Zentec Display Terminals

MANAGEMENT SUMMARY

UPDATE: *In September of 1986, Lear Siegler's display terminal products and certain other assets of the Data Products Division were acquired by Zentec Corporation. The Lear Siegler product line, as it was at the time of the acquisition, has not changed. All display terminal products are now being fully marketed under the Zentec name.*

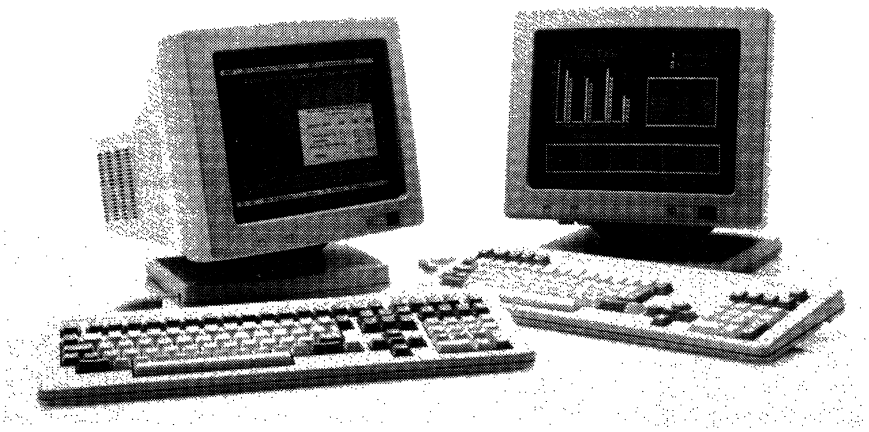
The Lear Siegler ADM 3A was the premier "dumb terminal." Introduced in 1975, it has been the most successful terminal of its type, selling in excess of 204,000 units. Lear Siegler was also the first terminal manufacturer to introduce a display terminal selling for less than $1,000. This move helped to initiate the trend of low-price, high-function terminals, a trend that has proven to be a detriment to more than a few terminal vendors. Each product is designed with special features such as full tilt and swivel monitors, nonglare screens, and detached, low-profile DIN-standard keyboards (the keyboard on the ADM 3A is attached). All ADM series terminals are now marketed under the Zentec name.

The ADM (American Dream Machine) Series currently consists of eight models: the ADM 3A, ADM 3E, ADM 11, ADM 12plus, ADM 220, ADM 1178, ADM 1000, and ADM 2000. Models no longer manufactured are the ADM 5 and ADM 22. Also offered are the Model 7105 and Model 7107 color graphics terminals.

One of the most recent of Zentec's offerings is the ADM 1000. This model, priced at $399, offers low-end price and performance with high-end styling and ergonomics. The ADM 1000 provides 7 programmable function keys, shiftable to 14, all of which use dynamically allocated nonvolatile memory. The 14-inch monitor is available in either green or amber. Serviceability is extremely easy with a logic board that slide-mounts into a single-edge connector and can be replaced in seconds without opening the housing. The ADM 1000 is compatible with the Zentec ADM 3A,

Zentec Corporation acquired Lear Siegler Data Products Division's terminal business in 1986. Lear Siegler had been a major supplier of general-purpose video display terminals since 1972. Zentec's ADM Series now consists of eight models, ranging from the traditional dumb models to fully featured smart units. The most recent additions to the ADM Series are the ADM 1000 and the ADM 2000. Zentec also offers two color graphics terminals, the Model 7105 and Model 7107.

MODELS: ADM 3A, ADM 3E, ADM 11, ADM 12plus, ADM 220, ADM 1178, ADM 1000, and ADM 2000; Model 7105 Color Graphics Terminal and Model 7107 Color Graphics Terminal.
DISPLAY: All models, except the ADM 3E, ADM 1000, and ADM 2000, feature a 12-inch (diagonal) display as standard; a 14-inch display is available on those models. White, green, or amber characters are available, depending on the model selected. A tilt/swivel monitor is standard on all models.
KEYBOARD: The ADM 3A features an attached keyboard; all other models feature detachable keyboards with a low-profile design. A typewriter-style layout is standard; the ADM 1178 features IBM 3278 keyboard compatibility, while the ADM 220 features Digital Equipment Corporation VT220 keyboard compatibility.
COMPETITION: TeleVideo Systems, Applied Digital Data Systems (ADDS), Esprit Systems, Visual Technology, Wyse Technology, Liberty Electronics, ITT Qume, and several others.
PRICE: Purchase prices range from $399 to $729.



Zentec's Models ADM 1000 and ADM 2000 offer low-end prices and performance with high-end styling and ergonomics. A 14-inch, tilt/swivel monitor is standard with either green or amber phosphor. An optional height adjustment mechanism is also available. More display versatility is offered on the Model 2000 with either 80 or 132 colums and up to 26 lines for data.

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ADM 5, and ADM 3E. It is also compatible with the ADDS Viewpoint A2 and 3A+, and the Esprit 6110.

Also a recent addition is the ADM 2000. This fully featured video display includes 16 dynamically programmable, nonvolatile function keys, shiftable to 32, which provide over 2,000 characters of nonvolatile memory. Over 50 programmable, nonvolatile "soft" keys are also offered on the ADM 2000 keyboard, which can be configured to the user's specific applications. The display format for the ADM 2000 is 26 lines by 80 or 132 columns. This model is compatible with the Wyse WY-50+, TeleVideo 925/950, ADDS Viewpoint A2, Esprit III and 6310, as well as Zentec's own ADM 3A and ADM 12plus.

