

# All About Alphanumeric Display Terminals

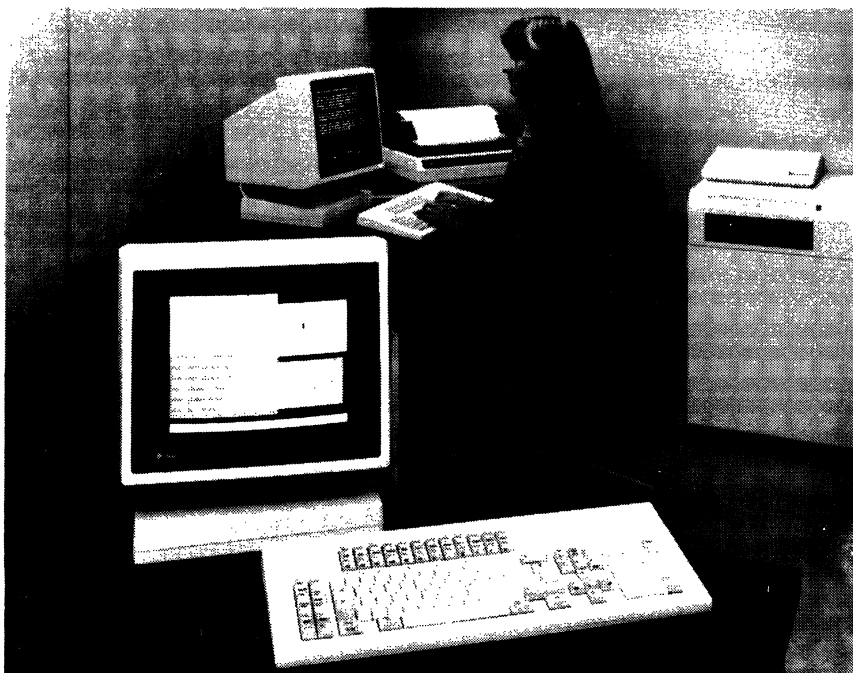
The video display terminal (VDT, or CRT, as it is commonly referred to) is the principal interface between people and computers. As the computer (particularly the micro-computer) becomes pervasive in today's business world, more and more people are being exposed to this popular business tool. Originally invented as a "glass teletype," an alternative to using a teleprinter terminal as a computer operator console, the display terminal has evolved to the point where it is a primary component in the vast majority of modern computer applications, including data entry, inquiry/response, program development, business and scientific graphics, word processing/text editing, CAD/CAM, and many others. For the purpose of this report, we will focus on alphanumeric display terminals designed for general-purpose business applications.

The steady introduction of improvements in CRT design and functional capability, such as editing, highlighting, protected fields, split-screen functions, color screens, and ergonomic housing, has contributed to the growth of the market. However, the single most important factor in today's display terminal market, in terms of how it affects both the vendor and the end user, is the continuing downward trend in pricing. Historically, price has been set in proportion to capability; dumb terminals have carried the lowest price tags, with fully featured smart editing terminals on the high-end of the price scale. While this is still true, advances in technology have caused the lines of distinction between what is dumb and what is smart to be blurred; meanwhile, prices have fallen, drastically in some cases. The classic dumb terminal, as it was known ten years ago, is now virtually extinct.

**The traditional alphanumeric display terminal, threatened by the onslaught of microcomputers with terminal emulation capabilities, remains alive and well. In fact, market studies consistently show a steady, stable growth for this market in the next few years. This report focuses on non-user-programmable alphanumeric display terminals designed for general-purpose business applications. It includes a brief historical summary of the market; current market trends; developments in ergonomics; and a look at the industry's major segments. Also included are comparison columns detailing the specifications of 352 display terminal models offered by 87 vendors.**

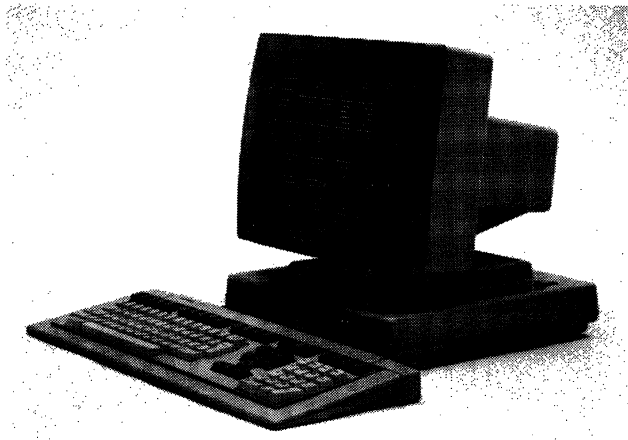
As with all segments of the hardware industry, technological improvements have led to lower prices for the user. Nowhere is this more obvious than in the display terminal market. Consider that about five years ago only the most basic dumb ASCII terminals carried a price tag below \$1,000. Today, the low-end price has fallen to below \$400, with the majority of basic smart terminals available in the \$500-to-\$1,000 range. Prices in the IBM 3270 segment of the market, traditionally much higher than in the asynchronous segment, have also fallen. Where once they sold for over \$2,000, basic 3270-type terminals can now be purchased for around \$1,000; the prices fall even lower when purchased in quantity.

These lower prices have reduced profit margins for vendors and have made competition in the terminal market tougher ▶



*The AT&T 6500 Multifunction Communication System is made up of modular controllers, terminals, personal computers, and printers; up to 32 devices can be connected in a cluster, and can communicate directly with multiple hosts using both synchronous and asynchronous protocols. Standard and multitasking displays are available.*

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Since Digital's introduction of the VT220 in 1983, a large market for VT220 emulating terminals has sprung up. Ampex Corporation has added the Ampex 220 to its terminal product line. Selling for \$749, the Ampex 220 provides a 14-inch display screen with 80- or 132-column display capability.

▷ and riskier than ever. This past year saw ITT subsidiary Qume unveil its QVT 101, a smart terminal with a price tag of \$395. Many of Qume's competitors accused the company of attempting to buy market share, saying that Qume could not be making money on such a low-priced terminal. Nevertheless, within a few months, most of Qume's major competitors had also introduced a sub-\$400 unit. The problem at this end seems to be one of distribution; at such low prices, distributors are simply unwilling to carry them, given the low margins that they will bring. Still, the market remains vigorous, and new vendors continue to enter. The real winner in all of this, obviously, is the user, who continues to gain more functionality per terminal dollar.

Today, there are somewhere in the neighborhood of 10 million display terminals installed throughout the United States. However, the healthy growth of this market has been jeopardized by the popular acceptance of the microcomputer by corporations. As microcomputer prices also tumble, many firms are using them as multipurpose workstations that usurp some of the functions traditionally performed by display terminals. As microcomputer-to-mainframe links improve, more and more microcomputers will be able to perform terminal tasks in addition to microcomputing tasks. Datapro has seen a drop in the number of companies entering the terminal market in the past few years, as well as a small shakeout. At the other end of the spectrum, however, lies the multiuser microcomputer, that provides another market into which the display terminal vendor can sell. The days of tremendous growth in the terminal industry would appear to be over; and, in fact, many of the established terminal vendors have experienced financial difficulties in the past year. But the display terminal will remain an important part of the computer industry for the foreseeable future.

### GENERAL CATEGORIES

All of the terminals covered in this report have three features in common: 1) each has a keyboard that can

generate, and a monitor that can display, a full alphanumeric character/code set; 2) each has the capability to send and receive data via communications lines to a remote host computer; and 3) each is marketed for general-purpose use in the United States and Canada, and is identified as a distinct product to end users.

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*Dumb* terminals offer a limited number of functions; most feature teletype compatibility.

*Smart* terminals offer extended functions, such as editing and formatted data entry. In some cases, the user can tailor the terminal to fit his/her own application via a limited degree of programming, such as format creation and parameter definition.

*User-programmable (or intelligent)* terminals feature software support. The vendor typically provides an operating system, an assembler- or compiler-driven programming language, subroutines, I/O utilities, one or more protocol emulators, and one or two application programs, such as data entry and text editing.

These categories have been squeezed from both sides, however. At the high end, user-programmable terminals have all but given way to microcomputers; very few companies continue to manufacture these high-priced terminals. At the low end, advances in technology and plunging prices have led to the extinction of the dumb terminal as such. Today, virtually all display terminals on the market fall into the smart terminal category.

### MICROPROCESSOR CONTROL

All display terminals currently manufactured are microprocessor-controlled. Microprocessor-based programs (firmware) reside in ROM or PROM memory. ROM-resident programs, which are inexpensive when reproduced in large quantities, control those features which are permanent and unchangeable; while PROM-resident programs are typically produced in smaller quantities and implement customized or modifiable features. Either type can be replaced by simply removing the old chip and putting in a new one. This flexibility is highly beneficial to the manufacturer, since older equipment can be updated and nonstandard customer specifications can be fulfilled without costly hardware changes. Theoretically, program interchangeability might also benefit the user, but in practice it is doubtful that the requirements of a particular user will change often enough to make it a great advantage. The fact that PROM replacement generally must be done at the factory or by a field service technician precludes frequent PROM replacement.

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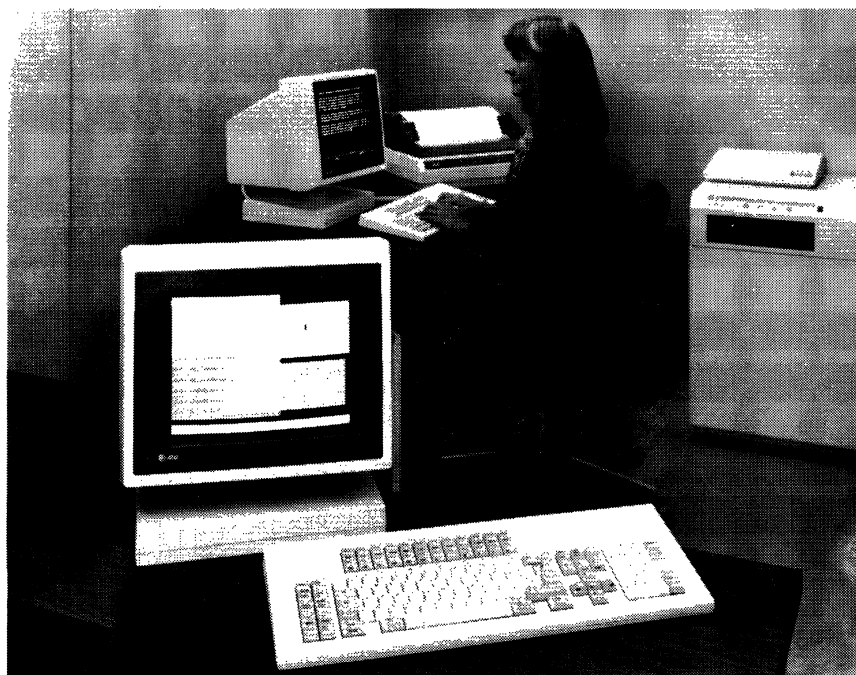
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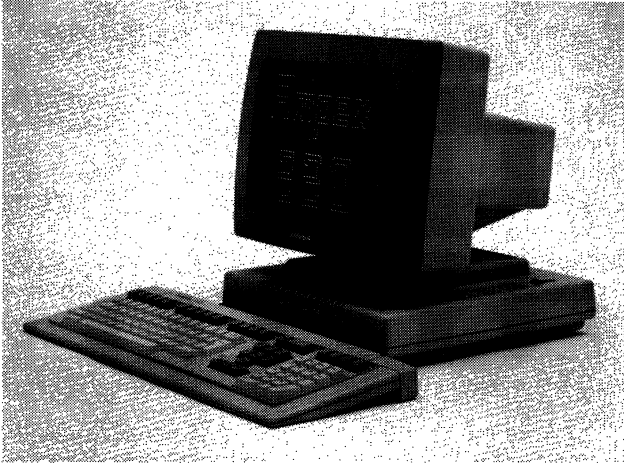
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board and displayed on the screen, implement special features, set control parameters, etc. Firmware specifications are generally determined at the time of order, and once the firmware is in place, execution is transparent to the user. Some vendors have predetermined programs from which to choose; a few permit users to submit their own firmware specifications.

### DISPLAY MEDIA

The vast majority of display terminals manufactured today use a cathode ray tube (CRT) as the display medium. The popularity of this device stems from its flexibility, high capacity of characters, and relatively low cost.

In addition to being able to display alphabetic and numeric characters in virtually any format, the CRT can highlight characters by means of underscoring, reverse video, blinking, or varying levels of brightness. Some CRT terminals can display double-size characters. Today, more and more CRT terminals have a graphics character set for creating forms and report formats on the screen. Some CRTs also permit the creation of business graphics—for example, bar, column, and pie charts reflecting sales, income and expense, inventory levels, etc. Interactive graphics or engineering graphics, on the other hand, is a completely different discipline which requires a high-resolution graphics terminal. Graphics terminals can also display alphanumeric characters, but they are considerably more expensive. Graphics terminals which are used primarily for scientific or laboratory applications are not included in this report.

Other types of alphanumeric displays have existed for years, and at one time were thought to be a serious challenge to the CRT. Examples of these are LEDs (light-emitting diodes), which are very popular in calculators and point-of-sale (POS) terminals, and gas-discharge displays such as IBM's 3290. In fact, there is quite a bit of research and development going on concerning flat screen, plasma displays; many industry observers expect these new displays to become a factor in this market very shortly. The chief advantages of these alternate types of displays are that they provide extremely sharp images, and are more compact than the traditional CRT. However, as of this time, they remain quite expensive, and have found only a small niche in certain specialty applications.

### ERGONOMICS

According to the American National Standard ANSI 294.1-1972, *ergonomics* is defined as "a multidisciplinary activity dealing with the interactions between workers and their total working environment, plus such traditional and environmental aspects as atmosphere, heat, light, and sound, as well as of tools and equipment of the workplace."

Display terminal manufacturers have become increasingly aware of the need to consider human factors, or ergonomics, in the design of their equipment. The trend toward making CRTs more "operator-friendly" began in Europe, particularly in the Scandinavian countries, where powerful unions representing clerical workers have implemented

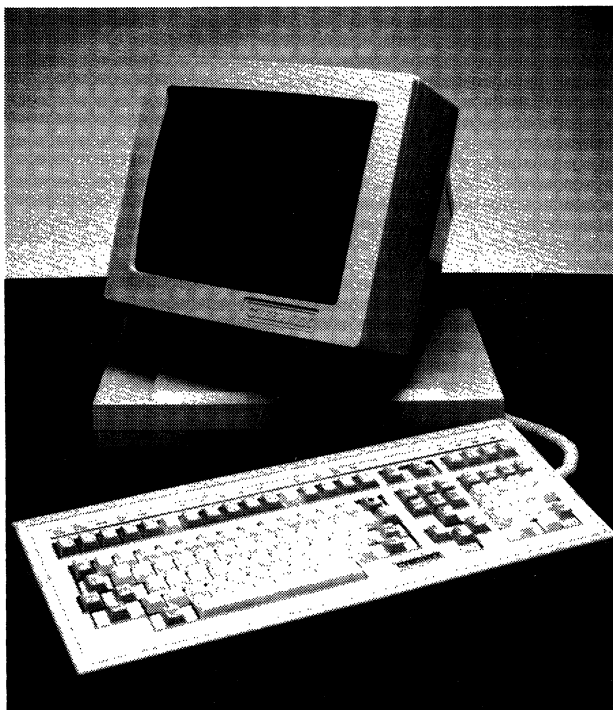
rigid guidelines as to what types of display terminals their members will use.

While no such guidelines are currently in effect in the United States, virtually all CRT manufacturers have recognized market opportunities in ergonomic designs, and are attempting to attract customers through marketing campaigns emphasizing the human factors that influenced the design of their terminals.

The average operator of a display terminal is concerned primarily with two components with which he or she has the most interaction; the keyboard, for input of data, and the display screen, for verifying what was keyed and for reading the output data. Ergonomic design improvements are therefore concentrated on these two components.

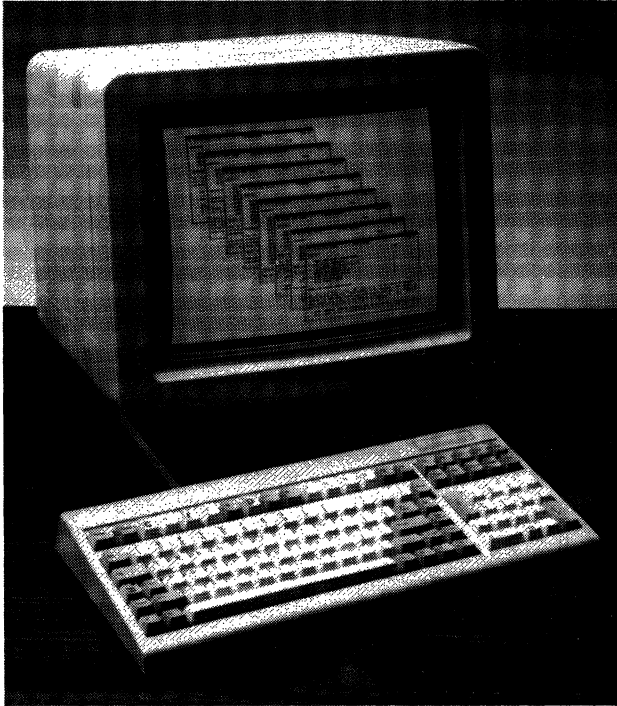
Virtually all display terminal vendors now offer keyboards that are detached or detachable. Connected to the display console via a cable or coiled wire, these keyboards may be placed at some distance (usually 3 to 6 feet) from the console, allowing the operator to place the keyboard in the most comfortable position(s) while working at the terminal.

The layout of the keyboard is also a concern. Most keyboards feature a typewriter-style layout, for ease of training personnel already familiar with a typewriter's key arrangement. Dedicated (separate) numeric keypads are also generally available for applications requiring fast numeric entry; these duplicate the key arrangement of a pocket calculator or adding machine. In addition, some vendors



*Cybernex Limited, of Canada, manufactures a broad line of display terminals offering emulation of several popular terminal models. Vendors whose terminals Cybernex emulates include Burroughs, Data General, Digital Equipment, Hewlett-Packard, Honeywell, and IBM.*

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*Ann Arbor Terminals recently introduced the VXL display terminal. The VXL provides display screen capacities ranging from 36 lines by 80 columns up to 60 lines by 160 columns. The VXL can connect to multiple hosts, and offers a multiwindow display.*

▷ have added a palm rest for the numeric pad, for operator comfort. Many vendors also offer sculptured key caps in place of flat key caps, to facilitate speed of data entry and improve operator comfort. For keyboard feedback, vendors may offer either audible or tactile (touch-sensitive) key click, which tells the operator that the key has been depressed far enough to register.

Another important design factor to be considered is the slope and thickness of the keyboard assembly itself. Most keyboards manufactured today are either sloped or stepped, and the optimum profile angle generally is believed to be between 5 and 15 degrees. It has also been determined through studies that the thickness of the keyboard, or the distance from the base of the keyboard to the home row of keys, generally should not exceed 30 mm. The vast majority of keyboards manufactured today have a low-profile design that conforms to the German DIN (Deutsches Institute fur Normen) standard for ergonomics.

Operator eyestrain or fatigue is a consideration which must be dealt with when designing a CRT display screen. Most display screens produced today are etched or contain a bonded faceplate to reduce glare. A few companies are now offering display screens that are flat, instead of curved at the edges. These flat displays provide a more uniform display over the entire screen, particularly around the edges. A method of glare reduction found to be the most popular among manufacturers is the addition of tilt and/or swivel adjustments. These adjustments not only allow the operator to place the viewing area in a position to avoid

glare, but also to place the screen at the most comfortable viewing angle.

The phosphor color and size of characters also contributes to their legibility. Green phosphor has replaced white as the standard for the majority of display terminal models. Amber phosphors are now very popular in Europe, and many domestic vendors now offer amber phosphor characters in this country. However, there is currently no scientific proof that one phosphor color is easier on the eyes than another. Character phosphor remains a matter of personal preference. The vast majority of display terminals on the market today utilize the dot matrix technique to form characters. The more dots that are contained in the character cell, the sharper the character will appear. For years, 5-by-7 characters were the standard of the industry; today, 7-by-7 and 7-by-9 characters are more common, and they provide a clearer character. Some vendors have incorporated higher refresh rates to reduce image instability, or flicker, in the characters, which further improves their legibility.

The size of the characters generated depends on the size of the screen and the display format used. Characters will be larger on 15-inch (diagonally measured) screens than on 12-inch screens; likewise, characters will be larger in an 80 character-per-line format than in a 132 character-per-line format. For applications requiring a 132-column format, a 14- or 15-inch display screen is preferable.

The most recent trend in terminal ergonomics is toward reduced size. Today's display terminals provide a reduced "footprint" size, that takes up less desk space.

Individually, these improvements may be slight, but when considered cumulatively, they represent a marked improvement over the terminals of five years ago.

All of the above features merit serious consideration by potential terminal buyers. Although many ergonomic features may be ordered from the terminal manufacturer, the increased emphasis on ergonomics has led to the springing up of a number of specialty companies that offer devices that can be *added* to terminals to make them more user-friendly. Several companies market optical display filters, glare shields, noise shields, etc., which are designed to fit most major displays. Modular office furniture manufacturers also offer work stations that provide tilt/swivel bases for terminals not equipped with these features.

As user awareness of human factors grows, we see ergonomic considerations in the U.S. becoming not simply a market opportunity, but a mandate. Controversy continues to grow regarding the effects that constant use of a CRT has on the health of the operator. Workers whose jobs require them to sit at the display all day have complained of headaches, dizziness, back pains, and nausea. The National Institute for Occupational Safety and Health (NIOSH) has conducted research studies on this subject (copies of these reports can be obtained from NIOSH). While no definite conclusions have as yet resulted from these studies, it is clear that these concerns are a significant matter that must ▷

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TABLE 1. IBM 3270 COMPATIBILITY

Vendor	System/Model	IBM Controllers Emulated	IBM Displays Emulated	Personal Computing Capability
AT&T	6500	—	3178/3179	Yes
AT&T	E4540	3274/3276	3278/3178/3279	No
Beehive	ATL-3270/ATL-3270MS	3276	3275/3276	No
Braegen	8500 (ELAN)	3274	3278/3180	Yes
Carterfone	7276	3276	3276	No
Computer Communications	Group 8000	3274	3276/3278	No
Comterm	5270/6270	3274	3278/3178	No
Control Concepts	EM-3275/3276/ CC-3275/3278	—	3275/3276/3278	No
Datastream	8178/8180	3274/3276	3178/3180	No
Davox	1911/2911	3274	3278	Yes
Harris	Challenger	3274	3178/3180/3179	Yes
Icot	700/701	—	3278	No
Informer	370	3276	3276/3278	No
CIE Systems	CIE-7800/7850	—	3178/3278	Yes
ITT Courier	9000	3274/3276	3178/3278/3179/3279	Yes
Lee Data	Series 300/400	3274	3178/3278/3279/3180	Yes
Memorex	207X	3274/3276	3178/3278/3279/3180	Yes
NCR	7950	3274	3278	No
Nixdorf	8270	3274	3278	No
Paradyne	PDS 270	—	3276/3278	Yes
PHAZE Information Machines	P3278/P3279/P9020	—	3278/3178/3279/3179	Yes
Term-Tronics	3270X	—	3275/3276/3278	No
Term-Tronics	Miracle 178/179	—	3178/3278/3179	No
Telex	TC 270	3274/3276	3276/3178//3278/3179/3279/3180	Yes

➤ be addressed by both vendors and buyers. As of this time, they are being addressed out of concern for market share in a highly competitive market. It is expected, however, that domestic unions will follow the lead of European unions and place standards for VDT use in future contracts. Ergonomic features will then be mandatory.

### MAJOR DISPLAY MARKETS

The alphanumeric display terminal market generally is acknowledged to contain two major segments: the ASCII (asynchronous) terminal market, and the IBM 3270 (synchronous) terminal replacement market. Both segments continue to enjoy healthy growth, particularly the ASCII market. And, as mentioned previously, low prices and increased price/performance have made display terminals more attractive than ever to potential users, and continue to play a major role in the direction of each of these segments.

### IBM's Best-seller, the 3270

The IBM 3270 has strongly impacted the alphanumeric display terminal market since deliveries began late in 1971. The first generation of devices, which were discontinued as IBM products in late 1982, included the 3271/3272 control units, 3275 display station, 3277 display, and 3284/3286/3288 printers. In 1977, the product line was radically overhauled, resulting in the announcement of a second generation of components (the 3274 control unit, 3276 control/display, 3278 display, and 3287/3289 printers) that offered increased capabilities at prices much lower than comparable older models. Along with that announcement came major price reductions on the older equipment. In late 1979, color displays and printers were added to the family.

In March 1983, IBM made some long-awaited changes and enhancements to the 3270 product line. Unveiled were the 3178 Display Station, a smaller and less expensive version of the popular 3278 Model 2 display; new versions of the 3274 Control Unit, offering improved price/performance; the 3290 Information Panel, a gas plasma display; the 3299 Terminal Multiplexer, a coaxial cable eliminator; price reductions of approximately 10 percent on older existing 3270 models; purchase discounts of 40 percent on the 3178 for quantities of 3,000 or more, with the conversion of leased 3278s applying to that quantity; and an option permitting the attachment of the IBM Personal Computer to the 3278 Display Station. These announcements were followed in October with the introduction of the 3270 Personal Computer, a version of the firm's PC for use as part of a 3270 cluster. The 3179 color display and 3180 display, both compact terminals along the same line as the 3178, were unveiled in March 1984.

These changes were made by IBM to protect their large (and lucrative) 3270 installed base. This installed base numbers well over 1½ million units. The independent 3270-compatible terminal vendors, through lower prices or improved price/performance, were seriously eroding IBM's share of the market. These independents include vendors such as ITT Courier, Telex, AT&T, Lee Data, Memorex, and several others. In order to remain competitive, these vendors were forced to reply to the IBM announcements with new products and/or price reductions of their own. Some could not, and a small shakeout occurred, with Raytheon Data Systems (once IBM's number-one competitor in this market) and MDS Trivex exiting the market.

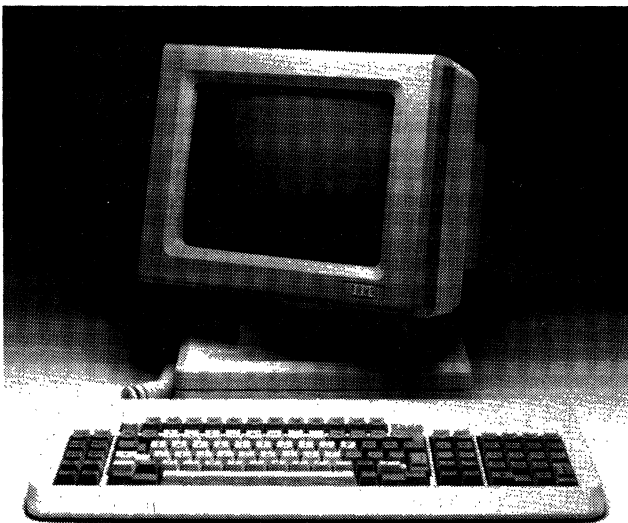
By adding the 3270-PC, as well as Personal Computer attachability, to the 3270 system, IBM has addressed a ➤

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▷ threat which is as much internal as it is competitive. The overwhelming acceptance and popularity of the IBM Personal Computer poses a real threat to the entire display terminal industry. As personal computing becomes the rule, and not the exception, in most major corporations, IBM is moving to protect its huge 3270 installed base by incorporating personal computing into the 3270 system. Most of the independents now offer some type of personal computing with their product lines, either via their own equipment or through IBM Personal Computer attachability. In the near future, some type of personal computing capability is likely to become requisite for competing in this market.

With the increased pressure from IBM, it is now more important than ever for the independent vendors to offer a complete line of 3270-compatible products. Today's successful independents must couple a full range of products with lower prices, improved price/performance, and added value, in order to create an opportunity to penetrate an IBM shop. International Data Corporation, a market research firm located in Framingham, Massachusetts, estimated the installed base of IBM 3270 and plug-compatible terminals to be nearly 3 million units at the end of 1984, with IBM holding nearly a 60 percent share. Clearly, even a small percentage of this market can be extremely profitable for an independent vendor.

In addition to the 3270-compatible vendors, some ASCII terminal vendors have invaded the 3270 market through protocol conversion. On a 3270 network, synchronous terminals can be replaced with asynchronous terminals coupled with protocol converters. These devices allow the ASCII terminal to support the functional characteristics of the 3270 terminal. The advantages of this strategy are twofold—ASCII terminals remain less expensive than their 3270 counterparts, and users with both IBM and non-IBM hosts may utilize the same terminals to access each.



*ITT Courier now offers a line of compact terminals that are plug-compatible with the IBM 3270 family of terminals. The ITT 1778, an alternative to the IBM 3178, can attach directly to IBM 3274 and 3276 controller ports.*

What is in store next for the venerable 3270 family? Most industry observers predict that IBM's next step will be the introduction of a new generation of 3274 control units, which will integrate new functions into the unit. Some of these functions may be the attachability of personal computers and/or ASCII terminals, with switch-selectability between the 3270 and ASCII environments.

Table 1 provides a summary of the major 3270-compatible vendors and their products. This table does not include those products that require a protocol converter for 3270 emulation.

### The ASCII Terminal Market

The ASCII display terminal market is the largest segment of the two major display markets, with regard to number of vendors, number of units marketed, and quantity sold. This market originated as the Teletype replacement market, with units intended to replace the highly popular Teletype ASR 33/35 terminals. Although today not many of the ASCII terminals purchased are actually replacing the older Teletype units, the ASCII terminal market is still often referred to as the teletype-compatible market.

Manufacturers of ASCII terminals generally aim their products at educational and commercial users who require large numbers of low-priced terminals for applications such as order entry and time-sharing.

As was mentioned earlier in this report, price is a key factor for success in this market. The continuing price war involving the low-end entries in the ASCII terminal market has made the recent activity in this segment even greater than in the past. Initially, only the truly "dumb" terminals (like the original dumb unit, the Lear Siegler ADM 3) were available for less than \$1,000. Now, features such as block mode transmission and editing capabilities are available at below traditional dumb terminal prices. In addition to price cutting, vendors are attempting to make their offerings more attractive to potential buyers by adding enhanced features such as business graphics, split-screen or windowing capabilities, and a variety of visual attributes. ASCII terminal vendors are also paying a lot of attention to ergonomics, incorporating features such as tilt/swivel screens and low-profile keyboards into their products.

Leaders in the ASCII field generally provide a full range of terminal models ranging from low-end units to editing models. The current leaders include Wyse Technology, TeleVideo Systems, Applied Digital Data Systems (ADDS), Esprit Systems, Lear Siegler, and ITT Qume. An active but somewhat separate subsection of the ASCII terminal market consists of the Digital Equipment Corporation VT100, its successor, the VT220, and those terminals that offer Digital emulation. A large number of vendors are involved in the Digital Equipment Corporation emulation market, including those general-purpose terminal vendors mentioned above; in fact, most major ASCII terminal manufacturers provide at least one Digital emulator in their product line. ▷



## All About Alphanumeric Display Terminals

► As a by-product of Digital emulation, vendors are now providing ANSI X3.64 code compatibility on their terminals. The American National Standards Institute (ANSI) first published the X3.64 standard for two-dimensional data devices in 1977. The goal of the standard was to standardize control codes for all terminals. The Digital VT100 was the first display terminal to conform to the ANSI standard, and the VT220 also conforms. In order to provide true Digital emulation, the makers of Digital emulators also are required to provide ANSI X3.64 code compatibility on their products.

In addition to Digital, most of the major mainframe and minicomputer vendors offer terminal product lines for use with their computer systems. Hewlett-Packard claims a large installed base of display terminals, as do Burroughs, Data General, and Sperry.

### DISPLAY TERMINAL CHARACTERISTICS

The accompanying comparison charts summarize the characteristics of 352 commercially available alphanumeric display terminals from 87 vendors. Nearly all of the information was supplied by the manufacturers during November and December 1985. Their cooperation is acknowledged and greatly appreciated.

Datapro sent repeated requests for information to over 100 companies known or believed to be in the display terminal business. The usable responses summarized in our charts provide a comprehensive picture of the commercial display terminals that are currently available in the United States and Canada. *The absence of any specific company from our charts means that the company either failed to respond to our repeated information requests or was unknown to us.*

The chart entries and their significance are explained in the following paragraphs.

### TERMINAL DESCRIPTION

Display terminals are available in one of two basic terminal configurations: *stand-alone* and *cluster*. Stand-alone units are typically those that contain all components that support the operation of the terminal including display, keyboard, interface, and power supply within a single cabinet. Auxiliary units such as printers, cassette tape drives, etc., are usually external devices. Sometimes a stand-alone unit includes separate cabinets for terminal control and keyboard/display sections, and it may even include one or two separate displays. A cluster configuration typically includes a terminal control unit and a number of individual cable-connected keyboard/display units that can be located several thousand feet from the controller. In some cases, the vendor provides a multiplexer that accommodates a cluster of stand-alone terminals. The size of a cluster arrangement is defined by the *maximum number of displays per controller*.

Terminals that are designed to be hand-held or to be hand-carried are noted in the entry *transportability*.

Some terminals are designed as direct replacements for other terminals. In the alphanumeric display terminal market, replacement terminals fall into two principal categories: those designed to replace an IBM family terminal are indicated as having *IBM compatibility*; and those designed to replace a terminal in the ASCII/Teletype market are indicated as having *teletype compatibility*.

Some vendors provide *other compatibility*, and can replace terminals such as those produced by Burroughs, Digital Equipment, Honeywell, and Sperry. For example, a wide variety of vendors market terminals that are compatible with the Digital VT100 or newer VT220.

Either of two types of compatibility may be offered: transmission compatibility or "plug-to-plug" compatibility. Transmission compatibility requirements include identical protocol, code and unit code structure, timing, asynchronous or synchronous operation, and transmission speed. Some vendors even provide identical cables, which is a cost-effective consideration in a local cluster environment. Most vendors with transmission-compatible units offer additional features and functions that the original vendor's equipment does not have, implemented via minor changes in host software. Units with true plug-to-plug compatibility not only have identical transmission parameters, but also identical features and functions; no alteration to host software is necessary, but no enhancements beyond the original vendor's equipment are available.

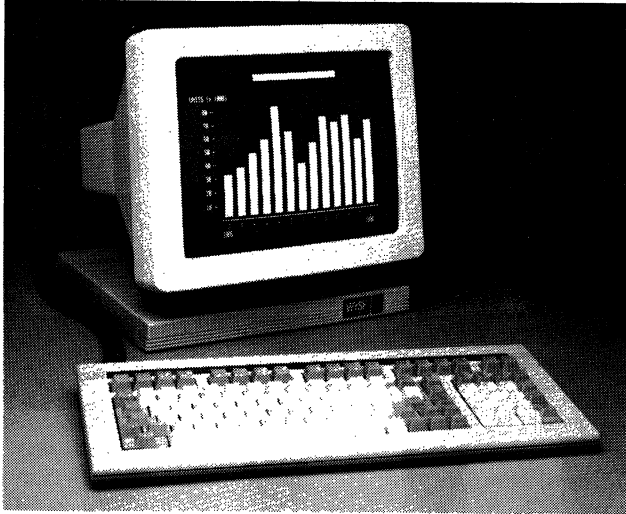
### DISPLAY PARAMETERS

Information displayed on the screen of a CRT is generally arranged according to an orderly format consisting of a maximum number of printed lines per screen and characters per line. The electronic circuitry that produces the display image is designed to a specified set of parameters that define the *display capacity* (i.e., the maximum number of display positions) and the *screen arrangement* (i.e., the maximum number of displayable lines and displayable characters per line). The most common display capacity is 1920 characters arranged in 24 lines of 80 characters. Many vendors offer 132-character display lines, which can eliminate the need to revise or patch software designed for standard 132-column printers or to maintain dual sets of programs for 80-column and 132-column output.

In most terminals, the number of characters that can be stored by the terminal's display memory equals the maximum screen capacity. In some terminals, however, storage is provided for more characters than can be displayed on the screen at one time. This additional data may be stored character-by-character, by the line, or by the "page" (a full screen of data). *Memory capacity* defines the total number of characters, lines, and pages that can be stored in the terminal's display memory.

Information is displayed in a rectangular area, slightly smaller than the total surface of the display screen. The factors that determine the required size of the *screen area* are the display arrangement and the size of the displayable ►

## All About Alphanumeric Display Terminals



Since its first terminal shipments in 1982, Wyse Technology has risen to the leadership position in the ASCII display terminal market. The company now boasts an installed base of over 250,000 terminals. The WY-50+ is an enhanced version of the WY-50, Wyse's most successful terminal model.

