

# Wyse Technology Display Terminals

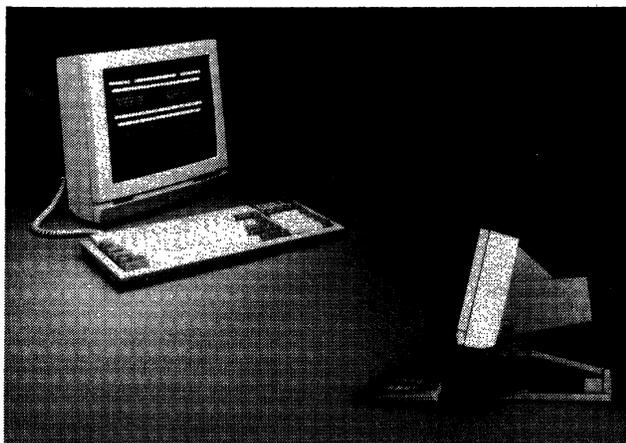
## MANAGEMENT SUMMARY

**UPDATE:** *This report has been updated to reflect one change in the Wyse terminal product line as well as changes in cost. Since our last update, Wyse has ceased production of the WY-50+ and introduced the WY-60, an ASCII, ANSI, and PC compatible terminal. Wyse Technology continues to hold the number one position among independent ASCII/ANSI terminal vendors.*

Formed in August 1981, Wyse Technology has managed to provide just the right combination of features with low prices to become the number one independent vendor of ASCII/ANSI terminals. Wyse began shipping its first product, the WY-100 smart terminal, in April 1982, and at present ships over 30,000 units per month. Its products include monochrome smart terminals, a color terminal, the WYSEpc+ microcomputer, and the WYSEpc 286 IBM PC-compatible. The company also offers a full line of IBM PC compatible monitors and adapter boards. The current members of the Wyse terminal product line are the WY-30, WY-50, WY-60, WY-75, WY-85, and WY-350. These models replaced Wyse's initial offerings, the WY-100, WY-200, and WY-300.

The WY-30 is an entry-level terminal with an impressive list of features. With a list price of \$399, these features include a 14-inch display screen, low-profile keyboard, visual attributes, split screen, four function keys, and multiple emulations (Wyse WY-50 and WY-100, ADDS Viewpoint A2 and Regent 25, Zentec ADM 3A/5 and ADM 31, TeleVideo 910, 910+, and 925E). The WY-30 includes a touch-tilt mechanism for the display; a height-adjustable arm is optional.

The WY-50 is a fully featured smart terminal. It effectively replaced the original WY-100 terminal; it includes a 14- ➤



*The WY-30 contains smart terminal features and carries a purchase price of \$399. The terminal includes a 14-inch display with a touch-tilt mechanism; a height-adjustable arm, shown here at the lower right, is optional.*

Six general-purpose ASCII, ANSI, and Digital Equipment Corporation-compatible display terminals are currently manufactured by Wyse Technology. These models provide a variety of smart terminal emulations and a wide range of features. ANSI X3.64 compatibility is available on the WY-60 and WY-75, Digital Equipment Corporation VT220 compatibility on the WY-85, and color display capability can be found on the high-end member of the product line, the WY-350. The Wyse Technology terminals offer a variety of advanced features, as well as an attractive ergonomic design, at a low price.

**MODELS:** WY-30, WY-50, WY-60, WY-75, WY-85, and WY-350.

**DISPLAY:** The WY-350 contains a 15-inch display screen; all other models feature a 14-inch display screen. The WY-350 is a color display, while all others are monochrome displays. A 24-line by 80 or 132-character display format is selectable on all models except the WY-30, which accommodates only 80 characters per line, and the WY-60, which provides a 44-line by 80- or 132-character display format.

**KEYBOARD:** All models include a detached, typewriter-style keyboard with a low-profile design.

**COMPETITION:** TeleVideo Systems, Applied Digital Data Systems (ADDS), Esprit Systems, Visual Technology, ITT Qume, Liberty Electronics, CIE Terminals, Zentec, and several others.

**PRICE:** Purchase prices for the Wyse Technology display terminals range from \$399 to \$999.

## CHARACTERISTICS

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

**DATE OF ANNOUNCEMENT:** WY-50—September 1983; WY-75—February 1984; WY-350—September 1984; WY-85—January 1985; WY-30 and WY-60—April 1986.

**DATE OF FIRST DELIVERY:** WY-50—November 1983; WY-75—February 1984; WY-350—December 1984; WY-85—January 1985; WY-30 and WY-60—April 1986.

**NUMBER DELIVERED TO DATE:** Over 750,000.

**SERVICED BY:** Wyse Technology, authorized service centers, and TRW (for out-of-warranty repairs). ➤

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▷ inch display screen with a tilt/swivel adjustment and 80-/132-column display capability, and a low-profile keyboard. Standard on the WY-50 are a full range of editing features, visual attributes, and terminal emulations (Wyse WY-100 and Zentec ADM 31 in native mode, as well as ADDS Viewpoint, Hazeltine 1500, and TeleVideo 910, 912, 920, and 925).

The WY-60, a high performance ASCII, ANSI, PC terminal, contains all of the features of the WY-50, plus additional emulations (TeleVideo 950 and 955; IBM 3101, 3161, and PC terminal; Data General Dasher D200; DEC VT52 and VT100; and WY-75), up to seven pages of display memory, green, amber, or paper white characters, and a bidirectional auxiliary port. The WY-60 also offers multiple keyboards.

The WY-75 is an ANSI X3.64-compatible version of the WY-50. It contains all of the ergonomics of the WY-50, and conforms to a subset of the ANSI X3.64 standard for terminal operation. The WY-75 is software compatible with the DEC VT100 for operation with DEC or Unix-based software systems. The newer WY-85 also features ANSI X3.64 compatibility, and emulates the DEC VT220.

The WY-350 is Wyse's color display, replacing the company's older WY-300 color terminal. The WY-350 contains the same terminal design as the WY-50 and WY-75, including a larger 14-inch tilt/swivel display with an 80-/132-column display capacity, and a detached, low-profile keyboard. A total of 64 colors are displayable, selectable from 16 predefined color scheme palettes; black must be either the foreground or background color for each individual character. The WY-350 features a full range of editing capabilities and visual attributes, and is compatible with the WY-50, ADDS Viewpoint, Hazeltine 1500, Zentec ADM 31, and TeleVideo 910, 920, and 925.

### COMPETITIVE POSITION

With over 750,000 terminals shipped since 1982, Wyse Technology is now generally considered the number one independent terminal supplier in the industry. Wyse has combined advanced features with low prices to successfully compete in a market that has been plagued by plummeting price tags and little product differentiation among the vendors. When Qume, an ITT subsidiary, broke the \$400 price barrier with the QVT-101 in the summer of 1985, Wyse quickly responded with the WY-30. These declining prices have caused a shakeout in the industry, with many terminal vendors experiencing financial difficulties while others have conceded to merge with, or to be acquired by, other companies. Despite the problems afflicting the computer industry in general, the market for display terminals will remain a healthy one for some time to come. One indication of this is IBM's presence in the 316X terminal family, a product line that marks IBM as a strong contender in the low end of the market.

For years, the ASCII terminal market was dominated by three traditional terminal vendors: Zentec, Applied Digital ▷

### ▶ MODELS

Wyse Technology currently offers six display models:

- **WY-30**—an entry-level smart terminal with a 14-inch display screen and 80-column display capability. Terminal emulations available include ADDS Viewpoint A2 and Regent 25; Zentec ADM 3A/5 and ADM 31; TeleVideo 910, 910+, 925, and 925E; and Wyse WY-30, WY-50, and WY-100.
- **WY-50**—a smart terminal that includes a 14-inch display screen and features 80-/132-column display capability. Terminal emulations available include Zentec ADM 31 (native mode); TeleVideo 910, 920, and 925; ADDS Viewpoint; Hazeltine 1500; and Wyse WY-100.
- **WY-60**—a high performance ASCII, ANSI, and PC terminal with a 14-inch flat-face screen which displays green, amber, or paper white phosphor characters in a 44 line by 80-/132 column format. An integral tilt/swivel base and an optional height adjustment arm are provided.
- **WY-75**—DEC VT100/ANSI X3.64-compatible terminal.
- **WY-85**—an ANSI X3.64-compatible terminal that emulates the DEC VT220.
- **WY-350**—a smart terminal with 64-color display capability, selectable from 16 predefined color scheme palettes. The WY-350 includes a 15-inch display screen with an 80-/132-column display format.

