex, local echo, auto-baud to 2400 bps; ASCII format; transmits 8 interface control signals in either direction; port configured as DTE/DCE • synchronous data rates from 2400 bps to 8.2M bps • RS-232C asynchronous channel interface; RS-232C/V.24/V.28, CCITT V.10/V.11/V.35, RS-449/-422, or MIL-Std-188-114 synchronous channel interface

Voice Channels • 1 to 64 voice channels; dual-port card • CVSD quantization; 16K-, 32K-, 64K-, or 128K-bps bandwidth • full-duplex; passes 2 network and 1 inband control signals • 2- or 4-wire E&M interfaces

Composite Link • up to 3 composite links • synchronous at 56K bps to 2.048M bps on coaxial cable or twisted-pair wiring; 1M bps to 10M bps on Manchester fiber-optic cable • RS-449/-442, CCITT V.11 or V.35, or MIL-Std-188-114 interface

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • local/remote modem loopback • aggregate error rate measurement • power failure and low battery voltage

Features/Options • optional redundant control logic, power supply, and modem • 12K-bps transmit/receive buffer on each asynchronous channel card; 64-bit transmit and 16-bit receive buffer on each synchronous channel card • bandwidth contention; meets DS1 unframed format

Cost/Service • $20,000 purchase price • rental prices unreleased • own service organization • $270 installation; $55 per month typical maintenance fee

■ BAYLY ENGINEERING LTD

167 Hunt Street, Ajax, ONT L1S 1P6 • 416-683-8200

☐ Bayly Omniplexer

Type/Application • time-division multiplexer with bit interleaving • point-to-point, bypass and drop-and-insert • synchronous at 1.544M bps (T1), 3.152M bps (T1C), 6.312M bps (T2), or 2.048M bps (CCITT)

Data Channels • 1 to 288 channels (asynchronous, synchronous, and voice) • dual-port asynchronous and synchronous channel cards • hard-configured parameters set by switches • asynchronous data rates from 150 bps to 19.2K bps half-/full-duplex; ASCII format; passes 4 interface control signals • synchronous data rate is 56K bps • DTE/DCE • RS-232C or CCITT V.35 interface

Voice Channels • dual-channel • PCM or CVSD quantization; 64K-bps (PCM) or 32K-bps (CVSD) bandwidth • full-duplex • 4-wire audio and E&M signaling interfaces

Composite Link • single composite link • synchronous at 1.544M bps, 2.048M bps, 3.152M bps, or 6.312M bps • CCITT V.35 interface

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • transmit/receive data and DSR/CTS signals indicated • duplicates data addresses within same VF slot alarm

Features/Options • redundant control logic and power supply • performs drop-and-insert and bypass without back-to-back demultiplexing/multiplexing • conforms to unframed and framed DS1 formats

Cost/Service • $18,000 purchase price • lease and monthly maintenance prices unavailable • vendor or distributor service

■ COASTCOM CORP

2312 Stanwell Drive, Concord, CA 94520 • 415-825-7500

☐ Coastcom D/I Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point; bypass and drop-and-insert • synchronous at 1.544M bps or 2.048M bps

Data Channels • 1 to 24 channels; can accommodate up to 168 terminal devices, depending on speed; 64K-bps channel slot • asynchronous data rates to 19.2K bps, half-/full-duplex; passes 7 control signals • synchronous data rates from 56K bps to 1.544M bps • all channel parameters set by switches • RS-422 interface for asynchronous; RS-422/CCITT V.35 interface for synchronous

Voice Channels • 1 to 24 channels • PCM quantization at 64K bps; full-duplex • 2-/4-wire E&M interfaces

Composite Link • single link • synchonous to 1.544M bps or 2.048M bps • CCITT V.35 and RS-422 interfaces

T1 Multiplexers

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • VF level drop • data/clock loss; out-of-frame

Features/Options • optional redundant control logic and power supply • performs drop-and-insert and bypass without back-to-back demultiplexing/multiplexing • optional dual composite link • CVSD voice channel due in 1984 • conforms to unframed DS1 format

Cost/Service • $16,000 purchase price • lease or monthly maintenance prices unavailable • vendor service

■ DATATEL INC

Cherry Hill Industrial Center, Cherry Hill, NJ 08003 • 609-424-4451

☐ Datatel DCP 9100

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous at 1.544M bps

Data Channels • 1 to 48 channels • no asynchronous data channel • dual-port synchronous channel cards • hard-configured channel parameters via rotary and/or DIP switches • data rates from 300 bps to 448K bps; half-/full-duplex • passes 4 control signals in either direction • port configured as DTE/DCE • RS-232C or CCITT V.35 interface

Voice Channels • 2 to 48 channels • dual-port voice card • CVSD quantization; 32K bps • full-duplex • 2-/4-wire E&M signaling interfaces

Composite Link • single composite link • synchronous at 1.544M bps only • CCITT V.35, RS-232C, AT&T 301/303, or MIL-Std-108 interface

Diagnostics/Indicators • LEDs indicate transmit/receive data and clock signals • local/remote channel loopback testing • local/remote link loopback testing • bit-error generator on each channel card

Features/Options • optional redundant control logic and power supply • 8-bit elastic buffer per channel • automatically reconfigures after power loss • conforms to DS1 unframed format • asynchronous channel card, drop/insert/bypass, and terminal-controlled configuration technique all planned for 1984

Cost/Service • $16,000 purchase price • no rental plan offered • return-to-factory service at $75 per component flat fee • third-party service available

■ DIGITAL COMMUNICATIONS ASSOCIATES

303 Technology Park, Norcross, GA 30092 • 404-448-1400

☐ Digital Communications Associates T1 Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous from 50 bps to 1.544M bps or 2.048M bps

Data Channels • 4 to 128 channels • no asynchronous channel card • 4-port synchronous channel card • soft-configured channel parameters • synchronous data rates from 50 to 256K bps, half-/full-duplex; passes 4 interface control signals in either direction; port configured as DCE • RS-232C interface standard; optional RS-422, RS-423, or CCITT V.35

Voice Channels • 4-port voice channel • CVSD quantization; 16K-, 32K-, or 64K-bps bandwidth • 4-wire E&M signaling interface

Composite Link • single composite link • synchronous from 50 bps to 1.544M bps or 2.048M bps • RS-232C interface standard; optional RS-422, RS-423, or CCITT V.35 interface • requires AT&T Model 306 modem (or equivalent) for attachment to AT&T ACCUNET T1.5 service

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • LEDs indicate channel activity, network synchronization, line data port activity, line clock/carrier detect, synchronous loss, and multiplexer bypass

Features/Options • optional redundant control logic and power supply • dynamic bandwidth contention allows channels to contend for available time slots • network statistics gathered and displayed • high-speed data transfers (e.g., CPU-to-CPU) can bypass the multiplexing process • up to 10 system configurations can be preprogrammed and initiated from terminal • 64-bit elastic buffer per channel • both DS1 framed and unframed format due in 1984

Cost/Service • $20,000 purchase price • $740 per month under 3-year lease • $200 per month typical maintenance fee • on-site vendor service; DCA also offers online remote diagnostics priced between one-third to one-half on-site service fees

■ GENERAL DATACOMM INDUSTRIES, INC

1 Kennedy Avenue, Danbury, CT 06810 • 203-797-0711

☐ General DataComm Megamux

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous transmission to 1.544M bps or 2.048M bps

Data Channels • 1 to 54 channels • single-port asynchronous and synchronous channel cards • hard-configured channel parameters via DIP switches and/or jumpers • asynchronous data rates from 50 to 9600 bps, half-/full-duplex; ASCII format; passes 4 control signals in either direction; port configured as DTE/DCE • synchronous data rates from 150 bps to 1.024M bps, half-/full-duplex; passes 2/4 control signals in either direction; port configured as DTE/DCE • RS-232C/CCITT V.24 interface for asynchronous channel card; RS-232C/CCITT V.24, V.11, V.35, AT&T 303, RS-422, or MIL-Std-188-114 interface offered with synchronous and asynchronous cards

Voice Channels • single-port voice channel • CVSD quantization; 32K bps • full-duplex • 4-wire E&M signaling interface

Composite Link • single composite link • synchronous rates up to 1.544M bps or 2.048M bps • RS-232C/CCITT V.24, V.10, V.11, V.35, RS-422, AT&T 303, or MIL-Std-188-114 interface

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • in/out of sync for local and remote units; data scan alarm (transmit/receive); loss of aggregate clock • network statistics

Features/Options • optional redundant control logic and power supply • optional soft configuration through Auto-Frame card • optional network supervisory port • conforms to DS1 unframed format • soft-configured system, drop-and-insert, and multilink capabilities due in 1984

Cost/Service • $20,000 purchase price • $600 per month under 3-year lease • $100 per month typical maintenance fee • on-site vendor service

■ INFOTRON SYSTEMS CORP

Cherry Hill Industrial Center, Cherry Hill, NJ 08003 • 609-424-9400

☐ Infotron T Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous at 1.544M bps

Data Channels • 1 to 48 channels • no asynchronous data channel • dual-port synchronous channel card • hard-configured channel parameters via rotary and/or DIP switches • data rates from 300 bps to 448K bps; half-/full-duplex • passes 4 control signals in either direction • port configured as DTE/DCE • RS-232C or CCITT V.35 interface

Voice Channels • 2 to 48 channels • dual-port voice card • CVSD quantization; 32K-bps bandwidth • full-duplex • 2-/4-wire E&M signaling interface

Composite Link • single composite link • synchronous at 1.544M bps only • CCITT V.35, RS-232C, AT&T 301/313, or MIL-Std-188 interface

Diagnostics/Indicators • LEDs indicate transmit/receive data and clock signals • local/remote channel loopback testing • local/remote link loopback testing • bit-error generator on each channel card

Features/Options • optional redundant control logic and power

T1 Multiplexers

supply • 8-bit elastic buffer per channel • automatically reconfigures after power loss • conforms to DS1 unframed format • asynchronous channel card, drop/insert/bypass, and terminal-controlled configuration all planned for 1984

Cost/Service • $23,000 purchase price • $240 per month typical maintenance • lease price unavailable • on-site vendor or third-party service

■ PARADYNE CORP

8550 Ulmerton Road, Largo, FL 33540 • 813-530-2000

☐ Paradyne DCX-T1 Mux

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous at 1.544M bps

Data Channels • 1 to 48 channels • no asynchronous data channel • dual-port synchronous channel cards • hard-configured channel parameters via rotary and/or DIP switches • data rates from 300 bps to 448K bps; half-/full-duplex • passes 4 control signals in either direction • port configured as DTE/DCE • RS-232C or CCITT V.35 interface

Voice Channels • 2 to 48 channels • dual-port voice card • CVSD quantization; 32K-bps bandwidth • full-duplex • 2-/4-wire E&M signaling interface

Composite Link • single composite link • synchronous data at 1.544M bps only • CCITT V.35, RS-232C, AT&T 301/303, or MIL-Std-188 interface

Diagnostics/Indicators • LEDs indicate transmit/receive data and clock signals • local/remote channel loopback testing • local/remote link loopback testing • bit-error generator on each channel card

Features/Options • optional redundant control logic and power supply • 8-bit elastic buffer per channel • automatically reconfigures after power loss • conforms to DS1 unframed format • asynchronous channel card, drop/insert/bypass, and terminal-controlled configuration all planned for 1984

Cost/Service • $23,000 purchase price • $310 per month under 5-year lease • maintenance costs unavailable • vendor on-site service

■ SCITEC CORP

811 Aquidneck Avenue, Middletown, RI 02840 • 800-343-0928

☐ Scitec BSP T1 Multiplexer

Type/Application • time-division multiplexer with bit interleaving • point-to-point • synchronous from 50 bps to 1.544M bps or 2.048M bps

Data Channels • 4 to 128 channels • no asynchronous channel card • 4-port synchronous channel card • soft-configured channel parameters • synchronous data rates from 50 to 256K bps, half-/full-duplex; passes 4 interface control signals in either direction; port configured as DCE • RS-232C interface standard; optional RS-422, RS-423, or CCITT V.35 interface

Voice Channels • 4-port voice channel • CVSD quantization; 16K-, 32K-, or 64K-bps bandwidth • 4-wire E&M signaling interface

Composite Link • single composite link • synchronous rates from 50 bps to 1.544M bps or 2.048M bps • RS-232C interface standard; optional RS-422, RS-423, or CCITT V.35 interface • requires AT&T Model 306 modem (or equivalent) for attachment to AT&T ACCUNET T1.5 service

Diagnostics/Indicators • local/remote channel loopback testing • local/remote composite link loopback testing • remote alarms • LEDs indicate channel activity, network synchronization, line data port activity, line clock/carrier detect, sync loss, and multiplexer bypass

Features/Options • optional redundant control logic and power supply • dynamic bandwidth contention allows channels to contend for available time slots • network statistics gathered and displayed • high-speed data transfers (e.g., CPU-to-CPU) may bypass the multiplexing process • up to 10 system configurations can be preprogrammed and initiated from terminal • 64-bit elastic buffer per channel • both DS1 framed and unframed format due in 1984

Cost/Service • price data incomplete; prices should approximate those of DCA T1 Mux • service unspecified

■ TIMEPLEX DATA COMMUNICATIONS

400 Chestnut Ridge Road, Woodcliff Lake, NJ 07675 • 201-930-4600

☐ Timeplex Link/1

Type/Application • time-division multiplexer with character interleaving • point-to-point • synchronous from 4800 to 1.544M bps or 2.048M bps

Data Channels • 4 to 44 data channels • no asynchronous data channel card • up to 4 ports per synchronous channel card • soft-configured channel parameters • synchronous data rates from 75 bps to 512K bps, half-/full-duplex; passes 7 control signals in either direction; port configured as DTE/DCE • RS-232C/CCITT V.24, RS-422, RS-423, CCITT V.11, MIL-Std-188C, or MIL-Std-188-114 interface

Voice Channels • 2-/4-port voice channel • CVSD quantization; 16K- or 32K-bps bandwidth • 2-/4-wire E&M signaling interface

Composite Link • single composite link • synchronous from 4800 to 1.544M bps or 2.048M bps • RS-422/CCITT V.11 interface

Diagnostics/Indicators • local/remote loopback testing • local/remote composite link loopback testing • remote alarms • firmware self-tests • out-of-sync/sync • clock error • data activity channel and link

Features/Options • optional redundant control logic and power supply; fully redundant system supports only 36 I/O ports • optional redundant T1 modem and link module • priority bandwidth assignment per user-class basis • alternate clock sources • automatic reconfiguration based on time of day • conforms to DS1 unframed format • asynchronous channel card, drop-and-insert, multiple data links all scheduled for 1984

Cost/Service • $20,000 purchase price • lease and monthly maintenance fees unavailable

• END

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

This Product Survey identifies and describes hardware devices designed for data communication protocol conversion, code conversion, terminal/cluster/printer emulation, and physical/electrical interface conversion. It **does not** include protocol/emulation software modules that are used in conjunction with host processor facilities and/or front-end processors; those are described in **report 647**. Also excluded from this survey is converage on gateway products such as X.25 PADs, which are detailed in **report 713**.

