

# AT&T Teletype 4400 Series Display Terminals

## Models 4420, 4424 & 4430

### ■ PROFILE

**Function** • general-purpose non-programmable interactive keyboard-display terminals.

**Architectures Supported** • any architecture supporting asynchronous ASCII protocol.

**Communications** • half-/full-duplex, asynchronous, 50- to 9600-bps, point-to-point character/block (4420) or character-only (4424) mode transmission • half-/full-duplex, asynchronous, 50- to 4800-bps, multipoint block mode (4430) • RS-232C or 20-/60-mA loop interfaces.

**Operating System** • none.

**Database Management** • none; only in association with host facilities.

**Transaction Processing Management** • none; only in association with host facilities.

**Support Software** • none; only in association with host facilities.

**Processor** • display-oriented control and communications logic • 5760-character (72-line) display memory (4420/4430); 3840-character (48-line) display memory (4424) • 2K display, 2K printer, and 1K-line buffer (4420/4424); 14K to 30K I/O and display/print buffer (4430).

**Terminals/Workstations** • single keyboard 1920-character display with dual auxiliary ports for local printers (4420/4424); or for local printer, paper tape, diskette, and slave keyboard-display or keyboard-printer devices (4430).

**First Delivery** • 1980 (4420); 1981 (4424/4430).

**Systems Delivered** • unknown.

**Comparable Systems** • competitive with number of general-purpose ASCII display terminals; most notable are ADDS Regent, Hazeltine Exec 10 and Esprit, Lear Siegler ADM, Beehive DM, IBM 3101, DEC VT100, Televideo 900 Series, and AJ 510/520.

**Vendor** • AT&T Teletype Corporation (Subsidiary of AT&T Technologies); 5555 Touhy Avenue, Skokie, IL 60077 • 312-982-2000.

**Distribution** • nationwide through Teletype sales offices • end-user sales handled by third parties only • also offered by AT&T-IS as Dataspeed 4400 (report 910-A428-4400).

### ■ ANALYSIS

The 4400 Series family of interactive display terminals were designed to replace older Teletype (AT&T Dataspeed) 40 Series models. The 4420 and 4424 replace the 40/1 and 40/2, while the 4430 replaces the 40/3. Only the Model 40/4—the synchronous 4800-bps member of the Teletype 40 Series—is still



actively marketed. Pricing for all models has been reduced by approximately \$300 per model in recent months; all other features remain the same since this report was first published.

Across the board, the 4400 Series is superior to the older 40 Series units. Such features as microprocessor control, buffering, programmable function keys, cursor addressing, and more advanced formatting/editing features are standard on 4400 models, and almost non-existent on the 40 family. The older 40 units were also limited to a top 4800-bps transmission rate; 4420/4424 operate at up to 9600 bps.

In the general marketplace, the 4400 Series will compete against the likes of the IBM 3101 or the very popular DEC VT100 display terminal. For the most part, Teletype displays should certainly more than hold their own technically. But when price is considered, they come at a premium. All models of the 4400 Series are higher priced than conventional display terminals offered by other vendors. Members of the 4400 family offer features which are unavailable on most competitive products. The bypass facility, discussed under Strengths, is one such feature.

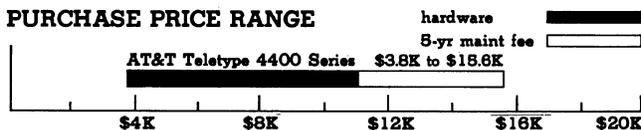
Users can no longer purchase a 4400 terminal directly from Teletype but must order through a third-party source. This isn't necessarily a disadvantage from the buyer's point of view, since third parties often discount due to competition pressures. The manufacturers' suggested purchase prices are presented in this report and can be used as a reference to determine the margin of discount from a third party. Teletype will still maintain the terminals, so the reported maintenance prices are exact.

#### Strengths

Each of the different models of the 4400 Series has its own individual set of strengths. The 4420 provides transmission options of character-at-a-time, line-at-a-time, or block/page modes at asynchronous rates to 9600 bps point-to-point; the 4424 offers character-only transmission at the same rates. The 4430 offers block/page mode transmission at rates to 4800 bps multipoint.

By far the "glamor" terminal in the series has to be the 4430. This top-of-the-line model has from 14K to 32K of dynamically shared

#### PURCHASE PRICE RANGE



**AT&T TELETYPE 4400 SERIES PURCHASE PRICING** bar graphs cover price ranges between "small" and "large" configurations for hardware (solid bar), and for associated 5-year maintenance (open bar) • **SMALL 4400** configuration consists of 4420 keyboard-display terminal model • **LARGE 4400** configuration consists of 4430 keyboard-display terminal with 300-lpm, 132-column printer, 30-cps paper tape punch/read module, and 32K-byte buffer.