### TRANSMISSION SPECIFICATIONS

The WY-30, WY-50, WY-60, WY-75, WY-85, and WY-350 transmit asynchronously, in half- or full-duplex modes, at speeds ranging from 50 to 38,400 bps. All models contain an RS-232-C modem interface; in addition, an auxiliary RS-232-C interface is available on all models, which transmits at speeds from 50 to 19,200 bps. Character format for all models includes 7 or 8 data bits, 1 or 2 stop bits, and odd, mark, even, or no parity.

### DEVICE CONTROL

The Wyse terminals feature conversational or block mode operation. Communications parameters, operating modes, function key sequences, and other operating parameters can be selected via the keyboard or the host computer in the terminals' soft setup mode. Visual attributes available on all models include normal, blink, blank, reverse, underscore, and dim, in any combination. Editing functions include insert/delete line or character, erase memory, erase to end of line/field, and erase to end of screen. The cursor may be defined as a blinking or solid block or underline. Jump scrolling or variable speed smooth scrolling is also user selectable. One page of memory is standard for all models; split screen capability is also standard. Data fields can be specified as protected or unprotected.

The WY-30 includes four operating modes: Wyse WY-30, ADDS Viewpoint A2, and TeleVideo 910 and 925. The terminal also includes the following additional terminal emulations: Wyse WY-50 and WY-100, ADDS Regent 25, Lear Siegler ADM 3A/5 and ADM 31, and TeleVideo 910+ and 925E. Four dedicated function keys are included, shiftable to 16; 25 additional keys may be programmed, for a total of 41 programmable functions.

The WY-50 features a native mode, in which it is compatible with the older Wyse WY-100 terminal as well as with the Zentec ADM 31. Additional modes are available in which the WY-50 is compatible with the ADDS Viewpoint, Hazeltine 1500, and the TeleVideo 910, 920, or 925. A total of 16 ▶

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▷ Data Systems, and Esprit Systems (formerly the Terminals Division of Hazeltine). TeleVideo sprang to the head of this market in the late '70s. Wyse Technology, ITT Qume, and Liberty Electronics are relative newcomers that have managed to carve out a healthy share of this market, at the expense of the traditional leaders. Currently, the competition in the market is stiffer than ever. It is a situation that has caused discomfort among the vendors, but the falling price levels have meant good news for users.

### ADVANTAGES AND RESTRICTIONS

Wyse Technology has added a high-end terminal, the WY-60, to its terminal product line. This model, which offers ASCII, ANSI, and PC terminal personalities, provides compatibility with a wide range of systems and applications. This gives the company a strong presence in emerging markets requiring sophisticated functions.

One key to Wyse's success in this market is the price/performance ratio available with its terminals. Features like the standard 14-inch display screen, multiple emulations, function keys, and 80-/132-column display capability, coupled with the terminals' low price tags, have helped Wyse achieve the top spot in the market.

### USER REACTION

In Datapro's 1986 Terminal Users Survey, conducted in conjunction with *Data Communications* magazine, a total of 36 users of Wyse Technology terminals responded; 23 were users of the WY-50, 7 were users of the WY-75, and the remaining six were unspecified. In all, these users represented an installed base of 2,134 units. The users were asked to rate their terminals with respect to seven different categories. Their ratings are summarized in the following table.

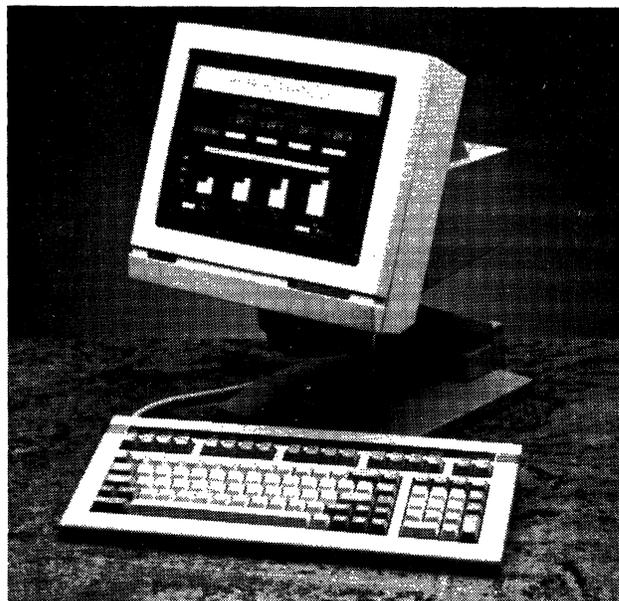
	Excellent	Good	Fair	Poor	WA*
Overall performance	14	17	5	0	3.3
Ease of operation	15	19	2	0	3.4
Display clarity	17	15	4	0	3.4
Keyboard feel & usability	13	14	7	2	3.1
Ergonomics	20	12	4	0	3.4
Hardware reliability	11	12	9	3	2.9
Mfr.'s maintenance service/technical support	2	16	7	7	2.4

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

The users were also asked whether or not they would recommend the Wyse terminals to other users. Twenty-six users answered that they would; two said that they would not. The remaining eight users were undecided or did not respond to the question. □

▷ user-programmable function keys provide the user with 32 possible codes. Function key labels are displayed on the screen's 26th display line.

The WY-60 offers up to seven pages of screen memory as standard. Popular operating systems such as AOS, Pick, Unix/Xenix, and VMS are among the many environments that the WY-60 is suited for.



*The Wyse WY-60 provides a range of features and configurations previously unavailable to full-function users in the ASCII market including a choice of display screens, keyboards, display formats, and fonts.*

The WY-75 contains ergonomic features identical to those found on the WY-50. However, the terminal conforms to the ANSI X3.64 standard, making it software compatible with the DEC VT100 terminal.

The WY-85, also ANSI X3.64 compatible, contains all of the features of the WY-75, as well as compatibility with the DEC VT220 terminal. The WY-85 contains 15 programmable function keys, with 30 combinations available.

The WY-350 is a color display with smart terminal features. The WY-350 can display up to 64 different colors. The colors are selected from 1 of 16 predefined color scheme palettes; the palettes can be interchanged by the user at any time except during setup. It is required that black be either the foreground or background color for each character displayed. The user can create additional color schemes while in setup mode. The WY-350 is compatible with the WY-50, as well as with the ADDS Viewpoint, Hazeltine 1500, Lear Siegler ADM 31, and TeleVideo 910, 920, and 925.

### COMPONENTS

**CRT DISPLAY UNIT:** The WY-50, WY-60, WY-75, and WY-85 include a 14-inch (diagonally measured) display screen with tilt/swivel capability. The WY-30 and WY-60 also include a 14-inch flat screen; a height-adjustable arm is optional. The WY-350 features a 15-inch display screen. Display capacity for all models (except the WY-30 and WY-60) is selectable at 1,920 or 3,168 characters, arranged in 24 lines of 80 or 132 columns. The WY-30 can display 1,920 characters in a 24-line by 80-character format. A 25th and 26th display line are available for terminal status information and function key identification. The WY-60 can display 3,520 characters arranged in a 44-line by 80-character format or 5,808 characters arranged in a 44-line by 132-character format. Characters are formed using a 7-by-12 dot matrix in a 10-by-16 cell. Characters are formed using a 7-by-13 dot matrix in a 10-by-13 cell on the WY-50, WY-75, and WY-350; via a 7-by-11 dot matrix in a 10-by-12 cell on the WY-30; via a 7-by-12 dot matrix in a 10-by-13 cell on the WY-50+; and via a 7-by-9 dot matrix in a 10-by-10 cell on

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▶ the WY-85. Green phosphor characters are standard on the WY-30, WY-50, WY-75, and WY-85. Green, amber, or paper white phosphor characters are displayed on the WY-60. The WY-350 can display up to 64 colors; black must be either the foreground or background color for each character displayed. The full 128-character ASCII set is displayable on all models, with 32 control codes and line drawing graphics.

**KEYBOARD:** A detached keyboard with a typewriter-style key layout is standard on all models. A total of 101 keys are contained on the WY-50, WY-75, and WY-350; the WY-30 contains 83 keys, the WY-60 offers five keyboard options, and the WY-85 contains 105 keys. All are arranged in typewriter, numeric pad, and function key sections. Sixteen user-programmable function keys are included on all models except the WY-30, WY-60, and WY-85, providing 32 possible combinations. The WY-30 includes 4 dedicated function keys, shiftable to 16, plus 25 additional programmable keys. Programmable keys on the WY-60 are dependent upon the keyboard selected. The WY-85 contains 15 programmable function keys, with 30 functions available. All keyboards feature a low-profile design that conforms to the European DIN specification for ergonomics. A two-position tilt adjustment is standard; the keyboard attaches to the monitor via a 6-foot coiled cord.