▷ characters. For example, the typical 1920-character display utilizes a 12- or 15-inch (diagonal) screen area.

Ergonomic factors are becoming increasingly important as terminal features. One such feature gaining in popularity is a *tilt and/or swivel screen*. This feature provides for the mounting of the display monitor onto a separate desktop base or pedestal, and allows the operator to twist the screen vertically ("tilt") and/or horizontally ("swivel") to the most advantageous position for viewing.

The set of *total displayable symbols* and the method of *symbol formation* are functions of the character generator, which accepts coded characters (typically ASCII or EBCDIC) from the computer and keyboard and converts them to a number of dots or strokes so that the form of the symbol or image can be displayed. In CRTs, characters are formed almost exclusively by the dot matrix technique. Each character is formed within a matrix of dots, and only those dots required to form the specific character are intensified. For example, a dot matrix that contains 35 dots is typically arranged 7 dots high by 5 dots wide.

Characters can be made clearer by increasing the number of dots within the matrix. The stroke technique forms characters by drawing short straight lines between specified points. *Character phosphor* refers to the physical coating of phosphorous on the back side of the screen which, when illuminated, creates the displayed characters. The type of phosphor used defines the color of the displayed character, as well as the persistence of the phosphor (a long-persistence phosphor is less likely to cause image flicker problems than a short-persistence phosphor; however, the image of a long-persistence phosphor is more likely to smear when lines are scrolled). Among the more common phosphors available are P4 (white), and P31 or P39 (green). Amber and yellow-green phosphors are also available on some terminals.

Display arrangement, display medium, character phosphor, and symbol formation all have a great impact on display clarity. Several units should be tested to decide which is easiest on the operator's eyes.

Attention can be drawn to vital information and different types of significant data can be visually separated by the use of the following display features:

- **Color**—characters or fields can be separated by color, which also can be used to identify conditions or types of data. IBM's color display, the 3279, is currently emulated by many of the independent 3270-compatible vendors.
- **Graphics**—bar charts, pie charts, and graphs may be used to present certain types of information. In most cases, an affirmative answer in this category indicates the presence of line drawing or special graphics character sets. It generally does *not* indicate the presence of highly sophisticated graphics capabilities found on graphics-dedicated terminals.
- **Underline**—highlights significant information by underlining.
- **Blink**—highlights significant information by causing it to blink off and on.
- **Blank (security)**—sensitive information is transmitted, but not shown on the screen.
- **Bold**—highlights significant information by displaying it at a different brightness level.
- **Reverse**—highlights significant information by displaying a negative image of it, e.g., when normal data is displayed in white on a dark background, the highlighted character or field is displayed in dark on a white background.
- **Double size**—highlights significant information by displaying it in characters which are of larger size than normal. Double height, double width, and/or double height/width characters may be supported.

Some terminals offer several of these display features, which can be combined to produce even more effective results. The features are programmable (usually via the keyboard), and can be used on a character-by-character basis, or in a designated field.

Some applications require viewing more data than can be displayed at one time. The following features satisfy this need:

- **Scroll**—this feature moves all displayed lines of data up or down by one line as a new line is added and an existing one removed. In some cases, the first line is linked with the last so that the data is rolled but not lost. In others, data is lost as it rolls off the screen. This feature permits the user to scan through a volume of data to locate key information. ▷

## All About Alphanumeric Display Terminals

▷ Many vendors now feature smooth scrolling, in which data is rolled or scrolled smoothly up or down (much the same as the credits at the end of a movie).

- *Paging*—this feature defines and stores two or more discrete frames or pages of data and displays any selected page.

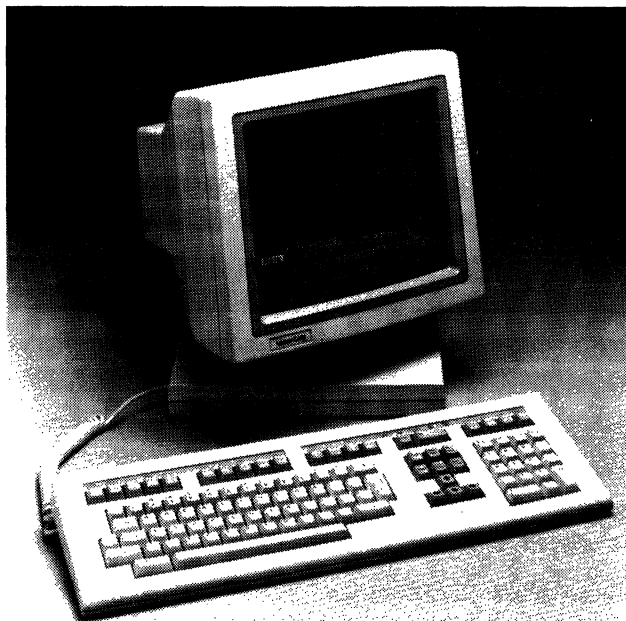
Although scroll and paging features can be software implemented in the host computer, the comparison chart entry applies only to those terminals that implement the feature via hardware or firmware. Many terminals provide the scroll feature, but relatively few provide paging. Some provide both features.

The cursor marks the position on the screen where the next character will be read or written from memory. Cursor controls enable the operator to maneuver the cursor on the screen and facilitate the input and output of data. Different manufacturers use a variety of symbols to indicate the cursor position on the screen, for example, an underline, a reverse video block, or a blinking character. Some terminals allow the operator to choose among several types of cursor symbols; the most typical feature being *selectable blinking cursor*. Some terminals also have *addressable/readable cursors* that enable the position of the cursor to be written or read by the host computer under program control.

Most businesses use printed forms for daily activities such as billing, ordering, payroll, etc. Some CRT terminals can duplicate the printed form on the face of the screen, and data can be keyed into the blank spaces just as the typist enters data into a printed form. This “fill-in-the-blanks” approach to data entry requires a *protected format* capability. Display terminals that incorporate this feature treat the fixed format differently than they treat keyed data. Field identifiers such as “name” or “salesperson number” are protected from inadvertent key entry, and data entry is confined to the variable fields (blank spaces) following the field identifiers.

After having completed entry into the fixed format, the operator transmits the data to the central computer. A feature called *partial screen transmit* promotes line economies by transmitting only the keyed data; the fixed format remains displayed and the “blanks” are erased for the next entry. This feature is also useful for transmitting only a portion of the displayed data such as a field, line, or block.

A few vendors now offer a *split-screen* and/or “*windows*” feature on their terminals, in which the display screen can be divided or partitioned into a number of separate workspaces. Data in these workspaces can be manipulated (e.g., scrolled, stored, or transmitted) independently of the rest of the screen. *Tabulation* capabilities allow some terminals to automatically move the cursor to the beginning of the next line, or to the beginning of the next variable field within a line of formatted data immediately following the entry of the character that completes the end of the current line or field. The tab key needs to be used only when the current line/field is to remain partially filled.



Volker-Craig is another company now offering a Digital VT220 emulator. The VC5220 sells for \$795, and offers a 14-inch green or amber display with 80/132-column display capability.

Editing features in a display terminal can consist of any combination of the functions listed below, although the best terminal for editing purposes would include all of them. Each function is performed with respect to the current position of the cursor. The desirable editing functions are:

- *Character insert*—the capability to insert a character into an existing line of displayed text; the remaining characters shift to the right or “spread” to accommodate the added character. The spreading capability may terminate at the last character position of the line or at the last displayable position on the screen. Data is lost when it is spread beyond the termination point.
- *Character delete*—the capability to delete a character from an existing line of displayed text; the remaining text closes up when the character is deleted.
- *Line insert*—the capability to insert a line of text into existing text; the text spreads to accommodate the added line.
- *Line delete*—the capability to delete a line of text from existing text; the remaining text closes up when the line is deleted.
- *Erase*—the capability to erase a character, line of text, message, field, or the complete screen. Most terminals include character erase and some form of display erase, which may erase the entire contents of the display, just that portion following the cursor location, or a combination of both functions. Line erase is optional in many terminals. ▷

## All About Alphanumeric Display Terminals

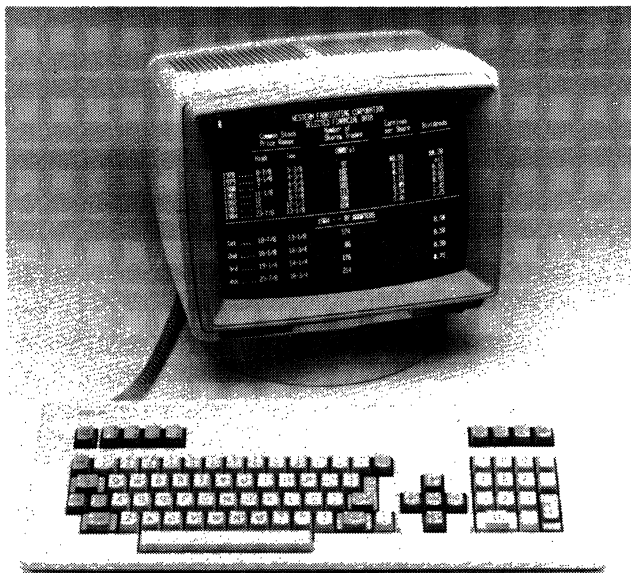
### ▷ KEYBOARD PARAMETERS

Keyboard *style* defines the general arrangement of keys; e.g., typewriter- or data entry (keypunch)-style. Data entry keyboards have a numeric keypad embedded in the alphabetic part of the keyboard which is accessed via numeric shift. The *character/code set* refers to the set of symbols that appear on the keytops and, in many cases, to the actual character codes generated for each key depression, such as ASCII, EBCDIC, APL, etc. Some terminals are available with more than one keyboard style to satisfy particular user needs.

Keyboards that can either fit flush against the display or be located some distance away via cable connection are referred to as *detachable* keyboards. This feature provides increased configuration flexibility and operator convenience.

Some terminals are available with *program function keys*. These are special keys whose character codes are interpreted by the user's program. A function key is used to reduce the number of required input keystrokes to save time and reduce the number of input errors. Depressing one key could instruct the system to "sell one seat" or "call Chart A," for example.

A *numeric keypad* is a special keyboard feature that includes a set or block of 10 numeric keys, usually located to the right of the main keygroup. These numeric keys are arranged in an adding-machine format and are particularly useful for applications that require a high volume of numeric entries or arithmetic calculations.



Lear Siegler's response to ITT Qume's \$395 QVT-101 is the ADM 3E, selling for \$399. The ADM 3E provides a 14-inch display screen, a low-profile keyboard, a wide range of smart terminal features, and emulation of the Lear Siegler ADM 3A, the original "dumb" terminal.

### ANCILLARY DEVICES

External I/O devices can add considerable flexibility to the applications possibilities for display terminals. Many vendors provide *serial printers* or *line printers* for use with their terminal families. In the case of IBM 3270-type terminals, these devices usually connect to the control unit, not to the display terminal itself.

*Composite video* output allows the terminal to drive an auxiliary monitor. This capability is useful in applications such as computer-aided instruction, where there is a need to display the screen image to a group of people.

*Other devices* supplied and supported by the terminal vendor, such as diskette drives, cassette tape drives, light pens, magnetic stripe (ID card) readers, bar code readers, etc. are also listed. Even if they supply no auxiliary devices themselves, most vendors supply a *port* through which another vendor's printer or other device may be attached to the display.

### TRANSMISSION PARAMETERS

Nearly every display terminal contains a communications interface that enables communications between the terminal and the central computer site. *Mode* and *technique* define the operating mode and the method in which data is transmitted. There are two operating modes: half-duplex (transmission in both directions, but not simultaneously), and full-duplex (simultaneous transmission in both directions).

Data is transmitted synchronously or asynchronously. Asynchronous transmission is characterized by the transmission of data in irregular spurts, where the duration of time can vary between successive transmitted characters; the transmission from an unbuffered teletypewriter is a good example. Synchronous transmission implies the transmission of data in a steady stream. The time interval between successive characters is always precisely the same. The communications interface either provides clocking or accepts external clocking signals from the data set.

*Communications protocol* refers to the type of line discipline (control code sequence and control characters) that the terminal employs. The three most commonly used protocols are ASCII, IBM's Binary Synchronous Communications (BSC) technique, and IBM's Synchronous Data Link Control (SDLC) line discipline. Other large mainframe vendors such as Burroughs, Honeywell, and Digital Equipment Corporation have produced their own communications protocols. Many display terminals now also conform to the ANSI X3.64 standard for control codes; if ANSI standard conformity exists, it will be indicated here.

The transmission *code* refers to the bit pattern of the transmitted characters. Two codes are prominent: EBCDIC and ASCII. The latter has been accepted as an industry and government standard, and is now the most commonly used code by display terminals. EBCDIC is most commonly used with IBM equipment and its replacements.



## All About Alphanumeric Display Terminals

▷ The CRT terminal is a high-speed device that is usually capable of transmitting and receiving several thousand characters per second; however, it must run at a speed that is compatible with the communications system in which it is used. Most terminals are used on voice-grade facilities, which limit the transmission *speed* to a practical maximum of 4800 bits per second over the dial network and 9600 bits per second over leased or private lines.

Message *format* refers to the way data is transmitted (e.g., by block, by line, or by character). Terminals that are designed to be transmission-compatible with a teletype unit transmit a character for each key depression. Buffered terminals transmit data in multicharacter blocks. The line or block mode permits data to be composed and edited prior to each transmission and generally permits more efficient utilization of the communications facility. Some terminals offer manual selection between the modes.

*Multipoint operation* characterizes terminals that are capable of operating in a multiple-terminals-per-line environment such as that employed by the IBM 3270 display terminals. Basic to implementing this capability is the ability of a terminal to distinguish a control message intended for it alone. Polling invites the terminals to send data. Addressing informs the terminal that a message from the central computer is coming, so that it will be conditioned to receive. Central control of the message traffic is maintained by the central computer.

Display terminals usually have a *terminal interface* that meets the standards of the EIA RS-232-C specification or the 20 ma current loop, and connects to an external modem or acoustic telephone coupler. Other interface types include RS-422, RS-423, and MIL-188 (military). IBM 3270 and 3270-compatible terminals generally connect directly to a cluster controller via coaxial cable.

Some terminals contain an *integral modem* that can be connected directly to a communications line. In some cases, the vendor provides an integral *acoustic telephone coupler*, so that the terminal can be connected to a conventional telephone handset.

### PRICING AND AVAILABILITY

Terminal pricing is provided for unit quantities (one terminal) unless otherwise specified. *Purchase prices* are shown for the complete terminal (including keyboard, display, and controller) for stand-alone units, and for the keyboard/display station and terminal controller for cluster units. The *monthly and annual prime-shift maintenance charges* show the cost of service during regular business hours (usually 9 a.m. to 5 p.m., Monday through Friday).

Single entries generally indicate the price of the basic unit without options; price ranges show the price of the basic unit and the price of an expanded unit with all options, or the price of the low end and high end of a multiple-unit family. In general, all prices exclude ancillary devices.

*Date of announcement* indicates the date that the terminal was unveiled to the public.

*Date of first production delivery* indicates when the first production model of each terminal was delivered (or is scheduled to be delivered) to a customer.

*Display units installed to date* shows how many display units of each type had been delivered to customers as of approximately December 5, 1985. All figures were supplied by the vendors themselves, and a number of companies chose not to release this information.

*Serviced by* specifies the party responsible for maintaining the terminal. In some cases, the vendor provides total service; in others, a national service organization is responsible. Service is sometimes rendered under the combined efforts of both the vendor and an independent service organization; usually in this situation, the vendor handles those areas close to its headquarters or where it has a multiplicity of installations, and the service company handles other geographical areas.

### COMMENTS

*Comments* at the bottom of the charts describe significant or unusual features, capabilities, or applications which are not reflected in the standard entries.

### VENDORS

Listed below, for your convenience in obtaining additional information, are the full names and addresses of the 87 vendors whose products are summarized in the comparison charts. ▷



Zentec's Zephyr 100 emulates the older Digital VT100; the company also offers a model with VT220 emulation. The Zephyr 100 conforms with the ANSI X3.64 standard for command code compatibility.

## All About Alphanumeric Display Terminals

▶ **Altos Computer Systems**, 2641 Orchard Parkway, San Jose, CA 95134. Telephone (408) 946-6700.

**Ampex Corporation**, Computer Products Division, 200 N. Nash Street, El Segundo, CA 90245. Telephone (213) 640-0150.

**Anderson Jacobson, Inc.**, 521 Charcot Avenue, San Jose, CA 95131. Telephone (408) 263-8520.

**Ann Arbor Terminals, Inc.**, 6175 Jackson Road, Ann Arbor, MI 48103. Telephone (313) 663-8000.

**Applied Digital Data Systems, Inc. (ADDS)**, 100 Marcus Boulevard, Hauppauge, NY 11787. Telephone (516) 231-5400.

**AT&T Information Systems**, 1 Speedwell Avenue, Morristown, NJ 07960. Telephone (201) 898-2000.

**AT&T Teletype** (see AT&T Information Systems).

**Beehive International**, 4910 Amelia Earhart Drive, Salt Lake City, UT 84125. Telephone (801) 355-6000.

**The Braegen Corporation**, 525 Los Coches Street, Milpitas, CA 95035. Telephone (408) 945-1900.

**Burroughs Corporation**, Burroughs Place, Detroit, MI 48232. Telephone (313) 972-7000.

**C & W Distribution Products**, 1111 W. Mockingbird Lane, Suite 1400, Dallas, TX 75247. Telephone (214) 630-9700.

**Carterfone Communications Corporation**, 1111 W. Mockingbird Lane, Suite 1400, Dallas, TX 75247. Telephone (214) 630-9700.

**Chi Corporation**, 26055 Emery Road, Cleveland, OH 44128. Telephone (216) 831-2622.

**CIE Systems, Inc.**, 2515 McCabe Way, Irvine, CA 92713-6579. Telephone (714) 660-1800.

**CIE Terminals, Inc.**, 2505 McCabe Way, Irvine, CA 92714-6297. Telephone (714) 660-1421.

**Computer Communications, Inc., (CCI)**, 2610 Columbia Street, Torrance, CA 90503. Telephone (213) 320-9101.

**Comterm Inc.**, 110 Hymus Boulevard, Pointe Claire, Quebec, Canada H9R 1E8. Telephone (514) 694-4332.

**Concurrent Computer Corporation**, (a Perkin-Elmer Company), 2 Crescent Place, Oceanport, NJ 07757. Telephone (201) 870-4500.

**Control Concepts**, (Division of Presearch, Inc.), P.O. Box 2367, 12004B Ballsford Road, Manassas, VA 22110. Telephone (703) 361-5545.

**Control Data Corporation**, 8100 34th Avenue South, P.O. Box 0, Minneapolis, MN 55440. Telephone (612) 853-8100.

**CTi Data Corporation**, 5249 North Boulevard, Raleigh, NC 27604. Telephone (919) 876-8731.

**Cybernex Limited**, 1257 Algoma Road, Ottawa, Ontario, Canada K1B 3W7. Telephone (613) 741-1540.

**Data General Corporation**, 4400 Computer Drive, Westboro, MA 01580. Telephone (617) 366-8911.

**Datamaxx USA Corporation**, 1815 South Gadsden Street, Tallahassee, FL 32301. Telephone (904) 224-8213.

**Datapoint Corporation**, 9725 Datapoint Drive, San Antonio, TX 78284. Telephone (512) 699-7000.

**Datastream Communications, Inc.**, 2520 Mission College Boulevard, Santa Clara, CA 95050. Telephone (408) 986-8022.

**Davox Corporation**, 4 Federal Street, Billerica, MA 01821. Telephone (617) 667-4455 or (800) 343-1152.

**Decision Data Computer Corporation**, 100 Witmer Road, Horsham, PA 19044. Telephone (215) 674-3300.

**Delta Data Systems Corporation**, 2595 Metropolitan Drive, Trevese, PA 19047. Telephone (215) 322-5400.

**Digital Equipment Corporation**, 146 Main Street, Maynard, MA 01754. Telephone (617) 897-5111.

**Direct, Inc.**, 4201 Burton Drive, Santa Clara, CA 95054. Telephone (408) 980-1414.

**Esprit Systems, Inc.**, 100 Marcus Drive, Melville, NY 11747. Telephone (516) 293-5600.

**Falco Data Products, Inc.**, 1294 Hammerwood Avenue, Sunnysvale, CA 94089. Telephone (408) 745-7123.

**General Business Technology, Inc.**, 1891 McGaw Avenue, Irvine, CA 92714. Telephone (714) 261-1891.

**General Digital Corporation**, 700 Burnside Avenue, East Hartford, CT 06108. Telephone (203) 528-9041.

**Harris Corporation**, Information Terminals Group, 16001 Dallas Parkway, P.O. Box 400010, Dallas, TX 75240. Telephone (214) 386-2000.

**Hewlett-Packard**, 1820 Embarcadero Road, Palo Alto, CA 94303. Contact your local Hewlett-Packard sales office.

**Honeywell Information Systems**, 200 Smith Street, Waltham, MA 02154. Telephone (617) 895-6000.

**Human Designed Systems, Inc.**, 3440 Market Street, Philadelphia, PA 19104. Telephone (215) 382-5000 or (800) 437-1551.

**Icot Corporation**, 830 Maude Avenue, Mountain View, CA 94543. Telephone (415) 964-4635.

**Informer Computer Terminals, Inc.**, 22936 Mill Creek Road, Laguna Hills, CA 92653. Telephone (714) 855-3112.

**Intecolor, an Intelligent Systems Company**, 225 Technology Park, Norcross, GA 30092. Telephone (404) 449-5961.

**International Business Machines Corporation (IBM)**, Old Orchard Road, Armonk, NY 10504. Contact your local IBM representative.

**ITT Courier Terminal Systems, Inc.**, 1515 West 14th Street, Tempe, AZ 85281. Telephone (602) 894-7000.

**ITT Qume Corporation**, 2350 Qume Drive, San Jose, CA 95131. Telephone (408) 942-4000. ▶

## All About Alphanumeric Display Terminals

▷ **Kimtron Corporation**, 1705 Junction Court, San Jose, CA 95112. Telephone (408) 286-8790.

**Lanpar Technologies Inc.**, 85 Torbay Road, Markham, Ontario, Canada L3R 1G7. Telephone (416) 475-9123.

**Lear Siegler, Inc.**, Data Products Division, 901 East Ball Road, Anaheim, CA 92805. Telephone (714) 778-3500 or (800) 532-7373.

**Lee Data Corporation**, 7075 Flying Cloud Drive, Minneapolis, MN 55344. Telephone (612) 828-0300.

**Liberty Electronics**, 625 Third Street, San Francisco, CA 94107. Telephone (415) 543-7000.

**Link Technologies, Inc.**, 2260 Paragon Drive, San Jose, CA 95131. Telephone (408) 943-0142.

**Matra Communication, Inc.**, 1202 Charleston Road, Mountain View, CA 94043. Telephone (415) 960-3600.

**McDonnell Douglas Computer Systems Company**, 4000 West MacArthur Boulevard, Newport Beach, CA 92660. Telephone (714) 250-1000.

**Megadata Corporation**, 35 Orville Drive, Bohemia, NY 11716. Telephone (516) 589-6800.

**Memorex Corporation**, Communications Group, 2300 Central Expressway, Santa Clara, CA 95050-2566. Telephone (408) 987-1000.

**Micro-Term, Inc.**, 512 Rudder Road, Fenton, MO 63026. Telephone (314) 343-6515.

**Microdata Corporation** (see McDonnell Douglas).

**NCR Corporation**, 1700 South Patterson Boulevard, Dayton, OH 45479. Telephone (513) 445-5000.

**Nixdorf Computer Corporation**, 300 Third Avenue, Waltham, MA 02154. Telephone (617) 890-3600.

**Paradyne Corporation**, 8550 Ulmerton Road, Largo, FL 33540. Telephone (813) 530-2000.

**Perfect Terminal, Inc.**, 3319 Seldon Court, Fremont, CA 94538. Telephone (415) 656-8383.

**PHAZE Information Machines Corporation**, 7650 East Redfield Road, Scottsdale, AZ 85260. Telephone (602) 991-6855 or (800) 423-2994.

**Plessey Peripheral Systems, Inc.**, Distributor Products Division, 15542 Mosher Avenue, Tustin, CA 91680. Telephone (714) 731-2440.

**Prime Computer, Inc.**, Prime Park, Natick, MA 01760. Telephone (617) 655-8000.

**RCA MicroComputer Products**, New Holland Avenue, Lancaster, PA 17604. Telephone (717) 397-7661.

**Soroc Technology, Inc.**, 161 Freedom Avenue, Anaheim, CA 92801. Telephone (714) 992-2860.

**Sperry Corporation**, Information Systems Group, P.O. Box 500, Blue Bell, PA 19424. Telephone (215) 542-4011.

**Tandberg Data, Inc.**, 1590 South Sinclair, Anaheim, CA 92806. Telephone (714) 978-6771.

**Tandem Computers, Inc.**, 19191 Vallco Parkway, Cupertino, CA 95014-2599. Telephone (408) 725-6000.

**Tandy Corporation**, 1800 One Tandy Center, Fort Worth, TX 76102. Telephone (817) 390-3300.

**Tatung Company of America, Inc.**, 2850 El Presidio Street, Long Beach, CA 90810. Telephone (213) 979-7055.

**TEC, Inc.**, 2727 North Fairview Avenue, P.O. Box 5646, Tucson, AZ 85703. Telephone (602) 792-2230.

**Tektronix, Inc.**, Information Display Division, P.O. Box 500, Beaverton, OR 97077. Telephone (503) 644-0161.

**Telegenix, Inc.**, 26 Olney Avenue, Cherry Hill, NJ 08003. Telephone (609) 424-5220.

**Teleray, Division of Research Inc.**, P.O. Box 24064, Minneapolis, MN 55424. Telephone (612) 941-3300.

**TeleVideo Systems, Inc.**, 55 East Brokaw Road, San Jose, CA 95150-6602. Telephone (408) 971-0255.

**Telex Computer Products, Inc.**, 6422 E. 41st Street, Tulsa, OK 74135. Telephone (918) 627-1111.

**Term-Tronics Inc.**, 4990 Viewridge Avenue, San Diego, CA 92123. Telephone (916) 565-6330.

**Texas Instruments, Inc.**, P.O. Box 2909, Austin, TX 78769. Telephone (512) 250-7111 or (800) 527-3500.

**Thomas Engineering Company**, 2440 Stanwell Drive, Concord, CA 94520. Telephone (415) 680-8640.

**3M Teleterminals**, 311 Turquoise Street, Milpitas, CA 95035. Telephone (408) 943-1970.

**Visual Technology, Inc.**, 1703 Middlesex Street, Lowell, MA 01851. Telephone (617) 459-4903.

**Volker-Craig Ltd.**, 330 Weber Street North, Waterloo, Ontario, Canada N2J 3H6. Telephone (519) 884-9300.

**Wang Laboratories, Inc.**, One Industrial Avenue, Lowell, MA 01851. Telephone (617) 459-5000.

**Westinghouse Canada Inc.**, P.O. Box 5009, 777 Walker's Line, Burlington, Ontario, Canada L7R 4B3. Telephone (416) 528-8811.

**Wyse Technology, Inc.**, 3571 North First Street, San Jose, CA 95134. Telephone (408) 433-1000.

**Zenith Data Systems**, 950 Milwaukee Avenue, Glenview, IL 60025. Telephone (312) 391-8860.

**Zentec Corporation**, 2400 Walsh Avenue, Santa Clara, CA 95051. Telephone (408) 727-7662.

**Zilog, Inc.**, 1315 Dell Avenue, Campbell, CA 95008. Telephone (408) 370-8000. □

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Altos 2	Altos 3	Altos 4	Altos 5	Ampex 210
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Altos, ANSI X3.41 ANSI X3.64	Standalone — No No No TeleVideo 910	Standalone — No No No TeleVideo 910 & 925, ADDS Viewpoint	Standalone — No No No Altos 2, Tektronix 4010/4014	Standalone — No No Std. ADDS, LSI, Gume, Esprit, Televideo
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000, 5280 — 25x80, 40x132	3432 3432 char. 26x80/132	2080 2080 char. 26x80	3432 4160 char. 26x80/132	2000 80/25/1 25x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 512 7x12/5x7 dot matrix P31 green	14 Std. 96 ASCII + graphics 10x13, 9x13 dot P31 green	14 Std. 96 ASCII + graphics 7x11 dot matrix P31 green	14 Std. 96 ASCII + graphics 10x13, 9x13 dot P31 green	14 Std. 169 ASCII, graphics 7x11 in 9x12 field PC134 amber or P31 green
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No Std. Std. Std. Std. Std. Up, down, smooth 3 std. (25x80) Std. Std. Std. Std. Std. Fwd./back. std. Std. Std. Std.	No No Std. Std. Std. Std. Std. Up/down, smooth No Std. Std. Std. Std. Std. Forward std. Std. Std. Std.	No No Std. Std. Std. Std. Std. Up/down, smooth No Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Std.	No Opt. Std. Std. Std. Std. Std. Up/down, smooth 2 std. Std. Std. Std. Std. Std. Forward std. Std. Std. Std.	No Line std. Std. Std. Std. Half intensity Std. No Up and smooth No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 16 plus shifted std. Std.	Typewriter  128 ASCII Std. 16 plus shifted std. Std.	Typewriter  128 ASCII Std. 16 plus shifted std. Std.	Typewriter  128 ASCII Std. 16 plus shifted std. Std.	Typewriter  128 ASCII Std. 14 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No RS-232-C —	No No No RS-232-C —	No No No RS-232-C —	No No No RS-232-C —	No No No Bidirectional std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous — ASCII 50-19,200 Character No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./block No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C	Half/full-duplex Async.; sync. opt. ASCII; SDLC opt. ASCII 110-19,200; 1M Char./line/block Opt. RS-232-C/RS-422	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	995 — — — 11/82 3/83 2,500 Altos/TRW	795 — — — 6/84 9/84 — Altos/TRW	495 — — — 10/85 1/86 — Altos/TRW	995-1,295 — — — 2/86 5/86 — Altos/TRW	469 — — — 5/84 7/84 — —
<b>COMMENTS</b>				Optional RS-422 multidrop	16 resident emula- tions total; DIN keyboard w/adjust- able slope; 7 nat- ional char. sets; CRT saver; fast screen refresh; dynamic focus; host writable line; true lc descenders



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Ampex 219	Ampex 220	Ampex 230	Anderson Jacobson AJ 510	Anderson Jacobson AJ 520
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT102/VT131/ VT52, Wyse WY-75	Standalone — No No Std. DEC VT220/VT100/ VT52	Standalone — No No Std. See comments	Standalone 1 No 2741 (opt.) Std. —	Standalone 1 No No Std. DEC VT100/VT52
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	3432 80/26/2 or 132/26/1 26x80/132	3200 80/25/1 or 132/25/1 25x80/132	3432 80/26/2 or 132/26/1 26x80/132	1920 — 24x80	1920, 3168 16K 24x80/132 plus status line 15
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 256 ASCII 7x11 in 9x12 field PC134 amber or P31 green	14 Std. 256 ASCII 7x11 in 9x12 field PC134 amber or P31 green	14 Std. 238 ASCII, graphics 7x11 in 10x12 field PC134 amber or P31 green	15 No 128 ASCII 7x10 dot matrix P31 green std.	15 Tilt std. 128 ASCII 10x12 dot matrix P31 green std.; amber opt.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size	No Line std. Std. Std. No Std. Std. Std. Std.	No Line std. Std. Std. No Std. Std. Std. Std.	No Line/block std. Std. Std. Half intensity Std. Std.	No — Std. Std. Std. Std. Std.	No — Std. Std. Std. Std. Std.
Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Up and smooth 2 std., 4 opt. Std. Both std. Std. Std. 2 std. Std. Std. Std. Std. Char./line/screen std.	Up and smooth 1 std., 4 opt. No Both std. No Std. 2 std. Std. Std. Std. Std. Char./line/screen std.	Up and smooth 2 std., 4 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	Up/down std. No Std. Std. Std. No Fwd. std. Std. Std. Char./line/screen std.	Up/down std. 8 std. Std. Std. No 2 Fwd. std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter ASCII Std. 16 std. (32 shift) Std.	Typewriter ASCII Std. 15 std. Std.	Typewriter 128 ASCII Std. 16 std. (32 shift- able) Std.	Typewriter 128 ASCII; APL opt. No No Std.	Typewriter 128 ASCII; APL opt. Std. 24 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Bidirectional std.	No No No Bidirectional std.	No No No Bidirectional std.	Various, 30-200 cps No No Std. Diskette recorder, acoustic coupler/ modems	Various, 30-200 cps No Std. Std. Diskette recorder, acoustic coupler/ modems
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous ASCII/ANSI ASCII 50-38,400 Char./line/block No RS-232-C std.; RS- 422, 20mA opt.	Full-duplex Asynchronous ASCII/ANSI ASCII 50-19,200 Char./block No RS-232-C std.; RS- 422, 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./line/block No RS-232-C std.; RS- 422, 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 110-9600 Char./line/page No RS-232-C std.; 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C std.; 20mA opt.
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	649 — — — 7/85 7/85 — —	749 — — — 7/85 11/85 — —	569 — — — 11/84 12/84 — —	1,675-1,995 — 27 — 9/78 — Anderson Jacobson	1,995-2,095 — 31-34 — 9/81 — Anderson Jacobson
<b>COMMENTS</b>	DEC VT100/VT102/ VT131/VT52-compat- ible, plus native mode; 16 programm- able function keys; bidirectional printer port; 2 display pages std.; seperate status & user lines	DEC VT220/VT100/ VT52-compatible, plus native mode; programmable user line; block mode; bidirectional printer port; variable speed smooth scroll	Ampex emulation mode replaces Ampex D30, D80, D81, D125 D150, D150E, & D175 also emulates Tele- Video 914, 924, 950 & Wyse WY-50; DIN keyboard w/adjust- able slope; 9 nat- ional char. sets	APL keyboard opt.; widely used in X-L applications	APL unit includes line mode, user- defined overstrike memory, plus all video attributes except bold

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Ann Arbor Ambassador XL	Ann Arbor Ambassador GXL	Ann Arbor Ambassador GXL+	Ann Arbor Guru XL	Ann Arbor Genie+ XL
<b>TERMINAL DESCRIPTION</b>	Standalone	Standalone	Standalone	Standalone	Standalone
Standalone or cluster	—	—	—	—	—
Maximum displays/controller	No	No	No	No	No
Transportability	No	No	No	No	No
IBM compatibility	Std.	Std.	Std.	Std.	Std.
Teletype compatibility	DEC VT100/VT52,	DEC VT100, Tek-	DEC VT100, Tek-	DEC VT100,	DEC VT100/VT52,
Other compatibility	ANSI X3.64	tronix 4010/4014	tronix 4010/4014	ANSI X3.64	ANSI X3.64
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	4800	4800	4800	11,200	2400
Memory capacity, no. char./lines/pages	4800/60/1	4800/60/1	4800/60/1	Up to 25K	4800, 30/80/2
Screen arrangement, lines x char./line	18x80 up to 60x80	18x80 to 60x80	18x80 to 60x80	Up to 66x170	30x80
Screen area (diagonal), inches	15	15	15	15	15
Tilt/swivel screen	Std.	Std.	Std.	Std.	Std.
Total displayable symbols	128 ASCII	128 ASCII	128 ASCII	128 ASCII	128 ASCII
Symbol formation	7x9 dot matrix	7x9 dot matrix	7x9 dot matrix	7x9 dot matrix	7x9 dot matrix
Character phosphor	P39 green	P39 green	P39 green	P4 white	Amber
Color capability	No	No	No	No	No
Graphics	—	Std.	Std.	—	—
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	Std.	No
Scroll	Up/down slow std.	Up/down, slow std.	Up/down, slow std.	Up/down, smooth std.	Up/down std.; slow
Paging	Std.	2 std.	2 std.	12	2 std.
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Both std.	Both std.	Both std.	Both std.	Both std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	N prog. std.	N prog. std.	N prog. std.	N. prog std.	N prog. std.
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back tab std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	128 ASCII	128 ASCII	128 ASCII	128 ASCII	128 ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	111 std.	111	111	111 std.	111 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	No	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Std.
Other vendor-supplied devices	—	—	—	—	—
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Communications protocol	ASCII, ANSI X3.64	ASCII, ANSI X3.64	ASCII, ANSI X3.64	ANSI X3.64	ASCII, ANSI X3.64
Code	ASCII	ASCII	ASCII	ASCII	ASCII
Speed, bits/second	110-19,200	110-19,200	110-19,200	110-19,200	110-19,200
Format	Char./line/block	Char./line/block	Char./line/block	Char./line/block	Char./line/block
Multipoint operation	No	No	No	No	No
Terminal interface	RS-232-C	RS-232-C	RS-232-C	RS-232-C	RS-232-C
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	1,595	3,090	3,590	2,395	1,395
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	—	—	—
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	7/84	7/84	10/84	7/84	7/84
Date of first production delivery	10/84	10/84	11/84	10/84	10/84
Display units installed to date	—	—	—	—	—
Serviced by	Ann Arbor/unit exchange	Ann Arbor/Unit Exchange	Ann Arbor/Unit Exchange	Ann Arbor	Ann Arbor/unit exchange
<b>COMMENTS</b>	Implements the ANSI X3.64-1979 standard; user-definable operation; user-selectable display format	Alphanumeric/graphics terminal with Tektronix 4010/4014 compatibility	Alphanumeric/graphics terminal with user-definable characters		ANSI X3.64 compatible

