40 CATALOG

TELETYPE™ MODEL 40/8B DATA TERMINALS
with TEMPEST Features

JUNE, 1978 EDITION

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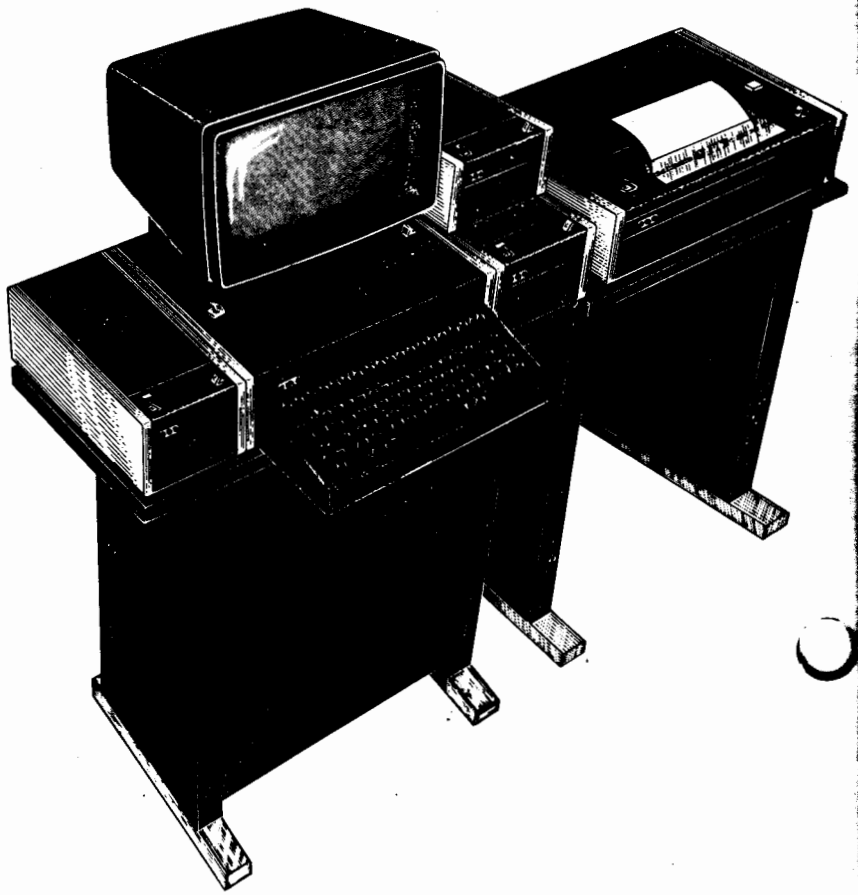

THE 40—ADVANCED DATA COMMUNICATIONS

Designing and building better data communication terminals has been our corporate way of life for more than 60 years. The extremely flexible, highly adaptable model 40 system is the culmination of this experience.

An advanced TEMPEST version of the model 40 is made possible by Teletype's extensive RFI background. The result is a secure, comprehensive system with facilities to enter, display, store, edit, print, send and receive data. The versatile 40 performs these functions efficiently and effortlessly to maximize data throughput and mininize operator fatigue and error.

The exterior appearance of the TEMPEST model 40 system is identical to its non-TEMPEST counterpart to maintain its contemporary, compact styling. The pedestal houses the terminal's electronics.

Some significant features of this system are high speed transmission and printing, ease of data preparation and editing, very low maintenance, and a high degree of modularity.

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A VARIETY OF FEATURES

MODULAR DESIGN

Model 40/8B terminals are available with display, printer, operator console, magnetic tape cassette drives and other modules which can be arranged in various configurations to meet varying requirements for transmission, reception and preparation of data.

BATCH (POLL/SEL) OR CONVERSATIONAL (KEYBOARD-ON-LINE) COMMUNICATIONS

The model 40/8B terminals can communicate on a batch or conversational basis.

In the batch mode, the operator enters and edits the data on the display before transmission, then transmits from either the display or magnetic tape cassette. This mode is especially suited for remote data collection and entry.

The magnetic tape cassettes are ideal for this application because of their high flexibility and great storage capacity.

In the conversational mode, the operator sends the data, a character at a time, from the operator console. This mode is especially suited for interactive applications in which a computer has been programmed to dialog with the terminal.

INPUT-OUTPUT SPEEDS

Communications speeds up to 2400 Bits/second, using either the (ITA2-AV) Baudot or (ITA5) ASCII codes, are possible with the model 40/8B terminal.

SEVERAL PROGRAMMABLE OPTIONS

MOS technology also allows us to offer many built-in programmable and switch-selectable field options to make the model 40/8B terminal compatible with a variety of communication systems requirements.

CHOICE OF INTERFACES

An isolated interface, conforming to MIL STD 188C(±6V Polar Signaling), is provided with each terminal. This interface provides a means for customer termination of signal, clock and control leads.

A field installable option is available to permit the terminal to connect to business machines or common-carrier modems, specifying the EIA STD RS-232.

A current interface is also available to provide facilities for 20/60 ma. dc neutral signals. This is often used on local loops and minicomputer applications.

HIGH SPEED PRINT OUT

The 40/8B features line-at-a-time, heavy duty, impact printers which can operate at speed up to 300 lines per minute. They are available with either friction or tractor feed and the latter comes in both 80 and 132 column versions. Printer can be remotely selected to receive once the terminal has been turned on and conditioned to receive.

RELIABLE DESIGN

Modern MOS solid-state components give the model 40/8B high reliability and minimum space and power requirements.

BUILT-IN DIAGNOSTICS

As reliable as the model 40/8B is designed and built, sometimes things can still go wrong. But when they do the maintenance man is not alone with the problem. There's built-in help.

Should a malfunction occur in the display module, for example, there's a series of neon glow tubes which are visible from the outside, mounted on circuit cards inside. A quick glance at these neon tubes tells him which card is not functioning properly.

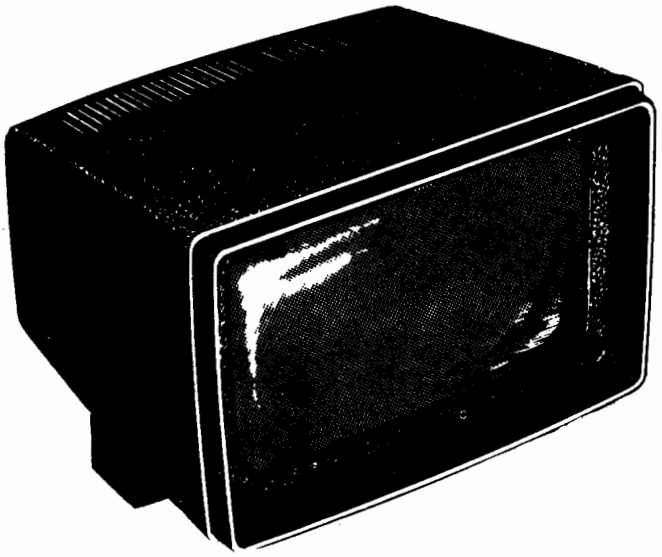
Should further diagnostics be required, depression of a pushbutton inside the controller causes it to perform a series of self-diagnostic tests. Included is a complete check of all circuit cards in the controller plus a test pattern check of the attached display.

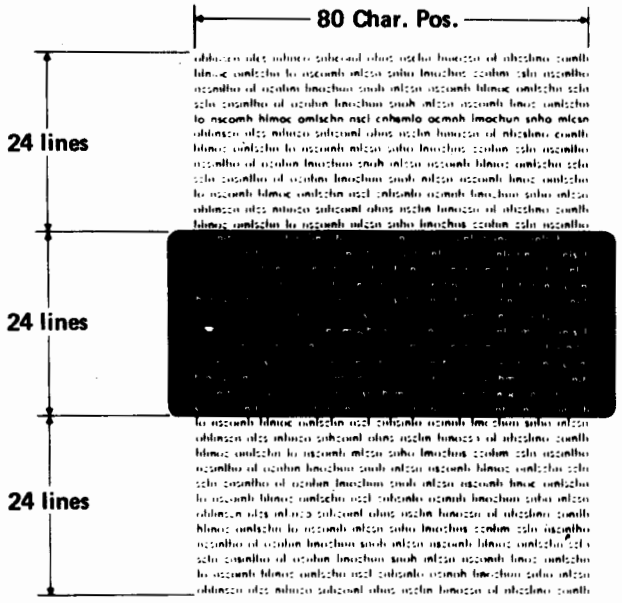
The operator console can also be checked for proper operation. Combinations of keys, depressed below their normal downstop, in proper order, illuminate indicators on the console if the console is working properly.