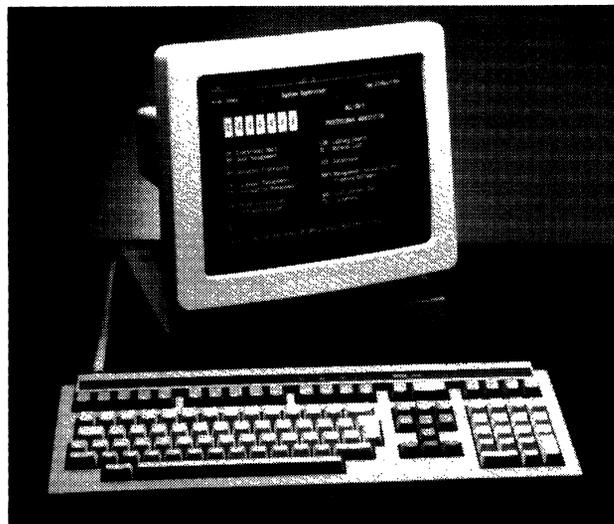
### PRICING

Wyse Technology display terminals are available for purchase only, through a network of distributors and OEMs in the U.S.; volume discounts are available. Service is performed by Wyse Technology authorized service centers; TRW handles out-of-warranty repairs. ■

### EQUIPMENT PRICES

	<u>Purchase Price (\$)</u>
WY-30	399
WY-50	499
WY-60	599
WY-75	795
WY-85	599
WY-350	999

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*The WY-85 is Wyse Technology's DEC VT220 emulator. The terminal features ANSI X3.64 compatibility, a 14-inch tilt/swivel display with 80/132-column display capability, and a low-profile keyboard.*

## MANAGEMENT SUMMARY

**UPDATE:** This report includes information on three new Wyse terminals: the WY-30, WY-50+, and WY-85. The WY-30 carries a single-unit purchase price of \$399, making it one of the lowest priced terminals of its kind on the market. Since the last version of this report, Wyse Technology has climbed to the number one position among independent ASCII terminal vendors.

Wyse Technology was formed in August 1981, and began shipping its first product, the WY-100 smart terminal, in April 1982. Since that time, the company has climbed to the number one spot among all vendors in the highly competitive ASCII display terminal market, shipping about 5,000 units per week. Its products include monochrome smart terminals, a color terminal, and the WYSEpc microcomputer. The current members of the Wyse terminal product line are the WY-30, WY-50, WY-50+, WY-75, WY-85, and WY-350. These models replaced Wyse's initial offerings, the WY-100, WY-200, and WY-300.

The WY-30 follows Qume's QVT-101 in breaking the \$400 price barrier. With a price tag of \$399, the WY-30 is an entry-level terminal with an impressive list of features. These include a 14-inch display screen, low-profile keyboard, visual attributes, split screen, four function keys, and multiple emulations (Wyse WY-50 and WY-100, ADDS Viewpoint A2 and Regent 25, Lear Siegler ADM 3A/5 and ADM 31, TeleVideo 910, 910+, and 925E). The WY-30 includes a Touch-Tilt mechanism for the display; a height-adjustable arm is optional.

The WY-50 and WY-50+ are fully featured smart terminals. The WY-50 effectively replaced the original WY-100

Wyse Technology manufactures a line of general-purpose ASCII display terminals. Six models are currently available, providing a variety of smart terminal emulations and a wide range of features. ANSI X3.64 compatibility is available on the WY-75 and WY-85, and color display capability can be found on the high-end member of the product line, the WY-350. The Wyse Technology terminals offer a variety of advanced features, as well as an attractive ergonomic design, at a low price.

**MODELS:** WY-30, WY-50, WY-50+, WY-75, WY-85, and WY-350.

**DISPLAY:** The WY-350 contains a 15-inch display screen; all other models feature a 14-inch display screen. The WY-350 is a color display, while all others are monochrome displays. A 24-line by 80- or 132-character display format is selectable on all models except the WY-30, which accommodates only 80-characters per line.

**KEYBOARD:** All models include a detached, typewriter-style keyboard with a low-profile design.

**COMPETITION:** TeleVideo Systems, Applied Digital Data Systems, Lear Siegler, Esprit Systems, Visual Technology, Qume, Liberty Electronics, CIE Terminals, and several others.

**PRICE:** Purchase prices for the Wyse Technology display terminals range from \$399 to \$1,295.

## CHARACTERISTICS

**VENDOR:** Wyse Technology, Inc., 3571 North First Street, San Jose, CA 95134. Telephone (408) 946-3075.

**DATE OF ANNOUNCEMENT:** WY-50—September 1983; WY-75—February 1984; WY-350—September 1984; WY-85—January 1985; WY-30 and WY-50+—August 1985.

**DATE OF FIRST DELIVERY:** WY-50—November 1983; WY-75—February 1984; WY-350—December 1984; WY-85—January 1985; WY-30 and WY-50+—September 1985.

**NUMBER DELIVERED TO DATE:** Over 250,000.

**SERVICED BY:** Wyse Technology, authorized service centers, and TRW (for out of warranty repairs).

## MODELS

Wyse Technology currently offers six display models:

- WY-30—an entry-level smart terminal with a 14-inch display screen and 80-column display capability. Termi-

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▶ terminal; it includes a 14-inch display screen with a tilt/swivel adjustment and 80-/132-column display capability, and a low-profile keyboard. Standard on the WY-50 are a full range of editing features, visual attributes, and terminal emulations (Wyse WY-100 and Lear Siegler ADM 31 in native mode, as well as ADDS Viewpoint, Hazeltine 1500, TeleVideo 910 and 925). The WY-50+ contains all of the features of the WY-50, plus additional emulations (TeleVideo 920 and 950, IBM 3101, Data General Dasher D200), extra display memory, amber characters, and a bidirectional auxiliary port.

The WY-75 is an ANSI standard X3.64-compatible version of the WY-50. It contains all of the features of the WY-50, and conforms to a subset of the ANSI X3.64 standard for terminal operation. The WY-75 is software-compatible with the DEC VT100 for operation with DEC or Unix-based software systems. The newer WY-85 also features ANSI X3.64 compatibility, and emulates the DEC VT220.

The WY-350 is Wyse's color display, replacing the company's older WY-300 color terminal. The WY-350 contains the same terminal design as the WY-50 and WY-75, including a larger 15-inch tilt/swivel display with an 80-/132-column display capacity, and a detached, low-profile keyboard. A total of 64 colors are displayable, selectable from 16 predefined color scheme palettes; black must be either the foreground or background color for each individual character. The WY-350 features a full range of editing capabilities and visual attributes, and is compatible with the WY-50, ADDS Viewpoint, Hazeltine 1500, Lear Siegler ADM 31, and TeleVideo 910, 920, and 925.

### COMPETITIVE POSITION

With over 250,000 terminals shipped since 1982, Wyse Technology is now generally considered the number one independent terminal supplier in the industry, supplanting TeleVideo Systems. Wyse has combined advanced features with low prices to successfully compete in a market that has been plagued by plummeting price tags and little product differentiation among the vendors. When Qume, an ITT subsidiary, broke the \$400 price barrier with the QVT-101 in the summer of 1985, Wyse quickly responded with the WY-30. Many industry observers believe that these price levels will eventually cause a shakeout in the industry. Although many terminal vendors are currently experiencing financial difficulties, this shakeout is still conjecture at this point. Datapro believes that despite these problems, and the problems afflicting the computer industry in general, the market for display terminals will remain a healthy one for some time to come. One indication of this is IBM's recent introduction of its 316X terminal family, a product line that marks IBM as a strong contender in the low end of the market for the first time.

For years the ASCII terminal market was dominated by three traditional terminal vendors: Lear Siegler, Applied Digital Data Systems, and Esprit Systems (formerly the Terminals Division of Hazeltine). TeleVideo sprang to the head of this market in the late '70s. Wyse Technology, Qume, and Liberty Electronics are relative newcomers that

▶ nal emulations available include: ADDS Viewpoint A2 and Regent 25, Lear Siegler ADM 3A/5 and ADM 31, TeleVideo 910, 910+, 925, and 925E, and Wyse WY-30, WY-50, and WY-100.

