

Liberty Electronics Display Terminals



The Freedom ONE video display terminal provides the customer with low price and advanced features, in one terminal. Being fully compatible with the company's Freedom 200 model, the Freedom ONE's emulation modes include Wyse WY-50, TeleVideo 950, ADDS Viewpoint A2, and Lear Siegler ADM 31. This terminal bridges the gap between low-price, low-featured products and high-priced, full-featured products, giving it universal appeal.

MANAGEMENT SUMMARY

UPDATE: This report provides you with information on Liberty Electronics' introduction of the Freedom ONE and UNILINK display terminals. Also reflected in this report are prices for the new models as well as existing Freedom models.

Liberty Electronics, founded in 1982, got its start with the introduction of the Freedom 100. Since that time Liberty has developed a full line of video display terminals that span the areas of ASCII, ANSI, and graphics, as well as Remote Information Stations. Most recently, Liberty entered the synchronous world with the introduction of the UNILINK terminal which emulates the Sperry UTS 20. Also recently announced is the Freedom ONE. This new ASCII product provides full functionality at entry-level prices.

UNILINK, a synchronous video display terminal, is a low-cost alternative to the Sperry UTS 20. Featuring a 14-inch green or amber display screen with 80/132 column capability, this model also features parallel and serial auxiliary port interfaces.

The Freedom ONE video display terminal offers a full set of advanced features, including 132 display column capability, 44 programmable keys, double high/double wide characters, and split screen capability. It emulates the

Liberty Electronics offers the Freedom series, a family of low-cost display terminals. The Freedom series terminals provide emulation for a number of popular terminals, including Digital Equipment Corporation's VT220. Liberty also offers two models that combine voice and data communications through the addition of an integral modem (Freedom 212 and Freedom 222) and two graphics display terminals (Freedom 240/ANSI and Freedom 210/ASCII). New to the Liberty lineup are the recently introduced Freedom ONE and UNILINK.

MODELS: Freedom 110, Freedom 200, Freedom 220, Freedom ONE, Freedom 212 Remote Information Station, Freedom 222 Remote Information Station, Freedom 240 Graphics/ANSI Display Terminal, Freedom 210 Graphics/ASCII Video Display Terminal, and UNILINK.

DISPLAY: All models feature a 14-inch display screen with a 25-line by 80-character format except the Freedom ONE and UNILINK, which feature 24-line by 80-character formats. Green phosphor characters are standard; amber phosphor is optional. The displays provide a tilt/swivel capability. **KEYBOARD:** All models include a low-profile, detachable keyboard with a typewriter-style key layout. Most keyboards contain 10 programmable function keys, shiftable to 20 functions. The Freedom 220 contains 15 programmable keys and the Freedom ONE contains 44 user-programmable keys.

COMPETITION: TeleVideo Systems, Applied Digital Data Systems (ADDS), Lear Siegler, Esprit Systems, Digital, Visual Technology, ITT Cume, Wyse Technology, and several others.

PRICE: Purchase prices for the Freedom series and the UNILINK range from \$449 to \$1,295.

CHARACTERISTICS

VENDOR: Liberty Electronics, 332 Harbor Way, San Francisco, CA 94080. Telephone (415) 742-9960.

DATE OF ANNOUNCEMENT: Freedom 200—November 1983; Freedom 110—March 1984; Freedom 220, 212, 222—June 1984; Freedom 210 and 240—November 1984; UNILINK—November 1985 and the Freedom ONE—March 1986.

DATE OF FIRST DELIVERY: Freedom 200—November 1983; Freedom 110—March 1984; Freedom 220, 212, 222, 210 and 240—August 1984; UNILINK—November 1985; Freedom ONE—May 1986.

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► Freedom 200, Wyse WY-50, ADDS Viewpoint A2, TeleVideo 950, and Lear Siegler ADM 31. At \$449, the Freedom ONE is Liberty's lowest priced model. The Freedom series includes an ergonomic enclosure for all models, and two terminals that include voice as well as data capabilities. The Freedom 110, a redesigned version of the Freedom 100, provides a wide range of features at a low price (\$545). Some of these features are full editing capabilities and visual attributes; emulation of the ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A/5, and TeleVideo 910; eight standard foreign character sets; block and conversational mode transmission; and 10 programmable function keys, shiftable to 20 functions. Design features include a 14-inch tilt/swivel display, a low-profile (DIN-standard) detachable keyboard, and a redesigned logic base that provides easy access for maintenance and room for an expansion board.