This survey summarizes the characteristics of **144** products, including **103 terminal/cluster/printer emulators**, **14 pure protocol converters**, **3 code converters**, and **24 interface converters**. Listings are arranged alphabetically by vendor and then by specific model. Each model entry is divided into sections covering function, controller/communications, price, and comments. To facilitate locating a particular class of product, the first entry under Function defines the product type (e.g., Terminal Emulator, Controller Emulator, Interface Converter, etc) printed in boldface.

In classifying these products, Data Decisions was cognizant that many products have overlapping functions. Every Emulator, for example, performs code conversion and in some cases protocol conversion. Our intent in the classification process is to show the **principal** service performed by the device.

Most of the entries detailing the product's characteristics are self-explanatory. A few, however, require amplification. The designation **supports remote terminal dial-in**, used with controller emulators, means that terminals can attach to the product via the public switched telephone network (DDD) and modems. The **interface** shown with emulated terminals defines the DTE attachment. For example, when an ASCII terminal is substituted for an IBM 3278 attached to a 3274/3276 controller, the ASCII terminal interface is RS-232C but the connection to the IBM controller remains as coaxial cable.

The following dot chart classifies the products by their principal applications, and should be used as a quick reference.

EMULATOR & PROTOCOL/CODE/ASYNC-SYNC/INTERFACE CONVERTER OUTLINE

COMPANY	MODEL	DEVICE TYPE: Emulator	Interface Converter	Protocol Converter	Code Converter	DEVICE EMULATED: IBM 3271/3272	IBM 3274/3276	IBM 5251-12	IBM 3277/3278/3279	IBM 3287	ASCII Terminals/Printers	Other	PROTOCOLS EMULATED: IBM BSC	IBM SNA/SDLC	Asynchronous	X.25	Other
Agile Corporation	Model 6287	●					●						●	●			
Alphamatrix Inc	BAE-806	●								●			●				
Alphamatrix Inc	BAX-1-80/BAX-1-75	●								●			●				
Analog Precision	Pantera Switch	●					●						●	●			
AST Research Inc	Model 3780	●									●		●				
AST Research Inc	Model 5251	●						●						●			
Atlantic Research Corp	IF 12-IFA-13		●														
Atlantic Research Corp	IFA-22		●														
Atlantic Research Corp	IFA-10/IFA-11		●														
Atlantic Research Corp	IFA-14/IFA-15		●														
Atlantic Research Corp	IFA-16/IFA-17		●														
Atlantic Research Corp	IFA-20/IFA-21		●														
Atlantic Research Corp	IFA-18		●														
AT&T Information Systems	4271			●													
AT&T Information Systems	4276	●															
AT&T Information Systems	5274			●													
AT&T Information Systems	5776			●													
Attachmate, Inc	3270	●							●								
Avanti-Communications Corp	100		●														
Avanti-Communications Corp	110		●														

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

COMPANY	MODEL	DEVICE TYPE: Emulator	Interface Converter	Protocol Converter	Code Converter	DEVICE EMULATED: IBM 3271/3272	IBM 3274/3276	IBM 5251-12	IBM 3277/3278/3279	IBM 3287	ASCII Terminals/Printers	Other	PROTOCOLS EMULATED: IBM BSC	IBM SNA/SDLC	Asynchronous	X.25	Other
Avanti-Communications Corp	120		•														
Avanti-Communications Corp	140		•														
Avanti-Communications Corp	150		•														
Avanti-Communications Corp	160		•														
Avanti-Communications Corp	170		•														
Avatar Technologies, Inc	PA 100	•						•									
Avatar Technologies, Inc	PA 1000	•						•									
Avatar Technologies, Inc	PA 1500	•							•								
Black Box Catalog	A/C-1	•					•						•	•			
Black.Box Catalog	A/S-2S	•								•			•		•		
Black Box Catalog	A/S-3	•								•			•	•			
Black Box Catalog	PQ-4 (B/RO)	•						•						•			
Commtex	CX-86/CX-83	•					•							•			
Computer Communications	CCI 8274C	•					•							•			
Computer Peripheral Systems	MARS/MARS Jr	•								•							
Control Concepts	CC-3276	•					•							•			
Control Concepts	EM-3276	•					•						•				
Control Concepts	Renex "Translator"	•					•						•	•	•		
CTi Data Corporation	CTi 300/li	•						•									
Data Plus, Inc	PCT Model DP 350	•				•	•						•	•			
Datagram Corp	DM 1600 B	•								•					•		
Datagram Corp	DM 2400 B	•								•					•		
Dataprobe	DR-10/DR-10A				•												
Datastream Corp	774 Cluster Controller	•					•						•				
Datastream Corp	874 Cluster Controller	•					•							•			
DEI Teleproducts	Modular Interface Converter		•														
Digital Comm Assoc (DCA)	INA/ATC	•				•	•						•	•			
Digital Comm Assoc (DCA)	IRMA	•						•									
Digital Comm Assoc (DCA)	IRMACOM	•				•	•		•				•	•			
Digital Comm Assoc (DCA)	IRMALETTE	•						•									
Digital Comm Assoc (DCA)	IRMALINE	•						•									
Digital Comm Assoc (DCA)	IRMAPRINT	•						•									
Diversified Data Resources	Hydra II	•				•	•						•	•			
Diversified Data Resources	Hydra Intelligent Controller	•					•						•	•			
DPX, Inc	DPX-INS SNA/SDLC Loop Adpt Ser 100	•					•							•			
DPX, Inc	PDX-INS SNA/SDLC Loop Adpt Ser 200	•								•				•			
Ergonomic Software	Ergolinx 3270	•						•									
Ergonomic Software	Ergolinx 2780/3780	•								•			•				
Gandalf Data Inc	PIN 3270 E-5	•				•	•						•	•			
Gandalf Data Inc	PIN 3270 E-7	•				•	•						•				
Gandalf Data Inc	PIN 3270 E-8	•				•	•							•			
Icot Corporation	VTS 351/352	•				•							•				
Icot Corporation	VTS 362	•					•							•			
Incaa Computers	P.I.T.			•													
Infotron Systems Corp	VTS 351/352	•					•							•			
Innovative Electronics, Inc	MC-80/100	•								•			•	•			
Innovative Electronics, Inc	MC-80/200	•								•							
Innovative Electronics, Inc	MC-80/300	•				•							•				
Innovative Electronics, Inc	MC-80/400	•				•							•				
Innovative Electronics, Inc	MC-80/600	•					•						•	•			

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

COMPANY	MODEL	DEVICE TYPE: Emulator	Interface Converter	Protocol Converter	Code Converter	DEVICE EMULATED: IBM 3271/3272	IBM 3274/3276	IBM 5251-12	IBM 3277/3278/3279	IBM 3287	ASCII Terminals/Printers	Other	PROTOCOLS EMULATED: IBM BSC	IBM SNA/SDLC	Asynchronous	X.25	Other
Innovative Electronics, Inc	MC-80/602	●				●	●						●				
Innovative Electronics, Inc	MC-80/700	●							●								
Innovative Electronics, Inc	MC-80/900	●						●									
Innovative Electronics, Inc	MC-800	●					●						●	●			
Innovative Electronics, Inc	MC-8051	●								●							
Innovative Electronics, Inc	PC-80	●						●									
Instrumentation Services Inc	ISI-87	●							●								
Int'l Antex Data Sys Div	ADS-8212			●													
Int'l Business Mach (IBM)	IBM 4994	●				●							●				
Int'l Business Mach (IBM)	IBM 7426	●					●							●			
Kaufman Data Communications	Model 870	●				●							●	●			
Kaufman Data Communications	Model 871	●								●			●	●			
Kaufman Data Communications	Model 872	●					●						⊙	⊙			
KMW Systems Corporation	Series II 3770	●								●				●			
KMW Systems Corporation	Model 2780/3780	●								●			●				
KMW Systems Corporation	Series II HASP	●									●		●				
KMW Systems Corporation	Series II BSC	●				●							●				
KMW Systems Corporation	Series II SNA	●					●							●			
Local Data	Datalynx/3274	●					●						●	●			
Local Data	Datalynx/3780	●									●		●				
Local Data	Datalynx/5251	●						●									
Local Data	Interlynx/3278	●							●								
Local Data	Interlynx/3287	●								●							
Local Data	Versalynx/3278	●									●						
MDS Qantel	MDS-4806 QPCI	●									●						
Micom Systems, Inc	Micro 7400	●					●						⊙	●			
Micrology, Inc	Baby Talk	●					●		●					⊙			
Modems Plus, Inc	BRITE II	●								●							
Modems Plus, Inc	SMRTE ONE, Model A	●					●					●		⊙			
Modems Plus, Inc	SMRTE ONE, Model B			●													
Modems Plus, Inc	SNAP	●					●					●		●			
Netlink Technology, Inc	3703	●							●								
Peripheral Technology Inc	Scat 2/2303	●				●	●						●	●			
Peripheral Technology Inc	Scat 2/2501	●				●	●						●	●			
Perle Systems Ltd	PDS 350/SNA	●					●							●			
Perle Systems Ltd	PDS 350/525	●						●						●			
Protocol Computers, Inc	PCI 176	●					●							●			
Protocol Computers, Inc	PCI 171	●				●							●	●			
Protocol Computers, Inc	PCI 167	●								●							
Protocol Computers, Inc	PCI 151	●						●						●			
Protocol Computers, Inc	PCI 1076X	●					●	●								●	
Protocol Computers, Inc	PCI 3780/SNA			●													
Protocol Computers, Inc	PCI 67	●								●							
Protocol Computers, Inc	PCI 71B/SNA			●													
Protocol Computers, Inc	PCI 74 D			●													
Protocol Computers, Inc	PCI 75B/SNA			●													
Protocol Computers, Inc	PCI RT 73 SX			●													
Racal Telesystems, Inc	Model 404	●								●							
Renex Corporation	Translator RT 51	●					●							●			
Renex Corporation	Translator RT 74	●					●						●	●			

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

COMPANY	MODEL	DEVICE TYPE: Emulator	Interface Converter	Protocol Converter	Code Converter	DEVICE EMULATED: IBM 3271/3272	IBM 3274/3276	IBM 5251-12	IBM 3277/3278/3279	IBM 3287	ASCII Terminals/Printers	Other	PROTOCOLS EMULATED: IBM BSC	IBM SNA/SDLC	Asynchronous	X.25	Other
Sigma Systems, Inc	CS-85	•								•							
Sigma Systems, Inc	CS-85P	•								•							
Techland Systems Inc	Blue Lynx 3270 SNA/SDLC	•									•			•			
Techland Systems Inc	Blue Lynx S/34/36/38	•					•							•			
Telebyte Technology	Model 64		•														
Teleprocessing Products Inc	TP-200			•													
Teleprocessing Products Inc	TP-200M			•													
Teleprocessing Products Inc	TP-300		•														
Teleprocessing Products Inc	TP-350		•														
Thomas Engineering Company	MZ-80	•				•	•						•				
Timeplex Inc	TRU/BLU 74	•					•						•	•			
Timeplex Inc	TRU/BLU 78	•						•									
Timeplex Inc	TRU/BLU 80 (TB80)	•									•						
Timeplex Inc	TRU/BLU 87	•							•								
Universal Data Systems	EC 100			•													
Universal Data Systems	210 A/S-P			•													
Versitron Inc	R 42 M		•														
Versitron Inc	Data Set Adapter		•														
Versitron Inc	R 42 DSU		•														
Versitron Inc	R 42 S·		•														
Versitron Inc	Electronic Relay Series		•														
Versitron Inc	CD/R		•														
Western Datacom	Datacom 1000				•												
Winterhalter Inc	Data Talker II	•					•							•			

EMULATOR & PROTOCOL/CODE/ASYNC-SYNC/INTERFACE CONVERTER FEATURES

The following outlines the classes of information contained within each of the principal headings.