- WY-50—a smart terminal that includes a 14-inch display screen and features 80-/132-column display capability. Terminal emulations available include: Lear Siegler ADM 31 (native mode), TeleVideo 910, 920, and 925, ADDS Viewpoint, Hazeltine 1500, and Wyse WY-100.
- WY-50+—an enhanced version of the WY-50, with extra screen memory, an amber display, and a bidirectional auxiliary port. Additional emulations include: Data General Dasher D200, IBM 3101, TeleVideo 950, and Wyse WY-50.
- WY-75—a version of the WY-50 that emulates the DEC VT100 and conforms to the ANSI X3.64 standard.
- WY-85—an ANSI X3.64-compatible terminal that emulates the DEC VT220.
- WY-350—a smart terminal with 64-color display capability, selectable from 16 predefined color scheme palettes. The WY-350 includes a 15-inch display screen with an 80-/132-column display format.

### TRANSMISSION SPECIFICATIONS

The WY-30, WY-50, WY-50+, WY-75, WY-85, and WY-350 transmit asynchronously, in half- or full-duplex modes, at speeds ranging from 50 to 38,400 bps. All models contain an RS-232-C modem interface; in addition, an auxiliary RS-232-C interface is available on all models, which transmits at speeds from 50 to 19,200 bps (the auxiliary port on the WY-50+ is bidirectional). Character format for all models includes 7 or 8 data bits, 1 or 2 stop bits, and odd, even, or no parity.

### DEVICE CONTROL

The Wyse terminals feature conversational or block mode operation. Communications parameters, operating modes, function key sequences, and other operating parameters can be selected via the keyboard or the host computer in the terminals' soft set-up mode. Visual attributes available on all models include: normal, blink, blank, reverse, underscore, and dim, in any combination. Editing functions include insert/delete line or character, erase memory, erase to end of line/field, and erase to end of screen. The cursor may be defined as a blinking or solid block or underline. Jump scrolling or variable speed smooth scrolling is also user-selectable. One page of memory is standard for all models; split screen capability is also standard. Data fields can be specified as protected or unprotected.

The WY-30 includes four operating modes: Wyse WY-30, ADDS Viewpoint A2, and TeleVideo 910 and 925. The terminal also includes the following additional terminal emulations: Wyse WY-50 and WY-100, ADDS Regent 25, Lear Siegler ADM 3A/5 and ADM 31, and TeleVideo 910+ and 925E. Four dedicated function keys are included, shiftable to 16; 25 additional keys may be programmed, for a total of 41 programmable functions.

The WY-50 features a native mode in which it is compatible with the older Wyse WY-100 terminal, as well as with the Lear Siegler ADM 31. Additional modes are available in which the WY-50 is compatible with the ADDS Viewpoint, Hazeltine 1500, and the TeleVideo 910, 920, or 925. A total of 16 user-programmable function keys provide the user with 32 separate codes. Function key labels are displayed on the screen's 26th display line.

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▷ have managed to carve out a healthy share of this market, at the expense of the traditional leaders. Currently, the competition in the market is stiffer than ever. It is a situation that has caused discomfort among the vendors, but the falling price levels have meant good news for users.

### ADVANTAGES AND RESTRICTIONS

In the past year, Wyse Technology has broadened its terminal product line with three new models. The WY-30 gives the company a strong presence at the low end of the market, while the WY-50+ is an enhanced version of the company's leading seller, the WY-50. The WY-85 is Wyse's second ANSI X3.64 terminal, and provides DEC VT220 emulation. Coupled with the three existing models, these new offerings give Wyse customers a good range of options; the company lacks only a graphics-dedicated terminal to make its line complete.

One key to Wyse's success in this market is the price/performance ratio available with its terminals. Features like the standard 14-inch display screen, multiple emulations, function keys, and 80-/132-column display capability, coupled with the terminals' low price tags, have helped Wyse achieve the top spot in the market.

### USER REACTION

During the months of November and December 1984, Datapro, in conjunction with *Data Communications* magazine, conducted a mail survey of display terminal, voice/data workstation, and cluster controller users. The 1985 Terminal Users Survey was the result. For the first time, Datapro received user responses on the Wyse Technology display terminals. A total of 18 Wyse users responded, 14 of which were users of the WY-50. In all, these users represented an installed base of 378 units. The users were asked to rate their terminals with respect to seven different categories. Their ratings are summarized in the following table.

	Excellent	Good	Fair	Poor	WA*
Overall performance	8	9	1	0	3.4
Ease of operation	8	9	0	0	3.5
Display clarity	7	11	0	0	3.4
Keyboard feel & usability	8	10	0	0	3.4
Ergonomics	10	8	0	0	3.4
Hardware reliability	4	10	3	1	2.9
Mfr.'s maintenance service /technical support	3	9	2	2	2.8

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

As you can see, the Wyse terminals debuted with impressive ratings. As part of this survey, the users were asked to name the factors which *most* influenced their decision to purchase the Wyse terminals. Fifty percent of the users named price as their main purchase reason, while 44 percent chose the terminals because of their features and/or functionality. The remaining 6 percent named vendor recognition or loyalty as the main factor in their buying decision.



*The new WY-30 contains smart terminal features and carries a purchase price of \$399. The terminal includes a 14-inch display with a touch-tilt mechanism; a height-adjustable arm, shown here at the lower right, is optional.*

▶ The WY-50+ contains all of the features of the WY-50, plus the following enhancements: two pages of screen memory as standard, with up to four pages optional; emulation of the Data General Dasher D200, IBM 3101, TeleVideo 950, and Wyse WY-50.

The WY-75 contains features identical to those found on the WY-50. However, the terminal conforms to the ANSI X3.64 standard, making it software-compatible with the DEC VT100 terminal. The WY-75 does not support some features found on the VT100 with the Advanced Video Option or the VT102; these are double-high/double-wide characters, alternate graphics character set, and answer-back. The WY-75 does support 132-column operation, and utilizes all 24 lines in 132-column mode.

The WY-85, also ANSI X3.64-compatible, contains all of the features of the WY-75, as well as compatibility with the DEC VT220 terminal. The WY-85 contains 15 programmable function keys, with 30 combinations.

The WY-350 is a color display with smart terminal features. The WY-350 can display up to 64 different colors. The colors are selected from 1 of 16 predefined color scheme palettes; the palettes can be interchanged by the user at any time except during setup. It is required that black be either the foreground or background color for each character displayed. The user can create additional color schemes while in set-up mode. The WY-350 is compatible with the WY-50, as well as with the ADDS Viewpoint, Hazeltine 1500, Lear Siegler ADM 31, and TeleVideo 910, 920, and 925.

### COMPONENTS

**CRT DISPLAY UNIT:** The WY-50, WY-50+, WY-75, and WY-85 include a 14-inch (diagonally measured) display screen with tilt/swivel capability. The WY-30 also includes a 14-inch screen; however, it has only a touch-tilt capability. A tilt/swivel base and height-adjustable arm are optional. The WY-350 features a 15-inch display screen. Display capacity for all models except the WY-30 is selectable at 1,920 or 3,168 characters, arranged in 24 lines of 80 or 132 columns. The WY-30 can display 1,920 characters in a 24-line by 80-character format. A 25th and 26th display line are available for terminal status information and function key identification. Characters are formed using a 7-by-13 dot matrix in a 10-by-13 cell on the WY-50, WY-75, and ▶

## Wyse Technology Display Terminals

▷ The users were also asked whether or not they would recommend the Wyse terminals to other users. Fifteen of the users answered that they would; none said that they would not. The remaining three users were undecided or did not respond to the question. □

▶ WY-350; via a 7-by-11 dot matrix in a 10-by-12 cell on the WY-30; via a 7-by-12 dot matrix in a 10-by-13 cell on the WY-50+; and via a 7-by-9 dot matrix in a 10-by-10 cell on the WY-85. Green phosphor characters are standard on the WY-30, WY-50, WY-75, and WY-85. Amber phosphor characters are displayed on the WY-50+. The WY-350 can display up to 64 colors; black must be either the foreground or background color for each character displayed. The full 128-character ASCII set is displayable on all models, with 32 control codes and line drawing graphics.

**KEYBOARD:** A detached keyboard with a typewriter-style key layout is standard on all models. A total of 101 keys are contained on all models except the WY-30 (83 keys) and WY-85 (105 keys), arranged in typewriter, numeric pad, and function key sections. Sixteen user-programmable function keys are included on all models except the WY-30 and WY-85, providing 32 separate codes. The WY-30 includes 4 dedicated function keys, shiftable to 16, plus 25 additional programmable keys. The WY-85 contains 15 programmable function keys, with 30 functions. All keyboards feature a low-profile design that conforms to the European DIN

specification for ergonomics. A two-position tilt adjustment is standard; the keyboard attaches to the monitor via a 6-foot coiled cord.