The Freedom 200 and Freedom 220 are the enhanced function smart terminals in the Freedom line. The Freedom 200 includes all of the features of the Freedom 110, plus the following: Lear Siegler ADM 31 and TeleVideo 950 emulation; a second page of display memory in emulation mode; smooth scrolling; horizontal windowing/split screen; double high/double wide characters; and a 106-key keyboard (as opposed to the Freedom 110's 94 keys). The Freedom 220 is Liberty's Digital VT220 emulator.

The Freedom 212 and Freedom 222 Remote Information Stations are Liberty's voice/data versions of the Freedom 200 and Freedom 220. These stations include a Bell 103- and 212A-compatible 1200 bps integral modem for remote communications. A standard telephone set can be attached directly to the terminal, providing it with voice communications. In addition to the terminal's standard data features, the following telephony features are available: a directory of up to 25 entries, including name, phone number, logon, and password functions; dialing by name, entry number, or manually; dialing for voice or data calls; pulse or tone dialing; and automatic redial.

The Freedom 210 and Freedom 240 are high-performance graphics terminals which combine the alphanumeric capabilities of the Freedom 200 and Freedom 220. Both operate with Tektronix 4010/4014 command set and may be used with most popular graphics software packages, including Tektronix PLOT10, ISSO A-GRAF and DISSPLA, and Precision Visuals GRAFMAKER/GRAFMASTER.

COMPETITIVE POSITION

During the past four years, Liberty Electronics' goal has been to introduce terminal products which offer both outstanding performance capabilities and aggressive pricing in the ASCII, ANSI, and graphics terminal market. By doing so, Liberty has managed to challenge the top vendors—Wyse Technology, TeleVideo Systems, Applied Digital Data Systems (ADDS), Lear Siegler, and Esprit Systems. Liberty, along with Visual Technology and ITT Qume, has managed to carve out a healthy share of this market despite the fierce competition that has characterized the display terminals market in the recent past. Liberty set out to ►

► NUMBER DELIVERED TO DATE: Over 50,000.

SERVICED BY: Liberty Electronics, Sorbus.

MODELS

Liberty Electronics' line of display terminals is currently made up of nine models. Five of these (Freedom ONE, 110, 200, 220, and UNILINK) are data-only terminals; two (Freedom 212 and 222) are voice/data terminals, and two (Freedom 210 and 240) are graphics terminals. The features that differentiate these terminals are described in the following paragraphs:

Freedom ONE—the low-end model of the Freedom series. Provides low price and advanced features in one terminal. Emulation modes include Wyse WY-50, TeleVideo 950, ADDS Viewpoint A2, and Lear Siegler ADM 31.

Freedom 110—a smart ASCII terminal with selectable emulation of the ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A/5, and TeleVideo 910.

Freedom 200—contains all of the features of the Freedom 110, plus Lear Siegler ADM 31 and TeleVideo 950 emulation; multiple pages of display memory; smooth scrolling; horizontal windowing/split screen; double high/double wide characters; and 132 columns.

Freedom 220—compatible with the Digital VT220, VT100, and VT52. Provides an 80-column display, with panning for 132-column display formats.

Freedom 212—combines the features of the Freedom 200 with an integral 1200 bps modem for the connection of a standard telephone. Telephony features include a 25-entry directory, automatic dial, and automatic redial.

Freedom 222—combines the terminal features of the Freedom 220 with the telephony features of the Freedom 212, resulting in a Digital-compatible voice/data terminal.

Freedom 240 and Freedom 210—are Liberty's graphics terminals. The Freedom 240 ANSI is Digital VT200-compatible. The Freedom 210 ASCII is compatible with the Freedom 200, TeleVideo 950, and Lear Siegler ADM 31. Both display terminals combine alphanumeric capabilities with bit-mapped graphics.