### All About Alphanumeric Display Terminals

VENDOR AND MODEL	Ann Arbor VXL	ADDS Viewpoint	ADDS Viewpoint+	ADDS Viewpoint/ Color	ADDS Viewpoint/60+
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. ANSI X3.64	Standalone — No No Std. Lear Siegler ADM 3A	Standalone — No No Std. —	Standalone — No No Std. —	Standalone — No No Std. ADDS Regent 40, Regent 60
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	9600 20K; 160/60/8 36x80 up to 60x160  15 Std. 128 ASCII 7x9 dot matrix P4 white std.  No No Std. Std. Std. Std. No Up/down, smooth 8 Std. Both std. Std. Std. 8 std. Fwd./back std. Std. Std. Char./line/screen std.	1920 1 page 24x80  12 Std. 128 ASCII 7x9 dot matrix P31 green/amber  No No Std. Std. Std. Std. No Std. Both std. No No No No Std. No Line/page std.	1920 1 page 24x80 plus status line 12 Std. 128 ASCII 7x9 dot matrix P4 white/P31 green  No No Std. Std. Std. Std. No Smooth std. Std. Addressable only No No No No No No Line/page std.	1920 1 page 24x80 plus status line 12 Std. 128 ASCII & 11 grph. 5x8 dot matrix P22 color  8 colors std. 11 graphics symbols  No Std. Std. Std. No Std. Up std. 1 std. Std. Both std. Std. Std. No Std. Fwd./back std. Std. Std. Line/screen std.	1920 2 pages opt. 24x80 plus status line; 48x80 opt. 12 Tilt std. 128 ASCII 7x9 dot matrix P4 white/P31 green green No —  Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys	Typewriter  128 ASCII Std. 111 std.	Typewriter  128 ASCII Std. 3/6 std.	Typewriter  128 ASCII Std. 3 std.	Typewriter  ASCII Std. 8 std.	Typewriter  128 ASCII Std. 8 std.
<b>ANCILLARY DEVICES</b> Numeric keypad Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. No No No Std. No	Std. No No No Std. —	Std. No No No Std. —	Std. No No No — —	Std. No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ANSI X3.64 ASCII 110-19,200 Char./line No RS-232-C  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Character No RS-232-C  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Character No RS-232-C  No No	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C std.; RS-422, 20 mA opt.  No No	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./block No RS-232-C, 20mA, or RS-422  No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Served by	2,795 — — — 6/85 10/85 Ann Arbor/unit exchange	549 — — — 10/85* 10/85* ADDS, NCR, TRW, GE *New functionality added	595 — — — 7/84 8/84 ADDS, NCR, TRW, GE	1,295 — — — 11/82 5/83 ADDS, NCR, TRW, GE	749 — — — 7/84 8/84 ADDS, NCR, TRW, GE
<b>COMMENTS</b>					

### All About Alphanumeric Display Terminals

VENDOR AND MODEL	ADDS Viewpoint/78	ADDS Viewpoint/78 Color	ADDS Viewpoint/90	ADDS Viewpoint/122	AT&T 4410
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3278 Std. —	Either — No 3279 Std. —	Standalone — No No Std. —	Standalone — No No Std. DEC VT220/VT100/ VT52	Standalone — No No Std. ANSI X3.64 (where applicable)
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1 page 24x80 plus status line 12 Tilt std. 128 ASCII & 11 grph. 7x8 dot matrix P4 white/P31 green No 11 graphics symbols Std. Std. Std. Std. Std. No Up std. No Std. Both std. No No No No No No Line/screen std.	1920 1 page 24x80 13 Tilt std. 128 ASCII 7x8 dot matrix P22 color 4 colors std. No Std. Std. Std. Std. Std. Up std. Std. Both std. No No No No No No Line/screen std.	960, 1920, 3168 1-2 pages 24x48/80/132 12 Tilt std. 128; 256 prog 7x9 dot matrix P4 white/P31 green No Block, mosaic Std. Std. Std. No Std. Std. 2 opt. Std. Both std. Std. Std. Std. Char./line/screen std.	1920, 3168 1 page 24x80/132 12 Std. 256 ASCII 7x7 dot matrix P31 green/amber No No Std. Std. Std. Smooth/4-speed No Std. Both std. No Std. Std. Std. & programmable Std. Std. Char./line/screen std.	1920, 3168 1 page 24x80/132 plus 3 status lines 12 Tilt std. 128 ASCII, 96 graph. 5x7/7x9 dot matrix White No Std. Std. Std. Half-intensity Std. No Std. Addressable std. No No 2 std. Std. Std. Line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	IBM 3278-2 ASCII Std. 24 std. Std. No No No No —	IBM 3278-2 ASCII Std. 24 std. Std. No No No No —	Typewriter 128 ASCII Std. 15 std. Std. N No No No Std. —	Typewriter 256 ASCII Std. 22 std. Std. N No No No Std. —	Typewriter 128 ASCII Std. 8 std. Std. No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Full-duplex Asynchronous ASCII ASCII 110-19,200 Character No RS-232-C std.; RS-422, 20 mA opt. No No	Full-duplex Asynchronous — ASCII 110-19,200 Character No RS-232-C std.; RS-422, 20 mA opt. No No	Half/full-duplex Asynchronous ASCII ASCII Up to 9600 Char./line/block No RS-232-C std.; 20 mA opt. No No	Full-duplex Asynchronous ASCII/ANSI ANSI Up to 19,200 Char./line/block No RS-232-C No No	Half/full-duplex Asynchronous ANSI/ASCII ASCII Up to 19,200 Character No RS-232-C No No
<b>COMMENTS</b>	1,095 — — 11/82 1/83 ADDS, NCR, TRW, GE Emulates IBM 3278 Model 2 when used with protocol converter	1,595 — — 5/83 5/83 ADDS, NCR, TRW, GE Color terminal designed to access 3270 applications on an IBM mainframe when used with a protocol converter	1,195 — — 12/81 1st Q/82 ADDS, NCR, TRW, GE	795 — — 9/85 11/85 ADDS, NCR, TRW, GE	902 — — 4/83 3rd quarter 1983 AT&T

### All About Alphanumeric Display Terminals

VENDOR AND MODEL	AT&T 4425	AT&T 4415	AT&T 4418	AT&T 5548	AT&T 5549
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT 102, UNIX, ANSI X3.64	Standalone — No No Std. ANSI X3.64 (where applicable)	Standalone — No 3278 Std. —	Cluster 32 No 3278 No —	Cluster 32 No 3279 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920, 3168 78 or 54 lines 24x80/132 plus 3 status lines 12 Tilt std. 128 ASCII, 96 grph. 5x7/7x9 dot matrix White, green, or amber No Std. Std. Std. Half-intensity Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.	1920, 3168 9600 char. 24x80/132 plus 3 status lines 12 Tilt std. 128 ASCII, 96 graph. 5x7/7x9 dot matrix White No Std. Std. Std. Half-intensity Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.	1920, 3168 1 page 24x80/132 plus 3 status lines 12 Tilt std. 128 ASCII, graphics 5x7/7x9 dot matrix Amber or green No Std. Std. Std. Half-intensity Std. No Std. 1 std. Std. Addressable only No No 2 std. Std. Std. Std. Line/screen std.	1920, 3564 — 24x80, 27x132 (13-inch only) 12 or 13 Tilt std. 96 EBCDIC 9x14/7x10 dot mat. White No No No Std. Std. No No No Both std. Std. Std. No Std. Std. Std. Char./line/screen std.	1920, 2560 — 24/32x80 13 Tilt std. 96 EBCDIC 7x10/9x14 dot mat. Color 4 colors std. No No Std. Std. No No No Std. Both std. Std. Std. No Std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 11 std. (22 func- tions) Std.	Typewriter  128 ASCII Std. 16 std. Std.	IBM 3278-style  128 ASCII Std. 24 std. No	Typewriter, data entry 96 EBCDIC Std. 24 std. Std.	Typewriter, data entry, ext. numeric 96 EBCDIC Std. 24 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. 300/1200 bps modem/ dialer opt.	No No No Std. —	No No No Std. 300/1200 bps modem/ dialer opt.	30-340 cps dot mat. 220-300 lpm No Std. Light pen	30-340 cps dot mat. 300 lpm No Std. Light pen
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII/ANSI X3.64 ASCII Up to 19,200 Char./block Std. RS-232-C  Opt. No	Half/full-duplex Asynchronous ANSI/ASCII ASCII Up to 19,200 Char./block Std. RS-232-C  No No	Half/full-duplex Asynchronous ASCII/ANSI ASCII Up to 19,200 Character No RS-232-C  Opt. No	Half/full-duplex Synchronous BSC, SNA/SDLC ASCII/EBCDIC Up to 9600 Block Std. RS-232-C  No No	Half/full-duplex Synchronous BSC, SNA/SDLC ASCII/EBCDIC Up to 9600 Block Std. RS-232-C  No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,265-1,720 — — — 9/84 10/84 — AT&T	1,492 — — — 4/83 3rd quarter 1983 — AT&T	1,080 — — — 5/84 5/84 — AT&T	1,411-2,573 3,518-8,038 — — 4/83 3rd quarter 1983 — AT&T	2,573 3,518-8,038 — — 5/84 5/84 — AT&T
<b>COMMENTS</b>			Features IBM 3270 emulation when used with a protocol converter	Available in three models: 12 (12-in. screen, 1920-char.), 22 (13-in. screen, 1920-char.), & 25 (13-in. screen, 1920 & 3564-char.; attach to 5544 or 5546 controller; also known as E4540	Attaches to 5544 or 5546 controller; also known as E4540 Display System

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	AT&T 6518	AT&T 6528	AT&T 6529	AT&T 6538	AT&T 6539
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 32 No 3270 System No Digital VT220	Cluster 32 No 3270 System No Digital VT220	Cluster 32 No 3270 System No Digital VT220	Cluster 32 No 3270 System No Digital VT220	Cluster 32 No 3270 System No Digital VT220
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80  12 Std. 96 EBCDIC 9x13 dot matrix Amber or green  No No Std. Std. Std. No No No No Std. No Std. Addressable only Std. Std. No Std. Std. Std. Char./line/screen std.	1920-3564 — 24/32/43x80, 27x132 15 Std. 96 EBCDIC/256 ASCII 9x16/12/9/14 Amber or green  No Line drawing set Std. Std. Std. Std. No No Std. Both std. Std. Std. Split screen Std. Std. Std. Char./line/screen std.	1920-3564 — 24/32/43x80, 27x132 14 Std. 96 EBCDIC/256 ASCII 9x16/12/9/14 Color  7 colors Line drawing set Std. Std. Std. Std. No No Std. Both std. Std. Std. Split screen Std. Std. Std. Char./line/screen std.	1920-3564 (x4) — 24/32/43x80, 27x132 15 Std. 96 EBCDIC/256 ASCII 9x16/12/9/14 Amber or green  7 colors Line drawing set Std. Std. Std. Std. No No Std. Both std. Std. Std. 4 windows std. Std. Std. Std. Char./line/screen std.	1920-3564 (x4) — 24/32/43x80, 27x132 14 Std. 96 EBCDIC/256 ASCII 9x16/12/9/14 Color (background, foreground select.) 7 colors Line drawing set Std. Std. Std. Std. No No Std. Both std. Std. Std. 4 windows std. Std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  EBCDIC Std. 24 std.  Std.	Typewriter  EBCDIC/ASCII Std. 24 std.  Std.	Typewriter  EBCDIC/ASCII Std. 24 std.  Std.	Typewriter  EBCDIC/ASCII Std. 24 std.  Std.	Typewriter  EBCDIC/ASCII Std. 24 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	400 cps impact 300 lpm belt No — Alarm	400 cps impact 300 lpm belt No — Alarm, keylock	400 cps impact 300 lpm belt No — Alarm, keylock	400 cps impact 300 lpm belt No Opt. (RS-232-C) Alarm, keylock, light pen	400 cps impact 300 lpm belt No Opt. (RS-232-C) Alarm, keylock, light pen
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Synchronous BSC, SDLC, X.25 EBCDIC/ASCII 1200-64,000 Block Std. Twisted-pair, coaxial cable No No	Half/full-duplex Sync./async. BSC, SDLC, X.25 EBCDIC/ASCII 300-64,000 Char./block Std. Twisted-pair, coaxial cable No No	Half/full-duplex Sync./async. BSC, SDLC, X.25 EBCDIC/ASCII 300-64,000 Char./block Std. Twisted-pair, coaxial cable No No	Half/full-duplex Sync./async. BSC, SDLC, X.25 EBCDIC/ASCII 300-64,000 Char./block Std. Twisted-pair, coaxial cable No No	Half/full-duplex Sync./async. BSC, SDLC, X.25 EBCDIC/ASCII 300-64,000 Char./block Std. Twisted-pair, coaxial cable No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Contact vendor 7,880-up Contact vendor Contact vendor 10/85 12/85 — AT&T	1,950 7,880-up Contact vendor Contact vendor 10/85 12/85 — AT&T	2,195 7,880-up Contact vendor Contact vendor 10/85 12/85 — AT&T	2,645 7,880-18,630 Contact vendor Contact vendor 10/85 12/85 — AT&T	2,895 7,880-18,630 Contact vendor Contact vendor 10/85 12/85 — AT&T
<b>COMMENTS</b>	Part of 6500 Multifunction Communication System; attaches to 6544 controller; controller price highly dependent on options selected	Part of 6500 Multifunction Communication System; attaches to 6544 controller; controller price highly dependent on options selected	Part of 6500 Multifunction Communication System; attaches to 6544 controller; controller price highly dependent on options selected	Part of 6500 Multifunction Communication System; attaches to 6544 controller; multitasking display; programmed symbols	Part of 6500 Multifunction Communication System; attaches to 6544 controller; multitasking display; programmed symbols

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Beehive ATL-3270	Beehive ATL-3270MS	Beehive ATL-078	Beehive ATL-178	Beehive ATL-004
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3276 No —	Cluster 5 No 3276 No —	Standalone 8 No 3278 Std. Beehive DM5A	Cluster 32 No 3178 No —	Standalone — No No Std. DEC VT52/VT100, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1 page 24x80 plus status line 14 Std. 128 EBCDIC 9x13 cell P31 green or amber  No No Std. Std. Std. Std. Std. No No 1 std. Std. Both std. Std. Std. No Std. Std. Fwd./back std. Std. No Char./screen/field std.	1920 1920/24/1 24x80 plus status line 14 Std. 128 EBCDIC 9x13 cell P31 green or amber  No No Std. Std. Std. Std. Std. No No 1 std. Std. Both std. Std. Std. No Std. Std. Std. Screen/char./field std.	1920 1 page 24x80 plus status line 14 Std. 128 EBCDIC 9x13 cell P31 green  No No Std. Std. Std. Std. Std. No No 1 std. Std. Both std. No Std. Std. Std. Char./screen/field std.	1920 1920/24/1 24x80 plus status line 14 Std. 224 EBCDIC 9x13 cell P31 green or amber  No No Std. Std. Std. Std. Std. No 1 std. Std. Both std. Std. Std. No Std. Std. No Screen/char./field std.	2160, 3564 10K 27x80/132  14 Std. 128 ASCII 9x13 cell P31 green or amber  No No Std. Std. Std. Std. Std. Std. Horiz./vert. std. 4 std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Page/line/field std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter (3278- style) EBCDIC Std. 24 + 3 PA keys  Std.	3278 Typewriter  EBCDIC Std. 24 std.  Std.	Typewriter (3278- style) ASCII/EBCDIC Std. 24 std.  Std.	3178 Typewriter  EBCDIC Std. 24 std.  Std.	Typewriter  ASCII Std. 16 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	No No No Std. —	No No No Std. —	No No No Opt. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 110-9600 Block Std. RS-232-C  No No	Half/full-duplex Synchronous BSC,SNA/SDLC EBCDIC 110-19,200 Block Std. RS-232-C  No No	Half/full-duplex Asynchronous TTY ASCII 110-19,200 Char./line/block Std. RS-232-C, RS-422, or 20mA No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Character No RS-232-C  No No	Half/full-duplex Asynchronous ASCII, ANSI X3.64 ASCII 50-19,200 Char./line/fld./blk No RS-232-C, RS-422, or 20 mA No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,695-1,895 — — — 4/84 5/84 — Beehive & Western Union	2,795-2,995 — — — 9/84 10/84 — Beehive & Western Union	1,195 — — — 1/82 4/82 — Beehive & Western Union	1,395 — — — 9/84 10/84 — Beehive & Western Union	Contact Vendor — — — 11/82 12/83 — Beehive & Western Union
<b>COMMENTS</b>	Supports serial ASCII printer	Designed to emulate IBM 3276	Designed to emulate IBM 3278 when used with CC74 controller on reduced function w/ protocol converter	Designed to emulate IBM 3178	Vertical scrolling capability for 132- character display mode

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Beehive ATL-083	Beehive ATL-220	Beehive ATL-008	Braegen 8521	Braegen 8522
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No No Burroughs TD 830/ MT 983	Standalone — No No Std. DEC VT220/VT100/ VT52	Standalone — No No Std. Digital VT100, ANSI X3.64	Cluster 120 No 3278 No —	Cluster 120 No 3278 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 16K std., 32K opt. 24x80	1920, 3168 1 page 24x80/132	2160, 3564 32K std., 128K opt. 27x80/132	1920 1 page 24x80	1920, 3564 1 page 24x80, 27x132
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 128 ASCII 9x13 cell P31 green	14 Std. 256 7x9 dot matrix P31 green or amber	14 Std. 128 ASCII 9x13 cell P31 green	15 Std. 136 EBCDIC 7x10 dot matrix P109 std.	15 Std. 136 EBCDIC 7x10 dot matrix P109 std.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No Std. Std. Std. Std. No No 4 std., 9 opt. Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Page/line/screen std.	No Line graphics std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Page/line/field/ std.	No No Std. Page/line/field/ std.	No No Std. Char./line/screen std.	No No Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Burroughs TD 830  ASCII Std. 16 std.  Std.	Typewriter (VT220- compatible) 128 ASCII Std. 19 std.  Std.	Typewriter  ASCII Std. 255 std.  Std.	Typewriter, data entry, APL EBCDIC Std. 24 std.  Opt.	Typewriter, data entry, APL EBCDIC Std. 24 std.  Opt.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Half/full-duplex Async./sync. Burroughs TDI ASCII 50-19,200 Block/line/page Std. RS-232-C, TDI	Full-duplex Asynchronous ANSI X3.64 ASCII 75-19,200 Char./line/field/blk No RS-232-C, std.;20mA RS-422 opt.	Half/full-duplex Async./isoch. ANSI X3.64 ASCII 50-19,200 Char./line/field/blk No RS-232-C, 20mA, or RS-422	Full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 1.5M — Std. Coaxial	Full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 1.5M — Std. Coaxial
<b>COMMENTS</b>	Contact vendor — — 4/82 5/82 — Beehive & Western Union Designed to emulate Burroughs TD 830 & MT 983	895 — — 12/85 12/85 200+ Beehive & Western Union display mode	Contact vendor — — 11/82 12/83 — Beehive & Western Union Vertical scrolling ability for 132-character display mode; horizontal scroll- ing; windowing	Contact vendor — — 8/83 11/83 — Braegen 852X displays replace channel connected IBM 3274; allows up to 60 3278 replacement termin- als to communicate on one physical coax cable; may be conn- ected to up to 4 local hosts	Contact vendor — — 8/83 11/83 — Braegen Same as 8521



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Braegen 8523	Braegen 8524	Braegen 3081	Braegen 3161	Burroughs ET 1100
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Cluster	Cluster	Cluster	Cluster	Standalone
Maximum displays/controller	120	120	32	32	—
Transportability	No	No	No	No	No
IBM compatibility	3278	3180	3270, 1403, 2501	3270	No
Teletype compatibility	No	No	No	No	Std.
Other compatibility	—	—	—	—	Burroughs
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	1920	1920 to 3564	2000	2000	2080
Memory capacity, no. char./lines/pages	1 page	1 page	1 page	1 page	10 pages
Screen arrangement, lines x char./line	24x80	24/32/43x80, 27x132	25x80	25x80	12/24x40/80 plus 2 status lines
Screen area (diagonal), inches	15	15	12	15	14
Tilt/swivel screen	Std.	Std.	No	No	Std.
Total displayable symbols	136 EBCDIC	—	196	196	256
Symbol formation	7x10/7x8 dot matrix	7x10 dot matrix	7x9 dot matrix	7x9 dot matrix	7x9 dot matrix
Character phosphor	P109 std.	P109 green	P31 green	P31 green	P39 green
Color capability	No	No	No	No	No
Graphics	No	No	No	No	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	No	Opt.	Opt.	Std.
Double size	No	No	No	No	Std.
Scroll	No	Opt.	Opt.	Opt.	Std.
Paging	Opt.	1 std.	Opt.	Opt.	Std.
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Std.	Std.	Std.	Std.	Std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	Opt.	No	No	No	No
Tabulation	Std.	Std.	Std.	Std.	Std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Opt.	Opt.	Std.
Erase	Char./line/screen std.	Char./line/screen std.	Char./field/screen std.	Char./field/screen std.	Line/page std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter, data entry, APL	Typewriter, data entry, APL	Typewriter, data entry, console	Typewriter, data entry, APL	Typewriter
Character/code set	EBCDIC	96 EBCDIC	256 EBCDIC	256 EBCDIC	128 ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	24 std.	24 std.	12 std.; 24 opt.	12 std.; 24 opt.	10 physical/20 logical
Numeric keypad	Opt.	Opt.	Opt.	Std.	Std.; 25-key opt.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	200/50 cps	200/50 cps	Various	Various	Std.
Line printer, type, and speed	400, 1200 lpm	600, 1200 lpm	Various	Various	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	No	No	No	No	Std.
Other vendor-supplied devices	Light pen opt.	Light pen opt.	Alarm, card reader	Alarm, card reader	Audible alarm
<b>TRANSMISSION PARAMETERS</b>					
Mode	Full-duplex	Full-duplex	Half-duplex	Half-duplex	Half-duplex
Technique	Synchronous	Synchronous	Synchronous	Synchronous	Async./sync.
Communications protocol	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC	BSC	Burroughs
Code	EBCDIC	EBCDIC	EBCDIC	EBCDIC	ASCII
Speed, bits/second	Up to 1.5M	Up to 1.5M	1200-19,200	1200-19,200	Up to 38,400
Format	—	—	Char./block	Char./block	Char./block
Multipoint operation	Std.	Std.	Std.	Std.	Std.
Terminal interface	Coaxial	Coaxial	Coaxial	Coaxial	RS-232-C, TDI, BDAA
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	Contact vendor	Contact vendor	Contact vendor	Contact vendor	1,580
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	—	—	20.33
Annual prime-shift maintenance	—	—	—	—	126-252
Date of announcement	8/83	6/84	—	—	4/83
Date of first production delivery	11/83	—	—	3/80	5/83
Display units installed to date	—	—	—	—	—
Serviced by	Braegen	Braegen	Braegen	Braegen	Burroughs
<b>COMMENTS</b>	Same as 8521	Part of ELAN sys.; switchable between screen formats; up to 60 8524 displays can communicate via one physical coax cable of up to 10,000 feet	May be connected to up to 8 IBM hosts, local & re- mote, and switched to operate with 14 different applica- tions	May be connected to up to 8 IBM hosts, local & re- mote, and switched to operate with 14 different applica- tions; APL support	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Burroughs PT 1500	C&W Distribution Products TP-1	C&W Distribution Products TP-100	C&W Distribution Products TP-900	Carterfone 7276
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC	Standalone — No No Std. ADDS Viewpoint, Lear Siegler ADM 3A	Standalone — No No Std. DEC VT100/VT131/ VT52	Standalone — No No Std. TeleVideo 912/920/ 925	Standalone — No 3276 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2320 4 pages 29x80	1920 80/24/1 24x80	1920, 3168 80 or 132/24/1 24x80/132	2000 80/24/2 25x80	1920 — 24x80 plus status line
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Std. 480 9x12 cell P31 green	12 Std. 128 ASCII 7x9 dot matrix P31 green std.	12 Std. 128 ASCII 7x9 dot matrix P31 green std.	12 Std. 128 ASCII 7x9 dot matrix P31 green std.	12 No 94 EBCDIC 7x9 dot matrix P4 white
Color capability Graphics Programmable field/char. highlighting via:	No No —	No Line drawing std.	No Line drawing std.	No No	No —
Underline Blink Blank Bold Reverse Double size	Std. Std. Std. No Std. No	Std. Std. Std. Std. Std. No	Std. Std. Std. Std. Std. Std.	Std. Std. Std. Std. Std. Std.	No No Std. Std. No No
Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Up/down std. Application dep. Application dep. No Application dep. Std. No Std. Std. Std. Std. Std. Std.	Up std. No Std. Addressable only Std. No No Fwd. std. No No Char./line/screen std.	Up/down, jump/smith. No Std. Both std. Std. Std. 3 std. Fwd./back std. Delete std. Std. Char./line/screen/ window std.	Up/down, jump/smith. 2 std. Std. Both std. Std. Std. 3 std. — Std. Std. Char./line/screen/ window std.	No No Std. Both std. Std. Std. No Fwd./back std. Std. No Field/screen std.
<b>KEYBOARD PARAMETERS</b> Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter, data entry
Character/code set Detachability Program function keys	ASCII Std. 10 std.	ASCII Std. 4 programmable	ASCII Std. 4 fixed, 10 pro- grammable Std.	ASCII Std. 22 programmable Std.	94 EBCDIC Std. 24 std. Std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Various No No Std. —	110-19.2K bps 110-19.2K bps No Serial std. —	75-19.2K bps 75-19.2K bps Std. Serial/parallel —	50-19.2K bps 50-19.2K bps No Serial std. —	32/120 cps impact No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200/307K Char./line/block — RS-232-C or RS-422	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Character No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 75-19,200 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C, 20mA, or RS-422	Half/full-duplex Synchronous BSC. SNA/SDLC EBCDIC 2400-9600 Block Std. RS-232-C
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,400 — 14 168 10/84 10/84 — Burroughs	595 — 30/15 2/84 5/84 — Carterfone	795 — 50/15 2/84 6/84 — Carterfone	695 — 40/15 2/84 6/84 — Carterfone	2,495 — 30 — 1/82 — Carterfone
<b>COMMENTS</b>	Requires use of UNIX system	Monitor mode std.; U.S./U.K./French/ German character sets std.	Monitor mode std.; English language set-up menu	Monitor mode std.; English language set-up menu	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Carterfone 9830	Chi MP-1 Terminal	CIE Systems CIE-7800	CIE Systems CIE-7100	CIE Terminals CIT-80
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Burroughs TD 830/ MT 983	Both — No 3276 BSC Std. Sperry UTS 20/40/ MT 100, DEC VT100	Either — No 3178/3278 Opt. DEC VT100, Burr- oughs	Standalone — No 3101 Std. DEC VT100, HP 2622A	Standalone — No No Std. DEC VT52/VT101
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	480, 960, 1920 4000 std., 4000 opt. 12/24x40/80	3192 64K 24x133 (user- selectable)	1920, 3564 1 page 24/32/43x80, 27x132	2000, 3300 1 page 25x80/132	1920 80/24/1 25x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 No 128 ASCII 9x12 dot matrix P31 green	14 Std. 128 7x9 dot matrix P31 green std.; amber opt.	14 Tilt std. 96 ASCII, EBCDIC 7x9 dot matrix P31 green, amber	14 Tilt std. 96 ASCII 7x9 dot matrix P31 green, amber	12 No 128 ASCII 7x9 dot matrix P4 white std.; P31 green, amber opt.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No Std. Std. Std. Std. No Std. 3 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Line/page std.	No No Std. Std. Std. Std. No Up/down No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Std.	No No Std. Std. Std. Std. No Std. Addressable std. Std. Std. No Std. Std. Std. Char./line/screen std.	No No Std. Std. Std. Std. Std. Up/down, smooth No Std. Addressable std. Std. Std. No Std. Std. Std. Char./line/screen std.	No No Std. Std. Std. Std. No Up/down, jump/smth. No Std. Both std. No No 3 std. Fwd./back std. No No No Line/screen/char./ window std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys	Typewriter 128 ASCII Std. Prog.	Typewriter (PC) ASCII Std. 32 std.	Typewriter 96 ASCII, 128 EBCDIC Std. 24 std.	Typewriter 96 ASCII Std. 24 std.	Typewriter 128 ASCII Std. 16 std.
Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. No No No Std. —	Std. 9600 bps serial All parallel prtr. No Std. OCR & bar code reader	Std. No No No Std. No	Std. No No No Std. No	Std. 50-19.2K bps 50-19.2K bps No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Async./sync. Burr. TDI, TTY ASCII Up to 9600 Char./block Std. RS-232-C	Full-duplex Sync./async. Uniscop/BSC ASCII/EBCDIC 50-19,200 Block Std. RS-232-C, Sperry mux	Half/full-duplex Async./sync. Bisynch SDLC ASCII, EBCDIC 110-19,200 Character Std. RS-232-C, coaxial	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./block Std. RS-232-C	Half/full-duplex Asynchronous ANSI/ASCII ASCII Up to 19,200 Char./line/block No RS-232-C or 20mA
Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	No No 1,195 — — — 1/82 8/82 — Carterfone	No No 1,250 — 30 (dep. on qty.) 300 (dep. on qty.) 4/85 5/85 100 TRW	No No 1,275-2,345 — — 5/83 11/83 — Selling party	No No 695 — — 11/84 11/84 — Selling party	No No 1,195 — — — 6/81 9/81 — Western Union/CIE Terminals Lease plans avail- able from authorized distributors
<b>COMMENTS</b>		Multiple protocols available; IBM 3270 & DEC VT100 emu- lation available 3/86; programmable function keys; cursor pad; intell- igent modem control	May be ordered with alternate person- ality, dual net- working available; sold thru ACM (Alternate Channel Marketing)	May be ordered with alternate person- ality, dual net- working available; sold thru ACM (Alternate Channel Marketing)	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	CIE Terminals CIT-101	CIE Terminals CIT-101e	CIE Terminals CIT-161	CIE Terminals CIT-220+	CIE Terminals CIT-500
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone No No Std. DEC VT52/VT100/ VT101/VT102	Standalone — No No Std. DEC VT52/VT100/ VT101/VT102	Standalone — No No Std. DEC VT100/VT52	Standalone — No No No DEC VT220/VT100/ VT52	Standalone — No No Std. DEC VT100, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920, 3168 80 or 132/24/1 24x80/132	1920, 3168 80 or 132/24/1 24/132x80	1920, 3168 — 24x80/132	1920, 3168 1 page 24x80/132	5120 — 66x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 No 128 ASCII 7x9 dot matrix P4 white std.; P31 green/amber opt.	14 Std. 96 ASCII 7x9 dot matrix P4 white std.; green/amber opt.	12 No 128 ASCII 7x9 dot matrix Color	12 Tilt std. 94 ASCII 7x10 dot matrix P4 white std.; P31 grn., P22 amber opt	15 (vertical) Std. 256 7x9 dot matrix P39 green
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Opt. Std. Std. Std. Std. Std. Up/down, jump/smith. No Std. Both std. No No 3 std. Fwd./back std. No No Line/screen/char./ window std.	No No Std. Std. Std. No Std. Both std. No No 3 std. Fwd./back std. No No Line/screen/char./ window	8 colors std. No Std. Std. No Std. Both std. No No 3 std. Std. No Std. Both std. No No 3 std. Std. No Std.	No No Std. Std. Std. Std. Up/down/jump/smith. No Std. Both std. No No 2 std. Forward Std. No Char./line/screen/ window std.	No No Std. Std. Std. Std. No Std. Both std. No No No Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 128 ASCII Std. 16 std. Std.	Typewriter 96 ASCII Std. 4 std. Std.	Typewriter 128 ASCII Std. 4 std. Std.	Typewriter 94 ASCII Std. 15 std. NVR Std.; hex alternate	Typewriter ASCII Std. 4 std.; up to 41 programmable Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	50-19.2K bps 50-19.2K bps No Std. —	50-19.2K bps 50-19.2K bps No Std. —	50-19.2K bps 50-19.2K bps No Std. —	75-19.2K bps 75-19.2K bps Opt. Std. —	50-19.2K bps 50-19.2K bps No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous ANSI/ASCII ASCII Up to 19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ANSI/ASCII ASCII 50-19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII/ANSI ASCII 50-19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII/ANSI X3.64 ASCII 75-19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII/ANSI X3.64 ASCII 50-19,200 Character No RS-232-C or 20mA
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,495 — — — 6/80 12/80 — Western Union/CIE Terminals	1,495 — — — 5/83 3Q/83 — CIE Terminals	2,595 — — — 6/83 3Q/82 — Western Union/CIE Terminals	1,195 — — — 6/84 7/84 — CIE Terminals	2,150 — — — — — — CIE Terminals
<b>COMMENTS</b>	Lease plans available from authorized distributors. Graphics, power supply and other expansion options available				Full-page word processing terminal compatible with Word 11, Lex 11, & WordStar software

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Computer Communications (CCI) 8178	Comterm 5178	Comterm 5278	Comterm 5278 (All-in-One)	Concurrent Computer (Perkin-Elmer) Model 6100
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster Up to 40 No 3270 No —	Cluster 32 No 3178 No —	Cluster 32 No 3278 No —	Cluster 32 No 3278 No —	Standalone — No No Std. —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80 plus status line 12 Std. 128 ASCII 7x12 dot matrix P31 green  No No Std. Std. Std. Std. No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. No No Char./line/screen std.	1920 — 24x80 12 Std. 94 Dot matrix P39 green  No No Std. Std. Std. Std. No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. No No Char./line/screen std.	1920-3440 — 24/32/43x80 15 Std. 94 Dot matrix P39 green  No No Std. Std. Std. Std. No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. No No Char./line/screen std.	1920-3564 — 24/32/43x80, 27x132 15 Std. 94 Dot matrix P39 green  No No Std. Std. Std. Std. No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. No No Char./line/screen std.	1920 — 24x80 12 Std. 128 ASCII 7x9 dot matrix P31 green or P134 amber No 96 char. std.  No Std. Std. No Std. No Up, smooth (opt.) 1 std. Std. Std. No No Std. No No Line/page std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	IBM 3278-style  128 ASCII Std. 24 std.  Std.	Typewriter (English & French) & French) EBCDIC Std. 12 std.  Std.	Typewriter (English & French) & French) EBCDIC Std. 12 std.  Std.	Typewriter (English & French) & French) EBCDIC Std. 12 std.  Std.	Typewriter  128 ASCII Std. 4 std. (8 functions) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	120 cps impact No No Std. —	200 cps dot matrix 300 lpm band Opt. Std. —	200 cps dot matrix 300 lpm band Opt. Std. No	200 cps dot matrix 300 lpm band Opt. Std. No	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Synchronous SNA/SDLC, BSC EBCDIC 1200-19,200M Block Std. Coaxial  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-19,200 Block Std. Coax Type A  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-19,200 Block Std. Coax Type A  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-19,200 Block Std. Coax Type A  No No	Half/full-duplex Asynchronous — ASCII 300-19,200 Character Std. RS-232-C std.; 20 mA opt. No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,500 4,990-5,775 12-25 144-300 12/83 1/84 — CCI	Contact vendor Contact vendor Contact vendor Contact vendor 1983 1983	Contact vendor Contact vendor Contact vendor Contact vendor 1983 1983	Contact vendor Contact vendor Contact vendor Contact vendor 1983 1983	950 — 15 — 9/83 11/83 — Perkin-Elmer
<b>COMMENTS</b>	Part of Group 8000; connects to 8274 controller	Attaches to Comterm 6270 controller or IBM-compatible; French function keys; choice of keyboard; antiglare filter	Attaches to Comterm 5270 and 6270 controllers, or IBM-compatible; French function keys; choice of keyboard	Attaches to Comterm 6270 controller or IBM-compatible; French function keys; choice of keyboard	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Concurrent Computer (Perkin-Elmer) Model 6312	Control Concepts EM-3275	Control Concepts EM-3276	Control Concepts CC-3276	Control Concepts CC-3278
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone No No Std.	Standalone Yes 3275 No	Standalone/cluster 1 Yes 3276 No	Standalone/cluster 1 Yes 3276 No	Standalone Yes 3278 Std.
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 2 pages opt. 24x80  12 Std. 128 ASCII 7x9 dot matrix P31 green or P134 amber No 32 char. std.	1920 8K 24x80 plus status line 12; 15 opt. Swivel opt. 96 EBCDIC 5x7 dot matrix P42 green  No No	1920 12K 24x80 plus status line 12; 15 opt. Swivel opt. 96 EBCDIC 5x7 dot matrix P42 green  No No	1920 12K 24x80 plus status line 12; 15 opt. Swivel opt. 96 EBCDIC 5x7 dot matrix P42 green  No No	1920 2K 24x80 plus status line 12 Std. 96 ASCII/IBM symb. 7x8 dot matrix P31 green  No No
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 16 std. (32 func- tions) Std.	IBM 3278-style  96 EBCDIC/ASCII Std. 24 std.  Std.	IBM 3278-style  96 EBCDIC/ASCII Std. 24 std.  Std.	IBM 3278-style  96 EBCDIC Std. 24 std.  Std.	IBM 3278  96 EBCDIC/ASCII Std. 24 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std.	180 cps No Opt. Opt. Audible alarm	180 cps 100 lpm Opt. Opt. Audible alarm	180 cps 180 lpm Opt. Opt. Audible alarm	No No No Std.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous — ASCII 300-19,200 Char./line/page/mes Std. RS-232-C std.; 20 mA opt.	Half-duplex Synchronous BSC EBCDIC/ASCII Up to 9600 Block Std.; contention opt. RS-232-C	Half-duplex Synchronous BSC EBCDIC/ASCII Up to 9600 Block Std. RS-232-C	Half-duplex Synchronous SDLC EBCDIC Up to 9600 Block Std. RS-232-C	Half/full-duplex Asynchronous BSC, SNA/SDLC ASCII 50-19,200 Char./block No RS-232-C or 20 mA
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,320 — 18 — 6/84 9/84 — Perkin-Elmer	1,995-3,490 Included 32 — 6/80 9/80 Over 500 Control Concepts, third party	2,195-3,590 Included 35 — 6/80 9/80 Over 1000 Control Concepts, third party	2,395-4,340 Included 42 — 3/82 6/82 Over 1000 Control Concepts, third party	990-1,495 — 23 230 3/84 4/84 — Control Concepts
<b>COMMENTS</b>					Interfaces to IBM 3270 IDS via pro- ocol converter