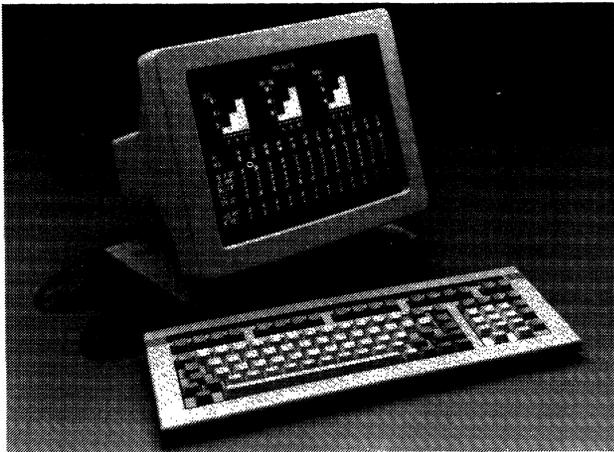
### PRICING

Wyse Technology display terminals are available for purchase only, through a network of distributors and OEMs in the U.S.; volume discounts are available. Service is performed by Wyse Technology authorized service centers; TRW handles out-of-warranty repairs.

### EQUIPMENT PRICES

	Purchase Price (\$)
WY-30	399
WY-50	599
WY-50+	699
WY-75	795
WY-85	799
WY-350	1,295 ■

# Wyse Technology Display Terminals



*The WY-50 is Wyse Technology's low-end smart terminal. The WY-50 provides a broad range of smart terminal features at the single-quantity price of \$695. A particularly attractive feature of the WY-50 is the terminal's 14-inch display screen, which accommodates selectable 80-/132-column formats.*

## MANAGEMENT SUMMARY

Wyse Technology was formed in August 1981, and began shipping its first product, the WY-100 smart terminal, in April 1982. Since that time, the company has carved out a healthy share of the highly competitive ASCII display terminal market. Its products include low-end smart terminals, a color display, and the WY-1000 microcomputer. The current members of the Wyse terminal product line are the WY-50, WY-75, and the recently unveiled WY-350. These models replace the older members of the family, the WY-100, WY-200, and WY-300.

The WY-50 and WY-75 are low-end smart terminals with several advanced features not normally found in their price range. The WY-50 effectively replaced the original WY-100 terminal. It includes a 14-inch display screen with 80-/132-column display capability and a low-profile keyboard. Standard on the WY-50 are a full range of editing features, visual attributes, and terminal emulations (Wyse WY-100 and Lear Siegler ADM 31 in native mode, as well as ADDS Viewpoint, Hazeltine 1500, and TeleVideo 910/925). The WY-50 also boasts an attractive, ergonomic display design that features a tilt/swivel display and reduced footprint size.

The WY-75 is an ANSI standard X3.64-compatible version of the WY-50. It contains all of the features of the WY-50, and conforms to a subset of the ANSI X3.64 standard for terminal operation. The WY-75 is software-compatible with the DEC VT100 for operation with DEC or Unix-based software systems.

The WY-350 is Wyse's color display, replacing the company's older WY-300 color terminal. The WY-350 contains the same terminal design as the WY-50 and WY-75, including a larger 15-inch tilt/swivel display with an 80-/132-column display capacity, and a detached, low-profile

Wyse Technology manufactures a line of general-purpose ASCII display terminals. Three models are currently available, providing a variety of smart terminal emulations and a wide range of features. ANSI X3.64 compatibility is available on the WY-75, and color display capability can be found on the newest member of the product line, the WY-350. The Wyse Technology terminals offer a variety of advanced features, as well as an attractive ergonomic design, at a low price.

**MODELS:** WY-50, WY-75, and WY-350.

**DISPLAY:** The WY-50 and WY-75 feature a 14-inch display screen; the WY-350 contains a 15-inch screen. The WY-350 is a color display, while the WY-50 and WY-75 are monochrome displays. A 24-line by 80- or 132-character display format is selectable on all models.

**KEYBOARD:** All models include a detached, typewriter-style keyboard with a low-profile design. A total of 16 programmable function keys are included, shiftable to provide 32 functions.

**COMPETITION:** TeleVideo Systems, Applied Digital Data Systems, Lear Siegler, Esprit Systems, Visual Technology, Qume, Liberty Electronics, CIE Terminals, and several others.

**PRICE:** Purchase prices for the Wyse Technology display terminals range from \$695 to \$1,295.

## CHARACTERISTICS

**VENDOR:** Wyse Technology, Inc., 3040 North First Street, San Jose, CA 95134. Telephone (408) 946-3075.

**DATE OF ANNOUNCEMENT:** WY-50—September 1983; WY-75—February 1984; WY-350—September 1984.

**DATE OF FIRST DELIVERY:** WY-50—November 1983; WY-75—February 1984; WY-350—November or December 1984 (anticipated).

**NUMBER DELIVERED TO DATE:** Over 80,000 (all products).

**SERVICED BY:** Wyse Technology, authorized service centers, and TRW (for out of warranty repairs).

## MODELS

Wyse Technology currently offers three display models:

- **WY-50**—a smart terminal that includes a 14-inch display screen and features 80-/132-column display capability.

## Wyse Technology Display Terminals

▷ keyboard. A total of 64 colors are displayable, selectable from 16 predefined color scheme palettes; black must be either the foreground or background color for each individual character. The WY-350 features a full range of editing capabilities and visual attributes, and is compatible with the WY-50, ADDS Viewpoint, Hazeltine 1500, Lear Siegler ADM 31, and TeleVideo 910, 920, and 925.

Wyse also markets the WY-1000 microcomputer, a desktop system that is actually an add-on to the WY-50 display terminal. The WY-1000 is based on an Intel 80186 microprocessor, with 128K bytes of RAM memory (expandable to 768K bytes). Dual double-sided 5¼-inch diskette drives are included, and room for two option cards is available within the WY-1000 enclosure. The MS-DOS operating system is supported.

### COMPETITIVE POSITION

Wyse Technology is one in a group of relative newcomers to the ASCII terminal market that is currently mounting a serious threat to the traditional leaders in this highly competitive market. Along with Visual Technology, Qume, and Liberty Electronics, Wyse has carved out a significant share of the market and poses a threat to the top four vendors, TeleVideo Systems, Applied Digital Data Systems (ADDS), Lear Siegler, and Esprit Systems. Like many of its contemporaries, Wyse has coupled advanced features and ergonomic design with a low price in order to establish itself. The WY-50 is currently a price leader in the low-end of the market.

### ADVANTAGES AND RESTRICTIONS

The WY-50 and WY-75 are the first members of an anticipated family of displays from Wyse. These terminals provide an impressive array of smart terminal features at a low price. The key advantage of these terminals is the 14-inch screen and 132-column display capability; these features are not available from the competition at a comparable price. The new Wyse terminals also feature a very attractive ergonomic design that takes up very little desk space. The WY-350 joins this family as the color member; it contains the same design features as the WY-50 and WY-75, with a somewhat larger (15-inch) screen.

At this point, Wyse provides a low-end smart terminal, an ANSI X3.64-compatible terminal, and a color unit. The only real gap in the line is the lack of a graphics-dedicated model. However, Wyse is expected to broaden its product line in the very near future, as indicated by the recent introduction of the WY-350. The WY-1000 microcomputer is an attractive option for users wishing to upgrade their display terminals and add local processing capabilities, without having to purchase new equipment.

▶ Terminal emulations available include: Lear Siegler ADM 31 (native mode), TeleVideo 910/925, ADDS Viewpoint, and Hazeltine 1500.

- WY-75—a version of the WY-50 that emulates the DEC VT100 and conforms to the ANSI X3.64 standard.

- WY-350—a smart terminal with 64-color display capability, selectable from 16 predefined color scheme palettes. The WY-350 includes a 15-inch display screen with an 80-/132-column display format.

### TRANSMISSION SPECIFICATIONS

The WY-50, WY-75, and WY-350 transmit asynchronously, in half- or full-duplex modes, at speeds ranging from 50 to 38,400 bps. All models contain an RS-232-C modem interface; in addition, an auxiliary RS-232-C interface is available on all models, which transmits at speeds from 50 to 19,200 bps. Transmission speed, character size, and parity can be specified independently for the main and auxiliary interface on the WY-50 and WY-75. Character format for all models includes 7 or 8 data bits, 1 or 2 stop bits, and odd, even, or no parity.