TRANSMISSION SPECIFICATIONS

The Freedom series of asynchronous terminals and the synchronous UNILINK terminal transmit data in conversational, block, or monitor (allows display of control codes) modes. Transmission rates from 50 bps (110 bps on the Freedom 110) to 19,200 bps are selectable by the user. Word structure is 7 or 8 data bits, with 1 or 2 stop bits. Odd, even, or no parity may be selected. X-on/X-off handshaking is standard. All models are equipped with an RS-232-C main port plus an RS-232-C auxiliary port.

The Freedom 212 and 222 include an integral 1200 bps modem, which is Bell 212A- and 103-compatible. Transmission rates of 110, 300, or 1200 bps can be set automatically for incoming calls; the transmission rate for outgoing calls is set based on the directory entry. A single line telephone interface is standard; the interface features RJ11, RJ12, and RJ13 compatibility. Two connectors are included, one for the attachment of an external telephone set, and one for attachment to the telephone network.

DEVICE CONTROL

The UNILINK and Freedom series display terminals operate in the following modes: block (line or page transmission); ►

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▷ become a price leader in the low end of the market, and this strategy has proven fairly successful. Its Freedom ONE video display terminal, priced at \$449, contains a range of features seldom found at that price level. Like almost all manufacturers of video display terminals, Liberty utilizes offshore production; the Freedom series and UNILINK terminals are manufactured in Taiwan.

ADVANTAGES AND RESTRICTIONS

In addition to low prices, Liberty Electronics offers stylish, ergonomically designed terminals which fulfill a variety of applications needs, from simple to sophisticated. Liberty terminals offer a broad range of features which include a flexible, modular design that can accommodate add-on boards and provide for ease of maintenance.

To accommodate all of your ASCII needs is the Freedom ONE. Offering advanced features at an economical price, this terminal provides a full range of capabilities, from basic data entry to sophisticated programmability, allowing you to span all your applications needs with one product. The Freedom ONE is styled to utilize the least amount of space in your work place. □

► conversational (character by character as it is keyed); monitor (displays control codes); and local (for stand-alone operation). All models feature a single page of display memory; the UNILINK emulates the Sperry UTS 20; Freedom ONE provides emulation of the Freedom 200, Wyse WY-50, TeleVideo 950, ADDS Viewpoint A2, and Lear Siegler ADM 31; the Freedom 200 provides a second page of memory in emulation mode. The Freedom 110 provides selectable emulation of the ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A/5, and TeleVideo 910. The Freedom 200 and 212 provide selectable emulation of the Lear Siegler ADM 31 and TeleVideo 950. The Freedom 220 and 222 emulate the Digital VT220, VT100, and VT52 terminals. These terminals provide only an 80-column display format; however, panning is available for 132-column formats. The Freedom 240 and Freedom 210 emulate the Tektronix 4010/4014.

All models include the following visual attributes: normal, reverse, half intensity, underline, blink, and blank. Attributes may be selected in any combination. The cursor can be selected as a blinking or nonblinking block, blinking or nonblinking underline, or invisible. All models except the Freedom 110 and UNILINK can display double high/double wide or double wide characters. Full erase and edit functions are standard on all models. Horizontal windowing (split screen) and smooth scrolling are available on all models except the Freedom 110 and UNILINK.

Operating parameters are selected via full-page menu setup. Parameters may be entered from the keyboard or downloaded from the host computer. A status line is available to indicate the operating parameters selected.

The Freedom 210 Graphics ASCII Display Terminal is a Freedom 200, TeleVideo 950, and Lear Siegler ADM 31 compatible graphics terminal. The Freedom 240 Graphics ANSI Display Terminal is a Digital VT220-compatible terminal. The Freedom 210 and 240 are inexpensive, high-performance graphics terminals which combine the alphanumeric capabilities of the Freedom 200 and Freedom 220, respectively, with medium-resolution bit-mapped graphics. Both products have a 655-by-290 pixel dot resolution with automatically scaled 4096-by-4096 addressability, and both support hard copy output to graphics printers and plotters (Digital LA100 or compatible printers/Hewlett-Packard 7470A- or HPGL-compatible plotters). They operate with Tektronix 4010/4014 command set and may be used with most popular graphics software packages.