Function • this entry defines the functions performed by the device and the method by which they are performed. The most prevalant products in this survey are device emulators, of which the overwhelming majority are IBM 3270 product substitutions. Most of these replacement products center around IBM 3271, 3272, 3274, 3275, or 3276 cluster controller replacements that allow low-cost ASCII displays/printers to substitute for 3277/3278/3279/3287 products. The 3270 attacher to IBM S/360, S/370, 43XX, 30XX, S/3, and 8100 host processors.

This description defines the native-mode devices emulated, followed by the products that can be substituted for individual components. For example, the Datastream Model 874 emulates the IBM 3274 controller with attached 3278 terminals. We specify the configuration and state that any ASCII terminal can be used in place of the 3278. In this case, the emulating controller provides full display functions and characteristics of the 3278. Any functions that are **not emulated** (e.g., formatted fields, program function keys, etc), are mentioned in the Comments section. Another service performed by the cluster controller is the conversion of the emulating product's output into a format normally generated by the replaced terminal. This level of conversion is also identified in the Function section.

Another common application of emulation allows an ASCII personal computer to attach to an IBM 3274/3276 controller. In this case, the emulation hardware/software (usually in the form of a printed circuit card that plugs into the personal computer) makes the ASCII personal computer appear as an IBM 3278/3279 terminal to the cluster controller. While none of the vendors contacted list the newer IBM 3178, 3179, or 3180 as substituted terminals, we assume that these are also emulated in light of their association with the older products.

Interface conversion is the second most abundant product category. This device category converts electrical interface signals and mechanical connections between products with dissimilar electrical interfaces; e.g., RS-232C to CCITT V.35. These converters interconnect data terminal equipment (DTE) and data circuit terminating equipment (DCE) with incompatible electrical interfaces.

Protocol converters convert between unlike protocols. Conversion between BSC and SNA/SDLC protocols is a common application, especially with users of older IBM 3270 controllers whose needs require interconnection with IBM SNA networks. We've also included **asynchronous/synchronous converters** in this protocol converter category. We are fully aware that many people consider such conversions more code than protocol, but a larger proportion of the data communications community do not agree, therefore, they are listed as protocol converters.

Controller/Communications • defines the interface to the destination device. In most cases, the controller is an IBM 3274/3276 controller with attached 3278/3279/3287 terminals/printers. In other cases, especially with products such as the IBM 2780 and 3780 batch terminals, the interface could be connected to a communication adapter in the host processor or a front-end processor.

Our classification notes whether the product is a standalone unit or a printed circuit card. The number of physical I/O ports

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

provided by the controller and the type of product it interfaces are specified. Standalone units contain their own power supplies; while printed circuit cards plug into a device and use its power source.

Also specified in this entry are the number of links to the destination device (usually a host processor), the maximum data transmission speed, and line/device protocol. The DTE/DCE interface is also specified. The dial-in/dial-out entry specifies that the controller can communicate with remote terminals via the public switched network (DDD).

The RAM buffer specified is the amount of storage provided to service the terminals and printers attached to the cluster controller. The storage can be used to buffer data prior to transmission to the host, or as a repository of data received from the host.

Price • this entry defines the price range for single-quantity purchases. Maintenance prices and warranties are also specified where applicable.

Comments • this entry is reserved for additional product information, such as unsupported features, special features, options, maintenance service levels, etc.

EMULATOR/PROTOCOL CONVERTER LISTINGS

■ AGILE

4041 Pike Lane, Concord, CA 94520 • 415-825-9220.

□ Model 6287

Function • **Printer Emulator** • attaches ASCII printer to IBM 3274/3276 controllers • emulates 3287 • converts IBM coax EBCDIC DSC/SCS to async ASCII.

Controller/Communications • standalone unit interfaces single printer to 3274/3276 controller • handles transmit speeds to 19.2K bps • 4K RAM print buffer • RS-232C or Centronics-parallel interface.

Price • $1,995 • 2-year factory warranty • $150 per year factory repair contract.

■ ALPHAMATRIX INC

1021 Millcreek Drive, Feasterville, PA 19047 • 215-355-3297.

□ BAE-806

Function • **Terminal Emulator** • allows any ASCII printer to replace an IBM 2780/3780 • converts ASCII to EBCDIC; transmits in BSC protocol.

Controller/Communications • standalone unit attaches 1 ASCII terminal • interfaces with host processor or front-end BSC port • supports single half-duplex BSC link to host at speeds to 9600 bps • RS-232C interface • recognizes XON/XOFF.

Price • contact vendor.

□ BAX 1-80/BAX 1-75

Function • **Terminal/Controller Emulator** • allows any ASCII terminal to replace an IBM 2780/3780 (BAX 1-80) or IBM 3275 (BAX 1-75) • converts ASCII to EBCDIC; transmits in BSC protocol.

Controller/Communications • standalone unit attaches single ASCII terminal • interfaces with host processor or front-end BSC port • supports single half-duplex BSC link to host at speeds to 4800 bps • RS-232C interface.

Price • $2,285.

Comments • integrated modem and transmit speeds to 9600 bps optional.

■ ANALOG PRECISION, INC

1620 North Park Avenue, Tucson, AZ 85719 • 602-622-1344.

□ Analog Pantera Switch

Function • **Terminal/Controller Emulator** • emulates IBM 3274 with 3278 terminals attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 4 to 32 ASCII computers/terminals • multidrop 16 devices per line • supports 2 host links • supports remote terminal dial-in/dial-out • RS-232C/RS-449 20-/60-mA current-loop interfaces.

Price • $45,000 basic unit; $70,000 basic unit and software.

Comments • additional channel connections • vendor-supplied on-site maintenance.

■ AST RESEARCH, INC

2121 Alton Avenue, Irvine, CA 92714 • 714-863-1333.

□ AST-3780

Function • **Terminal Emulator** • allows IBM PC to interface with S/370, 43XX, 30XX as an RJE terminal • emulates IBM 2780/3780/3741/2770 terminals • converts PC ASCII code to EBCDIC • transmits in BSC protocol.

Controller/Communications • interfaces with 270X/370X front-end BSC port • single BSC link to host to 9600 bps • RS-232C interface.

Price • $895.

□ AST-5251

Function • **Terminal/Cluster Emulator** • allows IBM PC to emulate 5251 Model 12 workstation and 5256 printer • converts PC ASCII to EBCDIC • transmits in SNA/SDLC protocol.

Controller/Communications • interfaces with S/34, 36, 38 • single line communications in SNA/SDLC • RS-232C interface.

Price • $790

Comments • bidirectional file transfer utilities offered.

■ ATLANTIC RESEARCH CORP

7401 Boston Boulevard, Springfield, VA 22153 • 703-644-9191.

□ IF 12-IFA-13

Function • **Interface Converter** • converts RS-449 balanced to RS-232C interface signals • DTE and DCE models with or without 9-pin connector.

Price • $270 to $315 • 1- or 2-module desktop rack with power supply: $280 • 1- to 10-module standard rackmount enclosure without power supply: $600 • power supply: $600.

Comments • one-year domestic factory service.

□ IFA-22

Function • **Interface Converter** • converts CCITT X.21, AT&T 303, RS-449, and V.35 to RS-232C interfaced monitoring equipment • provides a separate monitoring channel for test equipment.

Price • $425 to $1,150 • 1- or 2-module desktop rack with power supply: $280 • 1- to 10-module standard rackmount enclosure with no power supply: $600 • power supply: $600.

Comments • one-year domestic warranty; factory service.

□ IFA-10/IFA-11

Function • **Interface Converter** • converts CCITT X.20/X.21 electrical interface to RS-232C • DTE and DCE models.

Price • $195 to $235 • 1- or 2-module desktop rack with power supply: $280 • 1- to 10-module standard rackmount enclosure

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

without power supply: $600 • power supply: $600.

☐ IFA-14/IFA-15

Function • Interface Converter • converts AT&T 303 to RS-232C electrical signals • DTE and DCE models.

Price • $475 • 1- or 2-module desktop rack with power supply: $280 • 1- to 10-module standard rackmount enclosure without power supply: $600 • power supply: $600.

Comments • one-year domestic warranty; factory service.

☐ IFA-16/IFA-17

Function • Interface Converter • converts CCITT V.35 to RS-232C electrical signals • DTE and DCE models.

Price • $295/$305 • 1- or 2-module desktop rack with power supply: $280 • 1- to 10-module standard rackmount enclosure without power supply: $600 • power supply: $600.

Comments • one-year domestic warranty; factory service.

☐ IFA-20/IFA-21

Function • Interface Converter • converts RS-449 to CCITT V.35 • DTE and DCE models.

Price • $280 for 1- or 2-module desktop rack including power supply.

Comments • one-year domestic warranty; factory service.

☐ IFA-18

Function • Interface Converter • current-loop adapter converts and monitors 20-/80-mA current loop • single model for RS-232C DTE and DCE.

Price • $395 • 1- or 2-module desktop rackmount with power supply: $280 • 1- to 10-module standard rackmount enclosure without power supply: $600 • power supply: $600.

Comments • one-year domestic warranty; factory service.

■ AT&T INFORMATION SYSTEMS

100 Southgate Parkway, Morristown, NJ 07960 • 201-898-8000.

☐ AT&T-IS 4271

Function • Protocol Converter • emulates IBM 3271 with 3278/3287/3279 PC terminals attached • allows ASCII terminals/printers to replace IBM units • converts ASCII to BSC format.

Controller/Communications • standalone unit attaches up to 7 ASCII terminals/printers/personal computers • supports 1 BSC host link at 9600 bps • full duplex • RS-232C interface.

Price • $2,900: 3 channels; $4,300: 7 channels.

Comments • supports personal computer • factory service.

☐ AT&T-IS 4276

Function • Terminal Emulator • allows ASCII terminals/printers to emulate IBM 3278/3287 • converts ASCII to IBM SNA/SDLC format.

Controller/Communications • standalone unit attaches up to 7 terminals/printers/personal computers • supports 1 SDLC host link at 9600 bps • full duplex • RS-232C interface.

Price • $2,000: 3 channels; $4,300: 7 channels.

Comments • supports personal computers • factory service.

☐ AT&T-IS 5274

Function • Protocol Converter • emulates IBM 3274 controller with 3278/3279 terminal printers attached • allows IBM BSC to access SNA host.

Controller/Communications • standalone unit attaches up to 32 3277 terminals • supports 1 SDLC composite link at 9600 bps • full duplex • RS-232C interface.

Price • $4,900.

Comments • factory service.

☐ AT&T-IS 5776

Function • Protocol Converter • allows IBM 3780 or lookalike to emulate IBM 3776.

Controller/Communications • standalone unit attaches single terminal/printer • supports single SDLC composite link at 9600 bps • full duplex • RS-232C interface.

Price • $3,100.

Comments • factory service.

■ ATTACHMATE, INC

3241 118th S.E., Bellevue, WA 98005 • 206-644-4010.

☐ Attachmate 3270

Function • Terminal Emulator • allows IBM PC and PC/XT to interface with 3274/3276 • emulates 3278/3279/3270 PC; provides windowing facilities • converts PC code to terminal format.

Controller/Communications • printed circuit card fits into PC and performs code conversion • interfaces with local 3274/3276 controllers • displays up to 7 windows • option allows 3287 printer to be used as PC printer • RS-232C interface.

Price • $910.

■ AVANTI COMMUNICATIONS CORP

Aquidneck Industrial Park, Newport, RI 02840 • 401-849-4660.

☐ Model 100

Function • Interface Converter • converts RS-232C or MIL Std 188C on DTE to CCITT V.35 on DCE.

Price • $550.

☐ Model 110

Function • Interface Converter • converts RS-232C or MIL Std 188C on DTE to AT&T 301/303 current loop.

Price • $1,000.

☐ Model 120

Function • Interface Converter • converts CCITT V.35 on DTE to AT&T 301/303 current-loop modems.

Price • $1,150.

☐ Model 140

Function • Interface Converter • converts RS-232C or MIL Std 188C on DTE to neutral current-loop to interface Teletype equipment.

Price • $315

☐ Model 150

Function • Interface Converter • converts RS-232C to MIL Std 188C • DTE and DCE models.

Price • $425.

☐ Model 160

Function • Interface Converter • converts AT&T 301/303 current-loop interface on DTE to RS-232C or MIL Std 188C on DCE.

Price • $750.

☐ Model 170

Function • Interface Converter • converts CCITT V.35 on DTE to RS-232C or MIL Std 188C on DCE.

Price • $550.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

■ AVATAR TECHNOLOGIES, INC

99 South Street, Hopkinton, MA 01748 • 617-435-6872.

☐ PA 100

Function • Terminal Emulator • allows IBM PC and PC/XT to interface with 3274/3276/43XX • emulates 3278-2, 3, 4, and 3279-2A, 2B, 3A, 3B • converts PC code to 3278/3279 format.

Controller/Communications • printed circuit card fits into PC and performs conversion • interfaces with local/remote 3274/3276 controllers or 43XX host via integrated terminal controller • RS-232C interface.

Price • $895.

Comments • offered with Turbo file transfer/data capture software.

☐ PA 1000

Function • Terminal Emulator • allows any PC or ASCII terminal to interface with 3274/3276/43XX • emulates 3278-2 • converts ASCII code to 3278 format.

Controller/Communications • standalone unit performs code conversion and interfaces to 3274/3276 controllers or 43XX via integrated terminal controller • RS-232C interface.