The highly featured Model 7105 color graphics terminal is designed for general business, process control, engineering, and scientific applications. It features a 13-inch display screen, simultaneous display of up to 16 colors from a pallette of 4,096, 640-by-480 pixel resolution, 16K-by-16K virtual address space, pixel zoom and pan, all popular drawing capabilities, and 5 visual attributes. It is compatible with Tektronix Models 4105, 4010/4014, and Plot 10, as well as most popular applications packages.

The Model 7107 color graphics terminal provides all the features of the Model 7105, plus Tektronix 4107 compatibility, display list for storage of graphics objects, true zoom and pan, and local 2-D transformations.

Zentec's main business remains in the market for conversational terminals. Interestingly, the ancient (by computer industry standards) ADM 3A is still marketed by Zentec. The original ADM 3A is a teletype-compatible, data entry display terminal designed for asynchronous applications. It features a 12-inch diagonal, 24-line CRT screen with a display capacity of 1,920 characters, and is enclosed in Zentec's familiar "clamshell" cabinet.

The ADM 11 was unveiled at the 1983 National Computer Conference in Anaheim. The ADM 11 is a conversational terminal with a full range of visual attributes and business graphics capabilities.

Zentec has also entered the IBM 3270-compatible market with its ADM 1178. The ADM 1178 is a conversational ASCII terminal with IBM 3278 keyboard compatibility; it is designed to communicate with an IBM mainframe when used in conjunction with a protocol converter.

The ADM 12plus is an enhanced version of the ADM 12. Key features of the ADM 12plus are 132-column display capability; TeleVideo 912, 920, 925, and 950 compatibility; Zentec ADM 2, ADM 12, and ADM 31 compatibility; bidirectional printer port with independent transmission rates; and optional four-page display memory.

COMPETITIVE POSITION

Zentec's acquisition of the well known and much respected Lear Siegler terminal business and certain other assets of

CHARACTERISTICS

VENDOR: Zentec Corporation, 2400 Walsh Avenue, Santa Clara, California 95051. Telephone (408) 727-7662.

DATE OF ANNOUNCEMENT: ADM 3A—May 1975; ADM 11—May 1983; ADM 1178—December 1983; ADM 220—June 1984; ADM 12plus—February 1985; Model 7105 and Model 7107—June 1985; ADM 3E, ADM 1000, and ADM 2000—July 1986.

DATE OF FIRST DELIVERY: ADM 3A—August 1975; ADM 11—June 1983; ADM 1178—February 1984; ADM 220—August 1984; ADM 12plus—May 1985; Model 7105 and Model 7107—July 1985; ADM 3E, ADM 1000, and ADM 2000—Third Quarter 1986;

NUMBER DELIVERED TO DATE: Approximately 500,000 (all models).

SERVICED BY: Zentec Corporation and third-party contractors located throughout the USA and Canada.

MODELS

Zentec's ADM Series of display terminals currently consists of eight standalone models. Two color graphics terminals are also offered.

- **ADM 3A—the original "dumb terminal." The ADM 3A features Zentec's "clamshell" cabinet design, with a 12-inch screen and an attached keyboard.**
- **ADM 3E—a video display priced at $399. Standard features include 14-inch display screen available in green or amber phosphor, 7 programmable keys shiftable to 14 nonvolatile functions, and function key memory.**
- **ADM 11—a conversational terminal with Zentec's High Touch enclosure style. Standard features include visual attributes, business graphics, and limited editing.**
- **ADM 12plus—an enhanced version of the ADM 12, including 132-column display capability, TeleVideo 912\920\925\950 and Zentec ADM 2/12/31 emulation, and an optional four-page display memory.**
- **ADM 220—a Digital VT220-compatible terminal that conforms to the ANSI X3.64 standard.**
- **ADM 1178—a conversational terminal that features keyboard compatibility with the IBM 3278. The ADM 1178 is designed for use on an IBM 3270 network when coupled with a protocol converter. The High Touch enclosure style is standard.**
- **ADM 1000—a video display terminal with 14-inch monitor, available in green or amber phosphor. Monitor offers tilt and swivel capability; optional height adjustment mechanism is available.**
- **ADM 2000—a fully featured, multipurpose, multihost, ASCII video display terminal. This model is compatible with the Wyse WY-50+, TeleVideo 925/950, ADDS Viewpoint A2, Esprit III and 6310, and Zentec's ADM 3A and ADM 12plus.**
- **Model 7105—a highly featured color graphics terminal designed for business, process control, engineering, and scientific applications. Displays up to 16 colors from a pallette of 4,096.**
- **Model 7107—an advanced color graphics terminal which provides all the features of the Model 7105, plus Tektronix 4107 compatibility.**

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the Data Products Division, in September 1986, has significantly increased Zentec's competitive position in the display terminals market. However, with competitors such as Wyse Technology, Visiual Technology, and ITT Qume, Zentec has its work cut out for it in terms of working its way back to the head of the class of display terminal manufacturers.

ADVANTAGES AND RESTRICTIONS

While competitors such as Wyse, TeleVideo, and Liberty joined the exodus to offshore production, Lear Siegler continued manufacturing its terminal products in the U.S. However, in early 1986, citing continuing weakness and declining market share, the company begin transferring production to a plant in Mexicali, Mexico, and subcontracting other duties, such as physical designing and packaging, elsewhere. This move was aimed at keeping production costs at a minumum, while continuing to offer the customer quality products at the lowest possible price. The decision was not timely enough, however, to prevent Lear Siegler from ultimately accepting Zentec's offer to acquire the ailing Data Products Division.

USER REACTION

In Datapro's 1986 Terminal Users Survey, conducted in conjunction with *Data Communications* magazine, a total of 19 users of Zentec (Lear Siegler) display terminals responded. These users represented an installed base of 745 units. The users were asked to rate their terminals with respect to seven specific categories. Their responses are summerized in the following table.