Eight foreign character sets are resident on all Freedom models. These are British, French, Danish, Swedish, Finnish, Norwegian, German, and Swiss. The Freedom ONE however, contains Spanish rather than Finnish. The keyboard adapts to the standard layout of each language.

COMPONENTS

CRT DISPLAY UNIT: All models, except Freedom ONE and UNILINK, in the Freedom series contain a 14-inch (diagonally measured) display screen. The display tilts (+15 degrees, -5 degrees) and swivels (70 degrees), and features an etched, nonglare finish. Characters are displayed in P31 green phosphor (amber phosphor optional), and formed via a 7-by-9 dot matrix in a 9-by-12 field. These models feature a 3168-character display capacity, arranged in 25 lines of 80 characters each. The Freedom ONE and UNILINK models contain 12-inch display screens with characters formed using a 7-by-9 dot matrix in a 10-by-12 field. These two models feature a 1920-character display capacity, arranged in 24 lines of 80 characters each. The UNILINK provides a 25th status line. Except for the UNILINK (with a 128-character ASCII set), the 96-character ASCII set, plus 32 control characters, is displayable on all models. The Freedom 110 also provides a 15-character, line-drawing graphics set; all other models provide an 86-character extended graphics set, including line, block, Greek, and mathematics characters. Also standard is a screen saver feature, which shuts off the display after 5, 10, or 15 minutes (programmable) of inactivity.

KEYBOARD: All models include a detached, low-profile keyboard. The Freedom 110's keyboard consists of 94 keys, including a numeric keypad, 9 cursor control keys, 7 editing keys, 6 functional command keys, and 10 nonvolatile programmable function keys (shiftable to 20 functions). The Freedom ONE's keyboard consists of 101 keys, a total of 44 nonvolatile, programmable keys (shiftable to 88 functions) with 16 dedicated function keys (shiftable to 32 functions). All other Freedom models provide a total of 106 keys, including a numeric keypad, 11 cursor control keys, 9 editing keys, 12 functional command keys, and 10 nonvolatile programmable function keys (shiftable to 20 functions). The UNILINK, while also providing 106 keys which include a numeric keypad, 9 editing keys, and 10 dedicated nonvolatile programmable function keys, contains 12 cursor control keys and 9 functional command keys. The keys feature a sculptured design. The keyboard connects to the terminal's logic base via a coiled cord, and conforms to the European DIN standard for ergonomic design.

PRICING

Liberty Electronics Freedom series and UNILINK display terminals are available for purchase only, with volume discounts available. All models carry a six-month limited warranty. Third-party maintenance is available through Sorbus.

EQUIPMENT PRICES

	Purchase Price (\$)
Freedom ONE	449
Freedom 110	545
Freedom 200	595
Freedom 220	745
Freedom 212 Remote Information Station	1,295
Freedom 222 Remote Information Station	945
Freedom 210	995
Freedom 240	1,095
UNILINK	745
Amber screen option	25 ■

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MANAGEMENT SUMMARY

Founded in 1982, Liberty Electronics has rapidly become a major competitor in the general purpose ASCII terminal market. The company's first product, the Freedom 100, was unveiled at the National Computer Conference in Houston during June 1982. Significantly, the Freedom 100 carried a price tag of \$595, making it one of the lowest-priced smart terminals then on the market. Liberty has continued this trend—it is recognized as one of the most price-conscious vendors in this market, and has parlayed that approach into a healthy market share. Since the introduction of the Freedom 100, Liberty has shipped in excess of 50,000 terminals.

Recent enhancements to the Freedom series include a new ergonomic enclosure for all models, and two new terminals that include voice as well as data capabilities. The low-end model in the family is the Freedom 110, a redesigned version of the Freedom 100. The Freedom 110 provides a wide range of features at a low price (\$595). Some of these features are: full editing capabilities and visual attributes; emulation of the ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A and ADM 5, and TeleVideo 910; eight standard foreign character sets; block and conversational mode transmission; and 10 programmable function keys, shiftable to 20 functions. Design features include a 12-inch tilt/swivel display, a low-profile (DIN-standard) detachable keyboard, and a redesigned logic base that provides easy access for maintenance and room for an expansion board.