Price • $1,095.

☐ PA 1500

Function • Terminal Emulator • allows any ASCII printer to replace IBM 3287 • converts all appropriate printer codes.

Controller/Communications • interfaces with IBM 3274/3276 controllers • RS-232C or parallel interface.

Price • $1,495.

■ BLACK BOX CATALOG

Mayview Road at Park Drive, Pittsburgh, PA 15241 • 412-746-5500.

☐ A/C-1

Function • Terminal/Controller Emulator • emulates IBM 3274/3276 with 3287/3278-2 terminals attached • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 1 or 2 ASCII terminals/printers • supports single BSC or SNA host link • RS-232C parallel interface.

Price • $1,495 (A/C-7 (RO) terminal); $995 (A/C-1 (B) printer).

☐ A/S-2S

Function • Printer Emulator • allows any ASCII terminal/printer to interface with IBM S/360, S/370, or 2770/2780/3780/3741 • emulates IBM 2770/2780/3780/3741 • converts ASCII to EBCDIC format.

Controller/Communications • attaches ASCII terminal/printer at 9600 bps • supports single asynchronous or BSC full-duplex host link at 9600 bps • RS-232C interface.

Price • $1,445.

Comments • one-year warranty.

☐ A/S-3

Function • Terminal/Controller Emulator • emulates IBM 3271/3274/3276 controllers with 3277/3278/3287 terminals/printers attached • allows ASCII devices to replace IBM units • converts ASCII to IBM format.

Controller/Communications • standalone unit attaches 4 ASCII terminals/printers up to 9600 bps • supports single BSC or SNA half-/full-duplex host link at 9600 bps • RS-232C interface.

Price • $1,695 to $2,950.

Comments • IBM PC option available.

☐ PR-4 (B/RO)

Function • Terminal Emulator • allows ASCII terminals/printers to interface with IBM S/34/38 or Series 1 • emulates IBM 5251 Model 11/5256/5224/5225 • converts ASCII to SDLC format.

Controller/Communications • standalone unit attaches single ASCII terminal/printer • supports single half-duplex SDLC host link up to 19.2K bps • RS-232C interface.

Price • $1,845 (PQ-4 (B) bidirectional terminal); $1,645 (PR-4 (RO) printer).

■ COMMTEX

2411 Crofton Lane, Crofton, MD 21114 • 301-721-3666.

☐ Commtex CX-86/CX-83

Function • Terminal/Controller Emulator • emulates IBM 3274 with attached 3278/3287 printer • allows ASCII terminal devices to replace IBM units • converts terminal/printer codes.

Controller/Communications • standalone unit attaches up to 10 (CX-83) or 25 (CX-86) ASCII terminals/printers • 19.2K-bps channel speed • supports single half-duplex SNA/SDLC link to host at 19.2K bps • RS-232C interface.

Price • $5,850 (CX-86); $3,900 (CX-83).

Comments • file transfer software offered for IBM PC (compatible) units • third-party maintenance.

■ COMPUTER COMMUNICATIONS, INC

2610 Columbia Street, Torrance, CA 90503 • 213-320-9101.

☐ CCI 8274C

Function • Terminal/Controller Emulator • emulates IBM 3274C models with attached 3278/3287 terminals/printers • allows ASCII terminals/printers to replace IBM units.

Controller/Communications • standalone unit attaches up to 32 terminals/printers; 1200-bps channel speed • supports single half-/full-duplex, SNA/SDLC link to host at 9600 bps • RS-232C interface.

Price • contact vendor.

■ COMPUTER PERIPHERAL SYSTEMS, INC

3870 North Peachtree Road, Atlanta, GA 30341 • 404-292-9565.

☐ MARS/MARS Jr

Function • Printer Emulator • allows any ASCII terminal/printer to interface with any Burroughs Poll/Select mainframe • emulates Burroughs TC-4000/AP-310/TD-830 • converts ASCII to Burroughs Poll/Select format.

Controller/Communications • standalone unit attaches single terminal/printer at 38.4K bps • supports single synchronous/asynchronous/TDI link at 38.4K bps, half/full duplex • RS-232C/parallel interface.

Price • $1,140 (MARS); $795 (MARS Jr).

Comments • can be used as down-speed converter for secondary network; synchronous to TDI converter • factory depot replacement.

■ CONTROL CONCEPTS

12004B Balls Ford Road, Manassas, VA 22110 • 703-361-5545.

☐ CC-3276

Function • Printer/Controller Emulator • emulates IBM 3276-12 with 3287 printer • allows ASCII printer to replace IBM unit • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 2 ASCII printers • supports single SDLC host link at 9600 bps • RS-232C interface.

Price • $2,345: base unit; $4,650: with 4800-bps modem and composite video • maintenance: $30 per month base unit; $44 per month with 4800-bps modem.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

Comments • integrated 2400- or 4800-bps modem; composite video • vendor-supplied on-site service; depot service; factory repair.

☐ EM-3276

Function • Printer/Controller Emulator • emulates IBM 3276-2 with 3287 printer • allows ASCII printer to replace IBM unit • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 2 printers • supports single BSC host link at 9600 bps • RS-232C interface.

Price • $2,195: base unit; $4,450: with 4800-bps modem and composite video • maintenance $30 per month base unit; $44 per month with 4800-bps modem and composite video.

Comments • integrated 2400-bps or 4800-bps modem; composite video • vendor-supplied on-site service, depot service, factory repair.

☐ Renex Translator

Function • Terminal/Controller Emulator • emulates IBM 3276-2, -12 with 3278/3287; emulates 52XX with 525X attached • allows ASCII terminals/printers to replace IBM units • converts ASCII to IBM format.

Controller/Communications • standalone unit attaches up to 32 ASCII terminals/printers or personal computers • supports single BSC/SDLC/asynchronous host link at 9600 bps • RS-232C interface.

Price • $2,900: 3-channel; $18,540: 32 channels with all options.

Comments • optional: auxiliary printer passthrough; APL; 7-color enhancement; BSC to SNA upgrade • depot service.

■ CTI DATA CORPORATION

5275 North Boulevard, Raleigh, NC 27604 • 919-876-8731.

☐ CTi 3000/li

Function • Terminal/Controller Emulator • emulates IBM 3274 with 3278 attached • allows CTi 3078 to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 4 to 16 terminals • supports single full-duplex BSC or SDLC host link at 9600 bps • RS-232C interface.

Price • $6,650 minimum configuration.

Comments • optional: multiuser local processor unit running MP/M-86; up to 2 320K diskette drives; single 10M-byte Winchester disk • third-party maintenance.

■ DATA PLUS, INC

7205 East Lockport Place, Lorton, VA 22079 • 703-550-7914.

☐ PCT Model DP350

Function • Terminal/Controller Emulator • emulates IBM 3271/3274 controllers with 3277/3278 terminals • allows ASCII terminals to replace IBM • converts ASCII data to IBM terminal format.

Controller/Communications • standalone unit attaches up to 4 ASCII terminals • supports single BSC/SDLC link to host • RS-232C interface • 24K RAM buffer.

Price • $3,100 • one-year warranty.

Comments • factory service.

■ DATAGRAM CORP

11 Main Street, East Greenwich, RI 02818 • 401-885-4840.

☐ Datagram DM1600B Communications Processor

Function • Terminal/Printer Emulator • allows any ASCII terminal printer or Burroughs Poll/Select addressable terminal to interface with any Burroughs computer from B 800 to B 7900 to emulate Burroughs TD 830 • converts ASCII to Burroughs Poll/Select protocol.

Controller/Communications • standalone unit attaches 4 to 16 ASCII terminals/printers • multidrop up to 40 devices per host line adapter • supports single full-duplex host link • RS-232C/TDI interface • handles remote terminal dial-in/dial-out • 16K RAM buffer; optional 64K RAM buffer • optional X.25 interface.

Price • $5,700 to $18,000.

Comments • does not support forms mode when running ASCII-only terminals • optional: 64K memory; cluster control software; remote high-speed printing; enhanced speed processing; TDI interface • one-year warranty, extended 7.5 percent of quantity one price per year • depot service.

☐ Datagram DM 2400B Switching Communications Processor

Function • Terminal/Printer Emulator • allows any ASCII terminal/printer or Burroughs Poll/Select addressable terminal to interface with any Burroughs computer from B 800 through B 7900 • **emulates Burroughs TD830** • converts ASCII to Burroughs Poll/Select protocol.

Controller/Communications • standalone unit attaches 4 to 24 ASCII terminals/printers multidrop up to 60 devices per host line adapter • supports up to 7 full-duplex host links • up to 19.2K bps • RS-232C/TDI interface • handles remote terminal dial-in/dial-out • 64K RAM buffer • optional X.25 interface.

Price • $8,000 to $30,000.

Comments • does not support forms mode when running ASCII-only terminals • terminal switching module, remote high-speed printer optional, TDI interfaces one-year warranty, extended warranty 7.5 percent quantity one price per year • depot service.

■ DATAPROBE

110 West Palisades Boulevard, Palisades Park, NJ 07650 • 201-947-9500.

☐ DR-10/DR-10A

Function • Code Converter • ASCII to Baudot, ASCII to Telex converter allows asynchronous terminals to attach to synchronous modems • accepts ASCII, Baudot, EBCDIC data rate at 9600 bps, half-/full-duplex • matches terminal speed to modem.

Price • $750/$950 per line.

Comments • self-test, dynamic RAM.

■ DATASTREAM COMMUNICATIONS, INC

1115 Space Park Drive, Santa Clara, CA 95050 • 408-986-8022.

☐ Model 774 Cluster Controller

Function • Terminal/Controller Emulator • emulates IBM 3274 controller with attached 3278/IBM PC/word processor terminals • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 8 to 24 terminal devices; input channel speed to 9600 bps • supports 2 separate full-duplex, BSC host links at 9600 bps • RS-232C interface • supports remote terminal dial-in.

Price • $7,900 to $15,000.

Comments • factory service and third-party maintenance.

☐ Model 874 Cluster Controller

Function • Terminal/Controller Emulator • emulates IBM 3274 controller with attached 3278/IBM PC/word processor terminals • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 8 to 16 terminal devices; input channel speed to 9600 bps • supports 2 separate, full-duplex, SNA/SDLC host links to 9600 bps • RS-232C interface • supports remote terminal dial-in.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

Price • $10,950 to $16,950.

Comments • factory service and third-party maintenance.

■ DEI TELEPRODUCTS

230 North Market Place, Escondido, CA 92025 • 619-743-8344.

☐ Modular Interface Converter

Function • Interface Converter • converts RS-232C, RS-449, CCITT V.35 to any combination • DTE and DCE models offered.

Price • $280 to $440 depending on interface combination.

■ DIGITAL COMMUNICATIONS ASSOCIATES (DCA) INC

303 Technology Park, Norcross, GA 30092 • 404-448-1400.

☐ INA/ATC (Asynchronous Terminal Controller)

Function • Terminal/Controller Emulator • emulates IBM 3271/3274/3276 with 3278/3287/3279/PC terminals attached • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 12 to 24 ASCII terminals/printers • supports single half-/full-duplex BSC or SNA/SDLC host links up to 19.2K bps • RS-232C interface.

Price • ranges from $8,950 to $14,950 depending on configuration • maintenance/support contact vendor.

Comments • 1920-character screen • optional support for C-structured field and attribute, programmed symbols, extended color, extended highlighting • full function emulation • vendor-supplied on-site service, factory repair.

☐ IRMA

Function • Terminal Emulator • allows IBM PC and PC/XT to interface with 3274/3276/43XX • emulates 3278-2, 3, 4 and 3279-2A/2B • converts PC code to 3278/3279 format.

Controller/Communications • printed circuit card fits into PC and performs code conversion • interfaces with local/remote 3274/3276 controllers or 43XX host via integrated terminal controller • RS-232C interface.

Price • $1,195 • first-year maintenance free.

Comments • supports all terminal display characteristics • APL character generator optional.

☐ IRMACOM

Function • Terminal/Controller Emulator • allows IBM PC to interface with IBM S/370, 30XX, 43XX, 8100 hosts, and 3790 Communications system • emulates 3271/3274/3276; 3287/3289/3284/3286/3288 printers; 3277/3278 displays; 2780/3780/3770 RJE terminals • converts PC code to appropriate peripheral code.

Controller/Communications • emulates 3274/3276 BSC or SNA/SDLC; 3271/3275 BSC • interfaces with 3705/3725 • single half-/full-duplex host link to 9600 bps, external clocking • RS-232C interface.

Price • $495.

Comments • device emulation provided by diskette-resident software.

☐ IRMALETTE

Function • Terminal Emulator • allows IBM PC and PC/XT to interface with 3274/3276/43XX • emulates 3278-2 • converts PC code to 3278 format.

Controller/Communications • printed circuit card fits into PC • interfaces with DCA IRMALINE interface on 3274/3276 controllers or 43XX host • channel rates to 19.2K bps • RS-232C.

Price • $395 • first year maintenance free.

Comments • includes file transfer utilities, password security, automatic error correction • supports all terminal display characteristics except programmed symbols.

☐ IRMALINE

Function • Terminal Emulator • allows IBM, Apple, DEC, etc personal computers to interface with 3274/3276/43XX • emulates 3278/3279 terminals • converts PC code to 3278/3279 format.

Controller/Communications • printed circuit card fits into 3274/3276 local/remote controllers or integrated terminal controller on 43XX host • channel speeds to 9600 bps • RS-232C interface • supports terminal dial-in/dial-out.