### DEVICE CONTROL

The WY-50, WY-75, and WY-350 feature conversational or block mode operation. Communications parameters, operating modes, function key sequences, and other operating parameters can be selected via the keyboard or the host computer in the terminals' soft set-up mode. Visual attributes available on all models include: normal, blink, blank, reverse, underscore, and dim, in any combination. Editing functions include insert/delete line or character, erase memory, erase to end of line/field, and erase to end of screen. The cursor may be defined as a blinking or solid block or underline. Jump scrolling or variable speed smooth scrolling is also user-selectable. One page of memory is standard for all models. Data fields can be specified as protected or unprotected.

The WY-50 features a native mode in which it is compatible with the older Wyse WY-100 terminal, as well as with the Lear Siegler ADM 31. Additional modes are available in which the WY-50 is compatible with the ADDS Viewpoint, Hazeltine 1500, and the TeleVideo 910 or 925. A total of 16 user-programmable function keys provide the user with 32 separate codes. Function key labels are displayed on the screen's 26th display line.

The WY-75 contains features identical to those found on the WY-50. However, the terminal conforms to the ANSI X3.64 standard, making it software-compatible with the DEC VT100 terminal. The WY-75 does not support some features found on the VT100 with the Advanced Video Option or the VT102; these are: double high/double wide characters, alternate graphics character set, and answer back. The WY-75 does support 132-column operation, and utilizes all 24 lines in 132-column mode.

The WY-350 is a color display with smart terminal features. The WY-350 can display up to 64 different colors. The colors are selected from 1 of 16 predefined color scheme palettes; the palettes can be interchanged by the user at any time except during set-up. It is required that black be either the foreground or background color for each character displayed. The user can create additional color schemes while in set-up mode. The WY-350 is compatible with the WY-50, as well as with the ADDS Viewpoint, Hazeltine 1500, Lear Siegler ADM 31, and TeleVideo 910, 920, and 925.

### COMPONENTS

**CRT DISPLAY UNIT:** The WY-50 and WY-75 include a 14-inch (diagonally measured) display screen with tilt/swivel capability. The WY-350 features a 15-inch display screen. Display capacity for all three models is selectable at 1920 or 3168 characters, arranged in 24 lines of 80 or 132 columns. A 25th and 26th display line are available for terminal status information and function key identification. Charac-

## Wyse Technology Display Terminals

ters are formed using a 7-by-13 dot matrix in a 10-by-13 cell. Green phosphor characters are standard on the WY-50 and WY-75. The WY-350 can display up to 64 colors; black must be either the foreground or background color for each character displayed. The full 128-character ASCII set is displayable on all models, with 32 control codes and line drawing graphics.

**KEYBOARD:** A detached keyboard with a typewriter-style key layout is standard on all models. A total of 101 keys are contained, arranged in typewriter, numeric pad, and function key sections. Sixteen user-programmable function keys are included, providing 32 separate codes. The keyboard features a low-profile design that conforms to the European DIN specification for ergonomics. A two-position tilt adjustment is standard; the keyboard attaches to the monitor via a 6-foot coiled cord.

### PRICING

Wyse Technology display terminals are available for purchase only, through a network of distributors and OEMs in the U.S.; volume discounts are available. Service is performed by Wyse Technology authorized service centers; TRW handles out-of-warranty repairs.

<u>Models</u>	<u>Purchase Price (\$)</u>
WY-50	695
WY-75	795
WY-350	1,295 ■



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# Wyse Technology Asynchronous Display Terminals

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**Product Summary****Editor's Note**

Wyse Technology is the leading supplier of general-purpose asynchronous display terminals, with an installed base of approximately 2.5 million units. The vendor's most recent introductions are the WY-185, a Digital VT320-compatible display, and the WY-370, a multicolor graphics display with both ASCII and ANSI emulation modes, dual-session support, and many other attractive features.

**Description**

Wyse Technology markets a complete line of displays for both ASCII and ANSI environments.

**Strengths**

The products are competitively priced and include unique features and combinations of features not offered by competing products.

**Limitations**

None.

**Competition**

Applied Digital Data Systems (ADDS), TeleVideo Systems, IBM, Qume Corporation, and others.

**Vendor**

Wyse Technology, Inc.  
3471 N. First Street  
San Jose, CA 95134  
(800) GET-WYSE

**Prices**

WY-30, an entry-level display, is priced at \$419; the vendor's general-purpose ASCII/ANSI/PC displays range in price from \$549 to \$649; Wyse's Digital VT-compatible displays cost \$499; and the WY-370, a high-performance color display, is priced at \$1,249.

# Analysis

## Product Strategy

Founded in 1981, Wyse Technology entered a display terminal market that was already saturated with over 200 competitors. Within three years, the company had become the leading vendor of general-purpose asynchronous displays. Second only to IBM in the overall display terminal market, Wyse announced shipment of its one millionth terminal in 1987. Just two years later, the vendor announced shipment of its two millionth display.

Wyse offers a complete line of display terminals addressing each segment of the general-purpose asynchronous display terminal industry: the ANSI market; the color display market; the entry-level ASCII market; and the combination ASCII/ANSI/PC display market.

*WY-370 is a high-performance color display terminal compatible with ANSI, ASCII, and Tektronix 4010/4014 graphics personalities.*

- WY-30, introduced in 1984, is a compact, entry-level monochrome display terminal offering ADDS Viewpoint A2 and TeleVideo 910/925 emulation modes.
- WY-50, a general-purpose monochrome ASCII display terminal introduced in 1983, was the first product in its price range to offer a 14-inch screen, 10 by 13 character resolution, and a choice of 80 or 132 column screen arrangements. The WY-50 was also one of the first displays equipped with a detached keyboard.
- WY-60, a monochrome display terminal introduced in 1986, was the first combination ASCII/ANSI/PC display, and the first ASCII display available with multiple keyboard styles. The WY-60 is Wyse Technology's best-selling product, offering 12 emulation modes, seven screens of internal memory, and several productivity features.
- WY-85, released in 1985, is a Digital VT220-compatible terminal with a 14-inch screen.
- WY-99GT, introduced in 1987, is a combination graphics/text monochrome display terminal with over 12 different ASCII/ANSI



## Company Profile

### Wyse Technology, Inc.

#### Corporate Headquarters

3471 N. First Street  
San Jose, CA 95134  
(800) GET-WYSE

#### Officers

*Chairman and Chief Executive Officer:* Dr. Morris Chang

*President:* Dr. Daniel Wu  
*Vice Chairman:* Dr. Bernard Tse

*Senior Vice President of Sales and Corporate Marketing:* David Everett

#### Company Background

*Year Founded:* April 1981  
*No. Employees:* 2,800 worldwide

Wyse Technology is a leading independent supplier of microprocessor-based products designed to be used as standalone products or as components in multiuser systems. The company's business strategy is to be the leading low-cost manufacturer of high-performance, functionally advanced display terminal and workstation products sold at competitive prices.

Wyse markets IBM-compatible personal computers and monitors, display terminals, and UNIX-based multiuser systems. The vendor is organized into three divisions, one for each of these product families.

Privately owned by a group of Taiwan-based investors, Wyse Technology has sales offices across the United States, Canada, Australia, Hong Kong, and Western Europe.

Unlike most of its competitors, Wyse is an integrated marketing, engineering, and manufacturing company. The company manufactures about 90 percent of the subassembly parts that make up its products.

Wyse has chosen to sell its products exclusively through indirect distribution channels. The vendor sells primarily to distributors, and secondarily to master value-added resellers and original equipment manufacturers (OEMs). These indirect

### Financial History (in millions)

	1989	1988	1987
Net sales	\$452.31	\$456.57	\$272.35
Costs and expenses	\$478.42	\$413.88	\$241.41
Net income (loss)	(\$21.19)	\$27.98	\$18.58

channels offer a cost-effective marketing strategy. The distributors, in turn, sell Wyse's products to value-added resellers, systems integrators, small OEMs, dealers, and end users.

In February 1986, Wyse acquired Amdek Corp., a major distributor of IBM PC-compatible monitors. Amdek also markets a family of optical disk storage systems. In July 1987, Wyse purchased Link Technologies, Inc., a manufacturer of ANSI, ASCII, and PC display terminals that also sells to OEMs and distributors.

#### Financial Profile

After more than six years of steady financial growth, Wyse experienced difficulties in the personal computer marketplace in 1989, which resulted in a loss for that year. Three contributing factors were an industry-wide shortage of DRAM chips, which resulted in a price increase for that

component; an appreciation of the New Taiwan dollar, which affected the vendor's Far East manufacturing operations; and increased competition in the PC market, which forced Wyse to lower prices.

Net sales for 1989 were \$452.3 million, compared to \$456.6 million for 1988. Costs and expenses for 1989 totaled \$478.4 million, leading to a net loss of \$21.19 million.