The Freedom 200 and Freedom 220 are the enhanced function smart terminals in the Freedom line. The Freedom 200 includes all of the features of the Freedom 110, plus the following: Lear Siegler ADM 31 and TeleVideo 950 emulation; a second page of display memory in emula-

Liberty Electronics offers the Freedom series, a family of low-cost ASCII display terminals. The Freedom series terminals provide emulation for a number of popular terminals, including the new DEC VT220. Liberty has also recently introduced two models that combine voice and data communications, through the addition of an integral modem.

MODELS: Freedom 110, Freedom 200, Freedom 220, Freedom 212 Remote Information Station, and Freedom 222 Remote Information Station.

DISPLAY: All models feature a 12-inch display with a 24-line by 80-character format. Green phosphor characters are standard; amber phosphor is optional. The displays provide a tilt/swivel capability.

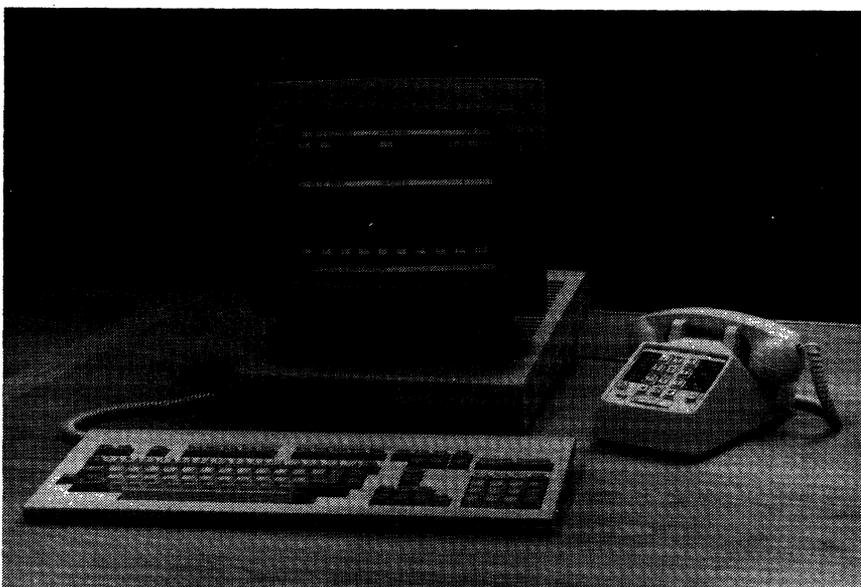
KEYBOARD: All models include a low-profile, detachable keyboard with a typewriter-style key layout. The keyboards contain 10 programmable function keys, shiftable to 20 functions.

COMPETITION: TeleVideo Systems, Applied Digital Data Systems (ADDS), Lear Siegler, Esprit Systems, Visual Technology, Qume, Wyse Technology, and several others.

PRICE: Purchase prices for the Freedom series range from \$595 to \$1,395.

CHARACTERISTICS

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



The Freedom 212 Remote Information Station combines voice and data capabilities. The Freedom 212 includes an integral Bell 212A-compatible modem for remote communications at speeds up to 1200 bps. Existing telephone wiring is utilized; a standard telephone set plugs directly into the terminal. Telephone features include a 25-entry directory for voice or data calls, automatic dialing from the directory by name or entry number, and automatic redialing or alternate number dialing for unanswered or busy calls.

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▷ tion mode; smooth scrolling; horizontal windowing/split screen; double high/double wide characters; and a 106-key keyboard (as opposed to the Freedom 110's 94 keys). The Freedom 220 is Liberty's DEC VT220 emulator. The terminal combines the features of the Freedom 200 with DEC emulation. It does not, however, allow for 132-column display formats; instead, it provides panning for 132-column formats.

Liberty has recently introduced voice/data versions of the Freedom 200 and Freedom 220 terminals. The Freedom 212 and Freedom 222 Remote Information Stations include a Bell 103 and 212A-compatible 1200 bps integral modem for remote communications. A standard telephone set can be attached directly to the terminal, providing it with voice communications. In addition to the terminal's standard data features, the following telephony features are available: a directory of up to 25 entries, including name, phone number, logon, and password functions; dialing by name, entry number, or manually; dialing for voice or data calls; pulse or tone dialing; and automatic redial.