Price • $395 • first year maintenance free.

Comments • supports terminal displays up to 3440 characters; does not support programmed symbols • multilevel passwords • works with any PC with async format data as employed by IBM 3101, DEC VT100, DGD 200, LSI ADM-3A, Televideo 950.

☐ IRMAPRINT

Function • Printer Emulator • allows ASCII printers and display-only monitor to interface with 3274/3276/43XX • emulates IBM 3287 Model 1 and 2 printers • converts printer code.

Controller/Communications • interfaces with DCA IRMALETTE card on 3274/3276 controllers or 43XX • channel rates to 38.4K bps • RS-232C or Centronics-parallel printer interface.

Price • $1,295 • first year maintenance free.

Comments • performs error correction • factory service.

■ DIVERSIFIED DATA RESOURCES, INC

25 Mitchell Boulevard, Suite 7, San Rafael, CA 94903 • 415-499-8870.

☐ Hydra II

Function • Terminal/Controller Emulator • emulates IBM 3272/3274 controllers with 3277/3278/3787/PC terminals attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 16 terminal devices; input channel speed to 9600 bps • supports 2 separate full-duplex BSC/SDLC host links to 9600 bps • RS-232C interface • supports remote terminal dial-in • 24K RAM buffer.

Price • $6,900 for 8 channels; $9,900 for 16 channels • maintenance runs 10% of purchase price per year.

Comments • file transfer software for PCs • on-site or factory service; 24 part replacement.

☐ Hydra Intelligent Controller

Function • Terminal/Controller Emulator • emulates IBM 3274 controller with 3277/3278/3279/3287/1403/3211/PC terminals attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 16 terminal devices; input channel speed to 9600 bps • supports single full-duplex BSC/SDLC host link to 9600 bps • RS-232C interface • supports remote terminal dial-in • 24K RAM buffer.

Price • $6,900 for 8 channels; $9,900 for 16 channels • maintenance run 10% of purchase price per year.

Comments • on-site and factory service.

■ DPX, INC

20823 Stevens Creek Boulevard, Cupertino, CA 95014 • 408-973-9292.

☐ DPX-INS SNA/SDLC Loop Adapter—100 Series

Function • Controller Emulator • emulates IBM 3274 loop-attached to IBM 8100 • converts RS-232C to loop interface.

Controller/Communications • standalone unit attaches up to 4 IBM 3270 peripherals • supports single link to host; SNA/SDLC • DPPX, DPPX/SP, DPCX interface.

Price • $1,295 to $1,995 • one-year warranty.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

☐ DPX-INS SNA/SDLC Loop Adapter—200 Series

Function • Terminal Emulator • emulates IBM 3640 loop-attached to IBM 8100 • allows ASCII terminal to replace IBM unit • converts ASCII to SDLC protocol.

Controller/Communications • standalone unit attaches 1 or 2 terminals/printers • single link to host via current loop; SNA/SDLC • DPPX and DPPX/SP • supports remote terminal dial-in.

Price • $1,595 for single port; $1,995 for 2 ports • one-year warranty.

Comments • on-site and factory service.

■ ERGONOMIC SOFTWARE, INC

79 Dartmouth Street, Boston, MA 02116 • 617-267-4545.

☐ Ergolinx 3270

Function • Terminal Emulator • allows Apple II PC to attach to IBM 3275/3276 • emulates 3277/3278 • converts Apple code to 3277/3278 format.

Controller/Communications • printed circuit card fits into Apple II and performs code conversion • interfaces to local 3275/3276 controllers operating under BSC • RS-232C interface.

Price • $850.

Comments • provides display format/characteristics of 3277/3278 Model 2; does not support magnetic card or light pen functions.

☐ Ergolinx 2780/3780

Function • Terminal Emulator • allows Apple II PC to interface with IBM S/360/370/43XX/30XX • emulates 2780/3780 terminals • converts Apple code to 2780/3780 format; transmits in BSC protocol.

Controller/Communications • interfaces with 270X/37XX front-end BSC port • RS-232C interface.

Price • $850.

Comments • does not support horizontal format control • factory repair.

■ GANDALF DATA INC

1019 South Noel One, Wheeling, IL 60090 • 312-541-6060.

☐ Gandalf PIN 3270E-5

Function • Terminal/Controller Emulator • emulates IBM 3271/3274 controllers with attached 3277/3278/3287 terminals/printers • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 5 terminals/printers at 9600 bps • supports single full-duplex BSC/asynchronous host link at 9600 bps • RS-232C interface • supports remote terminal dial-in • 1920-character buffer • offers X.25 interface.

Price • $4,500 • $90 flat fee for on-site service warranty • 1.25 percent of prices per month 7-day; 1 percent of price per month for 5-day maintenance.

Comments • optional: up to 15 translator per terminal translator types • 1-year warranty • on-site, depot, and factory service includes 4-hour response time.

☐ PIN 3270E-7

Function • Terminal/Controller Emulator • emulates IBM 3271/3274 controllers with attached 3277/3278/3287 terminals/printers • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 16 ASCII terminals/printers at 9600 bps • supports 2 full-duplex BSC host links at 9600 bps • optional X.25 interface • RS-232C interface • supports remote terminal dial-in • 1920-character buffer.

Price • $7,900 basic 8-port unit; $17,000 for 16-port system with redundancy option • $90 flat fee for on-site • 1.25 percent of price per month 7-day; 1 percent of price per month for 5-day maintenance.

☐ PIN 3270E-8

Function • Terminal/Controller Emulator • emulates IBM 3274/3271 controllers with attached 3277/3278/3287 terminals/printers • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 16 ASCII terminals/printers at 9600 bps • supports 1 or 2 full-duplex SNA/SDLC host links at 9600 bps • RS-232C interface • supports remote terminal dial-in • 1920- to 3564-character buffer depending on 3278 Model being emulated • optional X.25 interface.

Price • $10,950 to $22,950 for 16-port system with redundancy option.

Comments • same as 3270E-5 • see above.

■ ICOT CORPORATION

830 Maude Street, Mountain View, CA 94039 • 415-964-4635.

☐ Virtual Terminal System 351/352

Function • Terminal/Controller Emulator • emulates IBM 3271 controller with 3277/3278/3287/PC terminals/printers attached • allows ASCII units to emulate IBM terminals/printers • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 6 to 12 ASCII terminals/printers or personal computers at 9600 bps • supports 2 full-duplex BSC host links at 9600 bps • RS-232C/RS-449/20-mA current-loop interface • supports remote terminal dial-in.

Price • $5,800 to $9,100.

Comments • multi on-site, depot service.

☐ Virtual Terminal System 362

Function • Terminal/Controller Emulator • emulates IBM 3274-21C controller with 3278/3287 terminals/printers attached • allows ASCII terminals to replace IBM terminals/printers • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 16 ASCII terminals/printers at 19.2K bps • supports 2 full-duplex SDLC host links at 19.2K bps • RS-232C/RS-422/20-mA current-loop interfaces • supports remote terminal dial-in.

Price • $9,800 to $12,050.

Comments • same as 351/352 • see above.

■ INCAA COMPUTERS

7300 AE Apeldourn Holland • 055-551262.

☐ P.I.T.

Function • Protocol Converter • allows asynchronous/IBM 3270, IBM/Siemens communications processors to interface with IBM or asynchronous hosts • converts ASCII to EBCDIC code; asynchronous to BSC protocol.

Controller/Communications • attaches single programmable channel up to 19.2K bps • supports single IBM, Burroughs, or DEC host link up to 19.2K bps • RS-232C interface.

Price • contact vendor.

Comments • all conversions are programmable; operates in programmable or run mode • optional third peripheral port.

■ INFOTRON SYSTEMS CORPORATION

9 North Olney Avenue, Cherry Hill, NJ 08003 • 609-424-9400.

☐ VTS 351/352

Function • see ICOT Virtual Terminal System 351/352.

Controller/Communications • see Icot Virtual Terminal System 351/352.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

Price • $5,800/$7,600 (351/352) base unit; $1,500 each additional host link.

Comments • factory repair with swap out.

■ INNOVATIVE ELECTRONICS, INC

4714 NW 165th Street, Miami, FL 33014 • 305-624-1644.

☐ MC-80/100

Function • **Terminal Emulator** • allows any ASCII terminal/printer to emulate IBM 2780/3780 BSC RJE workstation • converts BSC to ASCII protocol; EBCDIC to ASCII code.

Controller/Communications • single half-/full-duplex BSC or asynchronous host link to 9600 bps • RS-232C interface • supports remote terminal dial-in/dial-out • 14K RAM buffer.

Price • $1,295 to $1,495.

Comments • optional: additional port; asynchronous ASCII • factory service.

☐ MC-80/200

Function • **Terminal Emulator** • allows any ASCII terminal that interfaces with any Burroughs host supporting Poll/Select to emulate any Burroughs terminal employing Poll/Select • converts Burroughs Poll/Select to asynchronous ASCII protocol; does not support formatted screens.

Controller/Communications • supports single half-/full-duplex synchronous host link up to 9600 bps • RS-232C interface • supports remote terminal dial-in • 14K RAM buffer.

Price • $1,295 to $1,598.

Comments • optional: additional port; additional 2K RAM; rackmount hardware • factory repair.

☐ MC-80/300

Function • **Terminal/Controller Emulator** • emulates IBM 3271 cluster controller • allows Burroughs Poll/Select terminal to be used in place of IBM 3277.

Controller/Communications • standalone unit attaches up to 16 terminals/printers up to 2400 bps • supports single half-/full-duplex BSC host link at 2400 bps • RS-232C interface • supports remote terminal dial-in • 14K RAM buffer.

Price • $2,095 to $2,465.

Comments • optional: additional RAM; rackmount hardware • factory repair.

☐ MC-80/400

Function • **Terminal/Controller Emulator** • emulates IBM 3271 controller • allows Burroughs Poll/Select terminal to be used in place of IBM 3277.

Controller/Communications • standalone unit attaches up to 13 terminals/printers up to 2400 bps • supports single half-/full-duplex BSC host link at 2400 bps • RS-232C interface • supports remote terminal dial-in • 14K RAM buffer.

Price • $2,095 to $2,720.

Comments • does not support formatted screens • optional: modem sharing; additional RAM • factory repair.

☐ MC-80/600

Function • **Terminal/Controller Emulator** • emulates IBM 3274-51C controller with 3277/3278 terminals attached • allows ASCII terminals to replace IBM units • converts ASCII data to IBM format.

Controller/Communications • standalone unit attaches up to 2 ASCII terminals/printers at 9600 bps • supports single half-/full-duplex BSC or asynchronous host link at 9600 bps • RS-232C interface • supports remote terminal dial-in • 14K RAM buffer.

Price • $1,295 to $1,795.

Comments • optional: additional port; modem sharing • factory repair.

☐ MC-80/602

Function • **Terminal/Controller Emulator** • emulates IBM 3271/3274/3276 controllers with 3277/3278 terminals attached • allows ASCII terminals to replace IBM units • converts ASCII codes to IBM format.

Controller/Communications • attaches single terminal/printer at 9600 bps • supports single half-/full-duplex BSC host link at 9600 bps • RS-232C interface.

Price • $1,650 basic unit.

Comments • one-year warranty • factory service.

☐ MC-80/700

Function • **Printer Emulation** • allows any high-speed dot-matrix, line, or letter-quality printer to interface with IBM 3274/3276 • emulates IBM 3287 printer • converts SNA/BSC to asynchronous.

Controller/Communications • supports remote terminal dial-in • 960/1920/2560/3440/3564-character buffer • RS-232C/parallel interface.

Price • $1,495.

Comments • factory repair.

☐ MC-80/900

Function • **Terminal Emulator** • allows any ASCII terminal, IBM PC, or PC/XT to emulate IBM 3278-2 • attaches to 3274/3276 controllers.

Controller/Communications • standalone unit interfaces single ASCII terminal • RS-232C interface.

Price • contact vendor.

Comments • factory repair.

☐ MC-800

Function • **Terminal/Controller Emulator** • emulates IBM 3274/3276 controllers with 3277/3278/3279/PC attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 24 ASCII terminals • supports single half-/full-duplex BSC/SDLC link to host at 19.2K bps • RS-232C interface • supports remote terminal dial-in.

Price • $3,600: 5 ports to $15,990.

Comments • factory service.

☐ MC-8051

Function • **Terminal Emulator** • allows any ASCII terminal/printer to emulate IBM 5251-11 workstation; IBM 5256 printer; 5292 display station • converts SDLC to asynchronous protocol.

Controller/Communications • standalone unit attaches 5, 7, or 9 ASCII terminal device • single half-/full-duplex link to S/34, S/36, S/38 at 19.2K bps • RS-232C interface • supports remote terminal dial-in.

Price • $4,650 to $5,950.

Comments • factory repair.

☐ PC-80

Function • **Terminal Emulation** • allows IBM PC or PC/XT to interface 3274/3276 controllers or 4331 host • emulates 3278-2, 3, 4, or 3279-2A, 2B, 3A, or 3B • converts PC ASCII code to 3278/3279 format • allows concurrent PC-DOS and 3270 sessions.

Controller/Communications • printed circuit card fits into PC • interfaces with local 3274/3276 or 4331 display/printer adapter.

Price • $895.

Comments • supports all 3278/3279 functions • has dual-level password security • menu-driven configuration • fill transfer software optional.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

■ INSTRUMENTATION SERVICES INC

957 Winnetka Avenue N, Minneapolis, MN 55427 • 612-544-8916.

☐ ISI-87 Protocol Converter

Function • Printer Emulator • allows any ASCII printer to replace an IBM 3287 attached to a 3274/3276 controller • converts EBCDIC to ASCII code.