	Excellent	Good	Fair	Poor	WA*
Overall performance	0	18	1	0	2.9
Ease of operation	3	15	1	0	3.1
Display clarity	5	11	2	1	3.1
Keyboard feel & usability	2	12	5	0	2.8
Ergonomic features	2	6	6	4	2.3
Hardware reliability	4	14	1	0	3.2
Maintenance service/ technical support	1	14	3	1	2.8

*Weighted Average based on a scale of 4.0 for Excellent.

When asked whether they would recommend the Zentec terminals to other users, 14 respondents answered yes, while 1 said no; the remainder were undecided or did not answer the question. It should be noted that the low scores in the Keyboard feel & usability and Ergonomic features categories can be greatly attributed to the fact that the majority of the responses covered Zentec's older models. □

TRANSMISSION SPECIFICATIONS

Transmission is performed asynchronously, in half- or full-duplex mode, at switch-selectable rates of up to 19,200 bits per second for all ADM Series models except the ADM 2000. Rates up to 38.4KB are selectable on the ADM 2000. All models use the eight-level ASCII transmission code including odd or even parity, space, or mark. The X-on/X-off data flow control is standard.

An EIA RS-232-C or optional 20 ma current loop interface is provided on all models for communications with the host computer. An RS-422 interface is also optionally available for the ADM 11, ADM 12, ADM 220, ADM 1178, ADM 3E, ADM 1000, and ADM 2000. An RS-232-C serial printer port is standard with all models.

DEVICE CONTROL

Transmission can be performed in Conversational mode only (character-by-character) on the ADM 3A, ADM 3E, ADM 11, ADM 220, ADM 1178, and the ADM 1000. Block mode transmission is available on the ADM 12plus and ADM 2000. In Block mode, the terminal can transmit up to five data types: line, page, message, special function sequences, and cursor coordinates. All data, or unprotected fields only, can be transmitted in Line, Page, or Message mode.

ADM 3A, ADM 3E, and ADM 1000: Full cursor controls (up, down, right, left, home, and return) and cursor addressability are standard features. Upward scrolling moves all lines up by one when the Line Feed function is executed. (The top line is lost as it overflows the top of the display screen.) The switch-selected "automatic new line" function moves the cursor to the beginning of the next line when the 80th character is keyed. A "here is" function transmits an identification message when the terminal is equipped with the Auto Answerback feature. The end-of-line bell function is standard. The repeat key, when executed with any other character key, repeats that character at a rate of 15.5 characters per second (the ADM 3E and ADM 1000 have auto repeat). The break function, a standard teleprinter function, is used to interrupt an incoming message. Clear, the only erase function, clears the entire screen. The rubout function transmits a delete code. Data transfer to an attached printer is automatic; all data sent from or received by the terminal is printed. Visual attributes available on the ADM 3E and ADM 1000 include reverse video, reduced intensity, blink, blank, and underline.

ALL OTHERS: Full cursor controls and cursor addressability are standard. Cursor controls include up, down, left, right, home, tab, backtab, return, and new line. Cursor functions can be controlled by the keyboard or host computer. A read cursor function permits the computer to find the cursor anywhere on the screen.

Character insertion and deletion and line insertion and deletion are standard features on all models except ADM 11. Insertion and deletion affect all characters to the right of the cursor up to the end of the line, or to the beginning of a protected field when the terminal is operating in Protect mode. Erase features (screen, end of line/page) are available on the ADM 11.

Four visual attributes are available on the ADM 11: reduced intensity (nonembedded), blink, blank, and reverse video (embedded). Five visual attributes are available on the ADM 12plus and ADM 2000, selectable as embedded or nonembedded: reduced intensity, underline, blink, blank, and reverse video. Five visual attributes are available on the ADM 1178: bold, blink, blank, underline, and reverse video. The ADM 220 includes four nonembedded visual attributes: blink, bold, underline, and reverse video. Nonembedded double-wide/double-high and double-wide line attributes are also available.

Upward scrolling is a standard function on all units and moves all lines up by one when a line advance function is executed, provided that the terminal is not operating in Protected Format mode. The top line is lost as it overflows the top of the screen. There is no downward scrolling function.

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Typewriter-style tabulation is available. Tabs can be set for any position on a line (producing a columnar effect) or for an entire screen (as if the screen were a 1,920-character line) and are available until cleared. In addition, "modulo" tabulation is also available. This function permits a fixed number of positions to be chosen as a parameter; tabs are then automatically set at regular intervals fixed by the parameter for the remainder of the page. For example, by setting a tab modulo of 25 positions, the tab will stop at the 25th, 50th, and 75th positions of the first line; 20th, 45th, and 70th positions of the next line; 15th, 40th, and 65th positions of the next line, etc.

Two-page paging with page-back and page-forward functions is standard on the ADM 12plus. Page characteristics, including cursor location, are stored in memory when the user changes from one page to another, and are restored automatically when the page is recalled. Pages can be used individually or linked together; when pages are linked, scrolling, editing, and clear functions operate on the entire paging memory as if it were a single page.

Formatting and field protection are available as standard features on all units except the ADM 11, ADM 220, and ADM 1178. Tabbing and backtabbing move the cursor from one unprotected field to another. Protected displayed data is shown in reduced-intensity characters. Display format can be received from the host computer or designed by the terminal operator. Available field designations include dual intensity, blinking, reverse video, and underlining.

When operating in protected format mode, the units can clear to protected spaces and clear to unprotected nulls; these functions are standard on all units.

The Program mode works in both block transmission mode and conversational mode, and permits storage, display, and transmission of control characters without executing the function on the display.