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Control Concepts CC-5251	Control Data Model 714	Control Data Model 721	Control Data Model 722-10	Control Data Model 722-30
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — Yes 5251-11 Std. —	Either 15 No No No —	Standalone — 3276 opt. Std. CDC 722	Standalone — No No Std. Control Data	Standalone — No No Std. CDC Advanced Mode, ADDS Viewpt., ANSI
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 2K 24x80 plus status line 12 Std. 96 ASCII/IBM symb. 7x8 dot matrix P31 green No No Std. Std. Std. Std. No No No No Std. Both std. Std. Std. No Std. Std. Std. Line/screen std.	1280, 1920 2560, 3940 char. 16/24x80 8x10 No 96 5x9 dot matrix P4 white No — Std. No No No Std. Both std. Std. Std. Std. Std. Char./screen std.	1920-3960 — 24/30x80, 24/30x132 15 Std. 96 ASCII 8x16/5x16 dot matrix P39 green No Std. (721-31) Std. Std. Std. No Up std. 1 std. Std. Both std. Std. Std. Std. Std. Char./screen std.	1920 — 24x80 12 No 96 ASCII 8x10 dot matrix P4 white No — Std. Std. No Std. No Up/down std. 1 std. Std. Both std. No Std. No Std. Std. Std.	1920 — 24x80 12 Std. 128 ASCII 7x9 in 10x12 cell P31 green No 31 special char. Std. Std. Std. Std. No Step std. 1 std. Std. Addressable only Std. Std. No Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	IBM 5251 style 96 EBCDIC/ASCII Std. 24 std. Std.	Typewriter ASCII No 8 std. Std.	Typewriter ASCII Std. 15 std. Std.	Typewriter ASCII No 12 std. Std.	Typewriter 128 ASCII Std. 12 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	180 cps No No Std. Audible alarm	40/55/150/200 cps No No Std. Audible alarm, touch panel, graphics (Tektronix 401X emulation)	150 cps No No Std. Audible alarm	40/55/150/200 cps No No Std. Audible alarm std.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous SDLC ASCII 50-19,200 Char./block No RS-232-C or 20 mA Opt. (1200/2400) No	Half/full-duplex Synchronous ASCII, CDC ASCII 2000-9600 Block Std. RS-232-C No No	Half/full-duplex Async./sync. opt. ASCII, BSC opt. ASCII 110-19,200 Char./block Opt. RS-232-C Opt. No	Half/full-duplex Asynchronous ASCII, TTY ASCII 110-9600 Character No RS-232-C No No	Half/full-duplex Asynchronous ASCII ASCII 75-19,200 Char./block No RS-232-C, CCITT V.24, or 20 mA No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	990-1,495 — 23 230 3/84 4/84 — Control Concepts	4,490-10,108 — 53-82 — 5/78 5/78 Over 500 Control Data	2,295/2,895 — 31/43 — 4/82 6/82 Over 15,000 CDC	850 — 25 — 2/81 2/81 Over 9000 Control Data	850 — 16 192 4/84 9/84 Over 1000 Control Data
<b>COMMENTS</b>	Interfaces to IBM System/34, S/36, or S/38 via protocol converter		721-21—Basic TTY; 732-31—Basic TTY & PLATO/Graphics; three maintenance options: On-Site; Mail-in to service center; Customer self-maintenance 1-year lease—\$125/ 159 per month	1-year lease—\$50/ month	1-year lease—\$50/ month; quantity pricing: 20-49 units—\$700 each; 50-99 units—\$650 each

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	CTi Data CTI 1000A	CTi Data CTI 3078	Cybernex RH 7814	Cybernex RH 7813	Cybernex RH 7305
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No IBM 2740/1, /2 No None	Cluster 16 No 3278-2 No None	Standalone — No No No Honeywell VIP 7800 Series	Standalone — No No No Honeywell VIP 7800/7300 Series	Standalone — No No No Honeywell VIP 7300
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 20K 24x80  12 Tilt std. 64 5x7 dot matrix Green  No No No No No No Std. No No No Std. Std. Std. Std. Std. Std. Fwd./back std. Std. No Char. std.	1920 1 page 24x80  12 Tilt std. 64 7x9 dot matrix Green  No No No Std. Std. No No No Std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Std.	2080 1 page 24x80 plus 2 status lines 14 Std. 128 ASCII 7x9 dot matrix P31 green  No 11 line drawing Std. Std. Std. Std. Std. No Up/down std. 72-line scroll Std. Both std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/page std.	2080 1 page 24x80 plus 2 status lines 14 Std. 128 ASCII 7x9 dot matrix P31 green  No 11 line drawing Std. Std. Std. Std. Std. No Up/down std. 72-line scroll Std. Both std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/page std.	2080 1 page 24x80 plus 2 status lines 14 Std. 128 ASCII 7x9 dot matrix P31 green  No 11 line drawing Std. Std. Std. Std. Std. No Up/down std. Both std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/page std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter  64 Std. 15 std.  Std. 80 & 180 cps No No Std. 55 cps docu. printer	Typewriter  64 Std. 24 std.  No 180 cps No No Std. 55 cps docu. printer	Typewriter  128 ASCII Std. 12 plus 10 pro- grammable Std.  No No No Std. Opt.	Typewriter, multifunction 128 ASCII Std. 12 plus 10 pro- grammable Std.  No No No Std. Opt.	Typewriter, multifunction 128 ASCII Std. 12 plus 10 pro- grammable Std.  No No No No —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Half/full-duplex Asynchronous IBM 2740 EBCDIC To 1800 bps Block Std. RS-232-C  No No 2,350 — 25 — 6/82 7/82 Over 500 TRW	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 9600 Character Std. RS-422  No No 1,250 6,400 14 — 3/83 4/83 — TRW	Half/full-duplex Sync./async. Honeywell/ASCII ASCII Up to 38,400 Char./block Std. RS-232-C, RS-422, or 20mA No No Contact vendor — — 3/85 9/85 — Cybernex, Honeywell ParaData Upward-compatible from Cybernex SA 7814 & SA 7800; sold exclusively in Canada by Honeywell Canada; sold exclu- sively in U.S. by ParaData; lifetime keyboard warranty	Half/full-duplex Sync./async. Honeywell/ASCII ASCII Up to 38,400 Char./block Std. RS-232-C, RS-422, or 20mA No No Contact vendor — — 3/85 9/85 — Cybernex, Honeywell ParaData Sold exclusively in Canada by Honeywell Canada; sold exclu- sively in U.S. by ParaData; lifetime keyboard warranty	Half/full-duplex Asynchronous Honeywell/ASCII ASCII Up to 38,400 Character No RS-232-C, RS-422, or 20mA No No Contact vendor — — 3/85 9/85 — Cybernex, Honeywell ParaData Sold exclusively in Canada by Honeywell Canada; sold exclu- sively in U.S. by ParaData; lifetime keyboard warranty
<b>COMMENTS</b>					



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Cybernex RB 1100	Cybernex XLA D200	Cybernex XLA 87 Series	Cybernex SA 2622+	Cybernex RG 220 Turbo
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Concatenation — No No No Burroughs ET 1100	Standalone — No No Std. Data General D200	Standalone — No No Std. See comments	Standalone — No No Std. Hewlett-Packard	Standalone — No No Std. Digital VT220
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	2080 15 pages 12/24x40/80 plus 2 status lines  14 Std. 256 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. Std. 15 std. Up/down std. 15 std. Std. Both std. Std. Std. No No Fwd./back std. Std. Std. Char./line/page std.	1920 1 page 24x80  14 Std. 128 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. No Up std. No Both std. No No No No Std. No Line/screen std.	2000 1 page 24x80  14 Std. 128 ASCII 7x9 dot matrix P31 green  No Bus. graphics opt. No No Std. Opt. Std. Opt. Up/down std. No Opt. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/page std.	2080 6 pages 24x80 plus 2 status lines  14 Std. 256 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. No Up/down std. 6 std. Std. Both std. Std. Std. Std. Std. Std. Char./line/page std.	Up to 3248 1 page 24x80/132 plus status line 14 Std. 256 ASCII 7x10/10x14 P31 green  No Bus. graph./prog. Std. Std. No Std. Std. Std. Up/down, smooth 1 std. Std. Both std. Std. No Std. Std. Std. Char./line/page std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter (Burroughs) 128 ASCII Std. 10 physical; 20 logical Std.	Typewriter  128 ASCII Std. 15 fixed; 15 programmable Std.	Typewriter  128 ASCII Std. Varies; model dependent Std.	Typewriter  128 ASCII Std. 8 std. Std.	Typewriter  256 ASCII Std. 105 (6 banks of 15 keys) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. Opt.	No No No Std.	No No No Std.	No No No Std.	No No Std. Opt.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half-duplex Async./sync. Burroughs ASCII Up to 38,400 Line/block Std. RS-232-C, TDI  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Character No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Char./block No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Char./block No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous ASCII ASCII Up to 38,400 Character No RS-232-C, RS-423, 20mA No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Contact vendor — — — 12/85 12/85 — Cybernex, third party vendors	Contact vendor — — — 2/82 5/82 — Cybernex, third party vendors	Contact vendor — — — 1/82 3/82 — Cybernex, third party vendors	Contact vendor — — — 12/85 12/85 — Cybernex, third party vendors	Contact vendor — — — 3/85 6/85 — Cybernex, third party vendors
<b>COMMENTS</b>	Totally remappable keyboard; 109-key keyboard, ET 1100-compatible, with extra cursor pad; lifetime keyboard warranty; upward compatible with Cybernex SA 830	Print page, through print with display, both buffered; 15 function keys, with up to 80 characters each; lifetime keyboard warranty	Emulations for Hazeltine 1510/1520 Rexon 303, others; lifetime keyboard warranty; customization available, volume dependent	Plug-compatible replacement for HP 2622; replaces HP 2392A in HP 2622 applications; six full pages of memory standard; lifetime keyboard warranty	Special Cybernex menu with extra functions beyond DEC; 6 banks of 15 keys each in addition to 15 programmable function keys; lifetime keyboard warranty; 106 keys

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Cybernex XLB 4309	Cybernex XM 3270	Cybernex XLB 3178	Cybernex XLB 5291	Data General Dasher D210/D211
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. MAI Basic Four EVDT 4309	Standalone — No 3278 w/prot. conv. Std. ANSI X3.64	Standalone — No 3178 w/prot. conv. Std. ANSI X3.64	Standalone — No 5291 w/prot. conv. Std. ANSI X3.64	Standalone 16 No No Std. DG D100/D200, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	2000 1 page 24x80 plus status line 14 Std. 128 ASCII 7x9 dot matrix P31 green  No Business graphics Std. Std. Std. Std. Std. No Up/down std. 1 std. Std. Both std. Std. Std. No Std. Std. Std. Std. Char./line/page std.	2000 1 page 24x80 plus status line 14 Std. 128 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. Read modified Std. Std. Std. Char./line/screen std.	2000 1 page 24x80 plus status line 14 Std. 128 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. No No Std. Std. Std. Char./line/screen std.	2000 1 page 24x80 plus status line 14 Std. 128 ASCII 7x9 dot matrix P31 green  No No Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. No No Std. Std. Std. Char./line/screen std.	1920 — 24x80  12 Tilt std. 128; 256 7x11 in 10x12 cell P31 green  No No Std. Std. No Up std. No No Both std. No No No Std. No No Line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 28 std.  Std.	Typewriter (IBM)  128 ASCII Std. 24 std.  Std.	Typewriter (IBM)  128 ASCII Std. 24 std., plus all non-ASCII keys Std.	Typewriter (IBM)  128 ASCII Std. 24 std., plus all non-ASCII keys Std.	Typewriter  128 ASCII Std. 15 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. Opt.	No No No Std. Opt.	No No No Std. Opt.	No No No Std. Opt.	No No No Std. (D211 only) —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII Up to 38,400 Char./block No RS-232-C std.	Half/full-duplex Asynchronous ASCII ASCII Up to 38,400 Char./block No RS-232-C std.; RS-422 opt.	Half/full-duplex Asynchronous ASCII ASCII Up to 38,400 Character No RS-232-C std.; RS-422 opt.	Half/full-duplex Asynchronous ASCII ASCII Up to 38,400 Character No RS-232-C std.; RS-422 opt.	Full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C; RS-422 20mA (D211) No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Served by	Contact vendor — — — 10/85 10/85 — Cybernex, third party vendors Completely MAI- compatible, includ- ing Basic Four motor bars; 114 keys; lifetime keyboard warranty	Contact vendor — — — 9/83 11/83 — Cybernex, third party vendors Block mode terminal suited to packet- switched networks; supported by Sim- ware, Pearle, & IBM 7171 protocol con- verters; IBM 3278 keyboard layout; selectable ANSI X3.64 mode	Contact vendor — — — 1/86 — — Cybernex, third party vendors Character mode ter- minal; works with any protocol con- verter; looks to operator as 3278-2; looks to protocol converter as VT100; lifetime keyboard warranty	Contact vendor — — — 1/86 — — Cybernex, third party vendors Character mode ter- minal; works with any protocol con- verter; looks to operator as 5291; looks to protocol converter as VT100; lifetime keyboard warranty	995/1,195 — — — 13/15 — 5/83 7/83 — Data General
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Data General Dasher D280C	Data General Dasher D410	Data General Dasher D460	Datamaxx EXT-4300	Datamaxx EXT-1200
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. —	Standalone 16 No No Std. DG D400, ANSI X3.64	Standalone 16 No No Std. DG D400, ANSI X3.64	Standalone — No 3278 Std. See comments	Standalone — No 3278 Std. DEC VT100; see comments
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80  13 Std. 96 ASCII 7x10 dot matrix Color  8 colors std. No Std. Std. No Std. Std. No Up std. No No Both std. No No No Std. No No Line/screen std.	1944, 3240 — 24x81/135  12 Tilt std. 256 7x11 in 10x12 cell P31 green  No No Std. Std. No Up std. No Std. Both std. Std. No 24 std. Std. Std. Std. Line/screen/window std.	1944, 3240 — 24x81/135  12 Tilt std. 256 7x11 in 10x12 cell P31 green  No Std. No Up std. No Std. Both std. Std. No 24 std. Std. Std. Std. Line/screen/window std.	2000 10 pages 25x80  14; 12 opt. Std. 128 7x11 dot matrix P39 green  No No Std. Std. No Up/down std. 10 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	2000 10 pages 25x80  14; 12 opt. Std. 128 7x11 in 10x12 cell P31 green std.; amber opt.  No No Std. Std. No Up/down std. 10 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 15  Std.	Typewriter  128 ASCII Std. 15 std.  Std.	Typewriter  128 ASCII Std. 15 std.  Std.	Typewriter  128 ASCII Std. 40 std.  Std.	Typewriter  128 ASCII Std. 40 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Opt. —	No No No Std. —	No No No Std. —	340 cps matrix 1000 lpm band No Std. IBM PC-compatible	340 cps matrix 1000 lpm band No Std. IBM PC-compatible
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Full-duplex Asynchronous ASCII ASCII Up to 19,200 Character No RS-232-C or 20mA	Full-duplex Asynchronous ASCII ASCII 110-19,200 Character No RS-232-C, RS-422, or 20mA	Full-duplex Asynchronous ASCII ASCII 110-19,200 Character No RS-232-C, RS-422, or 20mA	Half-duplex Async./sync. Polled ASCII 300-38,400 Char./line/block Std. RS-232-C, TDI std.	Half-duplex Async./sync. Polled ASCII 300-38,400 Char./line/block Std. RS-232-C, TDI std.
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,750 — — — 8/81 — — Data General	1,635 — 17 — 5/83 7/83 — Data General	1,835 — 19 — 5/83 7/83 — Data General	1,550 — 25 240 — 5/84 2,000 Datamaxx, TRW, Western Union	1,695 — 25 240 — 5/85 400 Datamaxx, TRW, Western Union
<b>COMMENTS</b>	Lease and rental available via third parties and terminal resellers		Alphanumeric and character-mapped graphics terminal; additional 3572 user-defined characters/symbols available	Compatible with Burroughs MT983 & ET1100, NCR 796-301 & 7900 Model 3; can be upgraded to workstation with Exxpert II—no extra software needed; quantity discounts available	Compatible with Burroughs MT983 & ET1100, NCR 796-301 & 7900 Model 3; can be upgraded to workstation with Exxpert II—no extra software needed; quantity discounts available

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Datamaxx EXT-7301	Datamaxx DMX-1100	Datapoint 8242	Datapoint 8215	Datastream 8178
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3278 Std. See comments	Standalone — No No Std. Burroughs ET 1100	Standalone Variable No W/Datapoint proc. Std. —	Standalone Variable No Via processor Std. ADDS, Hazeltine, Lear Siegler, Qume	Either 32 No 3178/3278 Std. DEC VT220
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000 10 pages 25x80	2000 10 pages 25x80	1920 80/25/1 25x80	1920 80/25/1 25x80	1920, 3300 3300 24x80/132
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14; 12 opt. Std. 128 7x11 in 10x12 cell P31 green std.; amber opt.	14; 12 opt. Std. 128 7x11 in 10x12 cell P31 green	14 Std. 96 ASCII 7x9 dot matrix Amber	14 Std. 96 ASCII 7x9 dot matrix Amber	14 Std. 96 7x9 dot matrix P31 green or P134 amber
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size	No No Std. Std. Std. Std. Std. No	No No Std. Std. Std. Std. No	No No No No No No	No No Std. Std. Std. Std. No	No No Std. Std. Std. Std. No
Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Up std. 10 std. Std. Both std. Std. Std.; NCR msg. mode No Fwd./back std. Std. Std. Char./line/screen std.	Up/down std. 10 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	Up/down std. 1 page Std. Both std. Std. Std. Std. Std. Std. Line/screen std.	Up std. 1 page Std. Both std. Std. Std. No Std. Std. Std. Line/screen std.	Up std. No Std. Both std. Std. Std. No Std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys	Typewriter 128 ASCII Std. 40 std.	Typewriter 128 ASCII Std. 20 std.	Typewriter (Selectric) 96 ASCII Std. 10 std.	Typewriter (Selectric) 96 ASCII Std. 14 std.	Typewriter (IBM 3180-style) 96 ASCII/EBCDIC Std. 24 std.
Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. 340 cps matrix 1000 lpm band No Std. IBM PC-compatible	Std. 340 cps matrix 1000 lpm band No Printer port std.	Std. 30/160/300 cps imp. 300/600 lpm band No RS-232-C std.	Std. 30/160/300 cps imp. 300/600 lpm band No RS-232-C std.	Std. No No No RS-232-C
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous Polled ASCII 300-19,200 Line/page Std. RS-232-C, NCR	Half-duplex Async./sync. Polled ASCII 300-9.6K/19.2K Char./line/page Std. RS-232-C, TDI	Half/full-duplex Asynchronous — ASCII 50-19,200 Character Std. RS-232-C	Half/full-duplex Asynchronous — ASCII 50-19,200 Character Std. RS-232-C	Half/full-duplex Sync./async. ASCII/BSC/SNA ASCII/EBCDIC Up to 19,200 Char./block No RS-232-C or 20 mA
Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	No No 1,695 — 25 240 — 5/85 200 Datamaxx, TRW, Western Union Compatible with Burroughs MT983 & ET 1100, NCR 796- 301 & 7900 Model 3; can be upgraded to workstation with Expert II—no extra software needed; quantity discounts available	No No 1,495 — 25 240 — 9/85 200 Datamaxx, TRW, Western Union Quantity discounts available	No No 1,395 Processor dependent 14 168 10/85 10/85 150 Intelogic Trace, Inc.	No No 599 Processor dependent 11 154 10/85 7/85 250 Intelogic Trace, Inc.	No No 995 5,000-26,000 — — 5/85 5/85 — Datastream Attaches to Data- stream BSC or SNA controllers; also attaches to DEC host or timesharing service
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Datastream 8180	Davox 1911	Davox 2911	Decision Data 3751-11	Decision Data 3791-01
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either 32 No 3180 Std. DEC VT220	Cluster 32 No 3270 SNA/BSC Std. DEC VT100	Cluster 32 No 3270 SNA/BSC Std. DEC VT100	Either 8 No 5251-11 No —	Either 8 No 5291, 5251-1/-11 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920-3564 3564 24/32/43x80, 27x132	2000 1920/24/11 28x80	2000 1920/24/11 28x80	1920 — 24x80 plus status line	1920 — 24x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 96 7x7 dot matrix P31 green or P134 amber	12 Std. 128 7x9 in 9x12 cell P31 green std.; amber opt.	12 Std. 1140 7x9 in 9x12 cell Color	15 Tilt std. 96, MNC-188 8x16 dot matrix P39 green	12 Tilt std. 96, MNC-188 7x9 dot matrix P39 green
Color capability Graphics Programmable field/char. highlighting via:	No ASCII (business)	No No	7-color support No	No No	No —
Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Std. Std. Std. Std. Std. No Std. No Std. Std. Both std. Std. Std. No Std. Std. Std. Std. Std. Std. Char./line/screen std.	Std. User selectable No Std. Std. No Up/down opt. Std. — No No Std. Std. Std. Std. Std. Std.	Std. User selectable Std. Std. Std. No Up/down opt. Std. — No No Std. Std. Std. Std. Std. Std.	Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.	Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter (IBM 3180-style) 96 ASCII/EBCDIC Std. 24 std. Std.	Typewriter 64 ASCII/96 EBCDIC Std. 16 opt. Std.	Typewriter 64 ASCII/96 EBCDIC Std. 16 opt. Std.	Typewriter, data entry EBCDIC Std. 24 std. Std.	Typewriter 16/188 MNC EBCDIC Std. 24 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No RS-232-C —	No No No No —	No No No No —	No No No No Light pen, magnetic card reader, keylock	No No No No Keylock
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Sync./async. ASCII/BSC/SNA ASCII/EBCDIC Up to 19,200 Char./block No RS-232-C or 20 mA	Half/full-duplex Sync./async. BSC, SNA/SDLC EBCDIC/ASCII 75-9600 Char./block Std. RS-232-C	Half/full-duplex Sync./async. BSC, SNA/SDLC EBCDIC/ASCII 75-9600 Char./block Std. RS-232-C	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 1M Block Std. Twinax phase- encoded	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 1M Block Std. Twinax,phase- encoded
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,850 5,000-26,000 — — 5/85 5/85 — Datastream	2,295 3,880-5,455 — 92-185 6/81 5/82 Over 500 CDC	5,600 3,880-5,455 — 245-383 6/81 5/82 Over 500 CDC	1,930 — 22.50 230 10/80 1/81 36,000 Decision Data	1,550 — — 170/yr. (1st 2 yrs.) 7/83 7/83 17,000 Decision Data
<b>COMMENTS</b>	Attaches to Data- stream BSC or SNA controllers; also attaches to DEC host or timesharing service				

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Decision Data 3761-01	Delta Data D2830-II	Delta Data D8303	Digital Equipment VT100 Series	Digital Equipment VT220
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either 8 No 5291 No IBM 5251-11	Standalone — No No Std. Burroughs ET1100	Standalone — No No Std. —	Standalone — No No Std. VT100 Series	Standalone — No No Std. VT100/VT52, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80 plus status line 14 Std. 96, MNC-188 7x9 dot matrix P39 green  No No Std. Std. Std. Std. No Up/down std. Std. Std. Std. Std. Std. Window Std. Std. Std. Std. Std.	1920 1920/24/10 24x80 plus status lines 14 Std. 128 ASCII 7x9 dot matrix P31 green  No No No Std. Std. Std. Std. No Up/down std. 10 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/display std.	2240 40K characters 28x80  14 Std. 256 ASCII 7x9 dot matrix P31 green  No No No Std. Std. Std. Std. No Up/down std. 20 std. Std. Both std. Std. Std. 8 std. Fwd./back std. Std. Std. Char./line/display std.	1848, 1920, 3168 — 24x80, 14/24x132  12 Opt. 128 ASCII 7x9 dot matrix P4 white std.  No Std. (VT125) Std. Std. (VT102); opt. No Std. (VT102/VT131) Std. Std. Smooth/bidir. No Std. Both std. No Std. 2 std. Std. & program tabs Std. (VT102/VT131) Std. (VT102/VT131) Char./line/screen std.	1920, 3168 — 24x80/132  12 Tilt std. 256 7x10 dot matrix White, green, or amber No No Std. Std. Std. Std. Std. Std. Both std. No Std. 2 std. Std. & program tabs Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  96, MNC-188 EBCDIC Std. 24 std.  Std.	Typewriter  128 ASCII Std. All soft keyboard  Std.	Typewriter  127 ASCII Std. 96 std.  No	Typewriter  ASCII Std. 4 std.  Std.	Typewriter  ASCII Std. 20 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No No Keylock	Opt. Opt. No Std.	Opt. Opt. Opt. Std.	30-240 cps impact No Std. Std.(VT102/125/131) Graphics printer (VT125)	30-240 cps impact No Std. Std.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 1M Block Std. Twinax  No No	Half/full-duplex Async./sync. Burr. poll/sel.,TTY ASCII Up to 19,200 Char./line/block Std. RS-232-C  No No	Half/full-duplex Async./sync. TTY, Xon/Xoff ASCII Up to 19,200 Char./block No RS-232-C  No No	Full-duplex Asynchronous ASCII/ANSI ASCII 50-19,200 Character No RS-232-C std.; 20mA opt. No No	Full-duplex Asynchronous ASCII/ANSI ASCII 75-19,200 Character No RS-232-C, 20mA, or RS-423 No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,820 — 125 4/84 4/84 8000 Decision Data	995-1,295 — 33 348 4/84 6/84 700 Delta Data	2,395 — 33 348 7/84 9/84 200 Delta Data	895-3,800 — 18-29 — 1978 1978 Over 500,000 Digital Equipment Corp.	1,095 — 6 — 11/83 11/83 — Digital Equipment Corp.
<b>COMMENTS</b>	Operator or programmer can store 1920 characters in off-line workpad	Full Burroughs ET1100 emulation	Expansion to full IBM PC operation including options for LAN, storage capacity, printers, & second host port	Models: VT100, VT101, VT102, VT125 (graphics), and VT131; ANSI-standard escape sequences	Plain language set-up menu for feature selection in English, French, & German; multinational character set support; multiple language keyboards available; word processing keyboards available

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Digital Equipment VT240	Digital Equipment VT241	Direct 820	Direct 825	Direct 828/1
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. VT100/52; Tek. 4010/ 4014; ANSI X3.64	Standalone — No No Std. VT100/52; Tek. 4010/ 4014; ANSI X3.64	Standalone — Portable case No No HP2640, HP2645A, HP2622	Standalone — Portable case No No HP2640, HP2645A, HP2622	Standalone — Portable case No No HP2640, HP2645A, DEC VT100/VT52
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920, 3168 — 24x80/132	1920, 3168 — 24x80/132	1920 4.2K 24x80	1920, 3168 16K std.; 32K opt. 24x80/132	1920, 3168, 3696 32K 24x80/132, 28x132
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 No 256 8x10 dot matrix White, green, or amber	13 No 256 8x10 dot matrix Color	12 No 128 ASCII 7x11 dot matrix P4 white	12 No 128 ASCII 7x11 dot matrix P4 white/P31 green	12 No 128 ASCII 7x11 dot matrix P4 white/P31 green
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Std. Std. Std. Std. Std. Std. No Std. Both std. No Std. 2 std. Std. & program tabs Std. Std. Char./line/screen std.	4 colors std. Std. Std. Std. Std. Std. Std. No Std. Both std. No Std. 2 std. Std. & program tabs Std. Std. Char./line/screen std.	No — Std. Std. Std. Std. No Bidir.; 3 rates Mult. pages std. No Both std. Std. Std. Std. Fwd./back tab Std. Std. Char./line/screen std.	No — Std. Std. Std. Std. No Bidir.; 3 rates Mult. pages std. No Both std. Std. Std. Std. Fwd./back tab Std. Std. Char./line/screen std.	No — Std. Std. Std. Std. No Bidir.; 3 rates Mult. pages std. No Both std. Std. Std. Std. Fwd./back tab Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  ASCII Std. 20 std.  Std.	Typewriter  ASCII Std. 20 std.  Std.	Typewriter  96 ASCII Std. 8 std.  Std.	Typewriter  96 ASCII Std. 8 std.  Std.	Typewriter  96 ASCII Std. 8 or 16 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	30-240 cps No Std. Std. —	30-240 cps impact No Std. Std. —	No No No Std. No	No No No Std. Modem opt., Plot 10 graphics opt.	No No No Std. Modem opt., plot 10 graphics opt.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Full-duplex Asynchronous ASCII/ANSI ASCII 75-19,200 Character No RS-232-C, 20mA, or RS-423 No No	Full-duplex Asynchronous ASCII/ANSI ASCII 75-19,200 Character No RS-232-C, 20mA, or RS-423 No No	Half/full-duplex Asynchronous DC1/DC2; Eng. Ack. ASCII 50-19,200 Char./line/block No RS-232-C No No	Half/full-duplex Asynchronous DC1/DC2; Eng./Ack. ASCII 50-19,200 Char./line/block No RS-232-C Opt. No	Half/full-duplex Asynchronous DC1/DC2; Eng./Ack. ASCII 50-19,200 Char./line/block No RS-232-C Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	2,195 — 16 — 11/83 11/83 — Digital Equipment Corp.	3,195 — 23 — 11/83 11/83 — Digital Equipment Corp.	1,495 — 24 — 4/83 6/83 — Contact vendor	1,890 — 24 — 7/81 7/81 — Contact vendor	2,790 — 24 — 3/81 4/81 — Contact vendor
<b>COMMENTS</b>	Bit-mapped graphics version of VT220; two graphic proto- cols: Tektronix 4010/4014 & DEC ReGIS; 800 x 240 pixel screen resolu- tion	Color version of VT240		HP line-drawing set; fold-up keyboard; user-adjustable convenience fea- tures; upgrade to CP/M computer system opt.; screen-labeled function keys	Same as 825 plus downline loadable fonts

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Direct 831	Esprit Systems ESP 6110+	Esprit Systems ESP 6115	Esprit Systems ESP 6310	Esprit Systems ESP 6515
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — Portable case No No No DEC VT100/VT131/ VT52	Standalone — No No Std. Esprit II, ADDS R25 & View., LSI ADM 3A	Standalone — No No Std. DEC VT52	Standalone — No No Std. TeleVideo 925, ADDS View., LSI ADM 3A/5	Standalone — No No Std. DEC VT100/VT220
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920, 3168, 3696 16K std.; 32K opt. 24x80/132, 28x132	1920 — 24x80	2000 — 24x80 plus status line 14 Std. 128 ASCII + graph. 7x11 dot matrix Green or amber	2000 — 4 pages opt. 25x80 14 Std. 128 ASCII + graph. 7x11 dot matrix Green std.; amber opt.	2000, 3168 — 24x80/132 plus status line 14 Std. 176 ASCII + graph. 7x11 dot matrix Green or amber
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 No 128 ASCII 7x11 dot matrix P4 white/P31 green	14 Std. 128 ASCII 7x11 dot matrix Green std., amber opt.	14 Std. 128 ASCII + graph. 7x11 dot matrix Green or amber	14 Std. 128 ASCII + graph. 7x11 dot matrix Green std.; amber opt.	No Std.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Line drawing set Std. Std. Std. Std. Std. No Bidir.; 3 rates Mult. pages std. No Both std. Std. Std. Std. Fwd./back tab Std. Std. Char./line/screen std.	No No Std. Std. Std. Std. No Std. Std. Both std. Std. Std. Fwd./back std. Std. Std. Line/screen std.	No Std. Std. Std. Std. No Up std. No Std. Both std. No Std. Fwd./back std. Std. Std. Std.	No Std. Std. Std. Std. No Smooth std. 4 opt. Std. Std. Std. No Fwd./back std. Std. Std. Std.	No Std. Std. Std. Std. Std. Smooth (4 speeds) No Std. Both std. No Std. 2 std. Std. No Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 96 ASCII Std. 16 std. Std.	Typewriter 96 ASCII Std. 4/8 std. Std.	Typewriter 128 ASCII Std. 16/32 std. Std.	Typewriter 128 ASCII Std. 11/22 std. Std.	Typewriter 176 ASCII Std. 18/36 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. Modem opt., Plot 10 graphics opt.	No No No Opt. —	No No No Std. —	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous X-on/X-off, DTR ASCII 50-19,200 Char./line/block No RS-232-C Opt. No	Half/full-duplex Asynchronous TTY ASCII 50-19,200 Char./line/block No RS-232-C std., RS- 422, 20mA opt. No No	Half/full-duplex Asynchronous ANSI/TTY ASCII/ANSI 50-19,200 Character No RS-232-C std., RS- 422, 20mA opt. No No	Half/full-duplex Asynchronous TTY ASCII 50-19,200 Char./line/block No RS-232-C std.; 20mA, RS-422 opt. No No	Full-duplex Asynchronous TTY ASCII/ANSI 75-38,400 Character No RS-232-C std.; 20mA, RS-422 opt. No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,395 — 24 — 11/82 11/82 — Contact vendor	395 — — — 7/84 8/84 20,000 Esprit Depot Re- pair, TRW	545 — — — 2/85 4/85 500 Esprit Depot Re- pair, TRW	699 — — — 11/83 12/83 60,000 Esprit Depot Re- pair, TRW Upgradeable to standalone PC	695 — — — 5/85 8/85 1,000 Esprit Depot Re- pair, TRW
<b>COMMENTS</b>	Full data entry check. & forms capa. downline load. char. fonts, line drawing set, fold-up kybd. All feat. & controls settable from kybd. & saveable in non- volatile RAM.				