Controller/Communications • standalone unit interfaces single printer to 3274/3276 • data rates to 9600 bps • recognizes XOFF/XON • RS-232C or parallel interface.

Price • $1,700.

Comments • factory repair.

■ INTERNATIONAL ANTEX/Antex Data Systems Division

2630 California Street, Mountain View, CA 94040 • 415-941-7914.

☐ ADS-8212 Data Exchange/Spooler

Function • Code Converter • printer interface converter and print spooler for personal computer printers • converts data stream from serial/parallel and vice-versa.

Controller/Communications • standalone unit installed between personal computer and printer • accepts serial/parallel data at speeds to 19.2K bps; stores data in 64K RAM spooler memory; outputs serial/parallel data to 19.2K bps • RS-232C/Centronics parallel interface • configured as DTE/DCE.

Price • $339.

Comments • works with most popular makes of PCs (IBM, Apple, DEC, HP, etc) • recognizes XON/XOFF, ETX/ACK controls • version offered with 5.25-inch Winchester for IBM PC.

■ INTERNATIONAL BUSINESS MACHINES (IBM) CORPORATION/Information Systems Group National Accounts Division

1133 Westchester Avenue, White Plains, NY 10604; 914-696-1900 • National Marketing Division; 4111 Northside Parkway, Atlanta, GA 30327; 404-238-2000.

☐ IBM 4994

Function • Terminal/Controller Emulator • emulates IBM 3272 controller with 3277 terminals attached • allows ASCII terminals to replace 3277 • converts ASCII to IBM format.

Controller/Communications • standalone unit attaches up to 48 terminals • supports single full-duplex BSC host link at up to 19.2K bps • RS-232C/CCITT V.24/20-mA current-loop interfaces.

Price • $16,735: 16 channels; $25,850: 32 channels; $32,300: 48 channels • $897: 16-channel per month rental; $1,395: 32-channel per month rental; $1,745: 48-channel per month rental • $195: 16-channel per month; $257: 32-channel per month; $313: 48-channel per month maintenance.

Comments • supported by Host Loaded Yale ASCII Communication System.

☐ IBM 7426

Function • Terminal/Controller Emulator • emulates IBM 3276-12 controller attaching 3278 terminals • allows IBM 3101 or any ASCII terminal to replace IBM units • converts ASCII data to IBM format.

Controller/Communications • standalone unit attaches 4 terminals/printers or personal computers • supports single half-/full-duplex SNA/SDLC host link at 9600 bps • RS-232C/RS-422 interface.

Price • $4,210 (Model 1); $3,830 (Model 2) • $20 per month maintenance.

Comments • host downline loads microcoded control logic; Model 1 direct attached or data link-attached loop; Model 2 connects via SDLC communications link • IBM repair center.

■ KAUFMAN DATA COMMUNICATIONS, INC

145 East Dana Street, Mountain View, CA 94041 • 415-962-8811.

☐ Kaufman Model 870

Function • Terminal/Controller Emulator • emulates IBM 3271/3274-51C/3276 with 3278 terminals attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 8 ASCII terminals/printers • supports single BSC; single asynchronous host links at 19.2K bps; full duplex • supports remote terminal dial-in • 5K RAM buffer • RS-232C interface.

Price • $2,624: 4 channels; $3,224: 6 channels; $3,768: 8 channels • $350: extra line interface modules (LIMs); $50: first PROM; $25: each additional PROM • $29 per month maintenance.

Comments • factory repair • 90-day warranty.

☐ Model 871

Function • Terminal/Controller Emulator • emulates Sperry UTS controller with UTS 400 terminals attached • allows any ASCII terminal to replace the Sperry unit • converts ASCII data to Sperry format.

Controller/Communications • standalone unit attaches up to 8 ASCII terminals • supports single BSC; single asynchronous host link at 19.2K bps; full duplex • supports remote terminal dial-in • 5K RAM buffer • RS-232C interface.

Price • $2,624: 4 channels; $3,224: 6 channels; $3,768: 8 channels • $350: LIMs; $50: first PROM; $25 each additional PROM • $29 per month maintenance.

Comments • factory repair • 90-day. warranty.

☐ Model 872

Function • Terminal/Controller Emulator • emulates IBM 3274-51C controller with 3278 terminals attached • allows any ASCII terminal to replace IBM units • converts ASCII to IBM format • allows ASCII communications to DEC PDP-11.

Controller/Communications • standalone unit attaches up to 8 ASCII terminals/printers • supports single full-duplex SDLC; single full-duplex asynchronous host links at 19.2K bps • RS-232C interface • supports remote terminal dial-in • 5K RAM buffer.

Price • $2,624: 4 channels; $3,224: 6 channels; $3,768: 8 channels • $350: LIMs; $50 first PROM; $25: each additional PROM • $29 per month maintenance.

Comments • factory repair • 90-day warranty.

■ KMW SYSTEMS CORPORATION

8307 Highway 71 West, Austin, TX 78735 • 512-288-1453.

☐ KMW Series II 3770

Function • Terminal Emulator • allows any RS-232C serial device (e.g., Apollo, IBM, or Apple personal computer pen plotters, parallel printer, card reader) to interface IBM 37XX front-end processor or equivalent • emulates IBM 3775-3, -4, or IBM 3777-3 RJE workstation • converts ASCII format to SNA/SDLC.

Controller/Communications • standalone unit attaches up to 8 RS-232C devices up to 19.2K bps • supports single half-/full-duplex SDLC host link at 19.2K bps • supports remote terminal dial-in • 256K RAM buffer • RS-232C/parallel interface.

Price • $4,595 base unit • 1.5 percent unit price per month or time and materials maintenance.

Comments • return to factory; on-site service; depot service.

☐ Model 2780/3780

Function • Terminal Emulator • allows any RS-232C device

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

(e.g., Apollo, IBM, and Apple personal computers, pen plotters, parallel printers, card readers) to interface IBM 37XX front-end processor or equivalent emulates IBM 2780/3780 RJE workstation • converts ASCII format to EBCDIC.

Controller/Communications • standalone unit attaches up to 3 RS-232C devices up to 19.2K bps • supports single half-/full-duplex BSC host link • RS-232C/parallel interface • supports remote terminal dial-in • 256K RAM buffer.

Price • $1,995 base unit.

Comments • same as Series II 3770.

☐ Series II HASP

Function • **Terminal Emulator** • allows any RS-232C serial device (e.g., Apollo, IBM, or Apple personal computer; pen plotters, parallel printers, card reader to interface IBM 37XX front-end processor or equivalent • emulates IBM S/360/370 HASP RJE workstation • converts ASCII format to EBCDIC.

Controller/Communications • standalone unit attaches up to 8 RS-232C devices up to 19.2K bps • supports single half-/full-duplex BSC host link up to 19.2K bps • RS-232C/parallel interface • supports remote terminal dial-in • 256K RAM buffer.

Price • $4,595 base unit • 1.5 percent unit cost per month or time and materials maintenance.

Comments • same as Series II 3770.

☐ Series II 3270 BSC

Function • **Terminal/Controller Emulator** • emulates IBM 3271 controller with 3277 terminals attached • allows any ASCII terminal to replace IBM unit • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 8 terminals up to 19.2K bps • supports single half-duplex BSC host link to 19.2K bps • RS-232C interface • supports remote terminal dial-in • 256K RAM (printer/variable screen); 2K RAM (terminal) buffer.

Price • $3,095 base unit • 1.5 percent of unit price per month or time and materials maintenance.

Comments • same as Series II 3770 • see above.

☐ Series 3270 SNA

Function • **Terminal/Controller Emulator** • allows most any ASCII terminal to interface IBM 37XX front-end processor or equivalent to emulate IBM SDLC 3274 controller; 3278 terminals • converts SNA/SDLC EBCDIC to ASCII format.

Controller/Communications • attaches up to 8 ASCII terminals up to 19.2K bps • supports single half-duplex SDLC host link to 19.2K bps • RS-232C interface • supports remote terminal dial-in • 256K RAM (printer/variable screen); 2K RAM buffer.

Price • $3,095 base unit • 1.5 percent of unit price per month or time and materials maintenance.

Comments • same as Series II 3770 • see above.

■ LOCAL DATA

2701 Toledo Street, Torrance, CA 90503 • 213-320-7126.

☐ Datalynx/3274

Function • **Terminal/Controller Emulator** • emulates IBM 3274 controller with 3278/3287 terminals/printers attached • allows ASCII terminal/printers to replace IBM units • converts ASCII code to IBM format • supports 3278-2 through -5 features.

Controller/Communications • standalone unit attaches up to 9 ASCII terminals/printers • supports 1 or 2 BSC/SDLC full-duplex host links at 19.2K bps • RS-232C interface • supports remote terminal dial-in/dial-out • 108K RAM buffer.

Price • $3,000 to $6,000 • $29 to $50 per month maintenance.

Comments • does not support light pen • factory advance exchange, flat rate repair, third-party on-site service.

☐ Datalynx/3780

Function • **Terminal Emulator** • allows any ASCII terminal/printer, microcomputer, or minicomputer to emulate IBM 2770/2780/3741/3780 • converts asynchronous ASCII to synchronous BSC/EBCDIC format.

Controller/Communications • standalone unit attaches up to 3 ASCII terminals/printers, minicomputers, or microcomputers to IBM S/34, S/38, 30XX/43XX hosts • supports single full-duplex BSC link at 19.2K bps • RS-232C interface • supports remote terminal dial-in • 4K RAM buffer.

Price • $1,495 • $12 per month maintenance.

Comments • factory repair; third-party on-site.

☐ Datalynx/5251

Function • **Terminal/Printer Emulator** • allows ASCII terminals/printers to emulate IBM 5251-12 terminals; 5224/5225/5256 printers • converts ASCII to EBCDIC SNA format.

Controller/Communications • standalone unit attaches up to 9 ASCII terminals/printers • supports 1 or 2 SNA/SDLC host links to IBM S/34/36/38 • RS-232C interface • supports remote terminal dial-in • 108K RAM buffer.

Price • $3,900 to $6,000 • $29 to $50 per month maintenance.

Comments • same as Datalynx/3780.

☐ Interlynx/3278

Function • **Terminal Emulator** • allows ASCII terminals/printers to interface with IBM 3274/3276 controller • emulates IBM 3278-2 terminal • converts ASCII to IBM format.

Controller/Communications • standalone unit attaches single terminal at 19.2K bps to 3274/3276 • RS-232C interface • 2K RAM buffer.

Price • $1,395 • quantity discounts offered • $12 per month maintenance.

Comments • same as Datalynx 3274 • see above.

☐ Interlynx/3287

Function • **Printer Emulator** • allows any ASCII printer to interface with IBM 3274/3276 controller • emulates IBM 3287 printer.

Controller/Communications • standalone box attaches single printer at 19.2K bps to 3274/3276 • RS-232C or parallel interface • 4K RAM buffer.

Price • $1,495 base unit; $1,750 with panel • $12 per month maintenance.

Comments • same as Datalynx/3780.

☐ Versalynx/3278

Function • **Terminal Emulator** • allows IBM 3178/3278 terminals to interface with ASCII hosts • emulates DEC VT100, IBM 3101, HP26XX, Lear Siegler ADM 3A, etc terminals.

Controller/Communications • standalone unit attaches single terminal • supports single link to ASCII host via dial-up line; DTE to DCE interface via RS-232C auxiliary interface on 3178/3278 • switches between ASCII mode and native 3178/3278 mode for attachment to 3274/3276 controllers.

Price • $795 • $8 per month maintenance.

Comments • can also be used with Datalynx/3274.

■ MDS QANTEL

4142 Point Eden Way, Hayward, CA 94545 • 415-887-7777.

☐ MDS-4806 QPCI

Function • **Terminal Emulator** • allows DEC VT100, IBM (and compatible) PCs and bar code readers to interface with Qantel S/10/20/40/64 • emulates any device connected through QPCI to Qantel system to appear as Qantel VT3/Model 4031 terminal • converts ASCII to EBCDIC if user programmed.

Controller/Communications • standalone unit attaches 3 ports • multidrop up to 31 devices • single QSP to system, single QSP

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

to other devices, 3 RS-232C host links • RS-232C interface on the device side, Qantel proprietary QSP supported on the system side • supports all Qantel systems BEST/AOS Level 408 or higher.

Price • $1,500 basic unit • $20 per month maintenance.

Comments • user-programmability provided at no cost • application software provided on license basis • maintenance on contract basis.

■ MICOM SYSTEMS, INC

20151 Nordhoff Street, Chatsworth, CA 91311 • 818-998-8844.

☐ Micro 7400 Protocol Converter

Function • Terminal/Controller Emulator • emulates IBM 3274/61C with 3278/3279/3287/PC terminals attached • allows ASCII terminals/printers to replace IOM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 2 to 12 ASCII terminals/printers or personal computers • supports 2 full-duplex BSC or SNA host links at 9600 bps • RS-232C/20-/60-mA current-loop interfaces.

Price • $1,650 to $5,750.

Comments • does not support extended highlighting/7-color • optional dual synchronous hosts, multiple asynchronous host, asymmetrical channels, large screen support, IBM PC • factory repair including express service.