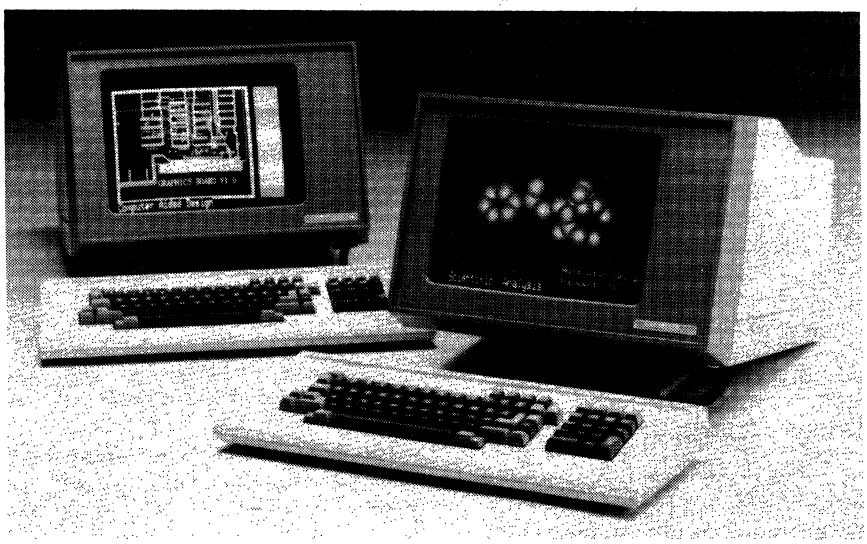
COMPONENTS

ADM 3A CRT DISPLAY UNIT: A 12-inch (diagonal) display screen is standard. The ADM 3A features Zentec's "clamshell" terminal enclosure design, which includes an attached keyboard. Screen capacity is 1,920 characters, arranged in 24 lines of 80 characters each. White (P4 phosphor) or green (P31 phosphor) characters are available. Characters are formed in the following matrix configurations: ADM 3A—5-by-7 dot matrix in a 7-by-9 field (uppercase only; lowercase characters are optional). The ADM 3A can display a 64-character ASCII set.

ADM 11, ADM 12plus, ADM 220, and ADM 1178 CRT DISPLAY UNITS: All models include a 12-inch (diagonal) display screen as standard; a 14-inch screen is optional. The ADM 11, ADM 12plus, ADM 220, and ADM 1178 feature Zentec's High Touch enclosure design, which incorporates a tilt (5 degrees forward to 15 degrees back of vertical) and swivel (360 degrees) display mechanism, as well as a small footprint size. Screen capacity for the ADM 11 and ADM 1178 is 1,920 characters, arranged in 24 lines of 80 characters each. Screen capacities for the ADM 220 and ADM 12plus are selectable at 1,920 or 3,168 characters, arranged in 24 lines of 80 or 132 characters each. All models feature a 25th status line. Characters are displayed in green (P31 phosphor); amber phosphor characters are optionally available. The ADM 11, ADM 12plus, and ADM 1178 form characters using a 7-by-10 dot matrix, with descenders, in an 8-by-11 dot matrix field. The ADM 220 uses a 7-by-9 dot matrix (with descenders) in a 10-by-10 dot matrix field in 80-column mode; in 132-column mode, a 7-by-9 dot matrix (with descenders) in a 9-by-10 dot matrix field is used. The ADM 11 and ADM 12plus can display the 128-character ASCII set with control codes. Business graphics characters are standard on both models. The ADM 1178 features 128 displayable ASCII characters, including control codes, plus an IBM extended character set. The ADM 220 features 94 displayable characters for each of the following sets: ASCII, U.K. National, Zentec Special Graphic, and Zentec supplemental (multinational). A compose sequence capability for creating special multiple keystroke characters is available.

Optional international character sets are available for the ADM 11, ADM 12plus, and ADM 1178.

ADM 3E, ADM 1000, and ADM 2000 CRT DISPLAY UNITS: Each unit contains a 14-inch (diagonally measured) display screen available in either green or amber phosphor. Tilt and swivel capability and a small footprint design are standard. An optional height adjustment mechanism is available for the ADM 1000 and ADM 2000. Screen capacity for the ADM 3E and ADM 1000 is 1,920 characters arranged in a 24-line by 80-column format with a 25th status line. The characters on the ADM 2000 are arranged in a 26-line by 80- or 132-character format. Characters are formed on the ADM 3E and ADM 1000 using a 7-by-9 dot matrix in a 9-by-12 field. On the ADM 2000, characters are formed using a 7-by-12 dot matrix in a 9-by-14 field. A 128 ASCII set is displayable.



Zentec's Models 7105 and 7107 color graphics terminals are designed for general business, process control, engineering, and scientific applications. They feature all popular drawing capabilities and five visual attributes.

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ADM 3A KEYBOARD: The ADM 3A features a 59-key, typewriter-style keyboard layout; the keyboard is attached to the monitor assembly.

ADM 11, ADM 12plus, ADM 220, and ADM 1178 KEYBOARDS: All models feature a detached, low-profile keyboard that conforms to the European DIN specification for ergonomics. The keyboard has an 11 degrees tilt adjustment, and sculptured, autorepeating keys, and is connected to the monitor through a 6-foot coiled cord. Selectable audible keyclicks, with 3-key rollover on the ADM 11, ADM 12plus, and ADM 1178, and N-key rollover on the ADM 220, are also standard. A typewriter-style key layout is standard on the ADM 11 and ADM 12plus. The ADM 11 contains 84 keys, including a numeric pad, cursor control keys, and 4 function keys, shiftable to 8. The ADM 12plus contains 107 keys, including a numeric pad, cursor control keys, edit keys, and 16 function keys, shiftable to 32. The ADM 12plus also incorporates a 404-character, dynamically allocated, function key memory.

The ADM 1178 keyboard contains 87 keys in an IBM 3278-compatible keyboard layout; included are a numeric pad, cursor control keys, 24 program function keys, and 2 program attention keys.