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Esprit Systems Esprit III Color	Esprit Systems Executive 10/51	Esprit Systems Executive 10/78	Falco Fame II	Falco Fame III
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. TeleVideo 950	Standalone — No 5251 Std. —	Standalone — No 3278 Std. —	Standalone — No No Std. DEC VT100/VT52, TeleVideo 925, ANSI	Standalone — No No Std. Lear Siegler ADM 3A, DEC VT52, ANSI
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80 plus status line 13 Tilt std. 128 ASCII + graph. 7x11 dot matrix Green  8 colors std. Std. No No No Dim std. Std. No No No Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Line/screen std.	1920 — 24x80 plus status line 12 Std. 124 ASCII 7x10 dot matrix P146 green  No No Std. Std. Std. Std. No No Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Line/screen std.	1920 — 24x80 plus status line 12 Std. 124 ASCII 7x10 dot matrix P146 green  No No Std. Std. Std. Std. No No Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Line/screen std.	1920, 3168 2 pages 24x80/132 plus status line 14 Std. 128 7x9 dot matrix P31 green std.; amber opt. No Opt. Std. Std. Std. Std. Std. Up/down std. Std. Std. Std. Std. Std. Std. Std. Std.	1920 2K std. 24x80 plus status line 12 std.; 15 opt. Std. 128 7x9 dot matrix P31 green std.; amber opt. No No No Up/down std. Std. Std. No No No Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 22 std.  Std.	Typewriter (IBM 5251-style) 124 ASCII Std. 8 std.  Std.	Typewriter (IBM 3278-style) 124 ASCII Std. 12 Std.  Std.	Typewriter  128 ASCII Std. 50 std.  Std.	Typewriter  128 ASCII Std. 12 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	No No No Std. —	No No No Std. —	No No Opt. Std. —	No No Opt. Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous TTY ASCII 50-19,200 Char./block No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous — ASCII 110-19,200 Block No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous — ASCII 110-19,200 Block No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous ASCII/ANSI X3.64 ASCII 50-19,200 Char./line/block No RS-232-C std.; RS-422 opt. Opt. No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C  No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	995 — — — 5/83 — — Esprit, TRW	1,095 — — — 5/83 — — Esprit, TRW	1,150 — — — 5/83 — — Esprit, TRW	795 — — — 9/83 11/83 — Dow Jones, factory	640 — — — 9/83 11/83 — Dow Jones, factory
<b>COMMENTS</b>		Emulates IBM 5251 when used with protocol converter	Emulates IBM 3278 Model 2 when used with protocol converter		

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Falco 500	General Business Technology 7700DS	General Digital VuePoint	General Digital VuePoint II	Harris H178-02
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. See comments; ANSI X3.64	Standalone — No 5250 No —	Standalone — Portable case Special order Opt. —	Standalone — No Special order Opt. —	Cluster 32 No 3178 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920-5016 2 pp. std.; 4 opt. 24/38x80/132 plus status line 14 Std. 128 10x10/15 cell P167 white std.; green, amber opt. No No Std. Std. Std. No Std. Std. 2 std.; 4 opt. Std. Std. Std. Std. 6 windows Std. Std. Std. Std.	1920 — 25x80 14 Std. 151 7x9 dot matrix P31 green or amber No No Std. Std. Std. Std. No Std. Std. No Std. Std. Std. Std. —	480 128K opt. 12x40 10 No 96 ASCII 5x7 dot matrix Gas plasma panel No No (or limited) No Std. Std. Std. No No Up std. 3 std.; up to 51 opt. Std. Addressable only Std. No No Fwd. std. No No Char./line/screen/ partial screen std.	480 143K opt. 12x40 10 No 96 ASCII 5x7 dot matrix Orange or green gas plasma No No (or limited) No Std. Std. Std. No No Up std. 3 std., up to 143 Std. Addressable only Std. No No Forward std. No No Char./line/screen/ partial screen std.	1920 1 page 24x80 plus status line 12 Std. 96 EBCDIC 9x14 dot matrix P39/P42 green, or PC166 amber No No No Std. Std. Std. No No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter  ASCII Std. 16 std. (64 func- tions) Std.	IBM 5250-compatible (typewriter) IBM 5291 set Std. 24 std.	Opt. (Typewriter)  128 ASCII Std. Via touchscreen  Via touchscreen	Opt.  128 ASCII Std. Via touchscreen  Via touchscreen	Typewriter, data entry, 96 EBCDIC  Std. Up to 24  Opt.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ANSI X3.64 ASCII Up to 38,400 Char./block No RS-232-C & RS-422 std.	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1M Char./line/block Std. Twinax (IBM 5250) No No	Full-duplex Asynchronous — ASCII 300-19,200 Character Opt. RS-232-C or 20mA No No	Full-duplex Asynchronous — ASCII 300-19,200 Character Opt. RS-232-C, RS-422/3, RS-485, 20mA, TTL No No	Half-duplex Asynchronous BSC, SNA/SDLC EBCDIC 2.3M Character No Coaxial No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	795 — — — 11/85 11/85 — Dow Jones, factory	1,450 — — 105 — — — ITT Servcom	3,920 — — — 9/79 — — General Digital	1,767 — — — 1/84 1/84 — General Digital	1,524 — — 12 134 7/85 11/85 — Harris
<b>COMMENTS</b>	Compatible with: Digital VT220/ VT100/VT52, ADDS Viewpoint, Wyse WY-50, TeleVideo 955, 950, 925, 920, & 910, Hazeltine 1500	User-programmable up to 224 char- acters	The VuePoint is a touch-input terminal with optional keyboard & printer	OEM targeted; options include ex- pansion memory, power & memory ass- embles, battery backed-up memory, 19-inch rackmount panel	Part of Challenger Information Display System; attaches to Harris H174 control units & equivalent IBM controllers

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VENDOR AND MODEL	Harris H180-14/15	Harris H179-01	Hewlett-Packard 2392A	Hewlett-Packard 2393A	Hewlett-Packard 2394A
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 32 No 3180 No —	Cluster 32 No 3179 No —	Standalone — No No Std. ANSI	Standalone — No No Std. Tektronix 4010/4014 ANSI X3.64	Standalone — No No Std. ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920-3564 — 24/32/43x80, 27x132 plus status line 14 or 15 Std. 96 EBCDIC 12x16/13/10, 9x12 P39/P42 green, or PC166 amber No No Std. Std. Std. Std. No Up/down std. No Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Char./line/screen	1920 1 page 24x80 plus status line 14 Std. 96 EBCDIC 9x14 dot matrix Color 7 colors std. No Std. Std. Std. Std. No No Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std.	1920 4 pages std., 8 opt 24x80 12 Std. 128 ASCII 9x14 dot matrix P31 green No No Std. Std. Std. No Std. Up/down smooth std. 4 std., 8 opt. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	1920 12 pages 24x80 12 Std. 128 ASCII 8x14 dot matrix P31 green std. No Std. Std. Std. Std. Up/down, smooth 12 std. No Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	1920 8 pages 24x80 12 Std. 128 ASCII 9x14 dot matrix P31 green std. No No Std. Std. Std. Std. No Up/down, smooth 8 std. No Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter data entry, API 96 EBCDIC ASCII/EBCDIC Std. 24 Std. Std.	Typewriter, data entry, APL 96 EBCDIC Std. 24 std. Std.	Typewriter 128 ASCII Std. 8 std. Std.	Typewriter 128 ASCII Std. 12 std. Std.	Typewriter 128 ASCII Std. 8 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Impact, various Planned No Std. Light pen	Impact, various Planned No Std. Light pen	RS-232-C or Centr. No No Opt. —	RS-232-C or Centr. No No Opt. —	RS-232-C or Centr. No No Opt. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 2.3M Character Std. Coaxial No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 2.3M Character Std. Coaxial No No	Full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C No No	Full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C No No	Full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,795 — 14 156 3/85 11/85 — Harris	2,195 — 14 156 3/85 12/85 — Harris	1,375 — — — 6/84 6/84 — Hewlett-Packard	2,095 — — — 6/85 6/85 — Hewlett-Packard	1,795 — — — 6/85 6/85 — Hewlett-Packard
<b>COMMENTS</b>	Part of Challenger Information Display System; attaches to Harris H174 control units & equivalent IBM controllers	Part of Challenger Information Display System; attaches to Harris H174 control units & equivalent IBM controllers	Compact display terminal designed for a wide range of applications	Graphics terminal; optional touch-screen, bar code reader, tablet, mouse	Data entry terminal

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Hewlett-Packard 2397A	Honeywell VIP 7201	Honeywell VIP 7301/ 7303/7307	Honeywell VIP 7305	Honeywell VIP 7814
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Tektronix 4010/4014 ANSI X3.64	Standalone 1 No No Std. Honeywell VIP	Standalone — No No Std. Honeywell	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 12 pages 24x80	1920 80/24/1 24x80	2000 80/25/1 25x80	2000 80/25/1 25x80	2000 6K/72/3 24x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Std. 128 ASCII 8x14 dot matrix Color	12 Tilt opt. 96 ASCII/26 special 7x11 dot matrix P31 green std.	12 No 120 7x9 dot matrix P31 green std.	12 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green	12 Tilt opt. 106 ASCII/special 7x9 dot matrix P31 green std.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	8 colors/from 64 Std. Std. Std. No Std. Std. Up/down, smooth 12 std. Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	No — Std. Std. No Std. No Up std. No Std. Both std. — Std. No Std. Std. Std.	No — Std. Std. No Std. No Up/horiz. std.(7303) No Std. Both std. No Std. No Std. Std. Line/screen std.	No Std. Std. Std. No Up/horizontal std. No Std. Both std. No Std. No Fwd./back std. Std. Std. Line/screen std.	No — Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 128 ASCII Std. 12 std. Std.	Typewriter 128 ASCII Std. 7 std. Std.	Typewriter, data entry, WP 128 ASCII Std. 12 std. Std. (7303/7307)	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std. Std.	Typewriter 128 ASCII Std. 12 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	RS-232-C or Centr. No No Opt. —	— No No Std. —	No No No No —	No No No No —	100 cps impact Various dot matrix No No 10 terminal cluster unit
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Full-duplex Asynchronous ASCII ASCII 110-19,200 Char./line/block No RS-232-C	Full-duplex Asynchronous ASCII 7-bit ASCII 300-19,200 Char./line/block No RS-232-C or RS-422A	Half/full-duplex Asynchronous ASCII 7-bit ASCII 300-19,200 Character No RS-232-C, RS-422A 20mA, or MIL-188C	Half/full-duplex Asynchronous Honeywell VIP ASCII 300-19,200 Character No RS-232-C or RS-422	Half/full duplex Synchronous Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,095 — — — 9/85 9/85 — Hewlett-Packard	795 — 20 See comments 12/82 2/83 — Honeywell	1,900 — 20 See comments 4/81 7/81 — Honeywell	1,900 — 20 22 6/83 8/83 1500 — Honeywell	2,700 — 25 See comments 11/82 1/83 — Honeywell
<b>COMMENTS</b>	Color graphics terminal; optional touchscreen, bar code reader, tablet, mouse	Honeywell Customer Assistance Maintenance Program (CAMP) available at \$80/year	Honeywell Customer Assistance Maintenance Program (CAMP) available at \$40/year; separate/interchangeable keyboards for stand-ard conversational, WP, or data entry applications	Multi-function key-board w/special overlays; eligible for Customer Assisted Maintenance Program (CAMP); choice of roll or non-roll keyboard w/adjustable tilt mechanism	Honeywell Customer Assisted Maintenance Program (CAMP) available at \$115/year; hor-izontal & vertical line drawing symbols std.; 100-line buffer print adapter; 1000-foot drive cap.

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Honeywell VIP 7815	Honeywell VIP 7816	Honeywell VIP 7817	Honeywell VIP 7823/7831	Honeywell VIP 7824
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP	Standalone — No No NO Honeywell VIP
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	2000 3 pages 24x80  15 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green  No Std.  Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	2000 3 pages 24x80  12 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green  No Std.  Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	2000 3 pages 24x80  15 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green  No Std.  Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	2000 3 pages 24x80 plus status line 12 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green  No Std.  Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	2000 3 pages 24x80  12 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green  No Std.  Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 12 dual std.  Std.	Typewriter  128 ASCII Std. 12 dual std.  Std.	Typewriter  128 ASCII Std. 12 dual std.  Std.	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std.  Std.	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A  No No	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A  No No	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A  No No	Half/full-duplex Asynchronous Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A  No No	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A  No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,095 — 30 295 5/84 8/84 — Honeywell	2,800 — 25 250 10/84 1/85 — Honeywell	3,095 — 30 295 10/84 1/85 — Honeywell	2,350 — 25 250 6/83 8/83 — Approx. 1500 Honeywell	2,700 — 25 250 10/84 1/85 — Honeywell
<b>COMMENTS</b>	15-inch screen provides large size characters & clear graphics display; buffered 16K-byte printer adapter; 72 line vertical scrolling; eligible for Customer Assist Maint. (CAMP)	Multiple mode terminal; can emulate VIP 7705R or VIP 7800 family; 16K buffered printer adapter; eligible for Customer Assisted Maintenance Program (CAMP); 72-line scrolling	Multiple mode terminal w/large screen emulates the VIP 7705 or VIP 7800 family; 16K buffered printer adapter; eligible for Customer Assisted Maintenance Program (CAMP)	72-line scrolling; buffered printer adapter; visual & form attributes may be stored in each position; multi-function keyboard w/application specific software; eligible for CAMP	Multi-function capability; horizontal & vertical line drawing symbols; 100-line buffer printer adapter; eligible for CAMP at \$115/year

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Honeywell VIP 7825	Honeywell VIP 7826	Honeywell VIP 7827	Honeywell VTS 7710	Human Designed Systems HDS200
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP	Standalone — No No No Honeywell VIP	Cluster 4 No No No Honeywell VIP	Standalone — No No Std. DEC VT100
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000 3 pages 24x80	2000 3 pages 24x80	2000 3 pages 24x80	1920 — 24x80	1920, 3168 4 pp. std.; 8 opt. 24x80/132
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	15 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green	12 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green	15 Tilt opt. 96 ASCII 7x8 upper/7x9 lower P31 green	12 Tilt std. 96 ASCII 8x12 dot matrix P39 green	15 Std. 128 ASCII/512 spec. 9x14 dot matrix PLA amber std.; P31 green opt.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	No Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	No Std. Std. Std. Std. Std. No Up/down std. 3 std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Std.	No — No Std. Std. No No No No Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	No Opt. Std. Std. Std. Std. Std. Up/down, smooth 4 std.; 8 opt. Std. Both std. Std. Std. 4+4 viewports std. Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std. Std.	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std. Std.	Typewriter (multi- func., low-profile) 128 ASCII Std. 12 dual std. Std.	Typewriter 96 ASCII Std. See comments Std.	Typewriter 128 ASCII Std. 55 (110) std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	Dot matrix, impact Various dot matrix No No 10 terminal cluster unit	100/160 cps impact 220 lpm belt Std. No —	No No Opt. Std. Shared printer interface opt.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A	Half/full-duplex Async./sync. Honeywell VIP ASCII 2400-9600 Block Std. RS-232-C or RS-422A	Half-duplex Asynchronous Honeywell VIP ASCII Up to 9600 Block Std. RS-232-C	Half/full-duplex Asynchronous RS-232-C, XON/XOFF ASCII 75-19,200 Char./block No RS-232-C std.; 20mA opt. No No
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,095 — 30 295 10/84 1/85 — Honeywell	2,800 — 25 250 10/84 1/85 — Honeywell	3,095 — 30 295 10/84 1/85 — Honeywell	1,250 4,535 63 — 4/81 4/81 — Honeywell	995 — 19 115 4/85 4/85 — HDS service
<b>COMMENTS</b>	15-in. screen provides large characters & clear graphics display; multi-function keyboard designed to accept application-specific keyboard overlay eligible for CAMP; 72-line vrt. scroll	Multiple mode terminal; emulates VIP 7705R or VIP 7800 family; can perform character mode, WP, & data entry func. on multi-function keyboard w/overlays eligible for CAMP; 72-line scrolling	Multiple mode terminal w/15-inch screen (56% larger image than 12-in.); multi-function keyboard can perform char. mode, WP, & data entry func.; emulates VIP 7705R & VIP 7815	Function codes obtainable via control key sequences	Non-volatile function keys & configuration; simultaneous communication w/multiple hosts; user defined windows (4) & viewports (4) 2-3 bidir. comm. ports; downloadable RAM character sets

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Human Designed Systems HDS200G	Human Designed Systems HDS201	Human Designed Systems HDS201G	Icot 700	Icot 701
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT100, Tektronix 4010/4014	Standalone — No No Std. DEC VT100	Standalone — No No Std. DEC VT100, Tektronix 4010/4014	Standalone/cluster — No 3278 No DEC VT100	Standalone/cluster — No 3278 No DEC VT100
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920, 3168 4 pp. std.; 8 opt. 24x80/132  15 Std. 128 ASCII/512 spec. 9x14 dot matrix PLA amber std.; P31 green opt. No Std. Std. Std. Std. Std. Up/down, smooth 4 std.; 8 opt. Std. Both std. Std. Std. 4+4 viewports std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 8 pages std. 24x80/132  15 Std. 128 ASCII/APL/spec. 9x14 dot matrix PLA amber std.; P31 green opt. No Opt. Std. Std. Std. Std. Both std. Std. Std. 4+4 viewports std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 8 pages std. 24x80/132  15 Std. 128 ASCII/APL/spec. 9x14 dot matrix PLA amber std.; P31 green opt. No Std. Std. Std. Std. Up/down, smooth 8 std. Std. Both std. Std. Std. 4+4 viewports std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3696 — 24x80, 28x132  12 No 87 ASCII Multiple P31 green No — Std. Std. Std. Std. Std. No No Std. Std. Addressable only Std. Std. No Std. Std. Std. Std.	560-3696 — 14x40, 14/25/33/44x80, 17/31x64, 28x132 14 No 87 ASCII Multiple P31 green No — Std. Std. Std. Std. Std. No No Std. Std. Addressable only Std. Std. No Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 55 (110) std.  Std.	Typewriter  APL Std. 55 (110) std.  Std.	Typewriter  APL Std. 55 (110) std.  Std.	Typewriter (IBM 3278-style) — Std. Std.  Std.	Typewriter  — Std. Std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Opt. Std. Shared printer interface, joystick opt.	No No Opt. Std. Shared printer interface opt.	No No Opt. Std. Shared printer interface, joystick opt.	No No Std. Opt. —	Std. — Std. Opt. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous RS-232-C, XON/XOFF ASCII 75-19,200 Char./block No RS-232-C std.; 20mA opt. No No	Half/full-duplex Asynchronous RS-232-C, XON/XOFF ASCII 75-19,200 Char./block No RS-232-C std.; 20mA opt. No No	Half/full-duplex Asynchronous RS-232-C, XON/XOFF ASCII 75-19,200 Char./block No RS-232-C std.; 20mA opt. No No	Full-duplex Asynchronous Async, BSC, SNA/SDLC ASCII 110-19,200 Character Std. RS-232-C or RS-422 No No	Full-duplex Asynchronous Async, BSC, SNA/SDLC ASCII 110-19,200 Character Std. RS-232-C or RS-422 No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,295 — 24 150 4/85 4/85 — HDS service	1,295 — 19 115 4/85 4/85 — HDS service	1,595 — 24 150 4/85 4/85 — HDS service	1,095 5,800-9,800 — — 1982 1982 — Icot	1,750 5,800-9,800 — — 1982 1982 — Icot
<b>COMMENTS</b>	Non-volatile function keys & configuration; simultaneous communication w/multiple hosts; user defined windows (4) & viewports (4) 2-3 bidir. comm. ports; downloadable RAM character sets	Non-volatile function keys & configuration; simultaneous communication w/multiple hosts; user defined windows (4) & viewports (4) 2-3 bidir. comm. ports; downloadable RAM character sets	Non-volatile function keys & configuration; simultaneous communication w/multiple hosts; user defined windows (4) & viewports (4) 2-3 bidir. comm. ports; downloadable RAM character sets	Built-in keypad calculator, alternate application sessions	Built-in keypad calculator, alternate application sessions

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Informer 101	Informer 201/203/205	Informer 207	Informer 376	Informer 378
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3101 Std. —	Either 1(VT100);32(376) No IBM 3276/3278 BSC No DEC VT100, IBM 3101	Either 1; 32; 8 Portable IBM 3276/3278 No DEC VT100, IBM 3101	Standalone — No 3276 No —	Cluster 8 No 3278 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 80/24/1 24x80  9 Std. 128 ASCII 7x9 dot matrix P4 white std.; P31 green opt. No No Std. Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	1920 4K 24x80 plus status line 11 Tilt std. ASCII (VT100) 8x10 dot matrix P31 green std. No No Std. Std. Std. Std. Std. No Up/down (VT100) No Std. Std. Std. Std. Std. Std. No Std. Std. No Std.	1920 4K 24x80 plus status line 11 Tilt std. ASCII; full IBM set 8x10 dot matrix P31 green std. No No Std. Std. Std. Std. No Up/down std. (VT100) No Std. Std. Std. Std. Std. Std. No Std. Std. No Std.	1920 80/24/1 24x80 plus status line 9 std., 12 opt. Std. 96 7x9 dot matrix P31 green std., P4 white opt. No No Std. Std. Std. Std. No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.	1920 80/24/1 24x80 plus status line 9 std., 12 opt. Std. 96 7x9 dot matrix P31 green std.; P4 white opt. No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Data entry  128 ASCII No 8 std.	Typewriter 201; Data entry (203/205) ASCII(VT100); EBCDIC Std. on 203, 205 18 (VT100); 24  Std. on some models	Typewriter  ASCII(VT100); EBCDIC Std. 18 (VT100); 24	Data entry  96 EBCDIC Opt. 24 std.	Data entry  96 EBCDIC Opt. 24 std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Std. Opt. —	120 cps No No Std. Light pen	120 cps No No Std. Light pen	30 cps dot matrix No Std. Opt. Light pen	30 cps dot matrix No Std. Opt. Light pen
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character Opt. RS-232-C or 20mA  No No	Full-duplex Async./sync. ANSI (VT100); BSC ASCII; EBCDIC 38.4K (VT100); 19.2K Char. (VT100); block Std.(376 & 378 only) RS-232-C; coax (378 only) Opt. No	Full-duplex Async./sync. ANSI; BSC ASCII; EBCDIC 38.4K (VT100); 19.2K Char. (VT100); block Std.(376 & 378 only) RS-232-C; coax (378 only) Opt. No	Half/full-duplex Synchronous BSC EBCDIC 50-9600 Block Std. RS-232-C  Opt. No	Half/full-duplex Synchronous BSC EBCDIC 50-9600 Block Std. RS-232-C  Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	690 — — — — — — Informer	1,090-3,900 4,000 (378 only) Contact vendor — 10/82 1/83 Informer	1,390-3,850 4,000 (378 only) Contact vendor — 10/82 1/83 Informer	1,950-2,350 — — — — — — Informer	1,700-2,050 5,000-5,400 — — — — — Informer
<b>COMMENTS</b>		Models available with Informer VT100, 376, or 378 software packages	Available with Informer VT100, 376, or 378 software packages	Models I, D, and S, and 201-205, including execu- tive inquiry with hide-away keyboard	Models I, D, and S, and 201-205, including execu- tive inquiry with hide-away keyboard; all models used with 374 controller



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Intecolor E 8001 G/H/R	Intecolor ColorTrend	Intecolor 2427	IBM 3101	IBM 3104
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3275 opt. Std. No	Standalone — No Std. DEC VT100, ANSI X3.64	Standalone — No No Std. Tektronix 4010 & 4027	Standalone — No No Std. —	Either — No 8775, 3276, 3278 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	3840 80/48/2 48x80	1920 80/24/2 24x80	1920 80/24/2 24x80	1920 — 24x80 plus status line	1920 — 24x80 plus status line
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	19 No 64 ASCII/64 ISA 5x7 (G); 6x8 (H&R) Color	14 No 64 ASCII/64 ISA 5x7 dot matrix Color	13 No 64 ASCII 5x7 dot matrix Color	12 Std. 128 ASCII 7x14 dot matrix Green	12 Std. 94 7x14 dot matrix White
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	8 colors Std. No Std. No Std. No Std. Std. Up std. 2 opt. No Both std. Opt. No No Fwd. std. Std. Std. Char. std.	8 colors Std. Std. Std. Std. Std. No Up/down std. 2 std. No Both std. No No Std. Fwd./back std. Std. Std. Char./line/page std.	8 of 64 colors Std. Std. Std. Std. Std. No Up/down std. 2 pages std. No Both std. No No Std. Hori./ver./f./b.std. Std. Std. Char./line/page std.	No No No No Std. No No No No No No Addressable Std. No No Std. No No Line/screen std.	No No Std. Std. Std. Std. Std. Std. Std. Both std. Std. Std. Std. Std. Std. Std. Char./field/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 64 ASCII Std. 16 std. Std.	Typewriter 64 ASCII No 12 std.; 72 func- tions Std.	Typewriter 64 ASCII Yes 12 or 24 opt. Std.	Typewriter ASCII Std. 8 std. Std.	Typewriter, data entry EBCDIC Std. 10 (Model B1); 24 (Model B2) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	55 cps impact opt. No No RS-232-C Light pen (H&R), digitizer (R), plotter (R) all optional	55 cps impact opt. No No RS-232-C; 20mA opt. Light pen opt.	55 cps impact opt. No No No RS-232-C; 20mA opt. Light pen opt.	No No No Std. —	Std. Std. No Std. Audible alarm, key- lock, clock
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Async.; sync. opt. ASCII ASCII Up to 9600 Character No RS-232-C std.; 20mA opt.	Half/full-duplex Asynchronous ANSI X3.64 ASCII, ANSI Up to 19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ANSI X3.64 ASCII, ANSI Up to 19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 110-9600 Character No RS-232-C or RS-422-A	Half/full-duplex Synchronous BSC/SDLC EBCDIC Up to 38,400 Block Std. Communication loop, twisted-pair No No
<b>PRICING AND AVAILABILITY</b> Integral modem Integral acoustic coupler Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	No No 2,745/3,175/3,975 — — — 1975/1979/1982 — — Intecolor rep., service centers	No No 1,295 — — — 1984 1984 — Intecolor rep., service centers	No No 2,695 — — — 6/83 11/83 — Intecolor, service centers	No No 1,430 — — — 70-180 1979 1979 — IBM	No No 2,190-2,250 — — — 38-210 3/82 — — IBM
<b>COMMENTS</b>	Resolution—160 H x 192 V; 480 H x 384 V (H&R); low resolution character cell graphics mode			Model 13; all other models (10, 12, 20, 22, 23) withdrawn from marketing	Model B1 equipped with 75-key data entry keyboard, Model B2 equipped with 87-key type- writer keyboard; for use with the 8100 Information System

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	IBM 3161	IBM 3163	IBM 3178	IBM 3179	IBM 3179-G
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No 3101 Std. See comments	Standalone — No 3101 Std. DEC VT100/VT52 (via opt. cartridge)	Cluster 32 No 3270 System No IBM 3278 Model 2	Cluster 32 (Mod.1); 9 (2) No 3270 (1); 5250 (2) No IBM 3279-S2A/S2B (1); 5292-1 (2)	Cluster 32 No 3270 System No IBM 3179/3279-S3G
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1920 char. 24x80 plus status line 12 Std. 128 ASCII 8x16 dot matrix Green  No Line drawing set  Std. Std. Std. Std. Std. No Up/down std. No Std. Addressable Std. Std. Std. Std. No No Line/screen std.	1920 7680 char. 24x80 plus status line 12 Std. 128 ASCII 8x16 dot matrix Green  No Line drawing set  Std. Std. Std. Std. Std. Up/down, smooth 4 std. Std. Addressable Std. Std. Std. Std. Std. Std. No Line/screen std.	1920 — 24x80 12 Std. 94 7x14 dot matrix Green  No No No No Std. Addressable only Std. Std. No Std. Std. No Char./line/screen std.	1920 — 24x80 14 Std. 94 EBCDIC 7x14 dot matrix Color  4/7 colors No  Std. Std. Std. Std. No No Std. Addressable only Std. Std. No Std. Std. No Char./line/screen std.	1920, 2560 — 24/32x80 14 Std. EBCDIC/APL/graphics 720x384 pixels/APA Color  8 colors Std.  Std. Std. Std. Std. No No Std. Addressable only Std. Std. No Std. Std. No Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  ASCII Std. 24 std.  Std.	Typewriter  ASCII Std. 24 std.  Std.	Typewriter, data entry EBCDIC Std. 10/12 std.  Std.	Typewriter, data entry, APL EBCDIC Std. 24 std.  Std.	Typewriter, APL EBCDIC/APL Std. 24 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	4201 Proprinter No No RS-232-C std. —	4201 Proprinter No No Std. —	Std. No No Std. Audible alarm, security keylock	Std. No No Std. Audible alarm, security keylock	Std. No No Std. Color Jetprinter screen printer, mouse, plotters via 3979 Expansion unit
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous XON/XOFF ASCII 50-19,200 Char./block No RS-232-C or RS-422-A No No	Half/full-duplex Asynchronous XON/XOFF ASCII 50-19,200 Char./block No RS-232-C or RS-422-A No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Coaxial, twisted-pair No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Coaxial, twinaxial, twisted-pair No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Coaxial, twisted-pair No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	695-774 — 35-55 6/85 7/85 — IBM	1,095-1,174 — 40-70 6/85 7/85 — IBM	1,660-1,720 4,885-18,230 — 63-252 3/83 — IBM	2,295(1); 2,195(2) 2,650-18,230 — 85-135 3/84 3/84 — IBM	2,995 4,885-18,230 — 133 6/85 6/85 — IBM
<b>COMMENTS</b>	Models 11 & 12; terminal emulations include: ADDS Viewpoint, Lear Siegler ADM 3A, Hazeltine 1500, & TeleVideo 910	Models 11 & 12; may be divided into 3 horizontal or vertical viewports, utilizing a 7,680-character data buffer	Part of 3270 Information Display System; attaches to 3274 or 3276 control unit; Models C1, C2, C3, & C4	Available in two models; Model 1 is part of 3270 Information Display System; Model 2 is part of 5250 Information Display System; attaches to 3274, 3276, & 5294 control units	Part of 3270 Information Display System; attaches to 3274 or 3276 control unit; Models G1 & G2; 3979 Expansion Unit (\$295) provides auxiliary device ports

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	IBM 3180	IBM 3276	IBM 3278	IBM 3279	IBM 3290
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Either	Cluster	Cluster	Cluster	Cluster
Maximum displays/controller	32 (Mod.1); 9 (2)	8	32	32	32
Transportability	No	No	No	No	No
IBM compatibility	3270 (1); 5250 (2)	3270 System	3270 System	3270 System	3270 System
Teletype compatibility	No	No	No	No	No
Other compatibility	IBM 3278 (Model 1); 5251 (Model 2)	—	—	—	—
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	1920-3564(1); 1920	960-3440	960-3564	1920, 2560	5300, 9920
Memory capacity, no. char./lines/pages	—	—	—	—	—
Screen arrangement, lines x char./line	24/32/43x80, 27x132 (Mod.1); 24x80 (2)	12/24/32/43x80	12/24/32/43x80, 27x132	24/32x80	50x106, 62x160
Screen area (diagonal), inches	15	14	14	14	10.7 x 13.4
Tilt/swivel screen	Std.	No	No	No	Tilt std.
Total displayable symbols	94 EBCDIC	96 EBCDIC; 120 APL o	64/96 EBCDIC; 120APL	94 EBCDIC; 120 APL	64/96 EBCDIC; 120APL
Symbol formation	8x8/8x11 dot matrix	7x11/7x14 dot matrix	7x12/7x14 dot matrix	9x12 dot matrix	5x8/7x9 dot matrix
Character phosphor	Green	White	White	Color	Amber gas plasma
Color capability	No	No	No	4/7 colors	No
Graphics	No	No	No	Opt.	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	No	No
Scroll	No	No	No	No	Std.
Paging	No	No	No	No	No
Selectable cursor blinking	Std.	No	Std.	Std.	Std.
Addressable/readable cursor	Addressable only	Addressable only	Addressable only	Addressable only	Addressable only
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	No	No	No	Up to 16 partitions
Tabulation	Std.	Std.	Std.	Std.	Std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	No	No	No	No	No
Erase	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter, data entry	Typewriter, data entry, APL	Typewriter, data entry, APL	Typewriter, data entry, APL	Typewriter, APL
Character/code set	EBCDIC	EBCDIC	EBCDIC	EBCDIC	EBCDIC
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	24 std.	12/24 std.	12/24 std.	10-12 std.	24 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	Std.	Std.	Std.	Std.	Std.
Line printer, type, and speed	No	No	No	No	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Std.
Other vendor-supplied devices	—	Audible alarm, mag. slot reader, light pen, keylock	Audible alarm, mag. slot reader, light pen, keylock, I.D. reader	Audible alarm, mag- netic slot reader, light pen, keylock	Audible alarm, security keylock
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half/full-duplex	Half/full duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex
Technique	Synchronous	Synchronous	Synchronous	Synchronous	Synchronous
Communications protocol	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC
Code	EBCDIC	EBCDIC	EBCDIC	EBCDIC	EBCDIC
Speed, bits/second	1200-9600	1200-9600	1200-9600	1200-9600	1200-9600
Format	Block	Block	Block	Block	Block
Multipoint operation	Std.	Std.	Std.	Std.	Std.
Terminal interface	Coaxial, twinaxial, twisted-pair	Coaxial, twisted- pair	Coaxial, twisted- pair	Coaxial, twisted- pair	Coaxial, twisted- pair
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	2,295(2); 2,195(1)	5,380-5,830	1,855-2,575	3,160-5,190	7,100
Controller, purchase	2,650-18,230	Included	4,885-18,230	4,885-18,230	4,885-18,230
Monthly prime-shift maintenance	—	30.50-32.00	10.00-12.50	16.50-25.00	30
Annual prime-shift maintenance	69-135	—	—	—	210
Date of announcement	3/84	1977	1977	10/79	3/83
Date of first production delivery	3/84	1977	1978	10/79	—
Display units installed to date	—	—	—	—	—
Served by	IBM	IBM	IBM	IBM	IBM
<b>COMMENTS</b>	Available in two models; Model 1 is part of 3270 Infor- mation Display System; Model 2 is part of 5250 Infor- mation Display System; Model 1 features multiple display capacities	Control unit/display station; part of 3270 Information Display System; supports up to 7 additional devices	Part of 3270 Infor- mation Display Sys- tem; attaches to 3274 & 3276 control units	Part of 3270 Infor- mation Display Sys- tem; attaches to 3274 or 3276 control unit	Part of 3270 Infor- mation Display Sys- tem; attaches to 3274 control unit

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	IBM 5251	IBM 5291/5292	IBM 8775	ITT Courier 1700	ITT Courier 1778
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either Up to 9 No 5250 System No —	Either Up to 9 No 5251-11 No —	Either — No Std. No —	Cluster 32 No 3178 No —	Cluster 32 No 3178 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80  12 No 96 EBCDIC; 188 opt. 8x16 dot matrix White  No No No No Std. No Std. No Std. No Std. Both std. Std. Std. No Std. Std. No Std. Std. No Char./field/screen std.	1920 — 24x80 plus status line  12 Tilt std. 96 EBCDIC 7x11 dot matrix White  7 colors (5292) No  Std. Std. Std. Std. Std. No Std. Std. Both std. Std. Std. Std. Std. Std. No Std. Std. No Char./field/screen std.	960-3440 — 12/24/32/43x80  12 Tilt std. 96 9x12/9x16 dot matrix White  No No  Std. Std. Std. No Std. Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Std. No Std. Std. No Char./field/screen std.	1920 1920 char. 24x 80  12 Std. 94 EBCDIC/ASCII 7x8 dot matrix Green  No No  Std./opt. Std./opt. No No No No No No Std. Both std. Std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.	1920 1920 char. 24x 80  12 Std. 94 EBCDIC/ASCII 7x8 dot matrix Green or amber  No No  Std./opt. Std./opt. No No No No No No Std. Both std. Std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter  EBCDIC Std. 24 std.  Std.  Std. No No Std. Mag. stripe reader, selector light pen, aud. alarm, keylock	Typewriter  EBCDIC Std. 24 command functions Std.  Std. No No Std. Mag. stripe reader, selector light pen, keylock	Typewriter, data entry EBCDIC/APL Std. Std. (various)  Std.  Std. Std. No Std. Audible alarm, key- lock, clock	Typewriter, data entry 94 EBCDIC/ASCII Std. 24 std.  Opt.  Up to 400 cps 300/600 lpm No No —	Typewriter, data entry 94 EBCDIC/ASCII Std. 24 std.  Opt.  Up to 400 cps 300/600 lpm No No —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Half/full duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Twinaxial, twisted- pair Opt. No	Half/full duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Twinaxial, twisted- pair Opt. No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 38,400 Block Std. Communication loop, twisted-pair No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial  No No
<b>COMMENTS</b>	Part of 5250 Infor- mation Display System; 5251-11 is remote cluster or local station; 5251-12 is remote cluster controller/ station; attach to 5294 control unit	5291 is a mono- chrome terminal; 5292 is a color version; part of 5250 Information Display System; attach to 5294 control unit	Workstation for IBM 8100 Information System; also at- taches to 4331 processor, 4300 & S/370	Part of 9000 Series; connects to ITT Courier 94XX controllers	Part of 9000 Series; connects to ITT Courier 94XX controllers; also connects to IBM 3274/3276 control- lers