Operation of a test switch on the printer activates a test generator which prints the substitute character in each print position.

Once the trouble is isolated, either circuit cards or whole modules can be easily exchanged, whichever is more efficient for the maintenance personnel. This is because the display module, printer and operator console, as well as the circuit cards feature a combined mechanical-electrical connection with the rest of the terminal for rapid replacement.

ALL-DATA DISPLAY





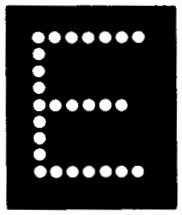
BIG SCREEN, LARGE VOCABULARY

The model 40/8B display module can display 96 ASCII characters plus symbols for 31 ASCII controls, on a 24-line capacity screen with each line having 80 character positions.

(Actual size)

The display memory size, of 72 lines of data, may be displayed 24 lines at a time by means of a simple scrolling key.

EASY VIEWING

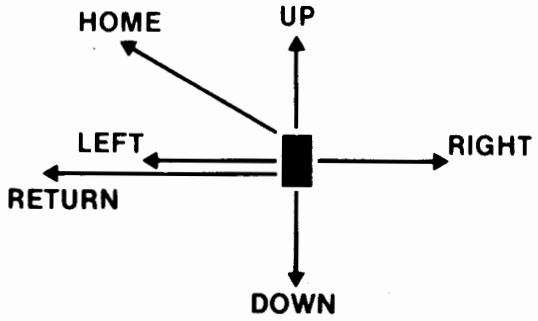


Characters are displayed 35% larger than standard print-out size by a high resolution 7x9 dot matrix refreshed at 60 times/sec for easy and flicker-free viewing.

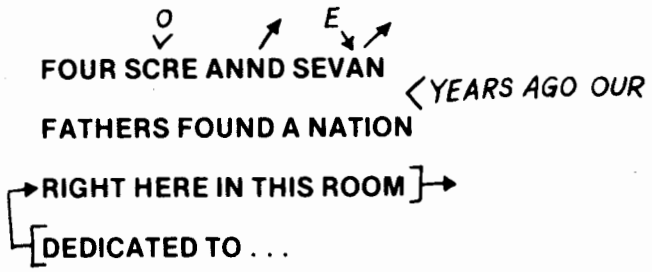
Screen tilt and brightness controls and a glare-reducing display tube permit the operator to compensate for nearby lighting glare and make viewing easy on the eyes.

EASY EDITING

The display's next-character-position cursor can be literally moved to anywhere on the screen by means of cursor left, right, up, down, return and home controls.



Once there, characters and lines of characters can be moved, removed, replaced and added with ease and efficiency by means of character delete, line delete, character insert and line insert editing controls.



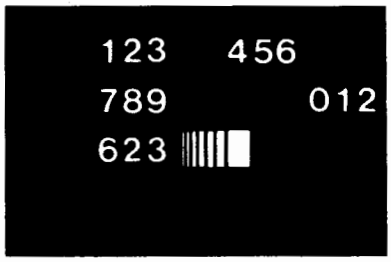
Aiding the efficiency is the fact that the cursor is an easy to find character-size rectangle, which never hides any of the displayed characters.

Whenever the cursor covers a character, the displayed character goes from white to black, eliminating the need to move the cursor aside to see the character being covered.

TABBING

Available with the model 40/8B display module is line independent tab control. With this feature tab stops can be set and cleared at any character position along a line, and can be cleared and set at different locations on succeeding lines—without disturbing settings on lines above.

Once tab stops are set, a tab key permits rapid movement of the cursor between tab stops for rapid entry of formatted data.

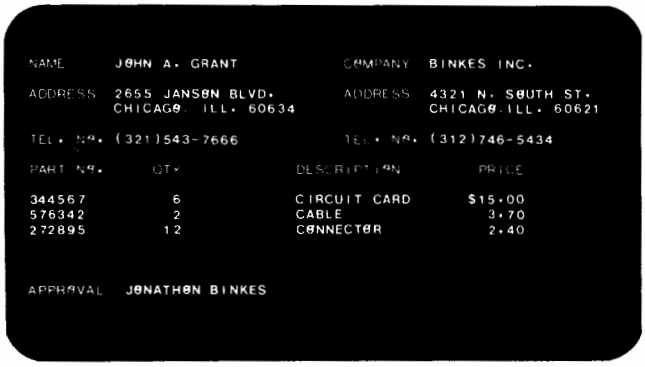


HIGHLIGHT

Highlighting permits any portion of the displayed data to be intensified (from normal intensity to intensified) for emphasis. For this feature alone there are a variety of applications: The operator can elect to highlight certain data as it is entered, for ready reference. A computer can respond to errors in the data it receives from the terminal by returning the data as received but with the erroneous portions highlighted. A computer can send instructions to the terminal, highlighted, so as not to blend in with the protected format.

PROTECTED FORMAT

With this feature fixed data can be entered and automatically saved after other data has been sent and cleared from display memory. It provides the display tube with all of the advantages of preprinted business forms: Once a form has been prepared, the operator only has to enter the vari-



able data each time the form is used, thereby reducing the preparation time and the probability of errors. The variable data is automatically formatted by the placement of the fixed data. Errors in the variable data can be further reduced by restricting the number of characters that can be placed in each "Blank". Fixed data is distinguishable from variable data—the display does it by displaying fixed (protected) data at half intensity, to contrast with variable (unprotected) data. The form can be rapidly filled out by use of a tab key. With protected data on the screen, operation of the tab key moves the cursor to the beginning of the next variable data blank or to the next tab stop, whichever comes first. Thus, without losing the ability to tabulate data, you gain the ability to rapidly and efficiently fill out forms.

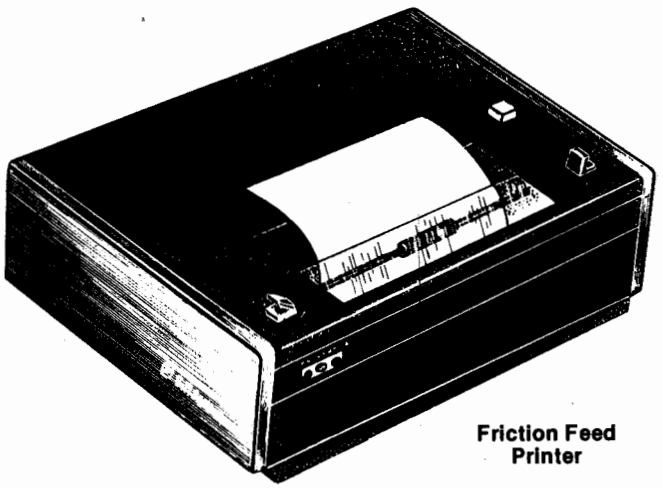
AUTO NL—A DATA SAVER

If for some reason NL (New Line) has been omitted from a line, this feature prevents the loss of any data.

On sending, when the display reaches the last character position, it will then automatically transmit a NL and continue sending from the next line.

On receiving (optionally), when the cursor reaches the last character position, it will then move to the beginning of the next line and the received data will continue to be displayed.

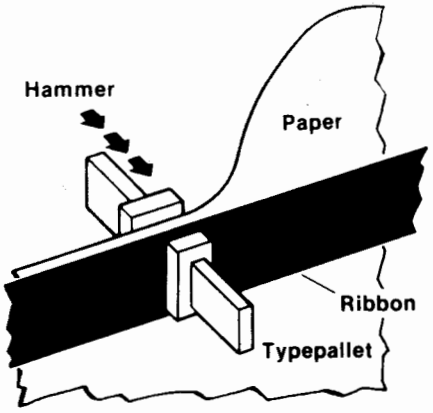
HIGH-SPEED PRINTER



Friction Feed Printer

STANDARD PRINTING—UNIQUE METHOD

The model 40/8B printer device prints characters by means of individual typepallets in an endless revolving carrier belt. With this method you gain high speed operation without losing the character clarity and changeability advantages of an impact typebox printer.