The ADM 220 keyboard contains 105 keys in a Digital VT220-compatible keyboard layout. Included are a numeric keypad, 4 general-purpose nonprogrammable function keys, and 15 function keys for 15 nonprogrammable functions unshifted plus 30 programmable functions with shift or CTRL (dynamically allocated storage). Five LED visual indicators are included: Power On, Hold Screen, Lock, Compose, and Wait.

ADM 3E, ADM 1000, and ADM 2000 KEYBOARDS: All models contain a DIN-standard keyboard with IBM Selectric-type layout. Included are 7 programmable function keys, shiftable to 14, and 3 edit keys shiftable to 6, on the ADM 3E and ADM 1000. The ADM 2000 contains 16 dynamically programmable, nonvolatile function keys, shiftable to 32, and over 50 programmable, nonvolatile "soft" keys which can be configured to the user's specific applications.

The Models 7105 and 7107 contain Digital VT100-compatible keyboard layouts.

PRICING

The Zentec display terminals are available for purchase only. Quantity discounts are available. Installation charges are on a time-and-materials basis.

Zentec provides service in over 3,000 cities nationwide and in Canada. On-site maintenance is provided on a prime shift basis (8 a.m. through 5 p.m., five days per week), excluding holidays. In certain cases, third-party contractors (mainly OEMs and large distributors) are also authorized to perform installation and maintenance services.

Extended Warranty coverage includes all parts and labor needed to perform remedial maintenance of equipment covered under this warranty. Defective units are returned to a factory depot for repair. Extended Warranty is available on an annual basis.

Express Depot service is a walk-in repair service available at repair depots located in 28 major U.S. cities. Service is performed while the customer waits, or within 48 hours at the latest.

On-site maintenance for terminals is limited to less than 50 miles from the service city (25 miles for printers); additional mileage is charged at $10 for each 25-mile increment.

Equipment Prices

Description	Purchase Price ($)	Monthly Maint. ($)
ADM 3A	595	17
ADM 3E	399	17
ADM 11	549	17
ADM 12plus	599	17
ADM 220	729	17
ADM 1178	695	17
ADM 1000	399	—
ADM 2000	699	—
Model 7105	2,995	—
Model 7107	3,995	— ■

Zentec Cobra Video Display Terminal

The Cobra is Zentec's smart video display terminal for OEMs and system integrators. The terminal is modularly designed, consisting of three separate components: the CRT module (available with 12- or 15-inch screen; the logic module; and the keyboard. The display module is mounted on a ball and joint mechanism, enabling the user to tilt or swivel the display for the most comfortable viewing position. The keyboard is detached.

Zentec's ergonomically-designed smart display terminal.

The Cobra features modular construction, and is available in 12-inch or 15-inch screen sizes. The unit's keyboard is detachable. Standard display capacity is 1920 characters, arranged in 24 lines of 80 characters each, plus a 25th status line. The display can be tilted or swiveled for operator comfort. Data can be transmitted in character or block mode.

Zentec sells its terminals chiefly to OEMs and system integrators. The Cobra is priced at $938 in quantities of 100 or more for the 12-inch version; the 15-inch model is priced at $1,125, also in quantities of 100 or better.

MANAGEMENT SUMMARY

Zentec Corporation is one of the terminal industry's leading suppliers of customized smart and intelligent terminals to OEMs and system integrators. The Cobra, introduced in April 1982, is a smart terminal featuring the company's new ergonomic housing design first implemented on its 8000 Series intelligent terminals.

The Cobra consists of three separate modules: the CRT module, available with 12- or 15-inch screens; the logic module, housing an 8-bit microprocessor; and the detached, typewriter-style keyboard. The CRT modules are fully interchangeable (requiring no special tools), and connect to the logic module via a ball and joint attachment that provides the display with 20 degrees of tilt and 60 degrees of swivel.

The standard display capacity of the Cobra is 1920 characters, arranged in 24 lines of 80 characters each. A 25th line for display of status information is provided. The Cobra is also configured with two full pages of display memory. Video attributes, selectable in any combination, include normal, dim, reverse, blink, underline, and blank. Edit features available include insert/delete character and insert/delete line, plus erase features.

The Cobra's keyboard features a typewriter-style layout, with a main key array, 14-key numeric pad, 12 special ➢

CHARACTERISTICS

VENDOR: Zentec Corporation, 2400 Walsh Avenue, Santa Clara, CA 95050. Telephone (408) 727-7662.

DATE OF ANNOUNCEMENT: April 1982.

DATE OF FIRST DELIVERY: April 1982.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: Zentec and distributors.

CONFIGURATION

The Cobra is a stand-alone, smart video display terminal. The unit consists of three separate modules: the CRT module, available in 12- or 15-inch screen sizes; the logic module, housing an 8-bit microprocessor; and the detached keyboard. The CRT module is attached to the logic module on a ball and joint mechanism, providing the display with up to 20 degrees of tilt adjustment and up to 60 degrees of swivel adjustment. The 12- and 15-inch display modules can be interchanged without the use of special tools, and without requiring special training. The typewriter-style keyboard is attached to the logic module via a four-foot long coiled cord.

TRANSMISSION SPECIFICATIONS

Transmission is asynchronous, in half- or full-duplex modes, at switch-selectable speeds from 110 to 19,200 bits per second. Character length is 7 or 8 bits. Odd, even, or no parity is switch-selectable. An RS-232-C or 20mA current loop interface is standard.

An RS-232-C serial printer interface is also provided, with switch-selectable transmission rates from 110 to 19,200 bps.

DEVICE CONTROL

The Cobra operates in both conversational (character-by-character) or block transmission modes. Data can be transmitted as characters, lines, complete screens, or fields ➢

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purpose edit/function keys, and 16 program function keys (shiftable to provide 32 functions). The keyboard is attached to the logic module via a four-foot coiled cord.