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RAM, allowing the attachment of tape or diskette peripherals as well as a local printer. Through such facilities, the 4430 may operate with completely independent auxiliary port send and receive buffers, display send and receive buffers, and printer receive buffer. Such capability allows communications modes of send block/page from display and auxiliary port buffers; and of receive block/page to display, auxiliary port, and printer buffers. This capability also allows local modes of display-to-printer, display-to-auxiliary port, auxiliary port-to-display, and auxiliary port-to-printer.

The 4420 and 4430 incorporate the logic and buffering to support direct addressing of attached printers or auxiliary devices by the host CPU without interfering with terminal operation. Many competitive products employ a shared buffer and common transmit/receive logic, which prevents simultaneous screen preparation and printer message reception. As a result, terminal operators must wait for the print operation to end before resuming screen activity. The bypass feature is a beneficial feature for Teletype users and could be a factor in overlooking 4400's less than competitive prices.

#### □ Limitations

Lack of upgrade mobility within the 4400 Series can be viewed as a minor limitation. Thus, the terminal user is not able to start with a 4420 and then field (or otherwise) upgrade it to a 4424 or 4430. Another potential upgrade problem relates to building true computer intelligence into the 4400 such as available with the DEC VT100. DEC now provides a CP/M-compatible microprocessor enhancement for its VT100.

#### ■ COMMUNICATIONS FACILITIES OVERVIEW

Operation as general-purpose half-/full-duplex asynchronous ASCII display terminal at point-to-point rates to 9600 bps (4420/4424) or multipoint rates to 4800 bps (4430). Character/line/block mode (4420), character mode only (4424), or block mode only (4430) transmission is offered.

Buffering of 2K to the display, 2K to the printer, and 1K from the line is available on 4420/4424, allowing keyboard-to-line/display, line-to-display, display-to-printer, and line-to-printer operations. Line-to-printer and keyboard-to-display operations may occur concurrently.

Dynamic buffering of up to 30K on 4430 allows keyboard-to-line/display, keyboard-to-display/printer, keyboard-to-display/auxiliary device, line-to-display, line-to-printer, line-to-auxiliary device, and auxiliary device-to-printer operations. Line-to-printer, line-to-auxiliary device, or auxiliary device-to-printer operations may occur concurrently with keyboard-to-display operations.

RS-232C or optional 20-/60-mA loop interfacing is available on all 4400 models. In addition, each model has a dual auxiliary device port for local attachment of up to 2 printers (4420/4424), or of printer, paper tape unit, diskette unit, or slave keyboard-display or keyboard-printer devices (4430).

#### ■ HARDWARE

##### □ Terms & Support

**Terms** • Teletype sells to OEM and third-party vendors only • prices shown in following descriptions are manufacturers' suggested prices.

**Support** • on-site or in-shop maintenance provided from over 90 AT&T Teletype field-service facilities located nationwide • monthly maintenance contracts available, negotiable by the level of service provided and distance from field-service facility • monthly maintenance prices quoted in this report reflect suggested prices for full on-site maintenance for preferred customers located within 50 miles of field-service facility.

#### ■ OVERVIEW

The Teletype 4400 Series consists of 3 ASCII keyboard-display buffered terminals designed for general-purpose operations. Each member of the series is based on a central 13-inch diagonal, 1920-character display module with cable-attached modular keyboard. Differences between members relate to display memory capacity, buffer size, character/block, character-only, or

block-only transmission modes; maximum data rate; and certain display format or communication capabilities. The 4420 and 4424 are designed for data entry/retrieval applications on a point-to-point basis. The 4430 is designed for multipoint communication applications.

#### □ Model Packages

##### 4420 & 4424

Major features in common with both models are character/block transmission mode at rates up to 9600 bps point-to-point asynchronous; buffering of 2K to display, 2K to local printer, and 1K from line; RS-232C interface; and auxiliary EIA and SSI local device interfaces.

**4420-10FA1 Keyboard-Display** • buffered, character/block mode terminal with 1920-character 24-line by 80-character capacity; 5760-character (72-line) display memory • 7x9 matrix 128 ASCII character set • 40-character answerback • 10 program function keys; cursor keypad:

\$3,836 prch \$20 maint

**4420-10FB1 Keyboard-Display** • same as above with numeric keypad:

3,938 20

**4424-10AB1 Keyboard-Display** • buffered, character-only mode terminal with 1920-character 24-line by 80-character capacity; 3840-character (48-line) display memory • 7x9 matrix 128 ASCII plus 32 graphics character set • split-screen capability • reverse video, underline, blink, and half-intensity characters • 16 program function keys; numeric keypad • 80-character answerback:

3,938 20

##### 4430

The 4430 is a multipoint private-line terminal. It offers dynamic buffering of up to 32K characters.