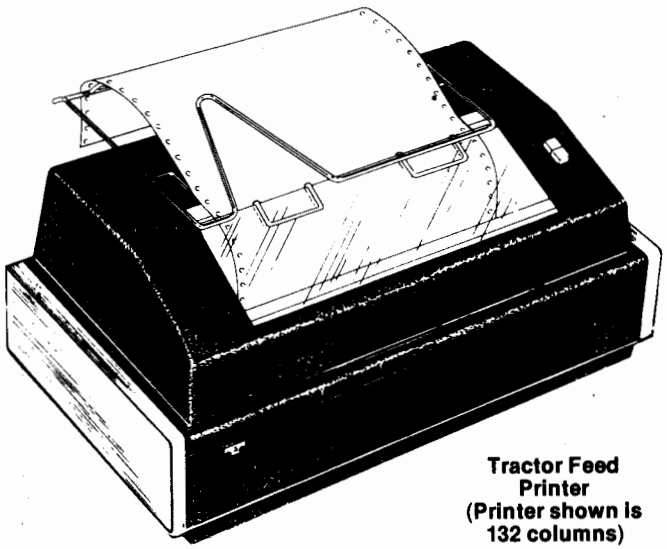
Producing the printing are 80 or 132 print hammers, one for each print position. They strike the paper into the ribbon and onto the typepallets, as the typepallets fly by on their continually moving carrier. They produce crisp impact printing of full characters, not dots arranged to look like characters. Print spacing is 10 characters to the inch horizontally and 6 (single line feed) or 3 (double line feed) line per inch vertically.

LOW MAINTENANCE

With 80 print hammers, each hammer is doing only 1/80th of the work, at 1/80th of the printing speed. This means longer printer life and less maintenance even though the printing speed is much higher than that of conventional teleprinters.

CHOICE OF FRICTION OR TRACTOR FEED, 80 or 132 COLUMN

The model 40/8B printer is available in either friction feed (left) or tractor feed (below) versions. The friction feed printer prints on standard, rolled single-ply paper up to 8½ inches wide. A multiple copy rolled paper mod kit is available for friction feed printers which enables the printer to print 3-ply rolls of paper. See Accessories section in this Catalog.

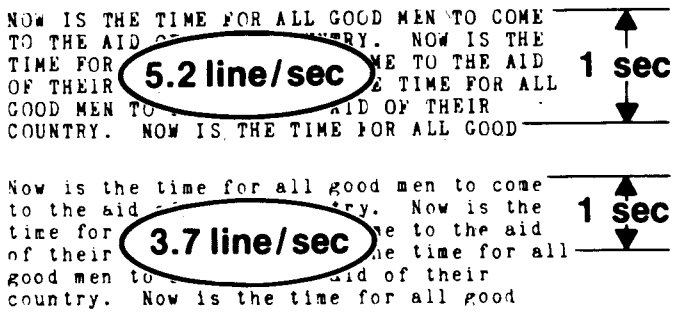


Tractor Feed Printer (Printer shown is 132 columns)

Tractor feed printers are available to print up to 80 or 132 char/line on standard fan-folded forms 4 to 9-1/2 or 15 inches wide; 3-2/3, 5-1/2 or 11 inches long; and up to 6-ply in thickness. Both form width and form length are operator adjustable, to permit a variety of forms to be handled by the same printer. Form width is adjustable by varying the distance between the form feed tractors, and form length is easily adjusted by moving a lever to 1 of 4 settings and/or by changing belts. See Accessories and Options for a complete listing of available form lengths.

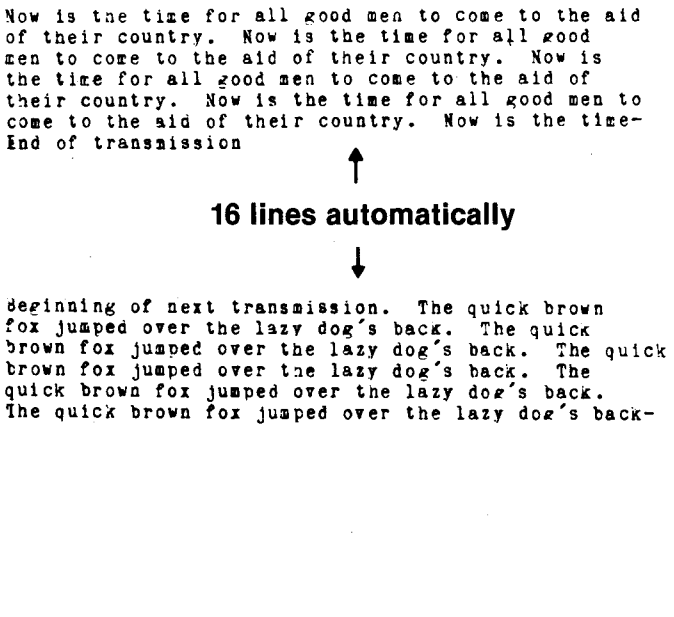
RAPID PRINT-OUT RATE

The full ASCII printer (96 character set) is capable of printing at a rate of 3.7 lines/second (220 lines/min). The monocase (64 character set) version is capable of printing at a rate of 5.2 lines/second (300 lines/min).



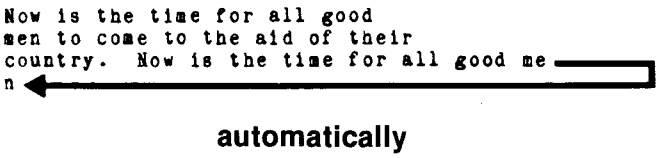
AUTOMATIC FORM/PAPER FEEDOUT

This feature permits message print-outs to be torn off as received, without requiring the computer to conclude each message with a form feed, in the case of a tractor feed printer, or the proper number of blank lines (16) in the case of friction feed printer. It can be elected to occur automatically at the termination of each transmission, also on receipt of the ASCII control ETX (End of Text), or not at all.



AUTOMATIC NEW LINE AT END OF LINE

If the printer prints more than 73 or 121 char/line this feature positively prevents the loss of any received data due to distortion of the New Line code or failure of the sender to transmit it. It can be adjusted to occur at any character position between the 73rd and the 80th or 121st and 132nd.



AUTOMATIC CHARACTER SUBSTITUTION

This feature is on monocase ASCII printers. With it the printer can be selected to either print the upper case equivalent on receipt of a lower case letter, or to print the substitute character*.

Receipt of	Prints
A	A
a	A or * (option selected)

FORM FEED OPTION

To satisfy the need for an 11 inch long form a 54-line paging option is available that provides a 1-inch blank space at the top and bottom of the page for special notation. This option is activated on receipt of a Form Feed code from the line or locally.

ESCAPE SEQUENCE SUPPRESSION

Since ESC sequences are used for nonprinting functions (e.g., setting tabs, moving cursor etc.), the printer does not print the character following ESC (ESC itself is always a non-printing character.)

CHOICE OF CHARACTER SETS

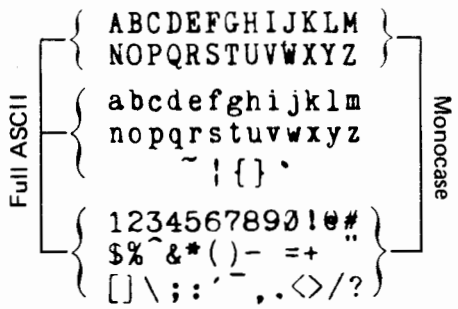
Printers are available to print the full 96 character ASCII code character set or to print a 64 character monocase character set. With either character set, typepallets are easily removed for character substitutions. Various type fonts are available. Three are shown below. All coded terminals in this Catalog have the Teletype Standard font. The other fonts are available by special request.

TEST CHARACTER GENERATOR

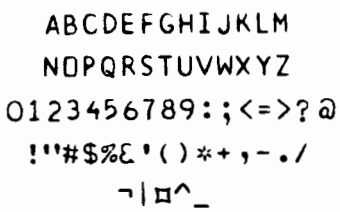
This feature permits the printer mechanism to be tested by operating a switch inside the terminal and printing the font identification symbol ▒ , in all printable positions, line by line.

INPUT BUFFER

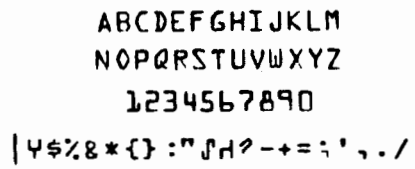
The 1024 character input buffer contained in the controller eliminates, in most cases, the need for the transmitting device to provide timing for such operations as form feed, motor start up, and handling short lines.