Data can be transmitted in character or block modes, at speeds up to 19,200 bits per second. A monitor mode is standard for debugging purposes.

The Cobra is designed to accommodate a number of custom options, such as custom keyboards, firmware, or software.□

within a protected screen. A monitor mode is provided to facilitate system debugging.

Video attributes, selectable in any logical combination, include underline, blink, normal, reverse, half-intensity (dim), and blank (non-display for security purposes). Erase features include: clear page with nulls; clear unprotected page with spaces; clear page with protected spaces; clear to end of page with nulls; clear to end of page with spaces; and clear line with spaces. Editing features available include insert/delete character and insert/delete line.

The Cobra provides two full pages of display memory (48 lines of 80 characters each). A scroll feature is provided to view the contents of memory. The display format provides an extra (25th) line for the display of error messages and system status messages. A self-test mode is also provided, for automatic verification of the memory, keyboard, and communications interface.

The unit's keyboard provides a separate numeric pad, 12 special purpose edit/function keys, and 16 program function keys. Cursor control keys are provided that move the cursor up, down, left, right, and home. The 16 function keys may be shifted to provide 32 separate functions.

The Cobra's serial printer interface provides for the attachment of a buffered printer for hard copy output. This secondary interface provides transmission speeds which are independent of the terminal's communications interface, allowing concurrent operation at different speeds. Background printing modes available on the Cobra allow concurrent printing and keyboard data entry under host control.

COMPONENTS

CRT DISPLAY UNIT: The Cobra's display unit consists of two separate modules: the CRT module and the logic module. The CRT module is available in two screen sizes: 12-inch and 15-inch (measured diagonally). Both CRT modules provide a screen capacity of 1920 characters, arranged in 24 lines of 80 characters each. A 25th status line is also provided. Characters are displayed in green (P31 phosphor) on a dark background, and formed utilizing a 7-by-9 dot matrix in a 10-by-10 cell. The standard character set consists of 128 ASCII symbols.

The logic module houses an 8-bit microprocessor, providing 16KB of RAM. The CRT module is joined to the logic module via a ball and joint mechanism, which provides the display with up to 20 degrees of tilt capability, and up to 60 degrees of swivel capability. The display screen itself features a direct etch, non-glare finish.

KEYBOARD: The Cobra's keyboard contains 103 keys, arranged in a 61-key main array, 14-key numeric pad, 12-key special purpose edit/function key array, and a row of 16 program function keys. Cursor control keys are included in the 12-key special purpose array. The function keys are shiftable to provide the user with 32 separate functions.

All frequently-used keys are auto-repeatable. The keyboard is detached, and connected to the logic module via a four-foot long coiled cord.

PRICING

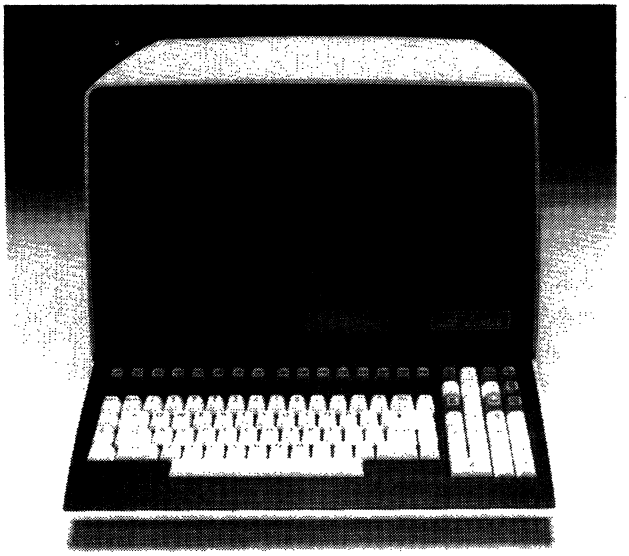
Zentec video display terminals are marketed primarily to OEMs and system integrators. The Cobra, available for purchase only, is priced at $938 with the 12-inch CRT module, in quantities of 100 or more. With the 15-inch CRT module, the purchase price is $1,125, in quantities of 100 or better. Service is provided through Zentec or third party distributors.■

Zentec Zephyr Display Terminal

MANAGEMENT SUMMARY

Known for manufacturing sophisticated intelligent display terminals, Zentec entered the field of low-price "smart" display terminals for the first time with the introduction of the Zephyr in late 1979. The Zephyr represents a departure in marketing policy for Zentec. Zentec markets their ZMS series display terminals (see report C21-950-101) primarily to OEM and large quantity buyers. With the Zephyr, Zentec is trying to reach the end users through its network of distributors while still offering quantity discounts. The Zephyr also represents a different product approach. While the ZMS series (the ZMS-50, ZMS-70, ZMS-90, and the new ZMS-40) represent user-programmable terminals that Zentec will customize to suit a user's needs, the Zephyr is an "off-the-shelf" smart terminal with full editing capabilities and transmission rates from 110 up to 19.2K bps.

The Zephyr, which is based on the Intel 8085 microprocessor, has features which make it fully competitive with other terminals in its class. It features a 12-inch (diagonal measurement) non-glare display screen, a 7-by-9 dot matrix for character formation, various video attributes for highlighting information, and a screen that can display 24 lines of 80 characters each (1920 per screen) plus a 25th line for terminal status messages. The 103-key integral keyboard has a 61-key typewriter-style keygroup, a 14-key numeric keypad, a 12-key control keypad, and 16 program function keys. The keyboard can generate and the screen can display 128 ASCII characters. The Zephyr features two pages of scrollable memory and a Monitor mode, which is used by the operator for forms and formatted data fields. The terminal also features Protect and Unprotect modes for formatted data entry and more ➢



Introduced in late 1979, the Zentec Zephyr can generate and display 128 ASCII characters, and can transmit data in character, line, or block format at speeds from 110 up to 19,200 bps.