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	ITT Courier 1900	ITT Courier 9230/9232	ITT Courier 9236	ITT Qume QVT 101	ITT Qume QVT 103
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 32 No 3179 No —	Cluster 32 No 3180/3278 No —	Cluster — No 3279 No —	Standalone — No No Std. TeleVideo 910, Haz. 1500, LSI ADM 3A/5	Standalone — No No Std. DEC VT100/132, VT52
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1920 char. 24x80  14 Std. 96 7x8 dot matrix Color  7 colors std. No Std./opt. Std./opt. No No No No No No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.	1920-3564 1920-3564 char. 24/32/43x80, 27x132  15 Std. 96 7x7/7x8/7x10 Green (9230); amber (9232) No No Std. Std. No No No No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.	1920, 2560 1920 or 2560 char. 24/32x80  14 Std. 96 7x8/7x10 dot matrix Color  7 colors std. No Std. Std. No No No No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./line/screen std.	1920 — 24x80 plus status line 14 Std. 128 ASCII 7x11 in 9x12 cell Green std.; amber opt. No 15 graphics symbols Std. Std. Std. Std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 2 pages std. 24x80/132  14 Std. 128 ASCII 7x9 in 10x12 cell Green std.; amber opt. No 15 graphics symbols Std. Std. Std. Std. Std. Smooth std. 2 std., up to 4 opt. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen opt.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  96 EBCDIC/ASCII Std. 24 opt.  Opt.	Typewriter, data entry, APL EBCDIC Std. 24 std.  Opt.	Typewriter, data entry, APL EBCDIC Std. 24 std.  Opt.	Typewriter  128 ASCII Std. 4 std. (12 func- tions) Std.	Typewriter  128 ASCII Std. 4 std. (12 func- tions) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	150-240 cps 600 lpm No No —	Up to 400 cps 300/600 lpm No No —	Up to 400 cps 300/600 lpm No No —	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial  No No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block No RS-232-C std.; RS-422, 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block No RS-232-C std.; 20mA opt.
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,900 5,700 & up — — 4/84 Fall 1984 — ITT Courier	2,180 5,700 & up 10 — 4/84 Fall 1984 — ITT Courier	3,600 5,700 & up 14 — 4/84 Fall 1984 — ITT Courier	395 — — — 3/85 4/85 Over 12,000 Qume, ITT Servcom	895 — — — 12/82 1/84 — Qume, ITT Servcom
<b>COMMENTS</b>	Part of 9000 Series; connects to ITT Courier 94XX controllers	Part of 9000 Series; attaches to ITT Courier 94XX controllers	Part of 9000 Series; attaches to ITT Courier 94XX controllers		Foreign character sets, screen saver automatic shutoff

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	ITT Qume QVT 108	ITT Qume QVT 119	ITT Qume QVT 201	ITT Qume QVT 202	Kimtron ABM 83
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone No No Std. TeleVideo 912/920, 925	Standalone No No Std. Qume QVT 109, ADDS A2, Wyse WY-50	Standalone No No Std. DEC VT102, VT220, VT100	Standalone No No Std. DEC VT102, VT220, VT100, VT52	Standalone No Opt. Std. TVI 925/920/910
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 2 pages 24x80 plus status line 12 std.; 14 opt. Std. 128 ASCII 7x9 in 9x12 cell Green std.; amber opt. No 15 graphics symbols Std. Std. Std. Std. Std. No Std. 2 std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 4 pages std. 24x80/132 14 Std. 96 ASCII/80 graphic 7x11 in 10x12/9x12 Green std.; amber opt. 80 graphics char. s Std. Std. Std. Std. Std. Smooth std. 4 pages std. Std. Both std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 1 page std. 24x80/132 14 Std. 128 ASCII 7x9 in 10x10/9x10 Green std.; amber opt. No 15 graphics char. s Std. Std. Std. Std. Std. Smooth std. No Std. Both std. No No Std. Fwd./back std. Std. Std. Char./line/screen std.	1920, 3168 1 page std. 24x80/132 14 Std. 128 ASCII 7x9 in 10x10/9x10 Green std.; amber opt. No 15 graphics char. s Std. Std. Std. Std. Std. Smooth std. No Std. Both std. No No Std. Fwd./back std. Std. Std. Char./line/screen std.	2000 2 pages opt. 25x80 12 Tilt std. 128 ASCII 7x9 dot matrix P31 std., amber opt. No — Std. Std. Std. Std. Std. No Std. 2 opt. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 11 std. (22 func- tions) Std.	Typewriter  128 ASCII Std. 44 std. Std.	Typewriter  128 ASCII Std. 34 std. Std.	Typewriter  128 ASCII Std. 32 std. Std.	Typewriter  96 ASCII Std. Std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	45-90 cps No No Std. Laser printer, 10 ppm	45-90 cps No No Std. Laser printer, 10 ppm	45-90 cps No Std. Std. Laser printer, 10 ppm	180 cps 300 lpm No Std. No
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block No RS-232-C std.; 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./line/block No RS-232-C std.; RS-422, 20mA opt. Opt. No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C std.; RS-422, 20mA opt. No No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C std.; RS-422, 20mA opt. No No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C or 20mA Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	595 — — — 12/82 10/83 — Qume, ITT Servcom	595 — — — 8/85 9/85 — ITT Servcom	695 — — — 3/85 3/85 — ITT Servcom	795 — — — 3/85 3/85 — ITT Servcom	695 — — — 7/83 8/83 — RCA Service Co.
<b>COMMENTS</b>	Foreign character sets, screen saver automatic shutoff	Foreign character sets, screen saver, dual host capabil- ities			

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Kimtron ABM 85H	Kimtron ABM 85H/ D100/200	Kimtron ABM 85H/VT-132	Kimtron ABM 86	Kimtron KGT-100
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No Opt. Std. —	Standalone — No Opt. Std. Data General D100/ 200	Standalone — No Opt. Std. DEC VT100/132	Standalone — No Opt. Std. TeleVideo 912, 920, 925 std.; LSI, ADDS	Standalone — No No Std. DEC VT100, Tek- tronix 4010/4012
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000 4 pages opt. 25x80	2000 4 pages opt. 25x80	2000 4 pages opt. 25x80	2160 4 pages opt. 27x80	2000, 3300 4 pages 27x80, 25x132
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Tilt std. 128 ASCII/11 graph. 7x9 dot matrix P31 green std., P4 white & amber opt.	12 Tilt std. 258 7x9 dot matrix P31 std., amber opt.	12 Tilt std. 258 7x9 dot matrix P31 std., amber opt.	12 Tilt std. 128 ASCII/15 graph. 7x9 dot matrix P31 green std., P4 white or amber opt.	12 No 256 plus graphics 7x9 dot matrix Green, gray, or amber
Color capability Graphics Programmable field/char. highlighting via:	No 11 graphics symbols	No —	No —	No 15 graphics symbols	No Std.
Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Std. Std. Std. Std. Std. No Std. 4 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Char./line/screen std.	Std. Std. Std. Std. Std. No Std. 4 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Char./line/screen std.	Std. Std. Std. Std. Std. No Std. 4 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Char./line/screen std.	Std. Std. Std. Std. Std. No Up/down/smooth std. 2 opt. Std. Std. Std. Std. Std. Fwd./back std. Std. Std.	Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set Detachability Program function keys	96 ASCII Std. 16 std.	96 ASCII Std. Std.	96 ASCII Std. Std.	96 ASCII Std. 16 std.	96 ASCII Std. 16 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	19.2K bps No No Std. —	180 cps 300 lpm No Std. No	180 cps 300 lpm No Std. No	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block/line No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block/line No RS-232-C; 20mA opt. Opt. No	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block/line No RS-232-C; 20mA opt. Opt. No
Integral modem Integral acoustic coupler	Opt. No	Opt. No	Opt. No	Opt. No	Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	795 — — — 5/81 9/81 Over 13,900 RCA Service Co.	895 — — — 8/83 8/83 — RCA Service Co.	895 — — — 9/83 9/83 — RCA Service Co.	995 — — — 5/82 12/82 Over 1200 RCA Service Co.	1,800 — — — 11/82 1/83 Over 500 RCA Service Co.
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Kimtron KT-7	Lanpar Vision II 1100	Lanpar Vision II 3210	Lanpar Vision II 3221	Lanpar Vision II 3222
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No Opt. Std. TeleVideo 920/925; ANSI, IBM, DG opt.	Either 1 No No No Burroughs ET 1100/ TD 830	Standalone — No No Std. DEC VT100	Standalone — No No Std. DEC VT220	Standalone — No No Std. DEC VT220
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80 plus status line 12 Std. 128 ASCII 7x9 dot matrix Green; amber  No Std. Std. Std. No Std. Std. No Std. No Std. Std. Std. No Std. Std. No Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Line/form/page std.	2000 181 lines std. 25x40/80  14 Std. 128 ASCII/multinat. 7x12 dot matrix Green std.; amber opt. No No Std. Std. Std. Std. Std. Std. Std. Up to 25 logical pp. Std. (3 modes) Both std. Std. 2 std. Fwd./back std. Std. Std. Char./line/field/ screen std.	2000, 3300 80-132/224/8 25x80/132  14 Std. 128 7x12 dot matrix Green, amber, or page white No No Std. Std. Std. Std. Std. Up/down, smooth 4 std./8 opt. Std. (3 modes) Both std. Std. Std. 6-line msg. window Fwd./back std. Std. Std. Char./line/screen std.	2000, 3300 80-132/224/8 25x80/132  14 Std. 288 7x10 dot matrix Green, amber, or page white No Tek. 4010/4014 opt. Std. Std. Std. Std. Std. Up/down, smooth 4 std./8 opt. Std. (3 modes) Both std. Std. No 6-line msg. window Forward std. Std. Std. Char./line/screen std.	2000, 3300 80-132/224/8 25x80/132  14 Std. 288 7x12 dot matrix Green, amber, or page white No Tek. 4010/4014 opt. Std. Std. Std. Std. Std. Up/down, smooth 4 std./8 opt. Std. (3 modes) Both std. Std. No 6-line msg. window Forward std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  ASCII Std. 22 std. Std.	Typewriter  128 ASCII Std. 14 std. (28 func- tions) Std.	Typewriter  ASCII Std. 16 std. (96 func- tions) Std.	Typewriter  ASCII Std. 15 std. (111 func- tions) Std.	Typewriter  ASCII Std. 15 std. (111 func- tions) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. Std. No Std. —	Up to 19.2K No Std. No —	Various Various Std. Std. —	Various Various Std. Std. —	Various Various Std. Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block No RS-232-C  No No	Half-duplex Sync./async. Burroughs ASCII To 19,200 (async.) Block Std. RS-232-C  No No	Full-duplex Asynchronous TTY ASCII Up to 19,200 Char./block No RS-232-C std.; 20mA opt. No No	Full-duplex Asynchronous TTY ASCII Up to 19,200 Character No RS-232-C std.; 20mA opt. No No	Full-duplex Asynchronous TTY ASCII Up to 19,200 Character No RS-232-C std.; 20mA opt. No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	595 — — — 12/83 12/83 — RCA Service Co.	1,395 — — — — — — Lanpar Technologies	995 — — — — — — Lanpar Technologies	950 — — — — — — Lanpar Technologies	1,095 — — — — — — Lanpar Technologies
<b>COMMENTS</b>	Line & block graph- ics; optional PROM provides DEC, IBM, Data General, ANSI X3.64 compatibility				



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Lear Siegler ADM 3A	Lear Siegler ADM 3E	Lear Siegler ADM 11	Lear Siegler ADM 11 plus	Lear Siegler ADM 12 plus
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. ADM 3	Standalone — No No Std. ADM 3A/5, ADDS Viewpoint A2/3A+	Standalone — No No Std. See comments	Standalone — No No Std. See comments	Standalone — No No Std. See comments
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1 page 24x80  12 No 128 ASCII 5x7 dot matrix P4 white or P31 green No Business graphics Std. Std. Std. No Std. No Std. No No No Both std. No No No No No Std. Std. No	1920 1 page 24x80 plus status line 14 Std. 128 ASCII 7x9 dot matrix P31 green or amber No Business graphics Std. Std. Std. No Std. No Std. Both std. No No No No Std. Std. Line/page/screen std.	1920 — 24x80 plus status line 12 std.; 14 opt. Std. 128 ASCII 7x10 dot matrix P31 green; amber opt. No Business graphics Std. Std. Std. Reduced std. Std. No Std. Std. Std. Both std. No No No No No Std. Std. Line/page/screen std.	1920 — 24x80 plus status line 12 std.; 14 opt. Std. 128 ASCII 7x10 dot matrix P31 green or amber No Business graphics Std. Std. Std. No Std. Std. Both std. No No No No No Std. Std. Line/page/screen std.	1920 2 pages 24x80/132 plus status line 12 std.; 14 opt. Std. 128 ASCII 7x10 dot matrix P31 green std.; amber opt. No Business graphics Std. Std. Std. Reduced std. Std. No Std. Std. Both std. Std. Std. Horizontal split Std. Std. Std. Line/page/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Teletype  128 ASCII No No  No	Typewriter  128 ASCII Std. 8 std.  Std.	Typewriter  128 ASCII Std. 8 std.  Std.	Typewriter  128 ASCII Std. 16 std.  Std.	Typewriter  128 ASCII Std. 32 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	No No No Opt. —	No No No Std. —	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous — ASCII 75-19,200 Character No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous — ASCII 110-19,200 Character No RS-232-C std.; 20mA, RS-422 opt.	Half/full-duplex Asynchronous — ASCII 300-19,200 Character No RS-232-C or 20mA  No No	Half/full-duplex Asynchronous — ASCII 300-19,200 Character No RS-232-C std.; 20mA, RS-422 opt.	Half/full-duplex Asynchronous — ASCII 110-19,200 Char./block No RS-232-C std.; 20mA, RS-422 opt.
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	595 — 17 — 5/75 8/75 — Lear Siegler	399 — 17 — 7/85 7/85 — Lear Siegler	549 — 17 — 5/83 6/83 — Lear Siegler	569 — 17 — 5/85 6/85 — Lear Siegler	599 — 17 — 12/83 3/84 — Lear Siegler
<b>COMMENTS</b>		International character sets std.; unidirectional or bidirectional auxiliary port with independent transmission rate opt.	Emulations include: LSI ADM 3A/5, ADDS Viewpoint & Regent 25, Hazeltine 1400, 1420, & 1500, DEC VT52; international character sets opt.	Emulations include: LSI ADM 3A/5 & 11, ADDS Viewpoint & Regent 25, Hazeltine 1400, 1420, & 1500, DEC VT52; international character sets opt.	Emulations include: LSI ADM 2, ADM 12, ADM 31, & ADM 32, TeleVideo 912, 920, 925, & 950; international character sets opt.

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Lear Siegler ADM 220	Lear Siegler 1178	Lee Data 1214	Lee Data 1221	Lee Data 2130
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT220/VT100/ VT52, ANSI X3.64	Standalone — No 3278 Std. —	Cluster 32 No 3278/3178/3180 Std. DEC VT100/VT52, HP 2624B	Cluster 32 No 3278/3178/3180 Std. DEC VT100/VT132/ VT52, HP 2624B	Cluster 32 No 3279/3179 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1 page std. 24x80/132 plus status 12 or 14 std. Std. 94 ASCII 7x9 dot matrix P31 green or amber	1920 No 24x80 plus status line 12 std.; 14 opt. Std. 128 7x10 dot matrix P31 green std.; amber opt.	1920-3564 1 page 24/32/43x80, 27x132 14 Std. 96 EBCDIC/ASCII 7x9 dot matrix Green	1920-3564 1 page 24/32/43x80, 27x132 15 Std. 96 EBCDIC/ASCII 7x9 dot matrix Green	1920 1 page 24x80 plus status line 14 Std. 96 EBCDIC/ASCII 7x9 dot matrix Color
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter  ASCII Std. 30 std.  Std. No No No Std.	IBM 3278-style  ASCII Std. 24 std.  Std. No No No Std.	Typewriter  96 EBCDIC/ASCII Std. 24 std.  Std. 80-340 cps 300 lpm No Opt.	Typewriter, data entry, APL 96 EBCDIC/ASCII Std. 24 std.  Std./opt. 80-340 cps 300 lpm No Opt. Bar code reader, mag. stripe reader, light pen	Typewriter, data entry, APL 96 EBCDIC/ASCII Std. 24 std.  Std. 80-340 cps 300 lpm No Opt. Bar code reader, mag. stripe reader, light pen
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Full-duplex Asynchronous ANSI X3.64 ASCII 75-19,200 Character No RS-232-C std.; 20mA, RS-422 opt. No No	Half/full-duplex Asynchronous — ASCII 300-19,200 Character No RS-232-C std.; 20mA, RS-422 opt. No No	Half/full-duplex Sync./async. BSC,SNA/SDLC,ASCII EBCDIC/ASCII 19,200(sy),9600(as) Char./line/block Std. RS-232-C No No	Half/full-duplex Sync./async. BSC,SNA/SDLC,ASCII EBCDIC/ASCII 19,200(sy)/9600(as) Char./line/block Std. RS-232-C No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 2400-19,200 Block Std. RS-232-C No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	895 — 17 — 1984 1984 — Lear Siegler	695 — 17 — 12/83 3/84 — Lear Siegler	1,146-1,846 3,720-21,964 8-10 — 7/84 7/84 — Lee Data	1,650-2,550 3,720-21,964 9-11 — 8/79 9/79 — Lee Data	1,650 3,720-21,964 9 — 1985 1985 — Lee Data
<b>COMMENTS</b>	International character sets std.; keyboard option— ADM 364	Emulates IBM 3278 Model 2 when used with protocol converter	For use with Series 300 (3270) & Series 400 (3270/Async) controllers	For use with Series 300 (3270) & Series 400 (3270/Async) controllers	For use with Series 300 (3270) & Series 400 (3270/Async) controllers

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Liberty Freedom 110	Liberty Freedom 200/210	Liberty Freedom 220/240	Link Technologies Link 125	Link Technologies Link 220
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. TeleVideo 910, ADDS R25, LSI ADM 3A/5	Standalone — No No Std. TeleVideo 950, LSI ADM 31; Tektronix	Standalone — No No Std. DEC VT220/VT100/VT52; Tektronix	Standalone — No No Std. See comments (ADDS, LSI, TVI, Wyse)	Standalone — No No Std. DEC VT220, VT100, VT52, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 — 24x80 plus status line; 24x132 opt. 12; 14 opt. Std. 128 ASCII 7x9 dot matrix P31 green std.; amber opt. No Line drawing set Std. Std. Std. Std. Std. No Up std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Line/page std.	1920 2 pages std. 24x80 plus status line; 24x132 opt. 12; 14 opt. Std. 128 ASCII & graphics 7x9 dot matrix P31 green std.; amber opt. No Std. (210) Std. Std. Std. Std. Std. Std. 2 std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Std.	1920 132 or 80/24/1 24x80 std.; 24x132 opt. 12; 14 opt. Std. 128 ASCII + graph. 7x9 in 10x12 field P31 green std., amber opt. No Std. (240) Std. Std. No Std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Std.	1920, 3168 2 pages 26x80/132  14 Std. 128 ASCII + graphic 8x13 in 9x14 field P31 green or P24 amber No Line std. Std. Std. Std. No Std. Std. Std. Std. Std. 1 std., 2 opt. Std. Std. Std. Std. Std. Std. Std. Std.	1920, 3168 2 pages 26x80/132  14 Std. 8 128 ASCII sets 8x13 in 10x14 field P31 green or P24 amber No Line std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter  128 ASCII Std. 10 std. (shiftable to 20) Std.  No No No Std. —	Typewriter  ASCII Std. 47 std. Std.  No No No Std. —	Typewriter  128 ASCII Std. 10 std. (20 functions) Std.  No No No Std. —	Typewriter  ASCII Std. 40 std. Std.  No No No Std. —	Typewriter  ASCII Std. 40 std. Std.  No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./block No RS-232-C  No No  545 — — 3/84 4/84 — Liberty Electronics, Sorbus Also provides Hazeltine 1420 emulation; 15 graphics characters; 8 foreign character sets	Half/full-duplex Asynchronous ASCII ASCII 110-19,200 Char./block No RS-232-C  No No  595/1,295 — — 11/83 11/83 — Liberty Electronics, Sorbus Freedom 210 provides Tektronix 4010/4014-compatible graphics	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C  No No  745/1,395 — — 6/84 8/84 — Liberty Electronics, Sorbus Freedom 240 provides Tektronix 4010/4014-compatible graphics	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./line/block No RS-232-C or 20 mA  No No  649 — — 2/85 3/85 — Dow Jones Emulations include: ADDS Viewpoint 60 & Viewpoint A1, Lear Siegler ADM 3A/5, TeleVideo 910, 925, & 950, Wyse WY-50	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./line/block No RS-232-C, RS-423, or 20mA  No No  699 — — 11/85 1/86 — Dow Jones
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Link Technologies PCTerm	Matra Scanset 410/415/415HS	McDonnell Douglas Prism 7	McDonnell Douglas Prism 8	Megadata System 850
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Kimtron KT-7, Wyse WY-50	Standalone — Portable carry case No Std. DEC VT100/VT52	Standalone — No No Std. —	Standalone — No No Std. ANSI mode—subset of DEC VT220	Standalone — No Opt. Opt. Opt.
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920, 3168 2 pages 26x80/132	960, 1920 2 pages opt. 24x40/80 plus status line	1920 80/25/1 25x80	1920, 3168 80 or 132/25/8 25x80/132	2000 16 pages 25x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 256 ASCII 8x13 in 9x14 field P31 green or P24 amber	9 Std. 96 ASCII 5x9 in 6x10 cell P4 white	14 Std. 96 ASCII 7x9 in 9x12 cell P31 green std.	14 Std. 96 ASCII 7x9 in 10x12 cell P31 green std.; P134 amber opt.	15 Std. 256 11x15 dot matrix P31 green std.; PC144 amber opt.
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Line std. Std. Std. Std. No Std. No Std. No Std. 2 opt. Std. Std. Std. Std. Std. Std. Std. Std. Std.	No No Std. No No Std. No Up/down std. 2 opt. Std. Std. No No Std. Std. Std. Std. Std.	No No Std. Std. Std. Std. No Up/down, jmp./smth. No Std. Both std. Std. No Horizontal std. Fwd./back std. Std. No Char./line/screen std.	No No Std. Std. Std. Std. Std. Std. Up/down, jmp./smth. 8 std. Std. Both std. Std. Std. Horizontal std. Fwd./back std. Std. No Char./line/screen std.	No No Std. Std. Std. Std. Std. Std. Up/down std. Std. Both std. Std. Std. 2 std. Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter ASCII Std. 40 std. Std.	Typewriter 96 ASCII No 12 std.	Typewriter, WP, data entry 96 ASCII Std. 18 std.	Typewriter, WP, data entry 96 ASCII Std. 18 std.	Typewriter 128 ASCII Std. 96 std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std.	120 cps dot matrix No RS-232-C std.	Various matrix 150/300/600 lpm No Std.	Various matrix 150/300/600 lpm No Std.	30-350 cps impact No Opt. 3 std. Tape punch, audible alarm, dual diskette drive
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII 50-38,400 Char./line/block No RS-232-C or 20mA No No	Half/full-duplex Asynchronous ASCII 75-2400 Line No RS-232-C & RJ-11C Std. No	Half/full-duplex Asynchronous RG551A-video cont. ASCII 50-19,200 Character No RS-232-C No No	Half/full-duplex Asynchronous Various ASCII 50-38,400 Character No RS-232-C or RS-422 No No	Half/full-duplex Async./Sync. To spec. ASCII/EBCDIC 50-19,200 Char./block Std. RS-232-C Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	649 — — — 11/85 11/85 — Dow Jones	545; 695; 995 — — — 2/82 7/82 — Matra, authorized distributors	Contact vendor — — — 1/86 2/86 — McDonnell Douglas	Contact vendor — — — 1/86 2/86 — McDonnell Douglas	1,700-2,800 — — — 20-50 — — 10/81 — Megadata, third party
<b>COMMENTS</b>	Multi-user PC terminal	Database access terminals; features include: one button auto logon; phone directory; built-in 1200 bps modem; VT100 terminal emulation; local memory; printer port	Replaces the Prism IV; formerly Microdata	Compatible with protocols offered by Tymnet; formerly Microdata	8 bit microprocessor based terminal features noiseless operation and low power requirements; 2K EARAM for user- selection of trans- mission rate, parity mode, stop bits, etc.

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Memorex 2078	Memorex 2079	Memorex 2178	Memorex 2080	Memorex 2051
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 32 No 3278 No —	Cluster 32 No 3279 No —	Cluster 32 No 3178 No —	Cluster 32 No 3180 No Memorex 2078	Cluster 8 No 5251-11 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920-3564 1 page 24/32/43x80, 27x132 15 Tilt std. 94; APL up to 222 9x12, 9x16 dot mat. P39 green, PLA amber No No Std. Std. Std. Std. Std. No No No Std. Std. Std. Std. Std. No Fwd./back std. Std. No Char./field/screen std.	1920, 2560 1920/2560 char. 24x80, 32x80 13 Tilt std. Up to 222 9x12 dot matrix P22 color 4/7 colors std. Opt. Std. Std. Std. Std. Std. No No Both std. Std. Std. No Fwd./back std. Std. No Char./field/screen std.	1920 1920 char. 24x80 12 Std. 94 7x14 dot matrix P39 green No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./field/screen std.	1920-3564 1 page 24/32/43x80, 27x132 15 Std. 94 7x14 dot matrix P39 green No No Std. Std. Std. Std. No Fwd./back std. Std. No Char./field/screen std.	1920 1920 char. 24x80 15 Std. — 8x16 dot matrix P39 green or PLA amber No No Std. Std. Std. Std. Std. No Fwd./back std. Std. No Char./field/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewr., data entry, APL, attr. select EBCDIC/ASCII/APL Std. 10/12/24 std.  Std.	Typewr., data entry, APL, attr. select EBCDIC/ASCII/APL Std. 10/12/24 std.  Std.	Typewriter, data entry 96 EBCDIC Std. 24 std.  Std. (Typewriter)	Typewr., data entry, APL, attr. select EBCDIC/ASCII/APL Std. 10/12/24 std.  Std.	Typewriter EBCDIC Std. 10/12/24 std.  Std. (10 keys)
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Impact, up to 350 cps No No Std. Light pen, ext. highlighting, APL, graph., secur. key- lock, audible alarm	Up to 350 cps impact 120 cps impact No No No — Lgt. pen, alarm, ext. highlighting, graph. APL, keyboard num. lock, secu. lock	120 cps impact No No No —	Impact, to 350 cps No No Std. Light pen, ext. highlighting, APL, graph., secur. key- lock, audible alarm	Screen printer No No No —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Synchronous BSC/SDLC EBCDIC/ASCII/APL 1200-56,000 Block Std. RS-232-C; coax A  No No	Half/full-duplex Synchronous BSC/SDLC ASCII/EBCDIC/APL 1200-56,000 Block Std. RS-232-C; coax A  No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-56,000 Block Std. Coax A  No No	Half/full-duplex Synchronous BSC/SDLC EBCDIC/ASCII/APL 1200-56,000 Block Std. Coax A  No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Twinax  No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,795-2,095 5,595-13,000 10-14 — 7/79 2/80 — Memorex	2,295-2,595 5,595-13,000 16-18 — 8/82 12/82 — Memorex	1,485 5,595-13,000 — 102 4/84 8/84 — Memorex	1,995 5,595-13,000 — — 4/85 5/85 — Memorex	Contact vendor — — — 1982 1982 — Memorex
<b>COMMENTS</b>	Part of 207X Display System; attaches to 2174, 2274, & 2076 controllers, as well as to equivalent IBM controllers	Part of 207X Display System; attaches to 2174, 2274, & 2076 controllers, as well as to equivalent IBM controllers	Part of 207X Display System; attaches to 2174, 2274, & 2076 controllers, as well as to equiv- alent IBM control- lers	Part of 207X Display System; attaches to 2174, 2274, & 2076 controllers, as well as to equivalent IBM controllers	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Memorex 2191	Micro-Term Mime 2A	Micro-Term Ergo 201/301	Micro-Term Ergo 320	Micro-Term Twist
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 8 No 5291-2/5251-11 No —	Standalone — No No Std. DEC VT52, Hazeltine 1500, Soroc 120	Standalone — No No Std. TeleVideo 925, LSI ADM 3A, DEC VT100	Standalone — No No Std. DEC VT220	Standalone — No No Std. DEC VT100/VT52, ANSI, LSI, TVI
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 1920 char. 24x80	1920 — 24x80	1920 1-2 pgs std. 24x80; 24x132 (301 only)	2000, 3300 1 page 25x80/132	2000 or 5760 3 pages 25x80 or 72x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Std. — 8x16 dot matrix P39 green or PLA amber	12 No 128 7x11 dot matrix P4 white	12 Tilt std. 128 ASCII 7x11 dot matrix P31 green;amber opt.	12 Tilt std. 128 ASCII + (4x128) 7x11 dot matrix P31 green or amber	15 Std. 128 ASCII + 128 20x17 dot matrix P4 white or amber
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No Std. Std. Std. Std. No No Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. No Char./field/screen std.	No No Std. Std. No Std. No Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Char./line/screen std.	No Opt. Std. Std. Std. No Std. Std. Std. No Fwd./back std. Std. Std. Std. Std.	No Opt. Std. Std. Std. Std. Std. Std. Up/down, smooth 1 std.	No No Std. Std. Std. Std. Std. Up/down, smooth 3 std. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  EBCDIC Std. 10/12/24 std.  Std. (10 keys)	Typewriter  128 ASCII No Std.  Std.	Typewriter  128 ASCII Std. 16 std.  Std.	Typewriter (DEC VT220) ASCII Std. 16 std.  Std.	Typewriter  ASCII Std. 16 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Screen printer No No No —	No No No Std. —	No No No Std. —	No No Std. Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC 1200-9600 Block Std. Twinax	Half/full-duplex Asynchronous ASCII ASCII 110-9600 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Char./line/block No RS-232-C std.; 20mA opt. No	Half/full-duplex Asynchronous — ASCII Up to 19,200 Char./line — RS-232-C, RS-422, or 20mA No No	Half/full-duplex Asynchronous — ASCII Up to 19,200 Char./line/block — RS-232-C or 20mA No No
Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	No No 1,545 — — — 9/85 9/85 — Memorex	No No 1,045 — 18-22 — — 8/78 — Western Union	No No 745-995 — — — 1983 1983 — Western Union	No No 795 — — — 11/84 11/84 — Western Union	No No 1,595 — — — 7/84 4/84 1000 Western Union
<b>COMMENTS</b>			Graphics option available for Ergo 201	Tektronix & ReGIS graphics option available	Screen rotates 90 degrees to display data in landscape (25x80) or full- page (72x80) format

### All About Alphanumeric Display Terminals

VENDOR AND MODEL	NCR 7900 Model 1	NCR 7900 Model 3	NCR 7901	NCR 7910	NCR 7950
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Standalone	Cluster
Maximum displays/controller	—	—	—	—	32
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	No	3270
Teletype compatibility	Std.	Std.	Std.	Std.	No
Other compatibility	—	—	—	No	—
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	2000	2000	1920	2000	1920, 2560, 3564
Memory capacity, no. char./lines/pages	—	—	—	12K	—
Screen arrangement, lines x char./line	25x80	25x80	24x80	25x80/132	24/32x80, 27x132
Screen area (diagonal), inches	12	12	12	15	15; 14 (color)
Tilt/swivel screen	Std.	No	Tilt std.	Std.	Std.
Total displayable symbols	64/96/128	128 ASCII	96 ASCII	128 ASCII, 32 graph.	96 ASCII
Symbol formation	7x7 dot matrix	7x7 dot matrix	5x7 dot matrix	7x9,5x9 dot matrix	7x9 dot matrix
Character phosphor	Amber std.	P31 green std.	P31 green std.	Amber std.	P31 green std., amber opt.; color 7 colors std.
Color capability	No	No	No	No	No
Graphics	No	—	No	Graphics char. set	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Opt.
Blink	Std.	Std.	Std.	Std.	Opt.
Blank	No	Std.	Std.	Std.	Opt.
Bold	No	No	No	Std.	Opt.
Reverse	Std.	Std.	Std.	Std.	Opt.
Double size	No	No	No	Std.	Opt.
Scroll	Up std.	No	No	Up/down std.	No
Paging	No	No	No	4 pgs std.	No
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Addressable only	Both std.	Addressable only	Both std.	Addressable only
Protected format	No	Std.	No	Std.	Std.
Partial screen transmit	No	Std.	No	Std.	Std.
Split screen/windows	No	No	No	Std.	No
Tabulation	No	Fwd./back std.	No	Fwd./back std.	Std.
Character insert/delete	No	Std.	No	Std.	Std.
Line insert/delete	No	Std.	No	Std.	Std.
Erase	Line/screen std.	Char./line/screen std.	Screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter, data entry
Character/code set	64/96/128 ASCII	128 ASCII	96 ASCII	128 ASCII	ASCII/EBCDIC
Detachability	Opt.	Opt.	Std.	Std.	Std.
Program function keys	1 key (96 functions)	No	No	—	24 std.
Numeric keypad	Std.;touch-tone opt.	Std.;touch-tone opt.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	Thermal/impact	No	Serial interface	No	200 cps matrix
Line printer, type, and speed	No	No	No	No	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	No
Other vendor-supplied devices	—	—	—	—	Audible alarm
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Synchronous
Communications protocol	ASCII	ASCII	ASCII	TTY ASCII	SNA/SDLC ASCII/EBCDIC
Code	ASCII	ASCII	ASCII	—	1200-9600
Speed, bits/second	50-19,200	50-9600	110-19,200	—	Block std.
Format	Char./line	Line/page	Character	—	Std.
Multipoint operation	No	Both std.	No	No	Coaxial
Terminal interface	RS-232-C	RS-232-C	RS-232-C	RS-232-C; RS-422 opt.	No
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	1,500	3,500-3,670	850	1,995	1,395
Controller, purchase	—	—	—	—	6,000
Monthly prime-shift maintenance	19	33	15	18	46-75
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	—	—	2/82	9/83	7/83
Date of first production delivery	6/79	—	5/82	9/83	7/83
Display units installed to date	—	—	—	—	—
Serviced by	NCR	NCR	NCR	NCR	NCR
<b>COMMENTS</b>		Parallel interface std.		96 Int'l symbols, conforms to ANSI X3.64 and NCR 7900-1/-4	

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Nixdorf 8278	Paradyne 9440	Paradyne 9476	Paradyne 9478	Paradyne 7811
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 256 No 3278 No —	Either 3 No 1052 No —	Either 32 No 3276 No —	Either 32 No 3278 No —	Standalone — No Emulation program Std. TeleVideo 910, Lear Siegler ADM 31
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 — 24x80	1920 — 24x80	1920 — 24x80	1920 — 24x80	1920 — 24x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Opt. 96 EBCDIC 7x9 dot matrix Amber	12 Tilt std. 128 ASCII/EBCDIC 7x14 dot matrix P39 green	15 Tilt std. 128 ASCII/EBCDIC 8x16 dot matrix P39 green	15 Tilt std. 128 ASCII/EBCDIC 8x16 dot matrix P39 green	12 Std. 128 ASCII 8x10 dot matrix P39 green
Color capability Graphics Programmable field/char. highlighting via:	No No No	No no No	No — Std.	No — Std.	No Graphics char. set Std.
Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No No Std. No No No No Std. Both std. Std. Std. No No Std. Std. Line/screen std.	No No Std. No No No Std. Both std. No Std. Std. No No No Std.	Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. No No Std.	Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. No No No Std.	Std. No No Reduced std. Std. No No Std. Both std. No Std. Std. No No No Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter, data entry, enhanced 96 EBCDIC Std. 12-24 std. Std.	Typewriter ASCII Std. 24 std. Opt.	Typewriter, data entry, WP ASCII/EBCDIC Std. 24 std. Std.	Typewriter, data entry, WP ASCII/EBCDIC Std. 24 std. Std.	Typewriter ASCII Std. 14 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	40/100/150/210 cps 300 lpm steel band No No Audible alarm, security keylock	Impact No Opt. No Light pen, keylock	45/150 letter/dot 300/600 band Opt. Opt. Light pen, keylock	45/150 letter/dot 300/600 band Opt. Opt. Light pen, keylock	Std. Std. No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half-duplex Synchronous HDLC EBCDIC Up to 9600 Block Std. RS-232-C/SAS No No	Half/full-duplex Asynchronous Paradyne SDLC ASCII/EBCDIC Up to 19,200 Character No RS-232-C No No	Full-duplex Synchronous Paradyne SDLC ASCII/EBCDIC Up to 256KB Block Std. RS-232-C Opt. No	Full-duplex Synchronous Paradyne SDLC ASCII/EBCDIC 256KB Block No RS-232-C Opt. No	Full-duplex Asynchronous — ASCII 300-19,200 Character No RS-232-C No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,610 (8278) 12,850 (8274) 11 132 11/82 6/83 3500 Nixdorf	3,000 1,000 27 — 11/80 1/81 200 Paradyne	5,850 2,500 30 — 11/80 1/81 400 Paradyne	3,000 4,000 20 — 11/80 1/81 Over 1200 Paradyne	695 — — — 3/84 3rd Q/84 — Paradyne
<b>COMMENTS</b>	Components of 8270 Compatible Display System; concurrent local & remote device support; no remote software for controller required; connects to 8274 controller		All remote connect- ed devices appear as local channel attached; no need for remote software; Paradyne CRTs use loop technology		Attaches to Paradyne's System 8400 and networking multiplexers; func- tions as 3278 via emulation program in 8400; graphics & foreign language characters