In January 1989, Wyse realigned itself along its three product lines, creating the present three company divisions. Although this reorganization promises to increase the company's operating efficiency and improve its manufacturing and marketing capabilities, it added to the year's expenses and resulted in a work force reduction of 15 percent.

emulation modes, dual host connection capability, and compatibility with Tektronix 4010/4014 and other graphics standards.

- WY-150, introduced in November 1988, is a general-purpose monochrome display terminal with styling and features normally found on

Western European displays. In addition to providing ASCII, ANSI, and PC personalities, WY-150 offers a 78 Hz refresh rate, overscan capability, and 10 by 13 character resolution.

- WY-185, released in July 1989, is a Digital VT320-compatible display terminal offering full

backward compatibility with earlier VT models, overscan capability, and special modes that provide higher character resolution and a higher refresh rate than Digital's product.

- WY-370, also released in July 1989, is the first display to offer ASCII and ANSI personalities together with graphics capability. This display provides 16 foreground and 16 background colors out of a palette of 64 colors; simultaneous access to two applications across one or two hosts; and a cartridge interface for an optional communications port and/or an emulation cartridge.

In addition to alphanumeric display terminals, Wyse Technology manufactures IBM-compatible computers, monitors, display systems for desktop publishing and computer-aided design environments, and PC-based multiuser systems. Wyse also offers a line of display terminals through one of its subsidiaries, Link Technologies, and a family of monitors and CD-ROM storage devices through a second subsidiary, Amdek.

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### Competitive Position

International Data Corporation (IDC) has forecast that combined U.S. ASCII/ANSI display terminal shipments will grow only 4.1 percent between 1988 and 1993. This trend, along with falling prices for personal computers and an explosion in diskless PC sales, confirms that users are moving away from host-controlled displays in favor of desktop computers, which can off-load some of the processing tasks from the host and support a mixture of both local and host-resident applications.

Since its establishment in 1981, Wyse Technology has grown to occupy nearly 50 percent of the ASCII display terminal market. The vendor's major competitors in this market are Applied Digital Data Systems, TeleVideo Systems, Qume Corporation, and IBM.

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### Sales and Distribution

Wyse markets its products indirectly to end-users through a worldwide network of independent distributors. Over 750 distributors in the U.S. alone sell and service Wyse equipment. The vendor's products are carried by Hamilton-Avnet, Tech

Data, MicroAmerica, Wyle Laboratories, Businessland, Metrologie Group, Trinitec, the Great Escape, Logitek U.K., and the Imagineering Group. The vendor is also a supplier to OEMs and value-added resellers.

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### Decision Points

Wyse has achieved its success through a very focused business strategy. Wyse has developed a broad product line addressing all major segments of the market. The vendor bases those products on well-established industry standards. With each successive product, Wyse also offers unique features or combinations of features, while maintaining a very competitive price.

WY-185 is fully compatible with the VT320 and its predecessors, the VT220 and the VT100. Selling for \$76 less than Digital's product, the WY-185 provides an 85 Hz refresh rate; overscan capability, which eliminates dark borders on the display; and a high-resolution 10 by 20 character cell mode that surpasses the 15 by 12 character resolution of Digital's display. Like the VT320, the WY-185 comes in an international version equipped with multiple-language setup menus.

WY-60, the first ASCII/ANSI/PC terminal, provides internal storage for up to seven screens of information. In contrast, Qume's QVT PCT offers storage only of four screens, and Applied Digital Data System's model 4000 and TeleVideo's model 925 retain only two screens. The WY-60 also includes a monitor that swivels a complete 360 degrees, programmable fonts, and productivity features such as a WordStar word processing mode, a built-in calculator, a calendar, and an alarm clock. Like all of Wyse's monochrome models, the WY-60 supports an optional height-adjustable arm.

The WY-370 is the only color display terminal on the market providing ASCII and ANSI emulation modes along with graphics capability. It provides two host connections for dual-session capability, 16 foreground and 16 background colors, vertical or horizontal split-screen capability, and an expansion port for future addition of an emulation cartridge and/or another communications port.

**Table 1. The Features of Wyse Technology's Display Terminals**

Model	WY-30	WY-50	WY-60	WY-85
<b>Type of Display</b>	An entry-level ASCII display terminal	A low-cost, general-purpose ASCII display terminal	A general-purpose ASCII/ANSI/PC display terminal	A Digital VT220-compatible display terminal
<b>Ergonomic Features</b>	<ul style="list-style-type: none"> <li>• Compact, streamlined design</li> <li>• Tilt and swivel base or height-adjustable arm available optionally</li> <li>• Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>• Tilt and swivel base; optional height-adjustable arm</li> <li>• Low-profile, detached keyboard with sculptured keys and two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>• Tilt and swivel base; optional height-adjustable arm</li> <li>• Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>• Tilt and swivel base; optional height-adjustable arm</li> <li>• Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>
<b>Display Features</b>				
Screen Size (in.)	14	14	14	14
Screen Color(s)	Green or amber monochrome	Green or amber monochrome	Green, amber, or paper-white monochrome	Green or amber monochrome
Screen Arrangement(s)	24 data display lines by 80 columns, plus a status line and a setup line; supports a horizontal split-screen mode	24 data display lines by 80 columns, plus a status line and a function key labeling line	26 or 44 lines by 80 or 132 columns; supports a horizontal split-screen mode	24 or 25 data lines by 80 or 132 columns, plus a status line
Video Attributes	Dim, blank, reverse, underline, blink, and protect (and combinations of these)	Blank, reverse, underline, and blink (and combinations of these)	Dim, blank, reverse, underline, and blink (and combinations of these); double-high and/or double-wide characters	Bold, dim, blank, reverse, underline, and blink (and combinations of these)
<b>Keyboard</b>	83-key layout with 16 programmable function key combinations	101-key layout with a numeric pad and 32 programmable function key combinations	Choice of a Wyse ASCII (101 keys), Wyse ANSI (101 keys), or IBM Enhanced PC-style (103 keys) layout	105 keys, with a numeric keypad and 30 programmable function key combinations
<b>Communications Features</b>				
Port(s)	One serial RS-232-C modem port and one serial RS-232-C printer port	One serial RS-232-C modem port and one serial RS-232-C printer port	One serial RS-232-C modem port and one serial RS-232-C printer port	One serial RS-423-A port and one serial RS-232-C printer port
Data Transmission Speed (K bps)	Up to 38.4 for either port	Modem port: up to 38.4; Printer port: up to 19.2	Modem port: up to 38.4; Printer port: up to 19.2	RS-423-A port: up to 38.4; RS-232-C port: up to 19.2
Data Transmission Format	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits
Data Transmission Mode(s)	Conversational or block; half or full duplex	Conversational or block; half or full duplex	Conversational or block; half or full duplex	Conversational, block, or local; half or full duplex
<b>Additional Features</b>	<ul style="list-style-type: none"> <li>• Provides WY-30, ADDS Viewpoint A2, and TeleVideo 9/10/925 emulation modes</li> <li>• International language kits are available</li> </ul>	<ul style="list-style-type: none"> <li>• A setup mode allows selection of all communications parameters</li> <li>• Four user-selectable smooth-scrolling speeds</li> </ul>	<ul style="list-style-type: none"> <li>• Supports 12 different compatibility modes, including Digital VT52/100, IBM 3101, IBM 3161, ADDS Viewpoint A2/60, and TeleVideo 910+/920/925/950/955</li> <li>• Stores up to seven screens of text</li> <li>• A setup menu allows selection of all communications parameters</li> <li>• Variable-speed smooth scroll</li> <li>• Built-in calculator, calendar, alarm clock, and ASCII table</li> <li>• Provides a WordStar word processing mode</li> <li>• A programmable soft font allows creation of any character set</li> </ul>	<ul style="list-style-type: none"> <li>• Fully backward-compatible with the VT100 and VT52</li> <li>• Includes U.S. and U.K. ASCII character sets, a multinational symbol set, a 94-character graphics symbol font, and programmable soft fonts</li> <li>• A setup menu allows selection of all display terminal parameters</li> </ul>