Teletype™ Standard



Block Style-Monocase



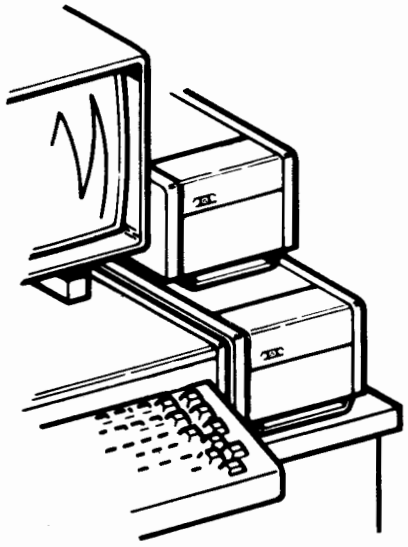
OCR A-Monocase

THREE TYPE FONTS

TAPE DRIVES

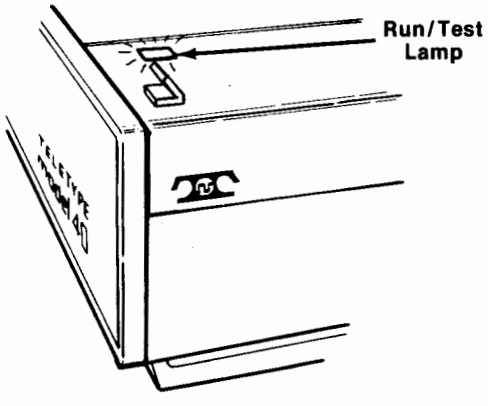
MAGNETIC TAPE CASSETTES

Tape cassettes enhance the data handling capabilities of the 40/8B by providing bulk storage for user data on magnetic tape cartridges. Major features of the tape drives are precision drive mechanism and quick access to discrete portions of data for transmission or updating. On-line monitoring of traffic is an outstanding feature of this device.



HIGH RELIABILITY AND ACCURACY

A check on tape cartridge, head alignment and associated circuitry is quickly and automatically performed every time a cassette is inserted in one of the drives to insure the low error rate of 1 character in ten million. A RUN/TEST lamp signals the operability of the device. Also, when the Receive Tape reaches the last 25 blocks of data, the key flashes on the keyboard.

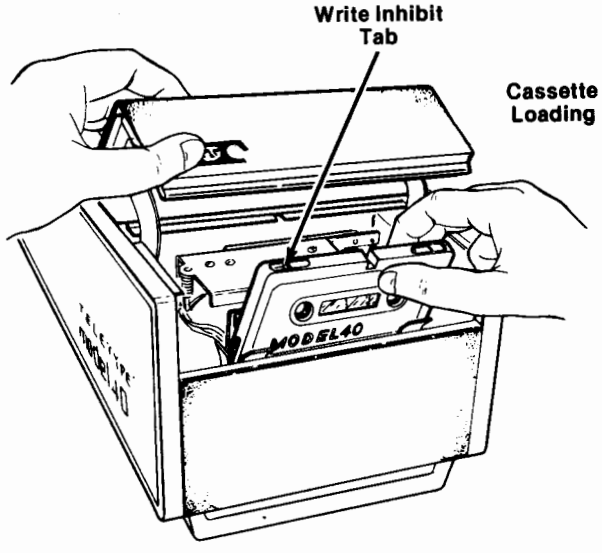


HIGH CAPACITY

Data is stored in block form on a 220 foot long tape. Each block contains 510 ASCII characters and there is a total of 500 blocks on the tape. In other words, a tape can store over one quarter million characters of data.

AUTOMATIC OPERATION

Operation of the cassette drives, whether receiving, sending, or monitoring data, is done entirely from the keyboard and the Directory in the Control Mode. By operating appropriate control keys the tape drives can be cycled through their full list of functions. For example, the Receive Tape is automatically cycled forward to the 'Blank' portion of the tape when data is to be recorded. And when sending data the Send Tape will similarly advance to the data block number selected from the Control Mode. Also, there is an automatic rewind of these cartridges when first inserted in the tape drive or when power is first applied. The only operation done manually is the insertion and removal of the cartridges themselves.

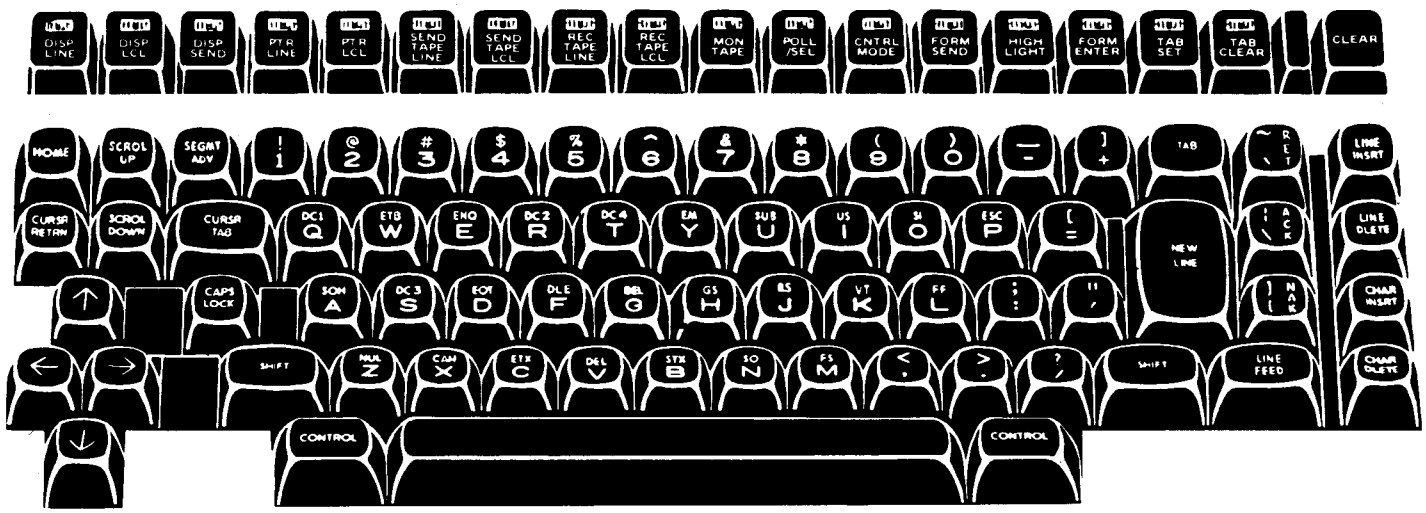


Data will be recorded on the cassette only if the write-inhibit tab is down and in place. When the tab is lifted, data cannot be recorded on the tape and the self test will not take place when the cassette is inserted in the tape drive.

SIMPLIFIED DATA ENTRY

Operation of the 40/8B is simple and straightforward due to the common-sense layout of the operator console.

Keys of similar function are clustered for easy access by the operator.



Keyboard

The alpha-numeric keys operate identically with those on a standard typewriter. That is, the keys normally generate numerals or lower case alphas. When the SHIFT key is also depressed, upper case alphas and punctuation characters are generated. Operation of the CAPS LOCK key (locking) causes all alpha characters to be generated in upper case regardless of SHIFT key operation.

The on-line control characters, appearing at the top of the alpha keys, are generated when the key is depressed in addition to the CONTROL key.

Operational Mode Controls

With both keys off terminal is confined to message preparation from the keyboard. With DISP LINE on, the display can send or recieve from the line. With the DISP LCL key on, the display can send or receive from other terminal devices locally. Both keys flash when data monitoring on the display is selected in the Control Mode. Key stops flashing once it is deselected. With the display in the monitor mode data received on-line as well as data from the local devices can be displayed.

When on, data can be sent from the display on-line or locally to a device or devices. When off, the display acts as a receiver.

With PTR LINE key on, printer will print received data or both sent and received data depending on option selection. With PTR LCL key on, printer will print all local data being transferred between the devices.

When first turned on, the terminal comes up in the Selective Calling Mode automatically, with the PTR LINE key lighted. If the PTR LCL key is selected, data transfer must occur within 15 seconds, otherwise the PTR LCL lamp turns off and PTR LINE turns on. This feature insures that the printer is available to receive data on-line when not being used to copy data locally.