**4431-2FFA Keyboard-Display** • buffered, block mode terminal with 1920-character 24-line by 80-character capacity; 5760-character (72-line) display memory • 16K buffer • 7x9 matrix 128 ASCII character set • cursor keypad:

\$3,968 prch \$20 maint

#### □ Buffer Memory

Both 4420 and 4424 terminal models contain 5K of RAM buffer of which 2K is assigned to the display, 2K to the local attached printer, and 1K to the line. The 4420 also has display screen memory for up to 72 lines (5760 characters); the 4424 has up to 48 lines (3840 characters) of display memory.

The 4430 has 16K of RAM buffering as a standard feature; this may be increased with optional RAM to up to 32K. From this buffer, up to 72 lines (5760 characters) are assigned as display memory. The remainder is pool-shared in 256-byte blocks among the display send/receive and printer/auxiliary device ports.

Memory is also available on all 4400 Series models to store screen menus of display format, keying and communication setup options; programmable key function definitions; answerback messages; and terminal self-diagnostics.

**410168 RAM Storage** • 16K-byte RAM increment for 4430 terminal, bringing total buffer size to 32K:

\$261 prch NC maint

#### □ I/O & Communications

In addition to a communication interface, all 4400 Series display terminals come equipped with dual port interfaces for the attachment of local printers (4420/4424); or printer, paper tape, diskette, slave keyboard-display, or slave keyboard-printer

**PRCH:** purchase price. **MAINT:** monthly maintenance charge for full on-site service within 50 miles of AT&T Teletype service center. **NC:** no charge. Prices effective as of February 1984.

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peripherals. The SSI (Standard Serial Interface) auxiliary port is used to attach Teletype Model 40 line printers on the 4420/4424 or Model 40 printers on the 4430. The other local auxiliary port, an RS-232C interface, supports Model 40/43 printers on all models, or tape unit, diskette unit, and slave terminals on the 4430.

Transmission speeds and communication modes vary with each model. The 4420 operates at synchronous half-/full-duplex rates to 9600 bps on a point-to-point basis, and can transmit a character-at-a-time, line-at-a-time, or block/page-at-a-time. The 4424 operates at the same rates but only offers character-at-a-time transmission. The 4420 offers an integrated manual/auto-answerback of up to 40 characters; the 4424 offers answerback of up to 80 characters. Both models offer odd/even/mark/space parity and employ 8-level ASCII code.

The 4430 is the only member of the series to provide for multipoint operations. Block mode transmissions are at half-/full-duplex asynchronous rates to 4800 bps. Protocol complies with ANSI 3.28 subcategories 1.1, 2.4 to 2.8, A1, A3, and A4; 85A poll/select with LRC, 8A1 contention features. The 4430 provides for roll-call polling with status replies; with message transfer check employing auto-retransmit, controlled retransmit, and LRC checking; and with termination transmit checking roll call with status replies. Odd/even/mark/space parity and 8-level ASCII code are also employed.

All 4400 Series models come equipped with an RS-232C interface as standard for communication line/modem connections; a 20-/60-mA current-loop interface is also available as an extra-cost option.

**403103 Adapter** • 20-/60-mA current-loop interface for all 4400 Series terminals:

\_\_\_\_\_ **\$307 prch NC maint**

**□ Disk**

Teletype offers no diskette storage module to attach to its 4430 terminal. However, the auxiliary interface on the terminal can support a floppy disk unit offered by the local AT&T operating company (the Sykes Datatronics Com-Stor II Model 8120), allowing the 4430 to perform diskette-based data entry, batching or buffering from the terminal and/or host line. The 256K/512K single/dual Com-Stor II diskette drive and controller module may be rented from AT&T offices at prices from \$130 to \$180 per month, or purchased directly from Sykes for \$3,300 to \$6,000.

**□ Terminals/Workstations**

**Configuration** • tabletop keyboard-display with modular keyboard • typewriter-style keyboard with cursor or cursor and numeric keypad cluster • 1/10/16 (4430/4420/4424) program function keys • swivel and tilt display screen.

**Display** • 13-inch diagonal • 7x9 (4420/4430) or 8x14 (4424) matrix • 1920 characters at 24 lines by 80 characters with 25th status indicator line; 72-line 5760-character (4420/4430) or 48-line 3840-character (4424) display buffer • 128 ASCII upper/lower (4420/4430) or 128 ASCII upper/lower plus 32 graphics (4424) character set • split-screen (4424) • block cursor.