■ MICROLOG, INC

222 Route 59, Suffern, NY 10901 • 914-357-8086.

☐ Baby Talk

Function • Terminal/Controller Emulator • allows IBM PC and Texas Instruments Professional Computer to interface with IBM S/370, 43XX, and 30XX • emulates 3274/3278/3284/2780/3780/HASP workstations • converts PC code to appropriate terminal code.

Controller/Communications • printed circuit card fits into PC • emulates terminal and 3274 controller • supports single half-/full-duplex BSC or SNA/SDLC data link to host at speeds to 19.2K bps • 2780/3780/HASP emulation interface to 3705/3725 directly • RS-232C interface.

Price • $1,079 with 1 emulation package; $499 each additional emulation package.

Comments • employs software-loaded emulation • built-in modem optional • RJ11 and 20-pin parallel port available • factory maintenance only.

■ MODEMS PLUS, INC

217 East Trinity Place, Decatur, GA 30030 • 404-378-5276.

☐ BRITE II

Function • Terminal Emulator • allows ASCII terminal to emulate any Burroughs video display • converts ASCII code to Burroughs Poll/Select.

Controller/Communications • single data link from protocol converter to host computer at speeds to 19.2K bps • half-/full-duplex poll/select protocol • supports remote terminal dial-in/dial-out • internal/external clock • dual 2K RAM terminal buffers • RS-232C and TDI interface.

Price • $1,295 • $120 per year maintenance.

Comments • supports batch/interactive processing • menu-driven • service by replacement or factory repair.

☐ SMRTE ONE, Model A

Function • Controller Emulator • converts IBM 3780/3275 BSC to SNA/SDLC • emulates 3274/3276/3770.

Controller/Communications • standalone unit provides 3 I/O ports with 2 addresses per port; accepts 3 3780 or 3275 BSC inputs • supports single half-/full-duplex SNA/SDLC link to 3705/3725 front end at speeds to 19.2K bps, internal/external clocks • RS-232C interface • 3.1K RAM buffer/port.

Price • $3,995 • $180 per year maintenance.

Comments • serviced by replacement or factory repair.

☐ SMRTE ONE, Model B

Function • Protocol Converter • converts DEC DDCMP to SNA/SDLC • permits 3770-type RJE file transfer.

Controller/Communications • attaches to 3705 • single DDCMP port • single half-/full-duplex SNA/SDLC link to host to 19.2K bps • supports remote terminal dial-in/dial-out • internal/external clock • RS-232C interface • 1K RAM buffer.

Price • $3,995 • $180 per year maintenance.

Comments • repairs by replacement.

☐ SNAP

Function • Terminal/Controller Emulator • emulates IBM 3274/3276/3776/3777 • allows ASCII terminals to replace IBM units; each terminal can directly attach a printer • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches single terminal with printer • supports single half-/full-duplex SNA/SDLC link to 3705/3725 at speeds to 19.2K bps • supports remote terminal dial-in • RS-232C interface • 4K RAM terminal buffer; 3K RAM printer buffer.

Price • $1,495.

Comments • attached printer can operate in bypass mode • batch/interaction operation.

■ NETLINK TECHNOLOGY, INC

1340 Saratoga Sunnyvale Road, San Jose, CA 95129 • 408-973-9411.

☐ Netlink 3703

Function • Terminal Emulator • allows any terminal supporting cursor addressing to interface with IBM S/370/8100 • emulates IBM 3278-2, -3, -4, -5 • converts ASCII to EBCDIC LU-1 and -2; BSC 3271, 3275 to LU-1, -2; BSC RJE MLU to LU0, LU1.

Controller/Communications • attaches up to 12 terminals at 9600 bps • supports single SDLC half-/full-duplex SDLC host link at 9600 bps • RS-232C interface.

Price • $6,000 to $10,000.

Comments • cursor addressing software-controlled via host • depot service.

■ PERIPHERAL TECHNOLOGY INC

14784 N.E. 95th Street, Redmond, VA 98052 • 206-881-6691.

☐ Peripheral Scat 2/2303

Function • Terminal/Controller Emulator • emulates IBM 3271/3274/3276 with IBM 3278 terminals attached • allows ASCII terminals to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 4 ASCII terminals • supports 2 SNA/SDLC or BSC host links at 9600 bps • RS-232C/RS-422 interface.

Price • $2,995.

Comments • factory service.

☐ Peripheral Scat 2/2501

Function • same as Scat 2/2303 • see above.

Controller/Communications • standalone unit attaches up to 5 ASCII terminals • supports single SNA/SDLC or BSC host at 9600 bps • RS-232C/RS-422 interface.

Price • $2,995.

Comments • factory service.

■ PERLE SYSTEMS LTD

360 Tapscott Road, Scarsborough, ON M1B 3C4 • 416-299-4999.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

☐ PDS 350/SNA

Function • Terminal/Controller Emulator • emulates IBM 3274 controller with 3278/3279/3287 terminals/printers attached • also emulates 3770/3777/3767 • allows any ASCII terminal/printer to replace IBM devices • converts ASCII code to IBM format.

Controller/Communications • standalone device attaches 16 ASCII terminals/printers • supports single half-/full-duplex SNA/SDLC link to host at speeds to 19.2K bps • RS-232C interface • internal/external clocks supported • 320K RAM buffer for terminal/printer use.

Price • contact vendor.

Comments • does not support extended function store options • on-site, factory repair.

☐ PDS 350/525

Function • Controller Emulator • emulates IBM 5251-12, 5251-11, and 525X attached to S/34/36/38 • allows ASCII terminals/printers/PCs to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 16 ASCII devices • supports single half-/full-duplex SNA/SDLC link to host processor at speeds to 9600 bps • RS-232C interface • 340K RAM buffer for terminal/printer use.

Price • contact vendor.

Comments • on-site, factory repair.

■ PROTOCOL COMPUTERS, INC

6150 Canoga Avenue, Woodland Hills, CA 91367 • 818-716-5500.

☐ 176 Protocol Converter

Function • Terminal/Controller Emulator • emulates IBM 3276-12 controller with 3287/3278 printers/terminals attached • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches up to 7 ASCII terminals/printers • supports single half-/full-duplex SNA/SDLC link to host at speeds to 19.2K bps • RS-232C interface • supports remote terminal dial-in.

Price • $1,850 (1 port) to $5,425 (7 ports with all options), for 78 Networker $995 • maintenance/support charges: $195 per year (1 port) to $420 per year (7 ports) plus $100 per year for graphics option.

Comments • optional: rackmount, available in 1, 2, 3, 5, or 7 ASCII ports, graphics support packages, paper CRT—allows hardcopy terminals to emulate 3278s, CoaxFACE—exclusive RS-232C—RG62A/U coax cable interface, PCIterm software for IBM Personal Computer communications; also PCI 78 networker terminal—3278 • depot service.

☐ 171 Protocol Converter

Function • Terminal/Controller Emulator • emulates IBM 3271 controller with 3277/3287 terminals/printers attached • allows ASCII terminals/printers to replace IBM units • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches 7 ASCII devices • supports single BSC/SDLC link line to local/remote host at speeds to 9600 bps • RS-232C interface • supports remote terminal dial-in.

Price • $1,850 (1 port) to $5,425 (7 ports with all options), for 78 networker $995 • maintenance $195 per year (1 port) to $420 per year (7 ports) plus $100 per year for graphics option.

Comments • optional: rackmount, available in 1, 2, 3, 5, or 7 ASCII ports, graphics support packages, paper CRT—allows hardcopy terminals to emulate 3278s, CoaxFACE—exclusive RS-232C—RG62A/U coax cable interface, PCIterm software for IBM Personal Computer communications; also PCI 78 networker terminal—3278 • depot service.

☐ 167 Protocol Converter

Function • Terminal Emulator • allows any ASCII terminal/printer/PC to emulate IBM 3767 workstation • converts ASCII to SNA/SDLC.

Controller/Communications • standalone unit attaches 7 ASCII devices • supports single SNA/SDLC link to local/remote S/370, 303X, 308X, 43XX, or 8100 host • RS-232C interface • supports remote terminal dial-in.

Price • $2,850 (1 port) to $6,425 (7 ports with all options) • maintenance/support charges: $195 per year (1 port) to $420 per year (7 ports) plus $100 per year for graphics option.

Comments • optional: rackmount, available in 1, 2, 3, 5, or 7 ASCII ports, graphics support packages, paper CRT—allows hardcopy terminals to emulate 3278s, CoaxFACE—exclusive RS-232C—RG62A/U coax cable interface, PCIterm software for IBM Personal Computer communications; also PCI 78 networker terminal—3278 • depot service.

☐ 151 Protocol Converter

Function • Terminal/Controller Emulator • allows any ASCII terminal, personal computer, printer, or plotter to emulate IBM 5251-12 cluster controllers, 5251-11 terminals • converts asynchronous/ASCII to SNA/SDLC.

Controller/Communications • standalone unit attaches 7 ASCII devices • supports single SNA/SDLC link to local/remote S/34/36/38 host • RS-232C interface • supports remote terminal dial-in.

Price • $2,850 (1 port) to $6,425 (7 ports with all options), for 51 networker terminal $995 • maintenance/support charges: $195 per year (1 port) to $420 per year (7 ports) plus $100 per year for graphics option.

Comments • optional: rackmount, available in 1, 2, 3, 5, or 7 ASCII ports, graphics support packages, paperCRT—allows hardcopy terminals to emulate 5251s, CoaxFACE—exclusive RS-232C—RG62A/U coax cable interface, PCIterm software for IBM Personal Computer communications; also PCI 51 networker terminal—5251 keyboard—compatible ASCII CRT • depot service.

☐ 1076X

Function • Terminal/Controller Emulator • emulates IBM 3274/5251 controllers • allows ASCII terminals/printers to replace IBM 3278/3287/5251 units • converts ASCII code to IBM format • interfaces with X.25 network.

Controller/Communications • standalone unit supports up to 7 ASCII terminals/printers • single link to local/remote PCI 73X or NPSI software on IBM S/370, 303X, 308X, 43XX, 8100, or PCMs • converts SNA/SDLC to X.25 • RS-232C interface • supports remote terminal dial-in.

Price • $3,350 (1 port) to $6,925 (7 ports with all options) • maintenance/support charges: $320 per year (1 port) to $6,800 per year (7 ports) plus $100 for graphics option.

Comments • optional: rackmount, available in 1, 2, 3, 5, or 7 ASCII ports, graphics support package, paperCRT—allows hardcopy terminals to emulate 3278s, CoaxFACE—exclusive RS-232C—RG2A/U coax cable interface, PCIterm software of IBM Personal Computer communications; also PCI 78 networker terminal—3278 keyboard-compatible ASCII CRT • depot service.

☐ 3780/SNA Protocol Converter

Function • Protocol Converter • allows IBM 2780/3780 terminals to operate in an SNA/SDLC environment • emulates the IBM 3776-2 and converts BSC to SDLC.

Controller/Communications • standalone unit interfaces single 2780/3780 • supports single SNA/SDLC link to IBM S/370, 303X, 308X, 43XX, and 8100 local/remote hosts • RS-232C interface • supports remote terminal dial-in.

Price • $3,100 • $320 per year maintenance.

Comments • async printer option offered for $1,000 • depot service.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

☐ Videotex 67 Protocol Converter

Function • Terminal Emulator • allows videotex, CRT, printer, and plotter to interface with IBM S/370, 303X, 43XX, 308X, 8100, and plug compatibles • emulates IBM 3767 SNA/SDLC PU type 1 • converts videotex asynchronous/ASCII to SNA/SDLC.

Controller/Communications • standalone unit attaches up to 7 terminals/printers/plotters • supports single SNA/SDLC link to host at speeds to 19.2K bps • RS-232C interface • supports remote terminal dial-in.

Price • $3,100 (1 port) to $7,000 (7 ports) • maintenance/support charges: $320 per year (1 port) to $680 per year (7 ports).

Comments • optional: rackmount, available 1, 2, 3, 5, or 7 ASCII ports, graphics support packages, paperCRT—allows hardcopy terminals to emulate 3278s, CoaxFACE—exclusive RS-232C—RG62A/U coax cable interface, PCI term software for IBM Personal Computer communications; also PCI 78 networker terminal—3278 • depot service.

☐ 71B/SNA Protocol Converter

Function • Protocol Converter • allows IBM 3271 cluster controllers with 3277/3287 terminals/printers attached to operate in an SNA/SDLC environment • emulates 3274/3276-12 cluster controllers • converts BSC to SNA/SDLC.

Controller/Communications • standalone unit emulates 3274/3276 • attaches 3 3271 cluster controllers with up to 32 attached terminals/printers • supports single SNA/SDLC link to local/remote host • RS-232C interface • supports terminal dial-in.

Price • $3,100 to $7,900 • $320 per year maintenance.

Comments • depot service.

☐ 74D Protocol Converter

Function • Protocol Converter • allows IBM 3278/3279 terminals attached to 3274/3276 controllers to interface with async ASCII hosts and IBM hosts • emulates DEC, Data General, Apple PC, IBM PC, Radio Shack TRS-80, etc • converts SNA/SDLC to ASCII.

Controller/Communications • standalone unit interfaces single terminal device • supports up to 6 ASCII link lines to local/remote hosts at speeds to 9600 bps; supports single SNA/SDLC link to IBM hosts • interfaces with DEC VAX, DG, Ethernet One • RS-232C interface • supports remote terminal dial-in.

Price • $5,200 to $5,425 • $520 per year maintenance.

Comments • rackmount, CoaxFACE RS-232C—RG6ZA/U coax cable interface optional • depot service.