Operation of SEND TAPE LINE sends data on the Send Tape on-line. SEND TAPE LCL activates data transfer from the Send Tape to other terminal devices locally, such as to printer or display.

With both lamps off the Send Tape can be accessed in the Control Mode to advance, rewind, and to list the Send Tape headings.

The indicator lamp in either key will flash if the key is depressed while the Send Tape is sending. The Send Tape will continue to send until the end of the message. Then the indicator will turn off.

Depressing the REC TAPE LINE key conditions the Receive Tape to receive on-line. Similarly, depressing the REC TAPE LCL key conditions the Receive Tape to receive data from a local sending device.

With both keys off the Receive Tape is still operable in the Control Mode to rewind and list tape headings.

When first operated, either key will flash until the tape has advanced to the next available recording area. If no recording area is available, the indicator will turn off (with the Receive Tape inoperable either on-line or in local).

If the Receive Tape detects low tape (25 blocks from the end of the tape), either the REC TAPE LINE or REC TAPE LCL will flash. When end of tape is detected the Receive Tape will continue to receive the message, then stop (indicator will turn off).

If either key is turned off while a message is being received, the indicator will flash but the Receive Tape will continue to receive until the end of the message, then it will turn off.

This key is an indicator only. When lighted it tells the operator that a Monitor Tape is loaded in its assigned drive and operational.

The Monitor Tape will record all data sent on-line in the Selective Calling Mode or On-Line Manual Mode. It does not copy data received on-line or data transferred in local.

The indicator flashes when the tape reaches low tape (25 blocks from the end of the tape). If data is being received when low tape is reached, the tape will continue to record until the end of the message, then the indicator will turn off.

When loaded in its drive the tape automatically advances to the next available recording area. If no recording area is available on the tape the indicator will turn off and the Monitor Tape will not record further data. An option in the terminal, if selected, requires that the Monitor Tape be present in its drive before the terminal can transmit on-line.

The POLLING/SELECTING key's indicator has three states: on, off, and flashing. With indicator lighted (on), the terminal is in the Selective Calling Mode. In this mode all sending and receiving on-line is controlled by unique sequences originating from the computer.

With indicator off, the terminal can still send and receive on-line, without line protocol. In other words, sending and receiving are manually controlled.

Indicator flashing means that a parity error was received. Depress key to reset.

Allows operator to perform a number of functions off-line. Depressing the CNTRL MODE key causes the terminal to display a protected list of functions. Among the off-line functions that can be executed in the Control Mode are: advance, rewind, and position the tape drive; place the terminal in single message mode; condition the terminal to monitor data on the display; reassign the tape drives for sending, receiving and monitoring from the keyboard; place the keyboard on-line; erase the receive tape; list tape headings; condition the terminal for 5-level operation.

With the key off only unprotected characters will be sent from the display, on-line or locally. With the key on, all data on the display will be sent, including protected, highlighted or not, and tab stops.

When operated, indicator lights. An attribute character stored at cursor location denotes the start of an intensified field. All subsequent characters will be intensified. If FORM ENTER is used with HIGHLIGHT, the characters following will not be intensified, but will be displayed at half-intensity. When the key is turned off an attribute character is stored which indicates the end of the highlighted field.

When depressed, indicator lights and causes a "protect" attribute character to be stored at cursor location denoting the start of a protected field. Depress key again, indicator extinguishes and a "protect end" attribute is stored in the memory. All areas between the "protect" and "protect end" attributes, as well as the two attributes, form a "protected field." This field, excluding the attributes, will be displayed at half intensity.

With the FORM ENTER key lighted:

Protected characters can be written, overwritten, moved, or cleared.

If data preparation requires short lines (lines less than 80 characters), protected line feeds can be used to provide a right hand margin.

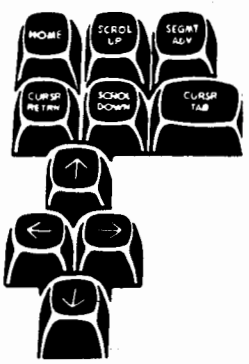
Overrides highlight feature and causes character to be displayed at half-instensity.

When depressed places tab stops on screen in column from cursor down to the end of the page. Tab stops are not displayed.

Clears tab stops from cursor down and to the right. Note: Depressing TAB CLEAR also clears any data between an HT mark (▶) and the cleared tab stop to the end of the same line unless protected data is present.

Removes all unprotected data from cursor position to the end of the page. If FORM ENTER is on, then all data (including protected data) will be removed from the cursor position to the end of the page.

Cursor Controls



HOME—Causes first segment to be displayed and moves cursor to start of first line.

CURSR RETRN—Moves cursor to start of line.

CURSOR POSITIONING—Up arrow, left arrow, right arrow and down arrow (Repeatable)—Moves cursor up, left, right and down, respectively.

LEFT ARROW (←)—Generates back space code when terminal is on line.

SCROL UP AND SCROL DOWN (Repeatable)—Moves displayed data up and down respectively.

SEGMT ADV—Removes the 24 lines being displayed and displays the next whole 24 line segment.

CURSR TAB—Moves cursor to the first tab stop on the right, or to the start of the next line, or to the first unprotected character following protected data, whichever comes first.

Editing Controls

LINE INSERT*—Moves unprotected data down one line, so that there is a line of space on the line the cursor is on. Does not occur if there are no lines of space at the end of the display memory or if there are no lines of space above the first line below having protected data in it.

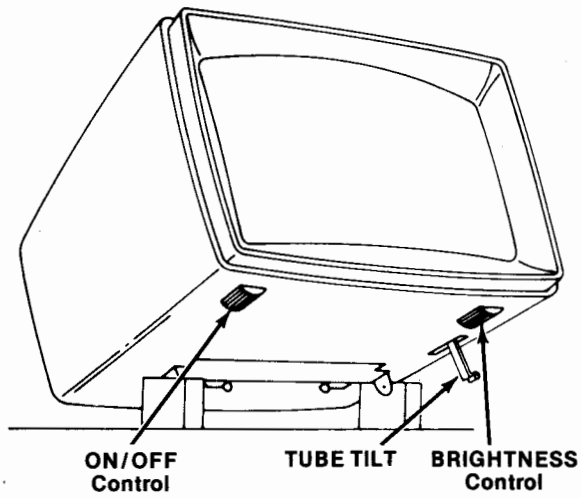
LINE DLETE*—Clears unprotected data from the line the cursor is on and moves all unprotected data displayed below up one line.

CHAR INSRT* (Repeatable)- Moves unprotected data one character to the right so that there is a space at the cursor location. Does not occur if there are no character spaces at the end of the line, or if there are no character spaces ahead of the first protected character or the first tab stop displayed on the right.

CHAR DLETE* (Repeatable)—Clears unprotected character at cursor location and moves all unprotected data displayed on the right one character position to the left.

**Affects protected as well as unprotected data if FORM ENTER was depressed prior.*

Other Controls



Display ON-OFF—Turns display module and operator console on-off.

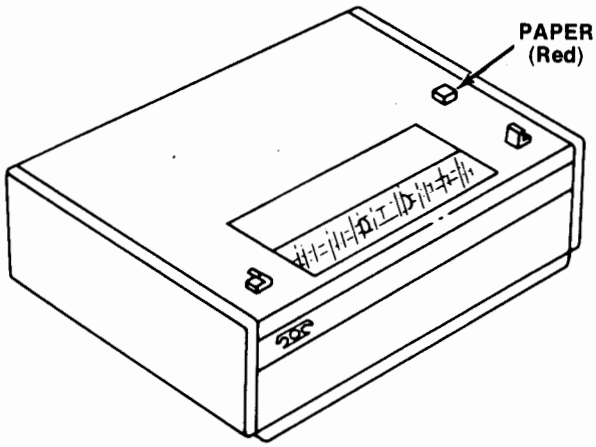
Tube Tilt—Tilts display screen forwards and backwards to compensate for nearby lighting glare.

Brightness—Increases and decreases intensity of displayed characters.