Zentec's first entry into the field of low-priced "smart" display terminals.

The microprocessor-based Zephyr features a 12-inch non-glare screen, a 7-by-9 dot matrix for character formation, video highlighting, full editing capabilities, a two page scrollable memory, 16 program function keys, and asynchronous transmission at rates up to 19.2K bps. An optional printer interface is available.

The single-unit price for the Zentec Zephyr is $1,350, but quantity discounts are available. The optional RS-232-C printer interface is priced at $160 per single unit. The optional interface is also subject to quantity discounts.

CHARACTERISTICS

VENDOR: Zentec Corporation, 2400 Walsh Avenue, Santa Clara, California 95050. Telephone (408) 246-7662.

DATE OF ANNOUNCEMENT: December 1979.

DATE OF FIRST DELIVERY: January 1980.

NUMBER DELIVERED TO DATE: —

SERVICED BY: Zentec and third party.

CONFIGURATION

The Zentec Zephyr is a stand-alone display terminal that includes a display monitor and integral keyboard. The Zephyr is controlled by an Intel 8085 microprocessor. The terminal has a scrolling, two page memory of 1920 characters per page. The display screen itself is a 12-inch (measured diagonally), P4 phosphor CRT. An RS-232-C printer interface is optional.

TRANSMISSION SPECIFICATIONS

Transmission is asynchronous in half- or full-duplex mode at switch-selectable transmission rates from 110 up to 19,200 bps. Character, line, block, or screen format can be transmitted. The 8-level, 10-, or 11-unit ASCII code is used. Odd, even, or no parity is switch selectable. An RS-232-C and 20 mA current loop communications interfaces are standard.

DEVICE CONTROL

The Zentec Zephyr, which is based on the Intel 8085 microprocessor, can operate in any of three modes. Block, Conversational, or Monitor. The Block mode permits the storage of keyed data and after keying, fast transmission of large blocks of data. In the Conversational mode, each keystroke is immediately transmitted to the host computer. The Monitor mode is used for designing and establishing screen formats for transmission of selected fields of data, while operating in the Block or Conversational modes. Any of these three modes can operate in either the Protect or Unprotect submodes. In the Protect submode only the ➤

Zentec Zephyr Display Terminal

efficient transmission. The Zephyr communicates asynchronously in the half- or full-duplex mode. RS-232-C and 20mA current loop interfaces are both standard. An optional RS-232-C interface for a serial printer is available.□

unprotected fields on the screen are accessible, while in the Unprotect submode all 1920 character positions (24 lines of 80 characters each) on the screen are accessible.

The 25th line of the screen is reserved by the terminal for displaying messages especially prepared for the operator, although it is not accessible by the operator. The first 63 character positions of the 25th line are reserved for special messages to be sent by the host computer to the terminal. The last 17 character positions of the 25th line will always indicate to the operator one or more of the following terminal status messages:

CNV	Conversational Mode
BLK	Block Mode
LOCK	Keyboard Locked
MCNV	Monitor Mode/Conversational
MBLK	Monitor Mode/Block
PROT	Protect Submode
REP	Replace editing submode
INS	Insert editing submode
RX	Receiving Communications
TX	Terminal Transmitting

The Zephyr is capable of displaying and storing up to 48 lines of data. These 48 lines are divided into two separate pages of 24 lines each. Editing or scrolling on one page does not affect the contents of the second page. The second page can be viewed by depressing the NEW PAGE Key (a Shifted key). This is an alternate action key that will cause the page that is displayed to be stored and the stored page to be displayed.

Should the need exist to have the displayed page and the stored page joined together, then the Auto Page function may be enabled by the host computer or the operator. When Auto Page is activated, the page that is currently displayed will now become page 1. The stored page will become page 2. These pages will retain this definition until Auto Page is turned off. A New Line function at the bottom of page 1 will automatically cause page 2 to be displayed. Also, a New Line function at the bottom of page 2 will automatically cause page 1 to be displayed. Data displayed on the screen may be transmitted to host computer in a variety of methods upon operator or host commands.

Depressing the SEND LINE key will cause all characters in the Unprotect submode to be transmitted from the beginning of the row up to and including the cursor position. The RETURN code, X'0D', is transmitted at the end of this sequence. In the Protect submode, protected fields are not transmitted but a field separator, X'1C', is transmitted at the end of each unprotected field. The RETURN code is transmitted as the ending character of the transmission. The SEND LINE (Shifted) key, when depressed, will perform the same operation as described above when in the Unprotect submode. When in the Protect submode, protected fields are transmitted and are bracketed by ESC ")" (Write Protect Set) and ESC")" (Write Protect Reset). The RETURN code is transmitted as the ending character.

Depressing the SEND PAGE key causes all characters in the Unprotect submode from the HOME position up to and including the cursor position to be transmitted. If the Auto Page function is operational, both pages of text can be transmitted. The NEW LINE code, X'1F', is transmitted at the end of each row. The RETURN code is transmitted as the last character to mark the end of transmission. In the Protect submode, protected fields are not transmitted, but a field separator, X'1C' is transmitted at the end of each unprotected field. The SEND PAGE (Shifted) key, when depressed, will perform the same operation as described above when in the Unprotect submode. If Auto Page is operational, both pages of text can be transmitted. When in the Protect submode, protected fields are transmitted and bracketed by ESC ")" and ESC ")". The NEW LINE code is transmitted at the end of each row and the RETURN code is transmitted as the ending character of the sequence.