☐ 75B/SNA Protocol Converter

Function • Protocol Converter • allows IBM 3275 with attached 3287 printers to operate in an SNA/SDLC environment • emulates 3274/3276 and converts BSC to SNA/SDLC.

Controller/Communications • standalone unit emulates 3274/3276 and attaches 3275s and linked printers • supports single SNA/SDLC link to local/remote host processor • RS-232C interface • supports remote terminal dial-in.

Price • $3,100 • $320 per year maintenance.

Comments • optional rackmount.

☐ RT73SX

Function • Protocol Converter • allows IBM 3274 and 5251-11 and -12 controllers to connect to X.25 networks via a PCI 73SX protocol converter • converts SNA/SDLC to X.25.

Controller/Communications • standalone unit interfaces 3 IBM 3274 or 5251-XX controllers • supports single link to PCI 73SX converter or NPSI software on IBM S/370, 303X, 308X, 43XX, 8100, or PCMs • transmits HDLC-LAPB • supports remote controller dial-in.

Price • $5,500 standalone version; $5,575 for rackmount unit • $520 per year maintenance.

■ RACAL-TELESYSTEMS, INC

410 North Michigan Avenue, Chicago, IL 60611 • 312-329-0700.

☐ RTI Model 404

Function • Terminal Emulator • allows incompatible word processors to intercommunicate • emulates 15 popular word processors (e.g., Wang, Lanier, etc) • converts ASCII to EBCDIC and vice-versa.

Controller/Communications • standalone unit attaches single word processor • emulation program loaded from cartridge • point-to-point communication at speeds of 300 to 4800 bps; BSC • RS-232C interface • 1024 RAM buffer.

Price • $3,995 to $11,495 • $396 per year maintenance.

Comments • emulates all word processor codes and functions, except graphics on some word processors.

■ RENEX CORPORATION

6901 Old Keene Mill Road, Springfield, VA 22150 • 703-451-2200.

☐ Translator RT 51

Function • Terminal/Controller Emulator • emulates IBM 5251 Model 11, allows direct connection to host; remote connection through 5251 Model 12 emulation.

Controller/Communications • allows up to 24 devices • supports 1 or 2 half-duplex SDLC host links at 19.2K bps • RS-232C/RS-449 interfaces • supports remote terminal dial-in.

Price • $3,950 to $12,990.

Comments • menu-driven has facilities for emulating over 100 ASCII terminals/IBM and Apple PCs; software utilities for uploading and downloading files • vendor on-site, factory service, third-party maintenance.

☐ Translator RT 74

Function • Terminal/Controller Emulator • emulates IBM 3274-41C, -51C, -61C/3276-2, -12 with attached 3278-2, -5 • allows ASCII terminals/printers to replace IBM units • converts ASCII to IBM format.

Controller/Communications • standalone unit attaches up to 32 ASCII terminals/printers/PC • supports 1 or 2 full-duplex SDLC or BSC host links at 19.2K bps • RS-232C/RS-449 interface.

Price • $2,900 to $15,990.

Comments • same as RT 51 • see above.

■ SIGMA SYSTEMS, INC

7221 NW 11th Place, Plantation, FL 33313 • 305-581-8361.

☐ Sigma CS-85

Function • Terminal Emulator • allows any ASCII terminal/printer to interface with IBM or DEC • emulates RJE or custom devices • converts asynchronous to synchronous; synchronous to asynchronous; SDLC ASCII to EBCDIC; full duplex.

Controller/Communications • standalone unit attaches 8 ASCII terminals/printers • supports 4 host links at 9600 bps or 2 at 19.2K bps • RS-232C/RS-449/20-/60-mA current-loop interfaces • optional X.25 interface.

Price • range from $1,495 to $3,995 • maintenance/support $65 per hour 4-hour minimum and expense.

Comments • custom software • third-party and factory service.

☐ CS-85P

Function • Printer Emulator • interfaces ASCII printer or card reader to IBM 3278-2 • emulates DEC serial printers or card readers • converts ASCII/EBCDIC, async or sync serial to parallel format and the converse.

Controller/Communications • connects to IBM 3278-2 RS-232C interface used for bar code readers, badge readers, etc • supports data rates to 19.2K bps.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

Price • $1,495.

Comments • allows printer operation to bypass UART/USART and screen • third-party and factory maintenance.

■ TECHLAND SYSTEMS, INC

25 Waterside Plaza, New York, NY 10010 • 212-684-7758.

☐ Blue Lynx 3270 SNA/SDLC

Function • **Terminal/Controller Emulator** • allows IBM PC to interface with S/370, 303X, and 43XX • emulates 3776-12 cluster controller • converts ASCII to EBCDIC and transmits under SNA/SDLC.

Controller/Communications • printed circuit board plugs into PC • supports single SNA/SDLC link to host processor at speeds to 9600 bps • RS-232C interface.

Price • $690.

Comments • emulation software loaded from diskette • does not support structured field commands.

☐ Blue Lynx S/34/36/38

Function • **Terminal/Controller Emulator** • allows IBM PC to interface with S/34/36/38 • emulates IBM 5251-12 • converts ASCII to EBCDIC and translates under SNA/SDLC.

Controller/Communications • printed circuit board plugs into PC • supports single SNA/SDLC link to host processor at speeds to 9600 bps • RS-232C interface.

Price • $690.

Comments • emulation software loaded from diskette.

■ TELETYPE TECHNOLOGY

148 New York Avenue, Halesite, NY 11743 • 516-423-3237.

☐ Model 64

Function • **Interface Converter** • converts RS-232C to current loop • operates as DTE or DCE.

Price • contact vendor.

■ TELEPROCESSING PRODUCTS, INC

4565 East Industrial Street, Building 7K, Simi Valley, CA 93063 • 805-522-8147.

☐ TP-200

Function • **Protocol Converter** • sync/async converter allows async terminals to attach to sync modems • accepts 8-/7-bit ASCII • data rates from 75 to 19.2K bps, half-/full-duplex and simplex • matches terminal speed to modem speed.

Price • contact vendor.

☐ Model TP-200M

Function • **Protocol Converter** • sync/async converter allows async terminals to attach to sync modems • accepts 8-/7-bit ASCII • data rates from 110 to 9600 bps • matches terminal speed to modem speed • performs error correction via 16-bit CRC • essentially a single-channel stat mux.

Price • contact vendor.

☐ TP-300

Function • **Interface Converter** • converts RS-232C DTE/DCE to AT&T 303 current loop.

Price • contact vendor.

☐ TP-350

Function • **Interface Converter** • converts RS-232C DTE to CCITT V.35 DTE • provides bidirectional data and control signals.

Price • contact vendor.

■ THE THOMAS ENGINEERING COMPANY

2440 Stanwell Drive, Concord, CA 94520 • 415-680-8640.

☐ Thomas MZ-80 Protocol Converter

Function • **Terminal/Controller Emulator** • emulates IBM 3271/3274 controller with 3277/3278 terminals attached; Honeywell VIP-7700; ITT Courier C700 • allows ASCII terminals to replace IBM (and compatible) units.

Controller/Communications • standalone device attaches 32 ASCII terminals • single half-/full-duplex BSC (SNA 4Q84) link to host at speeds to 19.2K bps • RS-232C interface • supports remote terminal dial-in.

Price • $5,120 to $12,120 • maintenance/support charges: one-year included in purchase price; $500 per year thereafter.

Comments • does not support IBM-copy function • optional floppy disk drives • vendor supplies spare parts to the Board Level, or factory repair.

■ TIMEPLEX INC

400 Chestnut Ridge Road, Woodcliff Lake, NJ 07675 • 201-930-4600.

☐ TRU/BLU 74 Protocol Converter

Function • **Terminal/Controller Emulator** • emulates IBM 3274/3276 controllers with attached 3278-2 through-5 terminals • allows any ASCII terminal to replace IBM units • converts ASCII code to IBM form.

Controller/Communications • standalone unit attaches 9 ASCII terminals and associated printers (IBM 3287-type); printers separately addressable • supports 2 half-/full-duplex, BSC/SDLC links to separate hosts at speeds to 19.2K bps • RS-232C interface supports remote terminal dial-up • 28K to 108K RAM buffer.

Price • starts at $3,900.

Comments • Timeplex field service support of TRU/BLU product line.

☐ TRU-BLU 78

Function • **Terminal Emulator** • allows ASCII terminal or PC to interface with IBM 3274/3276 controllers • emulates display/function characteristics of 3278-2 terminal • converts ASCII code to IBM format.

Controller/Communications • standalone unit attaches single ASCII terminal/PC • interfaces with local/remote 3274/3276 via Type A terminal adapter and RG62A/U coaxial cable; RS-232C/parallel interface to ASCII device • transfer data between terminal and TRU-BLU 78 at 2.5M bps • supports remote terminal dial-in • BSC/SDLC protocol.

Price • $1,695.

Comments • has passthrough auxiliary RS-232C interface • supports file transfer for PCs.

☐ TRU-BLU 80 (TB80)

Function • **Terminal Emulator** • allows ASCII terminals to emulate IBM 2780/3780/2770/3741 RJE terminals • converts ASCII to EBCDIC code.

Controller/Communications • standalone unit attaches single ASCII terminal/printer • TB80 interfaces with IBM 3705 over a single link at speeds to 19.2K bps • RS-232C interface.

Price • $1,595.

Comments • allows a PC with async output to drive an IBM peripheral such as the 6670 laser printer.

☐ TRU/BLU 87 Printer Adapter

Function • **Printer Emulator** • allows ASCII printer to replace IBM 3287/3289 • attaches to 3274/3276 cluster controller • converts printer code format to ASCII.

Controller/Communications • standalone unit attaches single ASCII printer • interfaces to 3274/3276 via Type A adapter and coaxial cable; RS-232C or Centronics parallel interface to printer • RS-232C passthrough port allows IBM and ASCII lists to share single printer • accepts SNA/SDLC or BSC data streams.

Device Emulators & Protocol, Code, Async/Sync & Interface Converters

Price • $1,975.

Comments • outputs any ASCII character (including control character) when prompted by EBCDIC input; allows use of special functions like subscripts, boldface, and half-spacing.

■ UNIVERSAL DATA SYSTEMS

5000 Bradford Drive, Huntsville, AL 35805 • 205-837-8100.

☐ EC 100

Function • Protocol Converter • async/sync converter; allows async terminal/printer to attach to half-/full-duplex sync modems • performs error control • 4K RAM buffer • RS-232C interface.

Price • $500 • one-year warranty.

☐ Model 210 A/S-P

Function • Protocol Converter • async/sync converter; allows async terminals to attach to full-duplex sync modems • RS-232C.

Price • $250 • one-year warranty.

■ VERSITRON, INC

6310 Chillum Park, NW, Washington, DC 20011 • 202-882-8464.

☐ R42M Interface Converter

Function • Interface Converter • converts RS-232C DTE/DCE to MIL Std 188C • performs signal inversion.

Price • $368.

☐ Data Set Adapters

Function • Interface Converter • converts RS-232C, MIL Std 188-XXX, CCITT V.35, RS-449 interface to any combination • interfaces DTE to DCE • performs signal inversion.

Price • $368 to $599 depending on interface combination.

☐ R 42 DSU Interface Converter

Function • Interface Converter • converts CCITT V.35 to MIL Std and EIA interfaces • performs signal inversion.

Price • $457.

☐ R 42 S Interface Converter

Function • Interface Converter • converts RS-232C DTE/DCE to RS-449 or MIL Std 188-114 • performs signal inversion.

Price • $600.

☐ Electronic Relay Series

Function • Interface Converter • converts RS-232C, MIL Std 188-XXX, TTY, TTL, DTL, WECO, CCITT V.35 interfaces to any combination • packaged as plug-in dry-contact relay • DTE and DCE models available.

Price • $101 to $329 depending on interface combination.

☐ CD/R Interface Converter

Function • Interface Converter • converts RS-232C, RS-422, RS-423, RS-449, MIL Std 188-XXX, TTL, WECO, and CCITT V.35 interfaces to any combination • DTE and DCE models offered • packaged as cable driver/receiver cards with enclosures.

Price • $53 per card • $333 for 265 card chassis.

■ WESTERN DATACOM

5083 Market Street, Youngstown, OH 44512 • 216-788-6583.

☐ Datacom 1000 Code Converter

Function • Code Converter • allows incompatible ASCII terminals to directly intercommunicate • translates 44 display functions such as read/write cursor address, program function keys, shift function keys, etc.

Controller/Communications • standalone unit connects between terminal and modem • supports 8-bit/no parity or 7-bit/even parity ASCII/async • data rates to 19.2K bps • XON/XOFF and CTS/DSR controls • supports dual baud rate modems (AT&T 212, Vadic 3400, V.22 bis, etc), dial-up or dedicated line • RS-232C; RS-423 or 20-mil current-loop devices supported by 2 lines.

Price • $875.

■ WINTERHALTER, INC

3853 Research Park Drive, Ann Arbor, MI 48104 • 313-662-2002.

☐ Data Talker II

Function • Terminal/Cluster Controller Emulator • emulates IBM 3274/3276 with attached 3278 terminals • allows ASCII PC to replace IBM terminals • converts ASCII to IBM format • version offered emulates IBM 3780.

Controller/Communications • standalone unit attaches single PC • supports single SNA/SDLC link to host at speeds to 9600 bps • RS-232C • supports remote terminal dial-in.

Gateway Services • version offered for X.25 and BSC communications.

Price • $995 • first year maintenance free.

• END