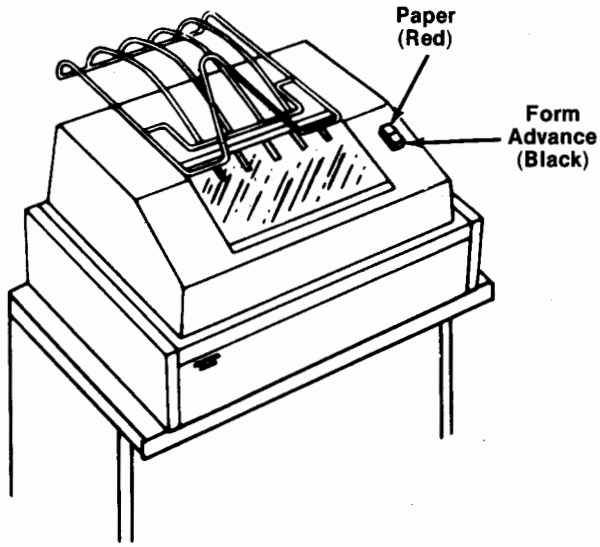
Audible Tone—Sounds on any of the following conditions to assist operator during data preparation: Nearing end of line, at end of line, attempting to enter unprotected data on top of protected data, attempting to follow a new line character with data, attempting to insert a character or line where room does not permit.

PAPER—Feeds out blank paper, for as long as it is depressed. Illuminates when paper is low. The low paper condition permits present print-out to continue but prevents another print-out from beginning until paper supply is re-filled.

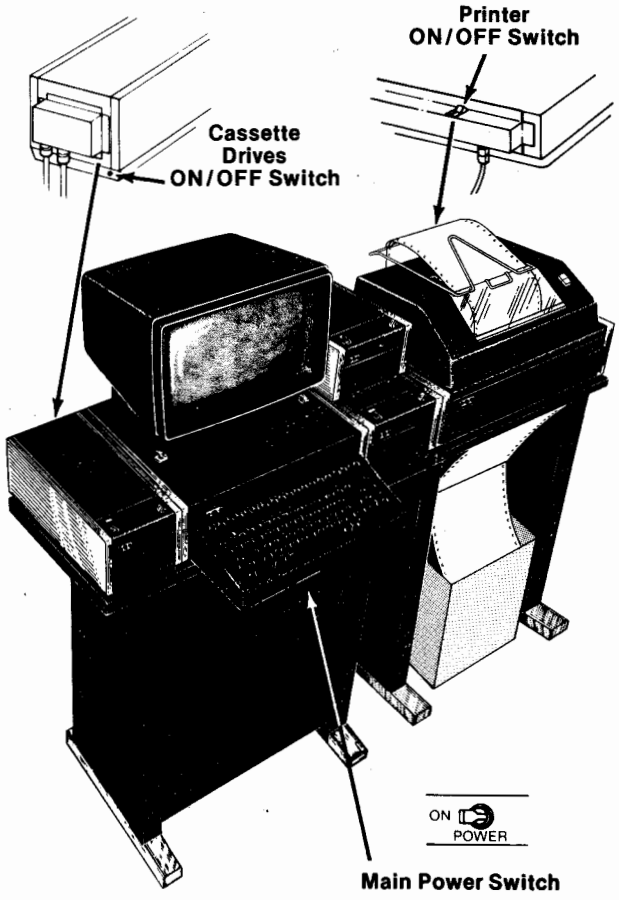
FORM ADVANCE—Feeds out forms, to the beginning of the next form.



Friction Feed Printer Cabinet



Tractor Feed Printer Cabinet



VERSATILE TERMINAL CONFIGURATIONS

Model 40/8B terminal configurations include:

Keyboard Display (KD)
Keyboard Display Magnetic Tape* (KDM)
Keyboard Display Printer (KDP)
Keyboard Display Printer Magnetic Tape* (KDPM)

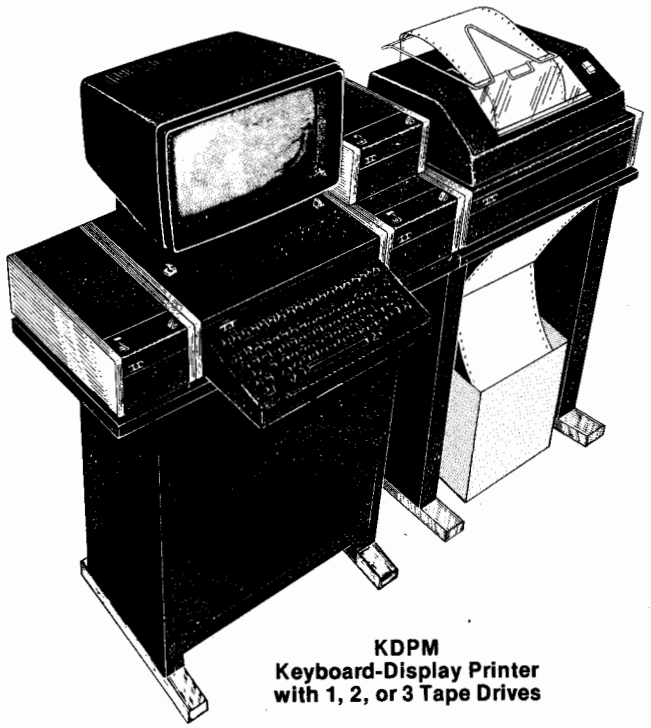
*Up to 3 Magnetic Tape Drives

KDPM

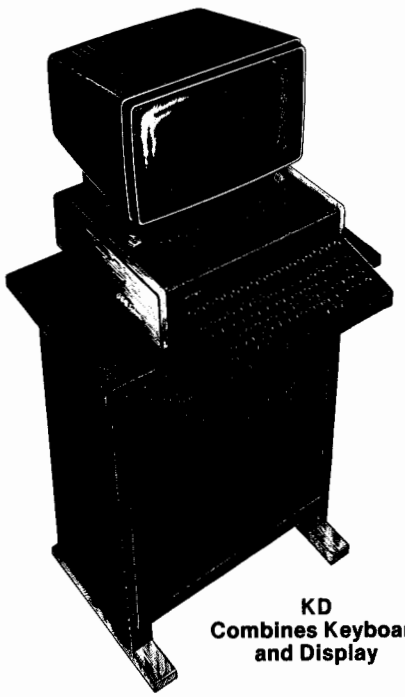
This arrangement consists of a keyboard, display, printer and 1, 2, or 3 magnetic tape drives, providing a means for data entry, storage, display, editing, printing, sending, receiving, and monitoring.

The printer is available in 80-column friction feed and 80 or 132-column tractor feed versions, and comes with a 10 character input buffer. This means that short lines are not a problem; any difference in terminal input speed and printing speed is automatically handled by the buffer. Should it fill, it provides a signal to halt the sender until it empties.

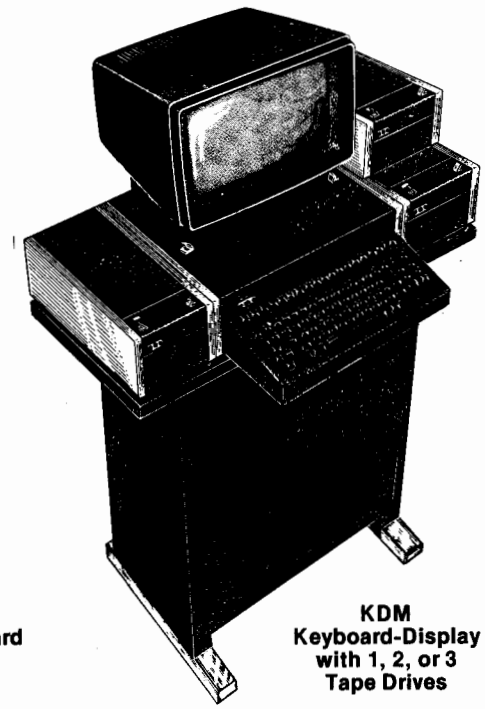
The magnetic tape cassettes greatly extend the terminal's data handling capacity for transmission, reception, and local preparation. The drives can be used in conjunction with the printer and display, as desired.