COMPETITIVE POSITION

Liberty Electronics is one of a group of new entrants in the ASCII terminal market who have managed to challenge the top four vendors—TeleVideo Systems, Applied Digital Data Systems (ADDS), Lear Siegler, and Esprit Systems. Liberty, along with Visual Technology, Qume, and Wyse Technology, has managed to carve out a healthy share of this market despite the fierce competition that has characterized the ASCII arena in the past two years. Liberty set out to become a price leader in the low end of the market, and this strategy has proven successful. Its Freedom 110 video display terminal, priced at \$595, contains a range of features seldom found at that price level. Like almost all manufacturers of video display terminals, Liberty utilizes offshore production; the Freedom series terminals are manufactured in Taiwan.

ADVANTAGES AND RESTRICTIONS

As we mentioned above, Liberty Electronics is a price leader in the low end of the ASCII terminal market. In addition to low prices, the terminals offer a broad range of features and an attractive, ergonomic design. They feature a flexible, modular design that can accommodate add-on boards and provide for ease of maintenance.

Liberty is also the first of the traditional ASCII terminal vendors to offer voice capabilities on a full-size terminal (TeleVideo provides the Personal Terminal, a compact unit targeted at the executive's desk). The Freedom 212 and Freedom 222 Remote Information Stations provide all of the terminal features found on the Freedom 200 and Freedom 220, respectively; in addition, they allow for remote and voice communications, and provide a full range of telephony features. As with the company's data-only terminals, these features are available at a low price. □

▷ **DATE OF ANNOUNCEMENT:** Freedom 200—November 1983; Freedom 110—March 1984; Freedom 220, 212, and 222—June 1984.

DATE OF FIRST DELIVERY: Freedom 200—November 1983; Freedom 110—March 1984; Freedom 220, 212, and 222—August 1984.

NUMBER DELIVERED TO DATE: Over 50,000.

SERVICED BY: Liberty Electronics, Sorbus.

MODELS

Liberty Electronics' Freedom series of display terminals is currently made up of five models. Three of these (Freedom 110, 200, and 220) are data only terminals; two (Freedom 212 and 222) are voice/data terminals. The features that differentiate these terminals are described in the following paragraphs:

Freedom 110—the low-end model of the Freedom series. The Freedom 110 is a smart ASCII terminal with selectable emulation of the ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A/5, and TeleVideo 910.

Freedom 200—contains all of the features of the Freedom 110, plus: Lear Siegler ADM 31 and TeleVideo 950 emulation; multiple pages of display memory; smooth scrolling; horizontal windowing/split screen; and double high/double wide characters.

Freedom 220—compatible with the DEC VT220, VT100, and VT52. Provides an 80-column display, with panning for 132-column display formats.

Freedom 212—combines the features of the Freedom 200 with an integral 1200 bps modem for the connection of a standard telephone. Telephony features include a 25-entry directory, automatic dial, and automatic redial.

Freedom 222—combines the terminal features of the Freedom 220 with the telephony features of the Freedom 212, resulting in a DEC-compatible voice/data terminal.

TRANSMISSION SPECIFICATIONS

The Freedom series terminals transmit data asynchronously in conversational, block, or monitor (allows display of control codes) modes. Transmission rates from 50 bps (110 bps on the Freedom 110) to 19,200 bps are selectable by the user. Word structure is 7 or 8 data bits, with 1 or 2 stop bits. Odd, even, or no parity may be selected. X-on/X-off handshaking is standard. All models are equipped with an RS-232-C main port plus an RS-232-C auxiliary port.

The Freedom 212 and 222 include an integral 1200 bps modem, which is Bell 212A- and 103-compatible. Transmission rates of 110, 300, or 1200 bps can be set automatically for incoming calls; the transmission rate for outgoing calls is set based on the directory entry. A single line telephone interface is standard; the interface features RJ11, RJ12, and RJ13 compatibility. Two connectors are included, one for the attachment of an external telephone set, and one for attachment to the telephone network.