### All About Alphanumeric Display Terminals

VENDOR AND MODEL	Perfect Terminal P200	Perfect Terminal P210	Perfect Terminal P6312	PHAZE P3278	PHAZE P3279
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Cluster	Cluster
Maximum displays/controller	—	—	—	32	32
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	3278/3178	3279-2A/3179
Teletype compatibility	No	No	No	—	No
Other compatibility	Prime PT-200	Data General D210/ 211	Perkin-Elmer 6312	Std.	No
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	1920, 3168	1920, 3168	1920, 3168	1920	1920
Memory capacity, no. char./lines/pages	4K char.	4K char.	4K char.	—	—
Screen arrangement, lines x char./line	24x80/132	24x80/132	24x80/132	24x80 plus status line	24x80 plus status line
Screen area (diagonal), inches	14	14	14	12	14
Tilt/swivel screen	Std.	Std.	Std.	Std.	Std.
Total displayable symbols	128	128	128	128 EBCDIC	128 EBCDIC
Symbol formation	7x13 dot matrix	7x13 dot matrix	7x13 dot matrix	7x14 dot matrix	7x11 dot matrix
Character phosphor	Green or amber	Green or amber	Green or amber	P42 green	Color
Color capability	No	No	No	No	4 colors std.
Graphics	No	No	No	—	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	No	No
Scroll	Up/down std.	Up/down std.	Up/down std.	No	No
Paging	2 opt.	2 opt.	2 opt.	No	No
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Both std.	Both std.	Both std.	Both std.	Both std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	No	No	No	No
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Std.	Std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	No	No
Erase	Line/screen std.	Line/screen std.	Line/screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter, data entry	Typewriter, data entry
Character/code set	128 ASCII	128 ASCII	128 ASCII	EBCDIC	96 EBCDIC
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	32 std.	38 std.	32 std.	24 std.	24 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	No	No
Composite video	Ni	Ni	Ni	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Parallel
Other vendor-supplied devices	—	—	—	Light pen, magnetic card reader	Light pen, magnetic card reader, bar code
<b>TRANSMISSION PARAMETERS</b>					
Mode	Full-duplex	Full-duplex	Full-duplex	Half/full-duplex	Half/full-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Synchronous	Synchronous
Communications protocol	ASCII	ASCII	ASCII	BSC, SNA/SDLC	BSC, SNA/SDLC
Code	ASCII	ASCII	ASCII	EBCDIC	EBCDIC
Speed, bits/second	Up to 38,400	Up to 38,400	Up to 38,400	1200-9600; 2.54MHz	1200-9600; 2.54MHz
Format	Char./line/block	Char./line/block	Char./line/block	Block	Block
Multipoint operation	No	No	No	Std.	Std.
Terminal interface	RS-232-C	RS-232-C	RS-232-C	Coax A (3270)	Coax A (3270)
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	795	795	795	1,045	1,995
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	—	—	—
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	7/85	6/85	6/85	110-134	135-184
Date of first production delivery	8/85	7/85	6/85	12/82	1/85
Display units installed to date	200	500	700	1/83	2/85
Serviced by	Dow Jones/factory	Dow Jones/factory	Dow Jones/factory	Third party	Third party
<b>COMMENTS</b>				Lightweight (31 pounds); designed for user mainte- nance; DIN compat- ible; auto video shut-down; IBM compatible	DIN ergonomics standard; screen save features; IBM compatible

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	PHAZE P9020	Plessey PT-220	Plessey PT-100B	Prime Performer Terminal	RCA VP-3301/VP-3303
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either 32 — 3278/PC No Std.	Standalone — No No Std. DEC VT220/VT100, ANSI X3.64	Standalone — No No Std. DEC VT100	Standalone — No No Std. Prime	Standalone 1 Briefcase — Std. —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 To 640K 24x80 plus status line 12 Std. 256 EBCDIC/ASCII 7x14 dot matrix P42 green  Opt. — Std. Std. Std. Std. No Std. Std. Both std. Std. Std. No Std. Std. Std. No Std. Std. No Char./line/screen std.	1920, 3168  24x80/132  12 Std. 128 7x10 in 10x10 cell P4 white std.; P31 grn., P22 amb. opt. No Line drawing std.  Std. Std. Std. Std. Std. No Std. Std. Std. Std. No Std. Std. No Std.	1920, 3168  24x80/132  12 No 96 ASCII 7x9 dot matrix Green, amber, or white No Graphics char. set  Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.	2000, 3696 512K—1024K 25x80, 28x132 14 Tilt 256 ASCII 7x9/5x7 dot matrix White, amber, or green Opt. Opt.  Std. Std. Std. Dim std. Std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/field/ screen std.	960  24x40, 12x20  — Opt. 95 ASCII 6x8 dot matrix —  8 colors NTSC —  No Std. Std. No Std. Std. No Up std. 2 std. Std. Std. Both Std. No No Fwd. std. Std. No Line, screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Typewriter, data entry EBCDIC Std. 24 std.  Std. No No No Std. Light pen, mag card reader, 2 360KB drives, serial/ parallel ports	Typewriter  ASCII Std. 4 std.  Std. No No No Std. —	Typewriter  ASCII Std. 4 std.  Std. No No No Std. No	Typewriter  256 ASCII Std. 26 std.  Std. No No No No —	Membrane, typewriter  128 ASCII Std. No  Std. No No Std. Std. No
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Half/full-duplex Async./sync. ASCII/BSC/SNA/SDLC EBCDIC/ASCII 1200-9600; 2.54 MHz Block Std. Coax A (3270)  No No  2,500 — — 9/83 11/83 — Third party	Half/full-duplex Asynchronous ASCII/ANSI ASCII 75-19,200 Character No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C std.; 20mA opt. No No	Half/full-duplex Asynchronous Xon/Xoff ASCII 50-19,200 Char./block No RS-232-C/CCITT V.24  No No  995 — 10 — 1/85 2/85 — Prime	Half/full-duplex Asynchronous — ASCII 110-19,200 Character No RS-232-C  No No  439/449 — — 4/81 4/81 Over 5000 Factory
<b>COMMENTS</b>	Designed for user maintenance; mod- ular design; ergo- nomic features; DIN compatible; auto video shutdown; compatible with IBM PC; parallel printer port				

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	RCA VP-3501	RCA VP-4801	RCA VP-5801	Soroc Challenger 530	Soroc Challenger 540
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone 2 Briefcase — Std. —	Standalone — Briefcase — Std. —	Standalone 2 Briefcase No Std. ADD5 Viewpoint, Texas Instruments	Standalone — No No Std. Lear Siegler ADM 3	Standalone — No No Std. Basic IV, Alpha Micro
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	960 — 24x40, 12x20	1920 1 page 24x80	960, 1920 1 page 24x40/80, opt. status line	1920 1 page 24x80 plus status line	1920 1 page 24x80 plus status line
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	— Opt. 95 ASCII 6x8 dot matrix —	12 No 95 ASCII 7x8 dot matrix P31 green	12 No — 7x8 dot matrix P31 green	12 Std. 128 5x9 dot matrix P31 green std.	12 Std. 128 5x9 dot matrix P31 green std.
Color capability Graphics Programmable field/char. highlighting via:	8 colors NTSC —	No —	No 2x3 block matrix	No Std.	No Std.
Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Std. Std. No Std. Std. Up std. No Std. Both No No No Fwd. std. Std. No Line, screen std.	No Std. Std. No Std. No Smooth No Std. Both No — Fwd./back opt. Std. No Line, screen std.	No Std. Std. No — No Std. Both std. No No Fwd./back std. Std. Std. Char./line/screen std.	Std. Std. Std. No Std. No Up std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	Std. Std. Std. No Std. No Up std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style	Membrane, typewriter	Membrane, typewriter	Typewriter	Typewriter	Typewriter
Character/code set Detachability Program function keys	128 ASCII Std. No	128 ASCII Std. 8 std.	64 ASCII Std. 8 user programmable	128 ASCII Std. 14 std.	128 ASCII Std. 16 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Std. No Acoustic coupler	No No Std. Std. Acoustic coupler	No No No No Acoustic coupler	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Asynchronous — ASCII 300 Character No 20 mA	Half/full-duplex Asynchronous — ASCII 110-9600 Character Std. RS-232-C, 20mA, or parallel	Half/full-duplex Asynchronous — ASCII Up to 9600 Character No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 110-36,400 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 110-36,400 Char./line/block No RS-232-C or 20 mA
Integral modem Integral acoustic coupler	Std. Opt.	Std. Opt.	Std. No	Opt. No	Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	498 — — — 11/81 11/81 Over 3000 Factory	498 — — — 6/83 9/83 — Factory	798 — — — 11/84 1/85 — Factory	595 — — — 1/83 1/83 — Soroc	895 — — — 6/83 6/83 — Soroc
<b>COMMENTS</b>			Built-in 1200/300 bps direct connect modem; auto dial, auto logon capa- bility		

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Soroc Challenger 525	Sperry SVT 1210	Sperry SVT 1220	Sperry SVT 1120	Tandberg Data TDV 2200S Family
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. TeleVideo 925	Standalone — No No No DEC VT52	Standalone — No No No DEC VT220, VT131	Standalone — No No No Sperry UTS 20	Standalone — No 3101 Std. DEC VT100/VT200, ANSI X3.64, more
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920 1 page 24x80 plus status line 12 Std. 128 5x9 dot matrix P31 green std. No Std. Std. Std. No Std. No Up std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	3168 1 page 24x80/132 12 Std. 96 ASCII/32 graphic 7x9 dot matrix P31 green No DEC graphics char. Std. No No Std. Std. Smooth std. No Std. Both std. No No 2 std. Forward std. No No Screen std.	3168 1 page 24x80/132 12 Std. DEC multinat./NRC 7x9 dot matrix P31 green No DEC graphics char. Std. No Std. Std. Var. speed smooth No Std. Both std. No Std. 2 std. Forward std. No No Char./line/screen std.	3168 1 page 24x80/132 14 Std. ASCII/Sperry nat. 7x9/5x7 dot matrix P31 green No No Std. Std. Low intensity Std. No 2 virtual screens No Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	2000 24K std.; 40/56 opt. 25x80 15 Std. 1024 9x14 dot matrix P31 green std.; white opt. No 720x336 pixel opt. Std. Std. Std. Dim std. Std. Std. Smooth, step 1 std.; 4/8/10 opt. No Both std. Std. Std. Std. Std. Std. Char./line/page/ buffer std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 128 ASCII Std. 20 std. Std.	Typewriter (DEC VT100-style) ASCII Std. 26 std. Std.	Typewriter (DEC VT220-style) DEC multinat./NRC Std. 62 std. (15 user- programmable) Std.	Typewriter (94- key) ASCII/Sperry nat. Std. 22 std. Std.	Typewriter, data entry, custom 256 ASCII Std. 16 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	160 cps matrix No No Std. —	160 cps matrix No No Std. —	160 cps matrix No No Std. —	Ink jet, 150 cps No Opt. Opt. Mag. card reader, security locks, mouse
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII 110-36,400 Char./line/block No RS-232-C or 20 mA Opt. No	Full-duplex Asynchronous TTY ASCII Up to 19,200 Character No RS-232-C No No	Half/full-duplex Asynchronous TTY ASCII Up to 19,200 Char./block No RS-232-C No No	Full-duplex Synchronous Uniscope ASCII Up to 19,200 Block Std. RS-232-C No No	Half/full-duplex Async./sync./ISO ASCII/HDLC/X.25 ASCII 50-19,200 Char./line/block Std. RS-232-C, RS-422, or 20mA Opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	895 — — — 5/84 5/84 — Soroc	495 — Various Various 1/85 1/85 — Sperry	895 — Various Various 5/85 5/85 — Sperry	795/895 — Various Various 10/85 10/85 — Sperry	995-1,995 — — — 7/84 — 140,000 Siemens
<b>COMMENTS</b>					Other emulations include: DG, HP, Datapoint, Sperry, & Honeywell; meets German GSA std. for ergonomics; 70 Hz refresh rate; total flexibility for customizing

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Tandberg Data TDV 2400	Tandem 6530 Family	Tandy DT-100	Tatung TVT-7220	TEC ET80/ET100
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT220, ANSI X3.64	Standalone — No No Std. Tandem	Standalone — No No Std. DEC VT100, ANSI X3.64	Standalone — Portable case No No DEC VT220/VT200/ VT100/VT102/VT52	Standalone — No No Std. TEC 70; DEC VT100 (ET100 only)
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	900-4224 1M bytes 18/32x50/132	2000 Up to 8 pages 25 x 80	1920, 3168 — 24x80/132	1920, 3168 1 page 24x80/132	2000 5 pages 24x80 plus status line
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	15 Std. 1024; 256 download 10x22 dot matrix P31 green std.; white opt. Planned (1986)	9(30)/12(31)/15(32) Std.(30); Opt. 128 ASCII 7x9 dot matrix P31 green	14 Std. 128 ASCII — White	14 Std. 128 ASCII 7x9 dot matrix P31 green std.; H10 opt.	15 Std. 256 7x12 dot matrix Black on white background
Color capability Graphics Programmable field/char. highlighting via:	800x600 pixel opt.	No No	No No	No No	No No
Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	Std. Std. Std. Std. Std. Std. Smooth, step Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Char./line/page/ buffer std.	Std. Std. Std. Std. Std. No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. —	Std. No No Dim std. Std. No Std. Std. No No Std. Std. No No Std.	Std. Std. No Std. Std. Std. Up/down, smooth 1 std. Std. Both std. Std. — Split screen std. Fwd./back std. Std. Std. Char./line/screen std.	Std. Std. Std. No Std. Std. Std. Up/down/jump/sm. Std. Std. Std. Std. Std. Std. Std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys	Typewriter, data entry, custom 256 ASCII Std. 20 std.	Typewriter ASCII Std. 16 std.	Typewriter (DEC VT220 style) ASCII Std. 16 std.	Typewriter, data entry 128 ASCII Std. 15 std.	Typewriter 256 ASCII Std. 18 std.
Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. Ink jet, 150 cps No Opt. Opt. Mag. card reader, security locks, mouse	Std. Std. No — —	Std. No No Std. —	Std. No No No Std. —	Std. No No No Std. Card reader/writer
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Async./sync. ASCII/HDLC ASCII 50-38,400; 1M opt. Char./line/block Std. RS-232-C, RS-422, or 20mA	Half/full-duplex Async./sync. ASCII ASCII 50-19,200 Char./block Std. RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII/ANSI ASCII Up to 19,200 Character No RS-232-C	Half/full-duplex Asynchronous XON/XOFF, DTR ASCII 75-19,200 Char./line No RS-232-C, 20mA, or RS-422/423	Half/full-duplex Asynchronous ASCII ASCII Up to 19,200 Char./block/line No RS-232-C std.; 20/60mA opt.
Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	No No 1,995-2,995 — — — 11/85 — — Siemens	No No 1,950-2,300 18 — 3/82 4/82 — Tandem	No No 795 — — 7/84 7/84 — Radio Shack	No No 695 — — 10/84 7/85 — Tatung Co. of America	No No 1,975 — — 5/81 1/82 — TEC
<b>COMMENTS</b>	Supports windowing, multitasking, multiple hosts; UNIX-compatible; Motorola 6800, 8 MHz DMA channel opt.	For use with Tandem NonStop Systems; three models avail- able: 6530, 6531, & 6532	Available at selected Radio Shack stores & dealers; for use with Model 16 com- puter running TRS- XENIX		Model ET100 features vertical scrolling to display 132- character lines

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	TEC 630	TEC DP-84	Tektronix 4025A	Tektronix 4100 Series	Telegenix TDS 2070
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Upon request	Standalone — Portable No No See comments	Standalone — No No Std. DEC VT100 opt.	Either — No No Std. DEC VT100	Standalone — Opt. No Std. ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000 Up to 4 pages 25x80	1280 80/24/1 16x80 (scrollable)	2720 16K/400/12 total 34x80	2560 To 256K 30/32x80	64-1920 1 page Custom (.7-inch character)
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Opt. 128 6x8 dot matrix P4 white std.; P31 green opt.	2.75 in. x 9.3 in. No (lap) 95 ASCII/32 graph. 5x7 Liquid crystal display (LCD)	12 No 96 std. 7x9 dot matrix P39 green	13, 19 model dep. Opt. 224 ASCII 6x9/8x14 dot matrix P22 color	Various Opt. 68 ASCII Segmented 16-stroke Neon orange (plasma)
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No Std. Std. Std. Reduced std. Std. No Std. Std. 2/4 opt. Std. Both std. Std. Std. Std. Fwd./back/auto Std. Std. Line/page/screen/memory std.	No Std. (VT100 comp.) Std. Std. Std. No Std. Up/down, right/left Std. Std. No Std. Fwd./back std. No No Char./line/screen std.	No Std. Std. No Std. Up/down std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	8 colors std. Std. Std. Std. Std. Std. Std. Both std. No No Std. Std. Fwd./back std. Std. Std. Std.	No No Std. Std. No No Std. Std. 4-way std. 1 std. Std. Addressable only No No Unlimited Forward std. No No Char./line/screen
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 128 ASCII Std. 6 std. Opt.	Typewriter 95 ASCII/32 graph. No Std. Opt.	Typewriter ASCII Std. 20 plus all keys std.	Typewriter ASCII Std. Std. Std.	Typewriter (opt.) 68 ASCII Std. 15 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Opt. Std. Mag. card reader/writer	No No No Std. (printer) —	Serial opt. No Std. Std. Tape, plotters	No No No Std. —	No No No Opt. Ceiling, floor, & wall mounts
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous — ASCII 110-9600 Char./line/block No RS-232-C std.; 20mA opt. No No	Half/full-duplex Asynchronous Async./ASCII ASCII/ANSI X3.64 Up to 19,200 Character No RS-232-C No Opt.	Full/std.; half/opt. Asynchronous ASCII ASCII 75-9600 Char./block No RS-232-C or 20mA No No	Full-duplex Asynchronous ASCII ASCII Up to 38,400 Character No RS-232-C, Centronics No No	Simplex Asynchronous Start-stop ASCII-77 Up to 9600 Character Std. RS-232-C std.; 20mA opt. No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,475-1,995 — — — 3/81 5/81 TEC	995 — — — 7/84 11/84 Factory	5900 — 7 1977 1977 — Tektronix	3,995-9,950 — — — 4/83 10/83 — Tektronix	2,400-29,500 Included Various — 10/85 Spring 1986 See comments Telegenix & third party
<b>COMMENTS</b>	Available in rack-mount or mag card reader/writer versions	Emulations include: DEC VT100/VT52, TeleVideo 910, Lear Siegler ADM 3A & ADM 5, Hazeltine (Esprit) 1400 & 1410, ADDS Regent 20 & Regent 25	Updated to 4025A in 1981 w/new features, 3X speed, 4027A color terminal also available	132-character mode through vertical scrolling	Over 15,000 plasma gas discharge displays of various sizes installed throughout the U.S. Canada, Europe, & Saudi Arabia; each display is custom built (within certain parameters)

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Telegenix TDS 2000	Telegenix TDS 2200	Teleray Model 7	Teleray Model 16-7801	Teleray Model 16/ 16 APL
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — Opt. No Std. ANSI X3.64	Standalone — Opt. No Std. ANSI X3.64	Standalone — No See comments Std. See comments	Standalone — No No Std. Honeywell VIP 7801	Standalone — No No Std. ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	32-1920 1 page Custom (1-inch character) Various Opt. 68 ASCII Segmented 16-stroke Neon orange (plasma) No No No No No 4-way std. 1 std. Std. Addressable only No No Unlimited Forward std. No No Char./line/screen	16-1920 1 page Custom (2-inch character) Various Opt. 68 ASCII Segmented 16-stroke Neon orange (plasma) No No No No No 4-way std. 1 std. Std. Addressable only No No Unlimited Forward std. No No Char./line/screen std.	1920 3840 char. 24x80 or user-define plus status line 14; 9 & 12 opt. Std. 256, incl. 128 ASCII 8x10 dot matrix Green or amber No Opt. Std. Std. Std. Dim std. Std. Std. Up/down/horiz./sm. 2 std.; 4 opt. Std. Std. Both std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/memory std.	1920 8 pages 24x80 plus status line 14; 9 & 12 opt. Std. 128 ASCII + graphics 8x10 dot matrix Green or amber No Graphics char. set Std. Std. Std. Dim std. Std. No Std. Std. Std. Both std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/memory std.	1920 7760 char. 24x80 or user-def. plus status line 14; 9 & 12 opt. Opt. 128 ASCII/64 graph. 8x10 dot matrix Green or amber No Graphics char. set Std. Std. Std. Dim std. Std. No Up/down/horiz./sm. 4 std.; plus 4 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/memory std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter (opt.)  68 ASCII Std. 15 std. Std.	Typewriter (opt.)  68 ASCII Std. 15 std. Std.	Typewriter  128 ASCII Std. 32/64 user-defin. Std.	Typewriter  128 ASCII Std. 32/64 user-definable Std.	Typewriter  128 ASCII Std. 32/64 user-defin. Std. & calc. mode
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Opt. Ceiling, floor, & wall mounts	No No No Opt. Ceiling, floor, & wall mounts	No No Opt. Std. —	No No Opt. Std. —	No No Opt. Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Simplex Asynchronous Start-stop ASCII-77 Up to 9600 Character Std. RS-232-C std.; 20mA opt. No No	Simplex Asynchronous Start-stop ASCII-77 Up to 9600 Character Std. RS-232-C std.; 20mA opt. No No	Half/full-duplex Asynchronous ASCII/ANSI ASCII 50-19,200 Char./line/block No RS-232-C std.; 20mA opt. No	Half/full-duplex Asynchronous ANSI/Honeywell ASCII 50-19,200 Char./line/block No RS-232-C std.; RS-422 opt. No	Half/full-duplex Asynchronous ASCII/ANSI ASCII/ANSI 50-19,200 Char./line/block No RS-232-C std.; 20mA opt. No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,000-55,000 Included Various — 2/82 10/82 See comments Telegenix & third party	4,000-88,000 Included Various — 7/85 11/85 See comments Telegenix & third party	1,095 — — — 11/84 12/84 — Teleray	1,595-1,895 — — — 5/83 — — Teleray	1,595/1,795 (APL) — — — 3/82 4/82 — Teleray
<b>COMMENTS</b>	Over 15,000 plasma gas discharge displays of various sizes installed throughout the U.S. Canada, Europe, & Saudi Arabia; each display is custom built (within certain parameters)	Over 15,000 plasma gas discharge displays of various sizes installed throughout the U.S. Canada, Europe, & Saudi Arabia; each display is custom built (within certain parameters)	Multiprotocol	Multiprotocol	Multiprotocol  Model 16 APL includes 96 APL char.

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Teleray Model 20-DDG	Teleray Model 7-DHP	Teleray Model 20-7305	Teleray Model 20-7813	TeleVideo 905
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. Data General D210, DEC VT220	Standalone — No No Std. HP 2622/2624, DEC VT102, ANSI X3.64	Standalone — No No Std. Honeywell VIP7305, DEC VT102, ANSI	Standalone — No No Std. Honeywell VIP7813, DEC VT102, ANSI	Standalone — No No Std. See comments
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920-3168 3840 char. 24x80/132 plus status line	1920 4000 char. 24x80	1920-3168 5760 char. 24x80/132	1920-3168 5760 char. 24x80/132	1920 1 page 24x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14; 9 & 12 opt. Std. 128 8x10 dot matrix Green or amber	14; 9 & 12 opt. Std. 256 8x10 dot matrix Green or amber	14; 9 & 12 opt. Std. 255 8x10 dot matrix Green or amber	14; 9 & 12 opt. Std. 255 8x10 dot matrix Green or amber	14 Std. 128 ASCII 6x8 dot matrix P31 green or amber
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No Opt. Std. Std. Std. Std. Std. Std. Std. 1 std; 2 opt. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/ memory std.	No Tektronix 4014 opt. Std. Std. Dim/bold Std. Std. Up/down, smooth 2 std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/ memory std.	No Tektronix 4014 opt. Std. Std. Dim/bold Std. Std. Up/down, smooth 3 std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/ memory std.	No Tektronix 4014 opt. Std. Std. Dim/bold Std. Std. Up/down, smooth 3 std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen/ memory std.	No No Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 32/64 user-defined  Std.	Typewriter  128 ASCII Std. 32 std. (screen- labelled) Std.	Typewriter  128 ASCII Std. 32 std.  Std.	Typewriter  128 ASCII Std. 32 std.  Std.	Typewriter  128 ASCII Std. 16 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Opt. Std. —	No No Opt. Std. —	No No Opt. Std. —	No No Opt. Std. —	No No Opt. Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ANSI/DG ASCII 50-19,200 Char./line/block No RS-232-C std; 20mA opt. No No	Half/full-duplex Asynchronous ANSI/HP ASCII 50-19,200 Char./line/block No RS-232-C std.; RS-422, 20mA opt. No No	Half/full-duplex Asynchronous ANSI/Honeywell ASCII 50-19,200 Char./line/block No RS-232-C, RS-422 std.; 20mA opt. No No	Half/full-duplex Asynchronous ANSI/Honeywell ASCII 50-19,200 Char./line/block No RS-232-C, RS-422 std.; 20mA opt. No No	Half/full-duplex Asynchronous — ASCII 50-19,200 Char./line/block No RS-232-C No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,195 — — — 11/84 12/84 — Teleray	1,095/1,195 — — — 3/85 4/85 — Teleray	1,295 — — — 12/85 1/86 — Teleray	1,595 — — — 1/86 3/86 — Teleray	409 — — — 1985 1985 — GE Instr. & Comm.
<b>COMMENTS</b>	Multiprotocol	Multiprotocol	Multiprotocol	Multiprotocol	Emulations include: ADDS Regent 25 & Viewpoint A2, Lear Siegler, Hazeltine, TeleVideo 910, 910+, & 925



### All About Alphanumeric Display Terminals

VENDOR AND MODEL	TeleVideo 910+	TeleVideo 921	TeleVideo 922	TeleVideo 924	TeleVideo 950
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Standalone	Standalone
Maximum displays/controller	—	—	—	—	—
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	No	No
Teletype compatibility	Std.	Std.	Std.	Std.	Std.
Other compatibility	—	—	DEC VT220/VT100/ VT52	TeleVideo 925/ 950	—
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	1920	1920	1920	1920	1920
Memory capacity, no. char./lines/pages	80/24/1	1 page	1 page	4 pages	80/24/4
Screen arrangement, lines x char./line	24x80	24x80	24x80/132	24x80 plus status line	24x80
Screen area (diagonal), inches	12	12	12	12	12
Tilt/swivel screen	Swivel std.	Std.	Std.	Std.	Std.
Total displayable symbols	128 ASCII	128 ASCII	128 ASCII/ANSI	128 ASCII+graphics	128 ASCII
Symbol formation	6x7 dot matrix	7x8 dot matrix	6x8 dot matrix	6x8 dot matrix	10x7 dot matrix
Character phosphor	P31 green	P31 green or amber	P31 green or amber	P31 green	P31 green
Color capability	No	No	No	No	No
Graphics	No	Std. (15 char.)	Std. (96 char.)	Std.	15 graphics symbols
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	No	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	No	No
Scroll	Up/down std.	Std.	Std.	Std.	Up/down std.
Paging	1 std.	—	Std.	Std.	4 opt.
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Both std.	Std.	Std.	Both std.	Both std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	No	Std.	Std.	Std.	Std.
Split screen/windows	No	No	No	Std.	No
Tabulation	Fwd./back std.	Std.	Std.	Fwd./back std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	128 ASCII	128 ASCII	128 ASCII	128 ASCII	128 ASCII
Detachability	No	Std.	Std.	Std.	Std.
Program function keys	No	32 non-volatile std.	30 non-volatile std.	32 std.	22 std.
Numeric keypad	Std.	Std. (true acctg.)	Std. (true acctg.)	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	No	No
Composite video	Opt.	Opt.	Opt.	Opt.	Opt.
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Std.
Other vendor-supplied devices	—	—	—	—	—
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Communications protocol	—	—	ANSI X3.64	—	—
Code	ASCII	ASCII	ASCII	ASCII	ASCII
Speed, bits/second	50-19,200	150-19,200	150-19,200	Up to 19,200	50-19,200
Format	Char./line/block	Char./block	Char./block	Char./block	Char./line/block
Multipoint operation	No	No	No	No	No
Terminal interface	RS-232-C std.; 20mA opt.	RS-232-C std.; 20mA opt.	RS-232-C std.; 20mA opt.	RS-232-C std.; RS-422 or 20mA opt.	RS-232-C std.; 20mA opt.
Integral modem	Opt.	No	No	Opt.	Opt.
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	649	695	795	899	1,195
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	—	—	—
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	2/82	5/84	5/84	4/83	12/80
Date of first production delivery	2/82	9/84	11/84	8/83	1/81
Display units installed to date	—	—	—	—	Over 40,000
Serviced by	GE Instr. & Comm.	GE Instr. & Comm.	GE Instr. & Comm.	GE Instr. & Comm.	GE Instr. & Comm.
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	TeleVideo 955	TeleVideo 970	TeleVideo Personal Terminal (PT)	Telex TC 078	Telex TC 079
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. —	Standalone — No No DEC VT100/VT52	Standalone — Yes No Std. —	Cluster 32 No 3178/3278 No —	Cluster 32 No 3179/3279 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 4 pages 24x80/132	1920 3 pages 24x80/132	1920 1 page 24x40/80	1920 — 24x80	1920 — 24x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 128 ASCII 10x7 dot matrix P31 green or amber	14 Tilt std. 128 7x8 dot matrix P31 green	9 No 128 ASCII 5x7 dot matrix P9 yellow-green	12 Std. 96 EBCDIC 9x12 in 9x16 cell Green or amber	12 Std. 96 EBCDIC 9x12 in 9x16 cell Color
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No 15 graphics symbols Std. Std. Std. No Std. No Up/down std. 4 std. Std. Both std. Std. No No Fwd./back std. Std. Std. Char./line/screen std.	No No Std. Std. Std. Std. 3 std. Fwd./back std. Std. Std. Char./line/field std.	No Std. (128 char.) Std. Std. Std. Std. Std. No Std. Std. Std. No Std. Std. Std.	No No No No Std. No No No Both std. Std. Std. No Fwd./back std. Std. No Char./screen std.	4/7 colors No No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 128 ASCII Std. 64 std. Std.	Typewriter 128 ASCII Std. 32 non-volatile Std.	Typewriter 128 ASCII No 14 std. No	Typewriter, data entry EBCDIC Std. 24 std. (typewriter only) Std.	Typewriter, data entry EBCDIC Std. 24 std. (Typewriter only) Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No Opt. Std. —	No No Opt. Std. No	No No Opt. Std. —	Std. Std. No Std. Security keylock, numeric lock, audible alarm	Std. Std. No Std. Security keylock, numeric lock, audible alarm
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous — ASCII 50-19,200 Char./line/block No RS-232-C Opt. No	Half/full-duplex Asynchronous ANSI X3.64 ASCII 50-19,200 Char./line/fld./blk. No RS-232-C std.; RS-422 or 20mA opt. Opt. No	Half/full-duplex Asynchronous — ASCII 150-19,200 Char./line/block No RS-232-C Opt. (300/1200 bps) No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 19,200 Block Std. Coaxial No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	699 — — — 1985 1985 — GE Instr. & Comm.	1,495 — — — 6/82 1/83 — GE Instr. & Comm.	499 — — — 11/83 11/83 — GE Instr. & Comm.	1,550 4,500-13,000 9 — 8/84 8/84 — Telex	2,195 4,500-13,000 12 — 8/84 8/84 — Telex
<b>COMMENTS</b>			Optional telephone handset for voice applications	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Telex TC 080	Telex TC 179	Telex TC 178	Telex TC 276	Telex TC 278
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Cluster	Cluster	Cluster	Either	Cluster
Maximum displays/controller	32	32	32	8	32
Transportability	No	No	No	No	No
IBM compatibility	3180	3179	3178/3278	3276	3278
Teletype compatibility	No	No	No	No	No
Other compatibility	—	—	—	—	—
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	1920-3564	1920-3440	1920	1920-3564	1920-3564
Memory capacity, no. char./lines/pages	—	—	—	—	—
Screen arrangement, lines x char./line	24/32/43x80, 27x132	24/32/43x80	24x80	24/32/43x80, 27x132	24/32/43x80, 27x132
Screen area (diagonal), inches	15	14	12	15	15
Tilt/swivel screen	Std.	Std.	Opt.	Opt.	Opt.
Total displayable symbols	96 EBCDIC	96 EBCDIC	96 EBCDIC	96 EBCDIC/ASCII	96 EBCDIC/ASCII
Symbol formation	Various	Various	7x12 dot matrix	9x14 dot matrix	9x14 dot matrix
Character phosphor	Green	Color	Green	Green or white	Green or white
Color capability	No	7 colors	No	No	No
Graphics	No	No	No	No	No
Programmable field/char. highlighting via:					
Underline	No	No	No	No	No
Blink	No	No	No	No	No
Blank	No	No	No	No	No
Bold	No	No	No	No	No
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	No	No
Scroll	No	No	No	No	No
Paging	No	No	No	No	No
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Both std.	Both std.	Both std.	Both std.	Both std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	No	No	No	No
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	No	No	No	No	No
Erase	Char./screen std.	Char./screen std.	Char./screen std.	Char./screen std.	Char./screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter, data entry	Typewriter, data entry	Typewriter, data entry	Typewriter, data entry	Typewriter, data entry
Character/code set	EBCDIC	EBCDIC	EBCDIC/ASCII-B	EBCDIC/ASCII	EBCDIC/ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	24 std. (typewriter only)	24 std. (Typewriter only)	12/24 std.	12/24 std.	12/24 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	Std.	Std.	Std.	Std.	Std.
Line printer, type, and speed	Std.	Std.	No	Std.	Std.
Composite video	No	No	No	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Std.
Other vendor-supplied devices	Security keylock, numeric lock, audible alarm	Security keylock, numeric lock, audible alarm	Security keylock, numeric lock, audible alarm	Security lock, audible alarm, light pen	Security lock, audible alarm, light pen
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half-duplex	Half-duplex	Half-duplex	Half-duplex	Half-duplex
Technique	Synchronous	Synchronous	Synchronous	Synchronous	Synchronous
Communications protocol	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC	BSC, SNA/SDLC
Code	EBCDIC	EBCDIC	EBCDIC	EBCDIC	EBCDIC/ASCII-B
Speed, bits/second	Up to 19,200	Up to 19,200	2400-9600	2400-9600	2400-9600
Format	Block	Block	Block	Block	Block
Multipoint operation	Std.	Std.	Std.	Std.	Std.
Terminal interface	Coaxial	Coaxial	Coaxial	Coaxial	Coaxial
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	2,195	2,295-2,995	1,550	5,350-6,150	2,100-2,800
Controller, purchase	4,500-13,000	4,500-13,000	4,500-13,000	—	4,500-13,000
Monthly prime-shift maintenance	13	14	12	30	12-15
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	1984	1984	6/82	6/79	6/79
Date of first production delivery	1984	1984	2nd quarter/82	8/79	8/79
Display units installed to date	—	—	—	—	—
Serviced by	Telex	Telex	Telex	Telex	Telex
<b>COMMENTS</b>	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers	Part of TC 270 Information Display System; control unit/display station; can operate as standalone unit, or connect up to 7 displays or printers	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Telex TC 279	Telex TC 476	Telex TC 479	Term-Tronics Miracle-178	Term-Tronics Miracle-179
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Cluster 32 No 3279 No —	Either 16 No 3270 No —	Either 16 No 3270 No —	Cluster 32 Handcarry (25 lbs.) 3178/3278-2 Opt. IBM 3101-20	Cluster 32 39 lbs. 3179 No —
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	1920-3440 — 24/32/43x80  15 Opt. 96 EBCDIC/ASCII 9x14 dot matrix Color  4 colors std. No No No No Std. No No No Std. Both std. Std. Std. No Fwd./back std. Std. No Char./screen std.	1920 — 24x80  15 Opt. 96 EBCDIC 8x15 dot matrix White or green  No  No No No Std. No No No Std. Both std. Std. Std. No Std. Std. No Char./screen std.	1920 — 24x80 plus status line 15 Opt. 96 EBCDIC 8x15 dot matrix Color  4 colors No No No No Std. Both std. Std. Std. No Std. Std. No Char./screen std.	1920 4K 24x80 plus status line 12 Std. 96 EBCDIC/ASCII 9x14 dot matrix P39 green/amber  No No Std. Std. Std. Opt. No No No Std. Std. Std. Std. No Std. Std. No Std.	1920 (see comments) 4K 24x80 plus status line 14 Std. 96 EBCDIC/ASCII 9x14 dot matrix Color  4/7 colors No Std. Std. Std. Std. Std. No No No Std. Std. Std. Std. No Std. Std. No Std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter, data entry EBCDIC/ASCII-B Std. 12/24 std.  Std.	Typewriter, data entry EBCDIC Std. 12/24 std.  Std.	Typewriter, data entry EBCDIC Std. 12/24 std.  Std.	Typewriter  96 EBCDIC Std. 24 std.  Std.	Typewriter (122- key) 96 EBCDIC Std. 24 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Std. Std. No Std. Security lock, audible alarm, light pen	Std. Std. No Std. —	Std. Std. No Std. Security keylock, audible alarm, light pen opt.	160 cps impact No No Opt. Laser scanners, printers	Opt. No No Opt. Printers, APL, light pen
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC 2400-9600 Block Std. Coaxial  No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 9600 Block Std. Coaxial  No No	Half/full-duplex Synchronous BSC, SNA/SDLC EBCDIC Up to 9600 Block Std. Coaxial  No No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC/ASCII Channel speed Block Std. RG62A/U coax (Type A) & twisted-pair Opt. No	Half-duplex Synchronous BSC, SNA/SDLC EBCDIC/ASCII Channel speed Block Std. RG62A/U coax (Type A) & twisted-pair No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	3,350-3,850 4,500-13,000 12-14 — 1/82 1st Q./1982 — Telex	2,800 — 30 — 5/82 8/82 — Telex	4,200 — 30 — 9/83 9/83 — Telex	995 — 6.50 — 8/84 8/84 — TTI (over 130 locations)	2,095 — Contact vendor — 12/85 12/85 — Contact vendor
<b>COMMENTS</b>	Part of TC 270 Information Display System; attaches to 076, 174 & 274C controllers, 276 control/display, & equivalent IBM controllers	Part of TC 270 Information Display System; up to 16 476s and/or 479s may be daisy- chained; available in library terminal version (476L) at \$2,250	Part of TC 270 Information Display System; up to 16 479s and/or 476s may be daisy- chained	Miracle-178D—w/opt .screen printer port; Miracle-178P— w/opt. 3287 sys. printer port; Miracle-178/101— w/opt. 3101 ASCII printer port; clus- ter controllers available	Options include: keylock; light pen; printer port; APL keycaps; Model 3 screen format; cluster controllers available