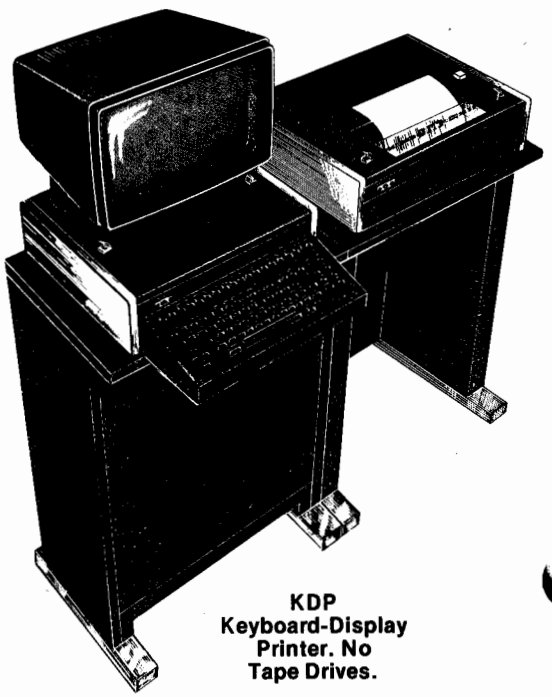
KDPM
Keyboard-Display Printer with 1, 2, or 3 Tape Drives



KD
Combines Keyboard and Display



KDM
Keyboard-Display with 1, 2, or 3 Tape Drives



KDP
Keyboard-Display Printer. No Tape Drives.

DATA LINK COMPATIBILITY

Transmission characteristics are dependent on the communications system that the model 40/8B will be used in. The terminal must therefore be conditioned to fit into a particular system. To accomplish this, several options have been provided.

INTERFACE

The terminal provides MIL Standard 188C communication interface. This interface consists of a termination point for the signal leads, control leads and clock leads. Signal, clock and control leads conform to the voltage, impedance and wave-shape requirements of MIL Std. 188C and are described below.

Signal— Receive and transmit data leads:
+6v = mark,
-6v = space.

Clock— Receive and transmit clock leads:
+6v to -6v squarewave,
-to + transition = start of bit;
+ to -transition = mid point of bit.

Controls— Terminal ready output:
+6v ready, -6v stop
clear to send input:
+6v clear, -6v stop

Accessories are available to provide either RS232 voltage interface or a 20/60 ma. neutral current interface, up to 260 volts open circuit voltage. Signal leads and/or control leads and/or clock leads may be inverted if required. For details see Accessories.

CODE SELECTION AND TRANSMISSION MODE OPTIONS

The terminal may be optioned to transmit in either the asynchronous or isochronous mode, half or full duplex.

Eight-level ASCII (ITA5) is the normal operating code, but by enabling command 1 in the Control Mode, the terminal can be shifted to five-level Baudot (ITA2) operation.

When in the asynchronous mode, a number of transmission speeds are available, which are switch selectable. The chart below lists the various speeds for both the Baudot and ASCII codes.

SPEEDS AND CODE STRUCTURE

With isochronous transmission, the terminal will operate at speeds up to 2400 bits per second with a Baudot code structure of seven bits per character or an ASCII code structure of 10 bits per character in which the stop unit is one bit in length.

With asynchronous transmission the terminal will operate between 50 and 2400 bits per second with a Baudot code structure of 7 or 7.5 bits per character (stop element 1 or 1.5 bits) or an ASCII code structure of 10 bits per character.

PARITY GENERATION AND DETECTION

When operating in an ASCII environment, the terminal will generate either odd parity, even parity or no parity at all. On reception of a parity error the display will highlight the line that contains the parity error and the printer can either print the character or print an asterisk (*) in place of the erroneous character. The terminal can be optioned to check for even parity or odd parity, or to not check parity.

Asynchronous Speeds Available

Bits/ sec	Bits/ char (unit code)	Char/ sec	
50	7/7.5	7.1/6.6	5 level (BAUDOT)
75	7/7.5	10.7/10	
100	10	10	
150	10	15	
300	10	30	
450	10	45	
600	10	60	
900	10	90	8 level (ASCII)
1200	10	120	
1800	10	180	
2400	10	240	

EASY OPERATION

Operation of the 40/8B terminal will generally follow one or more of the following operational modes:

Control Mode
Local
On-Line Selective Calling
On-Line Manual Operation

CONTROL MODE

The Control Mode is an off-line mode which enables the operator to perform a number of operations involving the various terminal devices.

Enter the Control Mode by operating the CTRL MODE key. The terminal responds by displaying a protected (unerasable) list of commands like this:

CONTROL MODE

1. ▮ Five-Level Communication Interface
2. __ Single Message Mode
3. ___ Send Tape Block Number
4. ___ Receive Tape Block Number
5. ___ Monitor Tape Block Number
6. _ List Send Tape Headings
7. _ List Receive Tape Headings
8. _ Monitor Data On Display
9. ___ Erase Receive Tape
10. _ Keyboard On-Line
11. _ Tape Ports: ST= RT= MT=

The commands are executed by entering the appropriate symbol in front of the commands and depressing the LINE FEED key on the operator console.

Following is a brief description of all the 11 functions of the Control Mode:

Line 1— Five Level Communication Interface:
To activate command, enter X in position 1 and depress the LINE FEED key. When the terminal is turned on the 8-level ASCII interface is automatically activated. By executing command 1 the terminal is programmed for 5-level Baudot operation. To terminate command delete X from position 1.

Line 2— Single Message Mode:
To activate command enter X in position 2. Activating this command conditions the terminal to transmit one message when polled. With this command not activated the terminal will send all messages recorded on the Send Tape. To terminate command delete X from position 2.

Line 3— Send Tape Block Number:
When the terminal is turned on, the Send Tape is automatically positioned at the beginning. By entering a specific block number and depressing the LINE FEED key, the Send Tape positions itself to that block number ready to send it when requested to do so. An R entered in this command and depresssing LINE FEED rewinds the tape. Tape should be rewound before it is removed from its drive.

Line 4— Receive Tape Block Number:
Displays the latest data block received. When the Receive Tape device is turned on, the tape automatically advances to the next unrecorded portion of the tape and that block number is displayed in this line. An R placed in line 4 and executed rewinds the Receive Tape. Tape should be rewound before it is removed from its drive.

Line 5— Monitor Tape Block Number:
As with lines 3 and 4, line 5 indexes the last monitored data block. When inserted in its drive the tape automatically advances to the unrecorded portion and that block number is displayed in this line. An R placed in line 5 and executed rewinds the Monitor Tape. Tape should be rewound before it is removed from its drive.

Line 6 and 7—List Send Tape Heading:
Entering X and depressing the LINE FEED key causes a listing of the first 55 characters of each message preceded by their block numbers of the Send (line 6) or Receive Tape (line 7) to be displayed. Depressing the SPACE key on

the operator console causes 24 additional messages to be displayed. Operator continues to depress the SPACE key until all messages are reviewed.

Line 8— Monitor Data on Display:
Data being received or sent on-line can be monitored on the display as it is being sent, received, or transferred locally (as from tape to printer) by placing an X in line 8 and depressing the LINE FEED key.

Line 9— Erase Receive Tape:
Typing XXX and depressing LINE FEED causes the erase function on the Receive Tape to take place so that the cassette can be used again.

Line 10— Keyboard On-Line:
This command puts the keyboard on-line in conversational communication with a distant terminal. Characters will be transmitted on-line as they are generated from the keyboard. Type X and depress LINE FEED key.

Line 11— Tape Ports ST= RT= MT=
This command enables the operator to reassign which tape drive will be the Send, Receive, or Monitor. By placing an X at the beginning of the line and reassigning the number adjacent to ST (Send Tape), RT (Receive Tape) and MT (Monitor Tape) the operator determines which tape drive sends, receives, or monitors. The assignment numbers are: 1, 2, and 3. The assignment of the tapes on power-up is determined by an installer option.

LOCAL OPERATION

Local operation of the 40/8B terminal consists primarily in generating, correcting, rearranging, and duplicating messages both new and others that have already been received. Use the Control Mode and various other controls to manipulate messages among the various terminal devices.

Display to Receive Tape

New messages that are to be transmitted are generated on the display from the keyboard. The various editing keys aid in the arrangement of data on the display. Certain portions of the message may be protected or unprotected, highlighted or not; start of message and end of message codes are entered; the cursor is returned to start of message; etc.

When the message is completed insert a cassette in the Receive Tape Drive, and depress the REC TAPE LCL key. Now depress two other control keys: the DISP SEND and the DISP LCL keys. The message on the display is now recorded on the Receive Tape.

If multiple messages are to be prepared, clear the display, prepare another message, depress the DISP LCL key. Record the message, then rewind the tape.

Depending on local procedures, you can keep the cassette in the Receive Tape Drive, enter the Control Mode and Reassign the Receive Tape Drive to become the Send Tape Drive, or physically remove the cassette from the Receive Tape Drive and insert it in the Send Tape Drive for on-line transmission.