**Table 1. The Features of Wyse Technology's Display Terminals (Continued)**

Model	WY-99GT	WY-150	WY-185	WY-370
<b>Type of Display</b>	A dual graphics/text display terminal	A multipersonality, general-purpose display terminal	A Digital VT320-compatible display terminal	A high-performance color display terminal
<b>Ergonomic Features</b>	<ul style="list-style-type: none"> <li>Tilt and swivel base; optional height-adjustable arm</li> <li>Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>Tilt and swivel base; optional height-adjustable arm</li> <li>Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>Tilt and swivel base; optional height-adjustable arm</li> <li>Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>	<ul style="list-style-type: none"> <li>Tilt and swivel base</li> <li>Low-profile, detached keyboard with two-position tilt adjustment</li> </ul>
<b>Display Features</b>				
Screen Size (in.)	14	14	14	14
Screen Color(s)	Amber monochrome	Green, amber, or paper-white monochrome; displays light characters on a black background or black characters on a light background	Green, amber, or paper-white monochrome	Generates 16 foreground and 16 background colors out of a palette of 64 colors
Screen Arrangement(s)	24 or 25 data display lines by 80 or 132 columns, with one or two status lines; supports a horizontal split-screen mode	26 lines by 80 or 132 columns	25 lines by 80 or 132 columns	26 or 52 lines by 80, 132, or 161 columns; vertical and horizontal split screens are supported
Video Attributes	Bold, dim, blank, reverse, underline, and blink (and combinations of these); choice of double-high and/or double-wide characters	Bold, dim, blank, reverse, underline, and blink (and combinations of these); choice of double-high and/or double-wide characters	Bold, dim, blank, reverse, underline, and blink (and combinations of these); choice of double-high and/or double-wide characters	All combinations of bold, dim, blank, reverse, underline, and blink; choice of double-high and/or double-wide characters
<b>Keyboard</b>	Choice of a Wyse ASCII (101 keys), Digital VT200-style (103 keys), or IBM Enhanced PC-style (103 keys) layout	Choice of a Wyse ASCII (101 keys), Wyse ANSI (101 keys), or IBM Enhanced PC-style (103 keys) layout	105-key Digital VT320-compatible keyboard with 30 programmable function key combinations	Choice of a Wyse ASCII (101 keys), Digital VT320-style (105 keys), or IBM Enhanced PC-style (103 keys) layout
<b>Communications Features</b>				
Ports	One serial RS-232-C modem port and one serial RS-232-C auxiliary port configured as a DTE connection; both ports support host access	One serial RS-232-C modem port and one parallel Centronics printer port	One RS-232-C interface (Port A) configured as a DTE connection and one Wyse modular 423 (DEC MMJ- and RJ-11-compatible) interface (Port B)	One RS-232-C/RS-422 modem interface (Port A) and one RS-232-C modem interface (Port B); both ports support host connections
Data Transmission Speed (K bps)	Up to 38.4 for either port	Modem port: up to 38.4	Up to 38.4 for either port	Port A: up to 76.8; Port B: up to 38.4
Data Transmission Format	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits	7 or 8 data bits; 1 or 2 stop bits
Data Transmission Mode(s)	Conversational, block, or local; half or full duplex	Conversational, block, or monitor (debug); half or full duplex	Conversational, local, or monitor (debug); half or full duplex	Conversational, block, or monitor (debug); half or full duplex
<b>Additional Features</b>	<ul style="list-style-type: none"> <li>Compatible with VMS, UNIX/XENIX, Pick, MS-DOS, and several other operating environments</li> <li>Supports Tektronix 4010/4014, Hercules graphics adapter, and IBM Color Graphics Adapter standards</li> <li>Provides over 12 alphanumeric emulation modes, including Digital VT220, TeleVideo 910/912/920/925/950, Lear Siegler ADM-31/5/3A, and PC terminal modes</li> <li>Incorporates a calculator, an alarm clock, a calendar, and an ASCII table</li> <li>A setup mode allows customization of display characteristics and definition of communications parameters</li> </ul>	<ul style="list-style-type: none"> <li>78 Hz refresh rate</li> <li>Up to 1,188 x 416 pixel resolution</li> <li>Provides ASCII, ANSI, and PC terminal emulation modes</li> <li>Includes a programmable soft font for international character sets</li> <li>Supports programmable icons, display personalities, and keycodes</li> </ul>	<ul style="list-style-type: none"> <li>Supports an 85 Hz refresh rate mode and a high-resolution 10 x 20 character cell mode</li> <li>Overscan capability</li> <li>Fully backward-compatible with Digital VT220, VT100, and VT52 displays</li> <li>Provides a programmable soft font</li> <li>Comes in an international version that supports multiple keyboards and languages</li> </ul>	<ul style="list-style-type: none"> <li>Supports dual sessions across one or two hosts</li> <li>Graphics capability (Tektronix 4010/4014)</li> <li>Emulates nine different ASCII and ANSI displays, including TeleVideo 950, Esprit III, Digital VT320/220, and Digital VT100 models</li> <li>Includes U.S. ASCII, Digital Multinational, and ISO 8859-1 character sets, along with 512 programmable characters</li> <li>Provides setup menus with help messages</li> <li>Built-in calculator, date book, and alarm clock</li> </ul>

# Characteristics

The following table lists the displays covered in this report and the date each was released. In general, each product was both announced and released at the same time.

Model	Date Released
WY-30	1984
WY-50	1983
WY-60	1986
WY-85	1985
WY-99GT	April 1987
WY-150	November 1988
WY-185	July 1989
WY-370	July 1989

**Number Installed to Date:** Approximately 2.5 million display terminals worldwide.

## Models

The detailed characteristics of each of these displays is shown in Table 1.

**WY-30** is an entry-level ASCII display terminal with a compact design. The unit includes a 14-inch green or amber monochrome monitor providing a screen arrangement of 24 lines by 80 columns. WY-30 supports emulation of ADDS Viewpoint A2 and TeleVideo 910/925 display terminals.

**WY-50** is a low-cost ASCII display terminal compatible with TeleVideo 910/920/925, ADDS Viewpoint A2, and Hazeltine 1500 display terminals. Its 14-inch, green or amber monochrome screen provides an arrangement of 24 lines by 80 columns, and supports a split-screen mode.

**WY-60** is a general purpose ASCII/ANSI/PC display terminal supporting 12 different emulation modes, including Digital VT52/100, IBM 3101, IBM 3161, ADDS Viewpoint A2/60, and TeleVideo 910+/920/925/950/955. WY-60 comes with a 14-inch monochrome monitor with green, amber, or paper-white characters. Screen arrangements of 26 or 44 lines by 80 or 132 columns

are supported, along with a split-screen mode. This display provides built-in storage of up to seven full screens of text.

**WY-85** is a Digital VT220-compatible display terminal that is fully backward compatible with the VT100 and the VT52. Its 14-inch monochrome monitor displays green or amber characters in arrangements of 24 or 25 lines by 80 or 132 columns. WY-85 supports multinational characters, a graphics symbol set, and programmable soft fonts.

**WY-99GT**, designed for text and graphics applications, provides over 12 different emulations, including Digital VT220, TeleVideo 910/912/920/925/950, Lear Siegler ADM-31/5/3A, and PC terminal modes. WY-99GT is compatible with Tektronix 4010/4014, Hercules Graphics Adapter, and IBM Color Graphics Adapter standards. Equipped with a 14-inch amber monochrome monitor, this display provides screen arrangements of either 24 or 25 lines by 80 or 132 columns and supports a split screen mode.

**WY-150** is a multipurpose display terminal with ASCII, ANSI, and PC personalities. Its 14-inch green, amber, or paper-white monochrome screen displays black characters on a light background or light characters on a black background, providing up to 1,188-by-416 pixel resolution and a refresh rate of 78 Hz. WY-150 supports screen arrangements of 26 lines by 80 or 132 columns.

**WY-185** is a Digital VT320-compatible display terminal fully backward compatible with the VT220, VT100, and VT52 displays. Its 14-inch green, amber, or paper-white monochrome screen supports arrangements of 25 lines by 80 or 132 characters. WY-185 supports an 85 Hz refresh rate, a high-resolution mode producing 10 by 20 cell characters, and overscan capability.

**WY-370** is a high-performance color display terminal capable of emulating nine different ASCII and ANSI displays, including TeleVideo 950, Esprit III, and Digital VT320 models. WY-370's 14-inch screen produces 16 foreground and 16 background colors out of a palette of 64 colors. It supports screen arrangements of 26 or 52 lines by 80, 132, or 161 columns, along with vertical or horizontal split-screen capability.

## Pricing

Wyse backs each display with a one year warranty, and provides direct service through any of five dedicated service centers within the U.S. Service after the warranty period can be obtained from a Wyse-approved third-party organization or from the individual distributor or value-added reseller from which the display was purchased. Listed below are the suggested retail prices for the displays covered in this report.



## Equipment Prices

	<b>Sug- gested Retail Price (\$)</b>
<b>Model</b>	
WY-30	419
WY-50	549
WY-60	599
WY-85	499
WY-99GT	649
WY-150	549
WY-185	499
WY-370	1,249