### All About Alphanumeric Display Terminals

VENDOR AND MODEL	Term-Tronics 3270-X	Texas Instruments 931	Thomas Engineering TE-780xA	Thomas Engineering TE-780xV	Thomas Engineering TE-780xS
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either 1/5/12 32 lbs. 3275/3276/3278 Opt. —	Standalone — No No Std. —	Standalone — No No Std. Honeywell VIP 7801	Standalone — No No Std. Honeywell VIP 7801, DEC VT100/52, ANSI	Standalone — No No No Honeywell VIP 7814
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	1920 3168 char. 24x80	2000 1 page 25x80	2000 — 25x80	2000 — 25x80	2000 — 25x80
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	14 Std. 96 EBCDIC/ASCII 7x12 dot matrix P31 green std.	12 Tilt std. 128 7x9 dot matrix Green	14 Std. 128 7x9 dot matrix P31 green	14 Std. 128 7x9 dot matrix P31 green	14 Std. 128 7x9 dot matrix P31 green
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No No No Std. No No No No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std.	No No Std. Std. Std. Std. Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/field/ screen std.	No Std. (11 line draw) Std. Std. High/low intensity Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	No Std. (11 line draw) Std. Std. High/low intensity Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	No Std. (11 line draw) Std. Std. High/low intensity Std. No Up/down std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style Character/code set Detachability Program function keys Numeric keypad	Typewriter 96 EBCDIC Std. 24 std. Opt.	Typewriter 96 ASCII Std. 12 std. Std.	Typewriter 128 ASCII Std. 12 std. Std.	Typewriter 128 ASCII Std. 12 std. Std.	Typewriter 128 ASCII Std. 12 std. Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	Opt. No No Opt. Printers	EIA, 35-150 cps No No Std.,EIA output only	No No No Std. —	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface Integral modem Integral acoustic coupler	Half-duplex Synchronous BSC EBCDIC/ASCII 9600 Block Std. RS-232-C No No	Full-duplex Asynchronous TTY ASCII 300-19,200 Character No RS-232-C std.; fiber optics opt. No No	Half/full-duplex Asynchronous TTY ASCII 50-19,200 Char./text/form No RS-232-C or 20mA No No	Half/full-duplex Asynchronous TTY ASCII 50-19,200 Char./text/form No RS-232-C or 20mA No No	Half/full-duplex Synchronous Honeywell VIP sync. ASCII 2400-19,200 Char./text/form Std. RS-232-C or 20mA No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Contact vendor Contact vendor — 5/82 6/82 — Contact vendor	1,295(EIA); 1,350 19 — 4/83 9/83 — Texas Instruments	1,695 — Factory service Factory service 12/82 12/82 — Thomas Engineering	1,895 — Factory service Factory service 12/82 12/82 — Thomas Engineering	1,895 — Factory service Factory service 12/82 12/82 — Thomas Engineering
<b>COMMENTS</b>	Options: DEC VT100 port; printer port	Can be simulta- neously connected to RS-232-C and fiber optics systems; separate buffering for auxiliary support; Int'l keyboards/character sets available	U.L. Listed; F.C.C. compliant; fully recessed connectors unlimited visual & logical display attributes; convection cooled; made in U.S.A.; available in TEMPEST version	U.L. Listed; F.C.C. compliant; fully recessed connectors unlimited visual & logical display attributes; convection cooled; made in U.S.A.; available in TEMPEST version	U.L. Listed; F.C.C. compliant; fully recessed connectors unlimited visual & logical display attributes; convection cooled; made in U.S.A.; available in TEMPEST version



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Visual 240	Visual 241	Visual 300	Visual 330	Visual 383
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Standalone	Standalone
Maximum displays/controller	—	—	—	—	—
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	No	No
Teletype compatibility	Std.	Std.	Std.	Std.	Std.
Other compatibility	DEC VT220/VT100/ VT52; Tektronix	DEC VT220/VT100/ VT52; Tektronix	ANSI X3.64	See comments	Burroughs TD830
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	2320, 3828	2320, 3828	1920	1920	1920
Memory capacity, no. char./lines/pages	1 page	1 page	8 pages	1 page	1 page
Screen arrangement, lines x char./line	29x80/132 plus status line	29x80/132 plus status line	24x80 plus status line	24x80	24x80
Screen area (diagonal), inches	14	14	12 std.; 14 opt.	12; 14 opt.	14
Tilt/swivel screen	Std.	Std.	Std.	Std.	Std.
Total displayable symbols	256 ASCII	256 ASCII	128 ASCII + 64 grph.	128 ASCII	128 ASCII
Symbol formation	5/8x10 in 6/10x10	5/8x10 in 6/10x10	7x9 dot matrix	7x9 dot matrix	7x11 dot matrix
Character phosphor	P31 green std.; amber opt.	Color (P21) RGB	P4 white std., P31 green opt.	P4 white std.; P31 green opt.	P31 green
Color capability	No	Std. (4 from 64)	No	No	No
Graphics	Std.	Std.	64 graphics char.	No	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	Std.	Std.	No	No	No
Scroll	Up/down, smooth	Up/down, smooth	Up/down, smooth	Up/down, smooth	Split screen
Paging	No	No	1 std.; 8 opt.	No	6 pages std.
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Std.	Std.	Both std.	Std.	—
Protected format	No	No	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	No	Std.	Std.	No
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Char./line/screen std.	Char./line/screen std.	Std.	Std.	No
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	256 ASCII	256 ASCII	128 ASCII	128 ASCII	128 ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	15/30 std.	15/30 std.	12 std.	12 std.	8 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	No	No
Composite video	Std.	Std.	No	No	No
Port for cust.-supplied devices	Std.	Std.	Opt.	Opt.	Std.
Other vendor-supplied devices	—	—	—	—	—
<b>TRANSMISSION PARAMETERS</b>					
Mode	Full-duplex	Full-duplex	Half/full-duplex	Half/full-duplex	Half-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Async./sync.
Communications protocol	ASCII	ASCII	ASCII	ASCII	ASCII
Code	ASCII	ASCII	ASCII	ASCII	ASCII
Speed, bits/second	50-19,200	50-19,200	50-19,200	50-19,200	50-19,200
Format	Character	Character	Char./line/block	Char./line/block	Character
Multipoint operation	No	No	No	No	Pollable
Terminal interface	RS-232-C std.; 20mA opt.	RS-232-C std.; 20mA opt.	RS-232-C std.; 20mA opt.	RS-232-C std.; 20mA opt.	RS-232-C, TDI
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	1,695	2,195	995	995	1,695
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	—	—	—
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	11/84	11/84	9/81	9/81	5/83
Date of first production delivery	5/85	5/85	9/81	9/81	6/83
Display units installed to date	—	—	—	—	—
Serviced by	Visual Technology	Visual Technology	Visual Technology	Visual Technology	Visual Technology
<b>COMMENTS</b>	DEC special graphics; five character sets; Tektronix 4010/4014 and DEC ReGIS graphics emulation	DEC special graphics; five character sets; Tektronix 4010/4014 and DEC ReGIS graphics emulation	Block graphics & 16 line drawing char- acter set std.; menu-style setup	Emulations include: DEC VT52, Lear Siegler ADM 3A, Data General Dasher D200, Hazeltine (Esprit) 1500; line drawing graphics std.; foreign char- acter sets opt.	Compatible with Burroughs poll/ select protocol

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Visual 500	Visual 550	Volker-Craig VC4604 & VC4604/GX	Volker-Craig VC5000 & VC5000/GX	Volker-Craig VC5220
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. See comments	Standalone — No No Std. See comments	Standalone — No No Std. Lear Siegler ADM 3A & VC4404	Standalone — No No Std. See comments	Standalone — No No Std. Digital VT220, VT100, VT131, VT52
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	2640 1 page 33x80 plus status line 14 Std. 128 ASCII 10x17 dot matrix P39 green  No Std. Std. Std. Std. No Std. No Std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	2640 1 page 33x80 plus status line 14 Std. 128 ASCII 10x17 dot matrix P39 green  No Std. Std. Std. Std. No Std. No Std. Std. Both std. Std. Std. Std. Fwd./back std. Std. Std. Char./line/screen std.	1920 1920 char. 24x80  12 No 128 ASCII 7x9 dot matrix P31 green or amber  No Std. (VC4604/GX) No No Dim Std. No Up std. Std. Addressable only No No No No No Line/screen std.	2000 8 pages 25x80  12 Std. 512 ASCII 7x9 in 9x10 cell P31 green or amber  No Std. (VC5000/GX) Std. Std. Dim Std. No Up/down, smooth 2 std.; 8 opt. Std. Std. Std. Std. Std. Std. Std. Line/screen std.	1920, 3168 1 page std. 24x80/132  14 Std. 256 7x10 dot matrix P31 green or amber  No Business graphics Std. Std. No Std. Std. Std. Jump & smooth std. 1 std. Std. Both std. No Std. 2 std. Std. Std. Std. Line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  128 ASCII Std. 12 std.  Std.	Typewriter  128 ASCII Std. 12 std.  Std.	Typewriter  128 ASCII Std. 10 std.  Std.	Typewriter  512 ASCII Std. 16/32 std.  Std.	Typewriter  128 ASCII Std. 15/30 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std. —	No No No Std. —	No No Opt. Std. —	No No Opt. Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./line/block No RS-232-C or 20mA	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Character No RS-232-C std.; 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 50-19,200 Char./block No RS-232-C std.; 20mA opt.	Half/full-duplex Asynchronous ASCII ASCII 75-19,200 Char./line/block No RS-232-C
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	1,595 — — — 8/82 9/82 — Visual Technology	1,595 — — — 4/82 5/82 — Visual Technology	495/945 (GX) — — — 5/83 4/84 — Third party	695/1,145 (GX) — — — 5/83 2/85 — Third party	795 — — — 10/85 12/85 — Honeywell, third party
<b>COMMENTS</b>	Emulations include: Hazeltine 1500, Data General Dasher 200, Lear Siegler ADM-3A, DEC VT52, Tektronix 4010, 4014 (in graphics mode); code compatible w/ raster size of 768x 585 pixels (% scale)	Alphanumeric code compatible to DEC VT100 and ANSI X3.64. in alpha mode; code compat- ible with Tektronix 4014, 4014 in graph- ics mode, with raster size of 768x 585 pixels (% scale)	VC4604/GX features: Tektronix 4010 graphics format; 512x250 resolution; 512x250 resolution; auto. scaling from 1024x780 resolution for Tektronix Plot 10 & Gino-F compat- ibility; National character sets	Emulates VC4604, VC4152, & VC414H, ADDS Viewpoint, DEC VT52, Esprit Systems Esprit, Hazeltine 1500, Lear Siegler ADM 3A/5 & ADM 11, TeleVideo 925 & 950; user-defined	



## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Wang 2110	Wang 4205	Wang 4210	Wang 4220	Wang 4230
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Standalone	Standalone
Maximum displays/controller	1	1	1	1	1
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	No	No
Teletype compatibility	No	No	No	No	No
Other compatibility	ANSI X3.64	—	—	—	—
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	2000	2000	2000	2000	2000
Memory capacity, no. char./lines/pages	—	—	—	—	—
Screen arrangement, lines x char./line	25x80	25x80	25x80	25x80	25x80
Screen area (diagonal), inches	12	12	12	12	12
Tilt/swivel screen	Std.	Std.	Std.	Std.	Std.
Total displayable symbols	256	256	256	256	256
Symbol formation	9x12 cell	8x10 dot matrix	8x10 dot matrix	8x10 dot matrix	8x10 dot matrix
Character phosphor	P31 green std.	P42 green std.	P42 green std.	P42 green std.	P42 green std.
Color capability	No	No	No	No	No
Graphics	No	No	Std.	No	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	No	No	No	No	No
Scroll	Up/down std.	Up/down std.	Up/down std.	Up/down std.	Up/down std.
Paging	No	No	No	No	No
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Both std.	Both std.	Both std.	Both std.	Both std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	No	No	No	No
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Std.	Std.	Std.	Std.	Std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	128 ASCII	128 ASCII	128 ASCII	128 ASCII	128 ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	16 std.	16 std.	16 std.	16 std.	16 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	30 cps-300 lpm	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	No	No	Std.	No	No
Other vendor-supplied devices	—	Monitor arm	Monitor arm	Monitor arm	Monitor arm
<b>TRANSMISSION PARAMETERS</b>					
Mode	Half/full-duplex	Full-duplex	Full-duplex	Full-duplex	Full-duplex
Technique	Asynchronous	Synchronous	Synchronous	Asynchronous	Asynchronous
Communications protocol	Wang private/ANSI	Wang private	Wang private	Wang private	Wang private
Code	WISCII/ASCII	WISCII	WISCII	WISCII	WISCII
Speed, bits/second	Up to 19,200	4M	4M	Up to 9600	4M
Format	Character	Block	Block	Block	Block
Multipoint operation	No	No	No	Std.	No
Terminal interface	RS-232-C	Wang 928	Wang 928	RS-232-C	Wang 928
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	895	2,000	3,100	2,000	2,750
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	9	20	20	18	20
Annual prime-shift maintenance	108	240	240	216	240
Date of announcement	4/85	2/83	8/83	8/83	11/83
Date of first production delivery	6/85	3/84	8/83	12/83	3/84
Display units installed to date	—	—	—	—	—
Serviced by	Wang Laboratories	Wang Laboratories	Wang Laboratories	Wang Laboratories	Wang Laboratories
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Wang 4245	Westinghouse Canada Model 1625	Westinghouse Canada Model W1640	Westinghouse Canada Model W1640 VIP Dual	Westinghouse Canada Model W1642
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Either	Either	Either; sw. select.	Either
Maximum displays/controller	1	48	48	322	48
Transportability	No	No	No	No	No
IBM compatibility	No	IPARS	No	No	IPARS
Teletype compatibility	No	Opt.	No	No	Opt.
Other compatibility	—	Honey. VIP7700, Uni- scope 100/200 opt.	Honey. VIP7700, Uni- scope 100/200 opt.	Honey. 7700/7800	Univac UTS 20, Uni- scope 100
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	2000	1920	1920; 2000 opt.	1920, 2000	2000
Memory capacity, no. char./lines/pages	—	80/24/1;3/5 pp. opt.	80/25/1; multi opt.	1920/24/1;3	80/25/1; multi-opt.
Screen arrangement, lines x char./line	25x80	24x80	24x80 plus status line	24x80 plus status line	24x80 plus status line
Screen area (diagonal), inches	12	12	12	12	12
Tilt/swivel screen	Std.	Opt.	Opt.	Opt.	Opt.
Total displayable symbols	256	126 ASCII; 254 opt.	94 ASCII + opt.	94 + 11 graphics	94 ASCII + opt.
Symbol formation	8x10 dot matrix	5x7 dot matrix	5x7/7x9 dot matrix	5x7 dot matrix	5x7/7x9 dot matrix
Character phosphor	Color	P31 green std.	P31 green std.	P31 green std.	P31 green std.
Color capability	8 colors std.	No	No	No	No
Graphics	Std.	—	—	11 graphics char.	Opt.
Programmable field/char. highlighting via:					
Underline	Std.	Field std.	Field std.	Std.	Field std.
Blink	Std.	Field std.	Field std.	Std.	Field std.
Blank	Std.	Field opt.	Field std.	Std.	Field std.
Bold	Std.	Std.	Std.	No	Std.
Reverse	Std.	Field opt.	Opt.	No; std. (7800)	Field opt.
Double size	No	No	No	No	No
Scroll	Up/down std.	Up/down std.	Opt.	No; up/down std.	Opt.
Paging	No	1st; 3/5 opt.	Opt.	No	Opt.
Selectable cursor blinking	Std.	No	Opt.	No	Opt.
Addressable/readable cursor	Both std.	Both std.	Add. std.; Read opt.	Both std.	Add. std.; Read opt.
Protected format	Std.	Std.	Std.	Std.	Opt.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	No	2 opt.	2 opt.	No	Opt.
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back tab std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.	Char./line/screen std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	128 ASCII	126 ASCII	94 ASCII	128 ASCII	94 ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	16 std.	7 std.; up to 19 opt.	7 std.; up to 19 opt.	6 std.; 17 std. (7800)	Up to 32 user-de- fined
Numeric keypad	Std.	Std.	Std.	Std.	Opt.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	30-60 cps impact	30-60 cps impact	No	30-60 cps impact
Line printer, type, and speed	No	No	No	No	No
Composite video	No	Opt.	No	No	No
Port for cust.-supplied devices	No	Std.; Aux opt.	Std.	RS-232-C std.	Std.
Other vendor-supplied devices	Monitor arm	—	—	Opt. cluster con- troller, W1654	Credit card reader, embedded numeric pad w/calculator functions
<b>TRANSMISSION PARAMETERS</b>					
Mode	Full-duplex	Half/full-duplex	Half/full-duplex	Half/full-duplex	Half std.; full opt.
Technique	Synchronous	Async./sync.	Synchronous	Synchronous	Async./sync.
Communications protocol	Wang private	Various opt.	Honey., Univac opt.	Honeywell VIP	Various opt.
Code	WISCII	ASCII	ASCII	ASCII	ASCII
Speed, bits/second	4M	50-9600	Up to 9600	Up to 9600	Up to 9600
Format	Block	Blk.std.;char./ln.	Block	Block/line (7800)	Block
Multipoint operation	No	Std.	Std.	Std.	Std.
Terminal interface	Wang 928	RS-232-C std.; 20mA, party line opt.	RS-232-C std.; party line opt.	RS-232-C std.; 5- cond. party line	Party line; RS-232-C opt.
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	3,550-3,700	2,600	2,800	3,065 (U.S.)	2,400
Controller, purchase	—	650	1,565	1,500 (U.S.)	425
Monthly prime-shift maintenance	28	Contact vendor	Contact vendor	—	Contact vendor
Annual prime-shift maintenance	276 (first year)	—	—	—	—
Date of announcement	6/84	6/76	2/80	—	5/80
Date of first production delivery	6/85	11/76	1/81	2/83	3/81
Display units installed to date	—	Over 8000	Over 1800	—	Over 2300
Serviced by	Wang Laboratories	WCI, third party	WCI, third party	WCI, third party	WCI, third party
<b>COMMENTS</b>					
		A base design CRT which can be sup- plied with customer firmware & I/O con- figured to meet specific customer requirements	A base design CRT which can be sup- plied with customer firmware & I/O con- figured to meet specific customer requirements	In cluster opera- tion, from 1 to 7 printers may be shared by terminals for local printing without communica- tion to the host	A base design CRT which can be sup- plied with customer firmware & I/O con- figured to meet specific customer requirements

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Westinghouse Canada Model W1643	Wyse WY-30	Wyse WY-50	Wyse WY-50+	Wyse WY-75
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Either 48 No SDLC Opt. Honeywell VIP 7700, Uniscope 100	Standalone — No No Std. See comments	Standalone — No No Std. See comments	Standalone — No 3101 Std. See comments	Standalone — No No Std. DEC VT100, ANSI X3.64
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line	2000 80/25/1 25x80	2080 1 page std. 24x80 plus status & label lines	2080, 3432 1 page std. 24x80/132 plus status/label lines	2080, 3432 1 page std. 24x80/132 plus status/label lines	2080, 3432 1 page std. 24x80/132 plus status/label lines
Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor	12 Opt. 512 5x7 dot matrix P31 green std.	14 Tilt std. 128 ASCII 7x11 in 10x12 cell P31 green	14 Std. 128 ASCII 7x13 in 10x13 cell P31 green	14 Std. 128 ASCII 7x13 in 10x13 cell Amber	14 Std. 128 ASCII 7x13 in 10x13 cell P31 green
Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	No — Std. Std. Std. Std. Std. No Opt. Opt. Std. Add. std.; Read opt. Opt. Std. Opt. Fwd./back std. Std. Std. Char./line/screen std.	No Line drawing Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Line/page/field std.	No Line drawing Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Line/page/field std.	No Line drawing Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Line/page/field std.	No Line drawing Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Char./line/page/ field std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  94 ASCII Opt. 24  Std.	Typewriter  ASCII Std. 4/16 dedicated, 25 additional Std.	Typewriter  ASCII Std. 16/32 dedicated  Std.	Typewriter  ASCII Std. 16/32 dedicated  Std.	Typewriter  ASCII Std. 16/32 dedicated  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	30-60 cps impact No No Std. Card reader	No No No Std. —	No No No Std. —	No No No Std. —	No No No Std. —
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface	Half/full-duplex Synchronous SDLC EBCDIC Up to 19,200 Block Std. RS-232-C or party line	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./block No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./block No RS-232-C	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./block No RS-232-C	Half/full-duplex Asynchronous ASCII/ANSI ASCII 50-38,400 Char./block No RS-232-C
Integral modem Integral acoustic coupler	No No	No No	No No	No No	No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	Contact vendor — — — 9/83 3/84 — WCI, third party	399 — — — 8/85 8/85 — Wyse Technology, authorized dist.	599 — — — 9/83 11/83 Over 500,000 Wyse Technology, authorized dist.	699 — — — 8/85 8/85 — Wyse Technology, authorized dist.	795 — — — 2/84 2/84 — Wyse Technology, authorized dist.
<b>COMMENTS</b>	Can be supplied with customer firmware and I/O configured to meet specific customer requirements	Emulations include: Wyse WY-50, ADDS Viewpoint, Lear Siegler ADM 3A/5, ADM 31, TeleVideo 925; tilt/swivel or adjustable arm opt.	Emulations include: ADDS Viewpoint, Lear Siegler ADM 3A/5, ADM 31, TeleVideo 910, 920, 925, Hazeltine 1500	Emulations include: Wyse WY-50, ADDS Viewpoint, Lear Siegler ADM 3A/5, ADM 31, TeleVideo 910, 920, 925, 950, Hazeltine 1500, Data General D200, IBM 3101	Emulations include: Wyse WY-50, ADDS Viewpoint, Lear Siegler ADM 3A/5, ADM 31, TeleVideo 910, 920, 925, 950, Hazeltine 1500, Data General D200, IBM 3101

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Wyse WY-85	Wyse WY-350	Zenith Z-22	Zenith Z-29A	Zenith Z-49
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility	Standalone — No No Std. DEC VT220, VT100, ANSI X3.64	Standalone — No No Std. See comments	Standalone — No No Std. LSI ADM 3A/5/11, TeleVideo 914	Standalone — No No Std. DEC VT100/VT52, LSI ADM 3A, Hazeltine	Standalone — No No Std. DEC VT100/VT52, Zenith Z-19, Z-29
<b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase	2080, 3432 1 page std. 24x80/132 plus status/label lines 14 Std. 256 ASCII 7x9 in 10x10 cell P31 green or amber  No Graphics soft. font  Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Char./line/page/ field std.	2080, 3432 1 page std. 24x80/132 plus status/label lines 15 Std. 128 ASCII 7x13 in 10x13 cell Color  64 colors available Line drawing  Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Both std. Std. Std. Std. Std. Std. Std. Std. Std. Line/page/field std.	1920 1 page 24x80 plus status line 12 Std. 128 ASCII 5x9 dot matrix P31 green  No Business graphics  Std. Std. Std. Std. Std. No Up std. No Std. Both std. Std. Std. No Fwd./back std. Std. Std. Char./line/screen std.	2000 — 24x80 plus user line 14 Std. 128 (91 ASCII + 33h) 5x7 dot matrix Amber  No Business graphics  Std. Std. Std. Std. Std. No Std. No Std. Both std. Std. Std. No No Std. Std. Std. Std.	2000 1 page 25x80  14 Std. 128 ASCII 10x12 dot matrix P31 green or amber  No Business graphics  Std. Std. Std. Std. Std. Std. Up std., smth./jump No Std. Both std. No No No Fwd./back std. Std. Std. Char./line/screen std.
<b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad	Typewriter  ASCII Std. 20 dedicated  Std.	Typewriter  ASCII Std. 16/32 dedicated  Std.	Typewriter  64 ASCII Std. 10 std.  Std.	Typewriter  ASCII Std. 9 std.  Std.	Typewriter  64 ASCII Std. 9 std.  Std.
<b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices	No No No Std.	No No No Std.	No No No Std.	No No No No	No No No Std.
<b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler	Half/full-duplex Asynchronous ANSI ASCII 50-38,400 Char./block No RS-232-C, RS-423, or 20mA No No	Half/full-duplex Asynchronous ASCII ASCII 50-38,400 Char./block No RS-232-C No No	Half/full-duplex Asynchronous ASCII ASCII 300-19,200 Char./line/block No RS-232-C No No	Half/full-duplex Asynchronous DC1-DC3 ASCII 75-19,200 Char./block No RS-232-C No No	Half/full-duplex Asynchronous ASCII/ANSI ASCII 50-19,200 Character No RS-232-C No No
<b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by	799 — — — 12/84 2/85 — Wyse Technology, authorized dist.	1,295 — — — 12/84 2/85 — Wyse Technology, authorized dist. Emulations include: Wyse WY-50, ADDS Viewpoint, Lear Siegler ADM 3A/5, ADM 31, TeleVideo 910,920, 925, Hazel- tine 1500	356 — — — 11/84 12/84 — Zenith Auto logon permits programming of up to 10 different passwords or phone numbers	799 — — — 1/83 — — Zenith Data Systems	1,099 — — — 6/84 8/84 — Zenith Emulates DEC VT52, VT100, & VT102, Zenith Z-19 & Z-29, ANSI X3.64
<b>COMMENTS</b>					

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Zentec Zephyr 100	Zentec Zephyr 220	Zentec 1051/2	Zentec 1055	Zentec 1060
<b>TERMINAL DESCRIPTION</b>					
Standalone or cluster	Standalone	Standalone	Standalone	Standalone	Standalone
Maximum displays/controller	—	—	—	—	—
Transportability	No	No	No	No	No
IBM compatibility	No	No	No	No	No
Teletype compatibility	No	Std.	Std.	Std.	Std.
Other compatibility	DEC VT100	DEC VT220	DEC VT132, ANSI X3.64	DEC VT220	DEC VT220
<b>DISPLAY PARAMETERS</b>					
Display capacity, no. of char.	2000, 3300	2000, 3300	2000, 3300	2000, 3300	2000, 3300
Memory capacity, no. char./lines/pages	1 page	1 page	4 pages	—	—
Screen arrangement, lines x char./line	25x80/132	25x80/132	25x80/132	25x80/132	25x80/132
Screen area (diagonal), inches	14	14	12 or 15	14	14
Tilt/swivel screen	Std.	Std.	Std.	Std.	Std.
Total displayable symbols	220	220	128 ASCII	128 ASCII	128 ASCII
Symbol formation	—	—	9x12 dot matrix	—	—
Character phosphor	P134 amber std.; P31 green opt.	P134 amber std.; P4 wht., P31 grn. opt.	P134 amber std.; white, green opt.	P134 amber or P128 green	P134 amber or P138 green
Color capability	No	No	No	No	No
Graphics	No	No	256 graphics char.	No	No
Programmable field/char. highlighting via:					
Underline	Std.	Std.	Std.	Std.	Std.
Blink	Std.	Std.	Std.	Std.	Std.
Blank	Std.	Std.	Std.	Std.	Std.
Bold	Std.	Std.	Std.	Std.	Std.
Reverse	Std.	Std.	Std.	Std.	Std.
Double size	Std.	Std.	Std.	Std.	Std.
Scroll	Smooth	Smooth	Smooth std.	Smooth	Smooth
Paging	No	No	4 std.	2 plus opt.	2 plus opt.
Selectable cursor blinking	Std.	Std.	Std.	Std.	Std.
Addressable/readable cursor	Std.	Std.	Std.	Std.	Std.
Protected format	Std.	Std.	Std.	Std.	Std.
Partial screen transmit	Std.	Std.	Std.	Std.	Std.
Split screen/windows	Std.	Std.	Std.	Std.	Std.
Tabulation	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.	Fwd./back std.
Character insert/delete	Std.	Std.	Std.	Std.	Std.
Line insert/delete	Std.	Std.	Std.	Std.	Std.
Erase	Std.	Std.	Std.	Std.	Std.
<b>KEYBOARD PARAMETERS</b>					
Style	Typewriter	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	ASCII	ASCII	ASCII	ASCII	ASCII
Detachability	Std.	Std.	Std.	Std.	Std.
Program function keys	12; 8 programmable	15 std.	16 std.	21 std.	21 std.
Numeric keypad	Std.	Std.	Std.	Std.	Std.
<b>ANCILLARY DEVICES</b>					
Serial printer, type, and speed	No	No	No	No	No
Line printer, type, and speed	No	No	No	No	No
Composite video	No	No	No	No	No
Port for cust.-supplied devices	Std.	Std.	Std.	Std.	Std.
Other vendor-supplied devices	—	—	—	—	—
<b>TRANSMISSION PARAMETERS</b>					
Mode	Full-duplex	Full-duplex	Half/full-duplex	Full-duplex	Full-duplex
Technique	Asynchronous	Asynchronous	Asynchronous	Asynchronous	Asynchronous
Communications protocol	ASCII	ASCII	ASCII	ASCII	ASCII
Code	ASCII	ASCII	ASCII	ASCII	ASCII
Speed, bits/second	75-19,200	75-19,200	Up to 19,200	75-19,200	75-38,400
Format	Character	Character	Char./line/block	Character	Character
Multipoint operation	No	No	Std.	No	No
Terminal interface	RS-232-C, RS-423, or 20mA	RS-232-C, RS-423, or 20mA	RS-232-C or RS-422	RS-232-C	RS-232-C
Integral modem	No	No	No	No	No
Integral acoustic coupler	No	No	No	No	No
<b>PRICING AND AVAILABILITY</b>					
Display station, purchase	650	850	1,295	850	950
Controller, purchase	—	—	—	—	—
Monthly prime-shift maintenance	—	—	Contact vendor	—	—
Annual prime-shift maintenance	—	—	—	—	—
Date of announcement	4/85	11/84	6/83	1/85	5/85
Date of first production delivery	5/85	12/84	1/84	3/85	6/85
Display units installed to date	—	—	—	—	—
Serviced by	Third party	Third party	Zentec	Zentec	Zentec
<b>COMMENTS</b>					
		DEC special graphics; multi-national character set & downloadable character set; soft set-up; optional foreign keyboards	RAM expandable to 64K (32K standard); soft set-up; 256 graphics characters	Custom features are factory quoted	Offers 390 scan line display for high resolution; custom features are factory quoted

## All About Alphanumeric Display Terminals

VENDOR AND MODEL	Zentec WS-1000	Zilog VTZ 3/20			
<b>TERMINAL DESCRIPTION</b> Standalone or cluster Maximum displays/controller Transportability IBM compatibility Teletype compatibility Other compatibility  <b>DISPLAY PARAMETERS</b> Display capacity, no. of char. Memory capacity, no. char./lines/pages Screen arrangement, lines x char./line  Screen area (diagonal), inches Tilt/swivel screen Total displayable symbols Symbol formation Character phosphor  Color capability Graphics Programmable field/char. highlighting via: Underline Blink Blank Bold Reverse Double size Scroll Paging Selectable cursor blinking Addressable/readable cursor Protected format Partial screen transmit Split screen/windows Tabulation Character insert/delete Line insert/delete Erase  <b>KEYBOARD PARAMETERS</b> Style  Character/code set Detachability Program function keys  Numeric keypad <b>ANCILLARY DEVICES</b> Serial printer, type, and speed Line printer, type, and speed Composite video Port for cust.-supplied devices Other vendor-supplied devices  <b>TRANSMISSION PARAMETERS</b> Mode Technique Communications protocol Code Speed, bits/second Format Multipoint operation Terminal interface  Integral modem Integral acoustic coupler <b>PRICING AND AVAILABILITY</b> Display station, purchase Controller, purchase Monthly prime-shift maintenance Annual prime-shift maintenance Date of announcement Date of first production delivery Display units installed to date Serviced by  <b>COMMENTS</b>	Standalone --- No No Std. DEC VT220  2000 1 page 25x80  14 Std. 128 ASCII --- P134 amber std.; P4 wht., P31 grn. opt. No No  Std. Std. Std. Std. Std. No No No No Std. Std. Std. Std. Std. Std. Std. Std. Std. Std. Fwd./back std. Std. Std. Std.  Typewriter  ASCII Std. 15 std.  Std.  No No No Std. ---  Full-duplex Asynchronous ASCII ASCII 75-19,200 Character No RS-232-C or RS-423  No No  Contact vendor --- --- 11/84 12/84 ---  Expandable, with plug-in bus extender, to IBM PC & PC XT compatibility (separate workstation storage unit available); soft set-up	Standalone --- No No No DEC VT132  2000, 3300 4 pages 25x80/132  13 Tilt std. 128 w/line graphics 5x12 or 11x12 cell P1 green or P134 amber No Std. (VT132)  Std. Std. Std. Std. Std. Std. Std. 4 std. Std. Std. Std. Std. Std. Std. Std. No Fwd./back std. Std. Std. Std.  Typewriter  64 ASCII Std. 16 std. (+ 16 shifted) Std.  No No No No ---  Full-duplex Asynchronous --- ASCII Up to 19,200 Char./line/block No RS-232-C  No No  1,295 --- --- 6/84 6/84 --- Zilog  80/132-column display; 25th line for status & static messages			