**Edit & Format Features** • auto-repeat keys • cursor up, down, left, right, home; tab, backtab, auto-tab; return, return line feed, line feed; page advance, scroll up, scroll down • cursor address read/write • erase to EOL/EOF/EOP; character insert and delete; line insert and delete • protected fields • underscore, reverse video, blink, intensity attributes • send, print local, print online, form enter, form transfer (all models); auxiliary print, auxiliary send, auxiliary receive, auxiliary local, auxiliary write (4430).

**□ Printers**

**Model 40 Printer** • 300-lpm full-character belt-impact printer • 64 or 128 ASCII set • 80 columns or 132 columns at 10 cpi • 6/3 lpi • friction or tractor feed • horizontal tab • vertical format control • floor console or tabletop.

4010-1AON Model 40 ROP • 1920-character buffer • 64 ASCII set • 80 columns • tractor feed • floor console • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **\$7,488 prch \$28 maint**

4010-1DON Model 40 ROP • 1920-character buffer • 128 ASCII set • 80 columns • tractor feed • floor console • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **7,488 28**

4010-1COO Model 40 ROP • 1920-character buffer • 64 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **6,777 28**

4010-1FOO Model 40 ROP • 1920-character buffer • 128 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **6,777 28**

4010-1HOO Model 40 ROP • 1920-character buffer • 64 ASCII set • 80 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **6,942 28**

4010-1KOO Model 40 ROP • 1920-character buffer • 128 ASCII set • 80 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **6,942 28**

4010-1LOO Model 40 ROP • 1920-character buffer • 64 ASCII set • 132 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **7,902 30**

4010-1MOO Model 40 ROP • 1920-character buffer • 128 ASCII set • 132 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **7,902 30**

4011-1AON Model 40 EIA • 64 ASCII set • 80 columns • tractor feed • floor console • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,725 28**

4011-1DON Model 40 EIA • 128 ASCII set • 80 columns • tractor feed • floor console • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,725 28**

4011-1BOO Model 40 EIA • 64 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,163 28**

4011-1EOO Model 40 EIA • 128 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,163 28**

4011-1GOO Model 40 EIA • 64 ASCII set • 80 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,177 28**

4011-1JOO Model 40 EIA • 128 ASCII set • 80 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **4,177 28**

4011-1LOO Model 40 EIA • 64 ASCII set • 132 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **5,133 30**

4011-1MOO Model 40 EIA • 128 ASCII set • 132 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary RS-232C interface:

\_\_\_\_\_ **5,133 30**

4011-3BOO Model 40 SSI • 64 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary SSI interface:

\_\_\_\_\_ **3,973 28**

4011-3EOO Model 40 SSI • 128 ASCII set • 80 columns • friction feed • tabletop • connects to 4430 display terminal via auxiliary SSI interface:

\_\_\_\_\_ **3,973 28**

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4011-4GOO Model 40 SSI • 64 ASCII set • 80 columns • tractor feed • tabletop • connects to 4430 display terminal via auxiliary SSI interface:

4,208      28

4011-4IOO Model 40 SSI • 128 ASCII set • 80 columns • tractor feed • tabletop • connects to 4420/4424/4430 display terminals via auxiliary SSI interface:

4,208      28

4011-4MOO Model 40 SSI • 128 ASCII set • 132 columns • tractor feed • tabletop • connects to 4420/4424 display terminals via auxiliary SSI interface:

5,170      30

45AP201AAA Auxiliary Printer • 340 cps, 7x7 half-space matrix • tractor feed • 5, 10, or 16.7 cpi; 6/8 lpi • connects to 4420, 4424, or 4430 • SSI or RS-232C interface:

3,888      32

**Model 43 Teleprinter** • RO/KSR • 10-/30-cps 7x9 matrix impact printer • 94 ASCII set • 80 columns at 10 cpi, 100 columns at 10 cpi or 132 columns at 13 cpi • 6/3 lpi • friction, pin, or tractor feed • tabletop.

4310AAG Model 43 RO • 132 columns • pin feed • connects to 4420/4424/4430 display terminals via auxiliary RS-232C interface:

1,388      17

4310AAH Model 43 RO • 80 columns • friction feed • connects to 4420/4424/4430 display terminals via auxiliary RS-232C interface:

1,423      17

4340BBL Model 43 BSR • buffered 132 columns • pin feed • connects to 4430 display terminal via auxiliary RS-232C interface:

3,142      17

4340BBM Model 43 BSR • buffered 80 columns • friction feed • connects to 4430 display terminal via auxiliary RS-232C interface:

3,085      17

4340BBN Model 43 BSR • buffered 100 columns • tractor feed • connects to 4430 display terminal via auxiliary RS-232C interface:

3,278      17

**Other Peripherals**

**Model 4350 TSR** • 30-cps paper tape reader/punch send/receive module • connects to 4430 display terminal via auxiliary RS-232C interface:

\$1,513 *prch*    \$28 *maint*

• END