DEVICE CONTROL

The Freedom display terminals operate in the following modes: block (line or page transmission); conversational (character by character as it is keyed); monitor (displays control codes); and local (for stand-alone operation). All models feature a single page of display memory; the Freedom 200 provides a second page of memory in emulation mode. The Freedom 110 provides selectable emulation of the

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► ADDS Regent 25, Hazeltine 1420, Lear Siegler ADM 3A/5, and TeleVideo 910. The Freedom 200 and 212 provide selectable emulation of the Lear Siegler ADM 31 and TeleVideo 950. The Freedom 220 and 222 emulate the DEC VT220, VT100, and VT52 terminals. These terminals provide only an 80-column display format; however, panning is available for 132-column formats.

All models include the following visual attributes: normal, reverse, half intensity, underline, blink, and blank. Attributes may be selected in any combination. The cursor can be selected as a blinking or nonblinking block, blinking or nonblinking underline, or invisible. All models except the Freedom 110 can display double high/double wide or double wide characters. Full erase and edit functions are standard on all models. Horizontal windowing (split screen) and smooth scrolling are available on all models except the Freedom 110.

Operating parameters are selected via full page menu set-up. Parameters may be entered from the keyboard or downloaded from the host computer. A status line is available to indicate the operating parameters selected.

The Freedom 212 and 222 Remote Information Stations combine voice and data capabilities. Each model includes an integral modem. A standard telephone set may be attached directly to the terminal's telephone interface; the terminal is then plugged into a modular wall jack. When not used as a remote information station, a selectable RS-232-C local communications port is available to allow the Freedom 212 to function as a Freedom 200, and the Freedom 222 to function as a Freedom 220.

When used as a remote information station, the Freedom 212 and Freedom 222 provide remote access to the corporate database, public information databases, timesharing services, and service bureaus; electronic mail capabilities are also supported. Up to 25 entries can be stored in the terminal's directory; each entry can consist of a name, telephone number, voice or data call selection, transmission rate and other host data parameters, link to logon and passwords, and logon and password sequences, which are loaded into function keys when the number is dialed. All entries are stored in nonvolatile memory. Entries can be dialed by name, entry number, or manually, either by pulse or tone. Automatic redial of busy or unanswered numbers is standard.

Eight foreign character sets are resident on all models. These are: British, French, Danish, Swedish, Finnish, Norwegian, German, and Swiss. The keyboard adapts to the standard layout of each language.

COMPONENTS

CRT DISPLAY UNIT: All models in the Freedom series contain a 12-inch (diagonally measured) display screen. The display tilts (+15 degrees, -5 degrees) and swivels (70 degrees), and features an etched, nonglare finish. Characters are displayed in P31 green phosphor (amber phosphor optional), and formed via a 7-by-9 dot matrix in a 9-by-12 field. All models feature a 1920-character display capacity, arranged in 24 lines of 80 characters each. A 25th line is available for status or user information. The 96-character ASCII set, plus 32 control characters, is displayable. The Freedom 110 also provides a 15-character line drawing graphics set; all other models provide an 86-character extended graphics set, including line, block, Greek, and mathematics characters. Also standard is a screen saver feature, which shuts off the display after 5, 10, or 15 minutes (programmable) of inactivity.

KEYBOARD: All models include a detached, low-profile keyboard. The Freedom 110's keyboard consists of 94 keys, including a numeric keypad, 9 cursor control keys, 7 editing keys, 6 functional command keys, and 10 nonvolatile programmable function keys (shiftable to 20 functions). All other models provide a total of 106 keys, including a numeric keypad, 11 cursor control keys, 9 editing keys, 12 functional command keys, and 10 nonvolatile programmable function keys (shiftable to 20 functions). The keys feature a sculptured design. The keyboard connects to the terminal's logic base via a coiled cord, and conforms to the European DIN standard for ergonomic design.

PRICING

Liberty Electronics Freedom series display terminals are available for purchase only, with volume discounts available. All models carry a six-month limited warranty. Third-party maintenance is available through Sorbus.

Models	Purchase Price Price (\$)
Freedom 110	595
Freedom 200	695
Freedom 220	795
Freedom 212 Remote Information Station	1,295
Freedom 222 Remote Information Station	1,395
Amber screen option	25 ■