Depressing the PRINT key will cause all data to be printed exactly as displayed on the screen from the HOME position up to, but not including, the cursor position. If Auto Page is operational, both pages of text can be printed. When this key is depressed the cursor will move from its position to HOME. The code sequence, CR LR NULL, will be sent to the printer before any data is sent, and at the end of data transmission. Null characters, trailing spaces and attribute control codes will not be sent. Depressing the PRINT (Shifted) key will cause data to be printed as displayed on the screen from the cursor position to the stop code or end of page. If Auto Page is operational, both pages of text can be printed. When this key is depressed the cursor will move from its position to HOME. All data will be sent in a continuous stream without inserting control characters. Null characters and all trailing spaces are transmitted and control codes for printing may be embedded within text. Depressing the BREAK key causes the terminal to transmit a continuous signal for 250 to 300 milliseconds. During a print routine (with the exception of print buffer routines), this key will cause approximately .5 second transmission delay to the printer.

The cursor is a blinking underline mark on the screen that indicates the next character position available for data entry. As character symbols are entered the cursor moves from left to right across the screen. Cursor movement may be controlled by the operator or a host computer. The operator has control over the cursor positioning via designated movement keys in the Cursor key pad section. The cursor movement keys include: Cursor Right, Cursor Left, Cursor Up, Cursor Down, Home, Back Space, Return, Line Feed, New Line, Tab, and Back Tab.

In addition to the cursor, the Zephyr's video attributes can highlight displayed data. These video attributes include normal, dim, reverse background, blinking, and underlining functions. These video functions can be implemented via an escape (ESC) code sequence.

The Zephyr has a complete set of screen editing function keys to allow easy editing of displayed data by either the host computer or the operator. These editing function keys include: CHAR INS/CHAR DEL, LINE INS/LINE DEL, CLEAR LINE/CLEAR PAGE, NEW LINE/NEW PAGE, and REP/INS. With this set of editing keys, the operator may perform any of the following editing functions:

- Character Replacement (strike over)
- Clear unprotected character positions to nulls or blanks
- Clear the entire display screen to nulls or blanks
- Insert or delete characters
- Insert or delete entire lines
- Erase from the cursor position to the end of a line or unprotected field.
- Erase from the cursor positon to the end of the page.
- Alternately display both pages.

Zentec Zephyr Display Terminal

For operator convenience, all of the editing keys are grouped together on the right side of the keyboard. Most of the editing keys are in the Cursor Keypad section above the numeric keyboard.

The Zephyr has 16 Program Function keys. These keys can be used in both unshifted or shifted modes in order to access 32 user-defined functions that are stored at the host computer. Whenever a Program Function key is depressed a three character code sequence will be transmitted. This transmission can not be disabled by the keyboard lock sequence; however, the Program Function keys will be ignored if the keyboard is being ignored during the receiving of communication.

When the CONTROL key is depressed simultaneously with another key, the terminal will transmit a unique code for this sequence. These sequences are displayed on the display screen when in the Monitor mode or when preceded by the escape (ESC) key during the Conversational or Block modes. Key sequences marked with an * (asterisk) are interpreted by the Zephyr in the half-duplex mode. The CONTROL key depressed by itself will not cause any code to be displayed, stored or transmitted.

In addition to the terminal operator keying an escape (ESC) code sequence of the ESC key and a character key, the Zephyr can be given special instructions and commands from the host computer through a series of special escape sequences. An escape (ESC) code, when received by the terminal, signifies that the next code(s) will have a special meaning or command for the Zephyr.

The RESET key will cause the Zephyr to perform the power-up routine. The keyboard can be disabled locally or enabled/disabled by the host computer through the use of two escape sequences:

- ESC #—Disables keyboard
- ESC "—Enables keyboard

When the keyboard has been disabled only the Program Function keys (and RESET) remain operable. All other keys on the keyboard will be ignored until an ESC " is received. The keyboard operation can also be restored manually by pressing the RESET key.

COMPONENTS

DISPLAY UNIT: A 12-inch (diagonal measurement) CRT screen with a viewing area 5.5 inches high by 8.25 inches wide. The display arrangement is 25 lines of 80 characters each. The 25th line is used for status and control information. A total of 128 upper and lower case alphanumeric and control characters are displayed in white (P4 phosphor). Each character is formed via a 7-by-9 dot matrix within a 10-by-10 dot cell. Highlighting includes normal, dim, blinking, underlining, and reverse background video attributes.

KEYBOARD: A 61-key, typewriter-style attached keyboard. The keyboard is also equipped with a combined keygroup of a 14-key numeric keypad and 12-key control keypad, located to the right of the main keygroup. There are 16 program function keys along the top of the keyboard. The control keypad contains cursor, scroll, paging, mode, and edit keys. The 16 program function keys can access 32 user-defined program functions that are stored at the host computer. The keyboard generates 128 ASCII character codes.

PRINTER INTERFACE: An optional RS-232-C interface is available. It can support asynchronous transmission at rates up to 19.2K bps.

PRICING

The Zephyr terminal is available from Zentec on a purchase-only basis. Quantity discounts are available. Typically, there are no installation charges, since the equipment is shipped to the customer and is unpacked and installed by the customer. Service is currently provided on a factory repair basis by Zentec. Zentec provides the following end-user and OEM quantity discounts:

Quantity Taken During 12-Month Period	Percentage of Discount	Single-unit Price
1	0%	$1350
2 to 24	10%	$1215
25 to 49	15%	$1148
50 to 99	20%	$1080
100 to 249	27%	$ 985
250 to 499	37%	$ 851
500 and up	Negotiated	—

Additionally, an optional RS-232-C printer interface is available for $160 per single unit. The quantity discount schedule also applies to this optional printer interface. A printer interface kit is also available for $180. For a listing of distributors—contact Zentec.■