Send Tape to Display

General message updating is a snap. Enter the Control Mode and reposition the Send Tape so that the desired data block is in the ready position. Then exit the Control Mode, depress the DISP LCL key, and the SEND TAPE LCL key. The message is transmitted to the display and can now be changed. Once changed the message can be recorded on cassette tape again as explained previously, namely, recorded on the Receive Tape and physically switched to the Send Tape drive, or reassign the Receive Tape to become the Send Tape. If the message exceeds the 72 lines of the display, the terminal will automatically segment the message.

Send Tape to Printer

Often there will be a need to prepare a hard copy of messages stored in the Send Tape before the messages are transmitted on-line. Enter the Control Mode and execute the appropriate command to position the desired message in the ready position. Now depress the PTR LCL key to turn the printer on and depress the SEND TAPE LCL key.

Send Tape to Receive Tape

Suppose that four messages have been prepared on the Send Tape. Suppose further that messages 1 and 3 need to be updated before being transmitted on-line. (The update consists of adding additional data to the message.) The 40/8B's intra device flexibility makes the task easy to do. Enter the Control Mode and access the first of the four messages. Now transfer the message from the Send Tape to the display by depressing the DISP LCL and SEND TAPE LCL key. Make the necessary changes to the message and transfer it to the Receive Tape by depressing the REC TAPE LCL, DISP SEND, and DISP LCL keys.

Message no. 2 requires no change and can be transferred to the Receive Tape directly. First depress the REC TAPE LCL key, then the SEND TAPE key.

For message no. 3 proceed as above: transfer it from the Send Tape to the display, make the necessary changes, then store it in the Receive Tape.

Message no. 4 can be transferred to the Receive Tape as was message no. 2.

Depending upon local routines the Receive Tape can be physically removed from the Receive Tape Drive and placed in the Send Drive thereby becoming the Send Tape, or access the Control Mode and reassign the tape ports so that the Receive Tape becomes the Send Tape. The original Send Tape then can be erased and used again.

ON-LINE SELECTIVE CALLING

The 40/8B terminal operates in a Selective Calling mode according to ANSI X3.28 procedures, subcategory 2.4 or 2.5 and A1 (similar to 8A1 poll and select procedures). This is a store and forward system in that all traffic is between the terminal and a central communication processor (a computer). There is no traffic between terminals directly.

In the Selective Calling Mode the terminal is either polled to send or selected to receive. The polling sequence from the communication processor consists of:

EOT
Station Identification Code
(Two lettered sequence)
DC1
ENQ

If the terminal has traffic to send and has been readied to send it will transmit the message or messages. Once the terminal has sent its messages, the computer may send messages to the printer device.

If the terminal has no message to send it replies with EOT.

The computer does not select the terminal as a whole, but selects the various devices individually or in combination. The sequences for device selection to receive are as follows:

Printer and Receive Tape (with option for printer only)	EOT Station Identification Code = (equals sign) ENQ
Printer and Receive Tape	EOT Station Identification Code DC2 ENQ
Display	EOT Station Identification Code DC3 ENQ
Receive Tape	EOT Station Identification Code DC4 ENQ

If the devices have been readied for receiving when selected, the terminal replies to the selecting sequence with ACK. Reception of data then takes place, beginning with SOH, the text, and ending with EOT. If no device has been readied for receiving, the terminal replies with NAK to the selecting sequence.

Sending

When the terminal is first turned on, the POL/SEL and PTR LINE keys are automatically lighted. It is operation of the POL/SEL key which conditions the terminal for all Selective Calling operations, sending as well as receiving. The POL/SEL condition can of course be selected at other times by simply operating the POL/SEL key. Thus when first turned on, the terminal is in the Selective Calling mode, automatically.

Proceed now to prepare the message(s) on the display. Once the message(s) are prepared they can be sent in response to a poll.

There are two methods of sending a prepared message: from the display and from the Send Tape.

Sending from the Display: Operate the DISP SEND key on
Operate DISP LINE on
Is printed copy of outgoing message required
- yes-leave PTR LINE key on
- no-turn PTR LINE key off

When terminal is polled the message will be automatically sent. If Monitor Tape is present it will record the message.

Sending from Send Tape: Enter control mode by operating the CNTRL MODE key
If single message is to be sent, execute the Single Message command, otherwise multiple messages may be sent.
If message is to be monitored on the display, execute the Monitor Data on Display command
Advance the Send Tape to the message to be sent
Is hard copy of message required
- yes-leave PTR LINE key on
- no-turn PTR LINE key off

If message is to be monitored on the display:
Exit Control mode
Depress DISP LINE
Depress SEND TAPE LINE key on

When terminal receives its polling code the message will be sent.

Receiving

Operation of the POL/SEL key conditions the terminal to receive messages in response to a select code. Messages can be received on the following devices:

Display
Display and Receive Tape
Receive Tape
Printer (alone or with the other devices)

The display and Receive Tape must be placed in the receive mode by the operator in order for these devices to receive.

Receiving messages need not necessarily tie-up the entire terminal. Messages can be received on certain devices such as the printer or tape while messages can be prepared in the local mode on the display.

Receiving on the Display:
Turn terminal on
Operate DISP LINE key to on
When selected to receive the terminal replies with ACK, then copies the message on the selected device.

Receiving on Receive Tape (and Monitor on the Display):
Turn terminal on
Enter control mode and condition the terminal to monitor data on display.
Exit control mode.
Depress DISP LINE
Depress REC TAPE LINE
When selected to receive, the terminal replies with ACK, then receives the message on the selected devices.

Receiving on Receive Tape and on Display:
Turn terminal on
Turn on REC TAPE LINE key
When selected to receive the terminal replies with ACK, then receives the message on the selected device.

Receiving on Printer:
Turn terminal on (PTR LINE turns on automatically)
When selected to receive the terminal responds with ACK, then the printer copies the message.

ON-LINE MANUAL OPERATION

In the On-Line Manual Operation the 40/8B terminal sends and receives data on-line without the polling and selecting used in the Selective Calling Mode (POL/SEL off).

Sending can be done from the display or from the Send Tape.

To Send from the Display:
Depress DISP SEND key
Depress DISP LINE key

To Send from the Send Tape:
Depress SEND TAPE LINE key

To Receive on the Display:
Depress DISP LINE
(DISP SEND key off)

To Receive on the Receive Tape:
Depress REC TAPE LINE key

KEYBOARD ON LINE

In this mode the 40/8B terminal is placed in conversational communication with the distant terminal (computer). This mode is especially useful for updating files, etc because the keyboard can transmit on-line, one character at a time.

In this mode, only the keyboard is on-line. The terminal may be optioned to display the data being sent. The Send Tape is inoperative. As for receiving, data may be received on the display (DISP LINE on) and the printer (PTR LINE on).

To place the keyboard on-line, extinguish the POL/SEL lamp, enter the control mode, and execute command 10-Keyboard On-Line. Now exit the control mode and type on the keyboard. If hard copy is required leave PTR LINE key on.

TECHNICAL FACTS

Data Preparation Details

Line Ending Controls

Each line of displayed data should be ended with a NL (New Line) control character, which is displayed as ≡. If, however, in the course of editing this character is overlooked the Automatic New Line feature of the terminal will insert it for you, but only at the 81st character position of the line—the intervening positions between the last data character and ≡ being automatically filled with space characters.

From this it can be seen that it is more economical to insert a NL at the end of your data than rely on the Automatic New Line feature. In other words, each time this feature is employed the processor sees a full 80 character line, even though you may be sending only a few characters of actual data.

Also, no characters can be transmitted to the right of the NL symbol.

Terminal responses to the line ending controls are as follows:

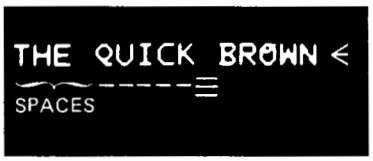
Line Ending Control			Sent & Received On-Line	Function Performed on CRT	Function Performed on Printer
Key	Function	Symbol			
Return	Carriage Return	⩤	CR	Return Cursor to start of next line	Return
Line Feed	Line Feed	⩛	Line Feed (New Line)	Return Cursor to start of next line	New Line
New Line	CR, CR, LF	≡	CR, CR, LF	Return Cursor to start of next line	New Line

Underlining, overscoring, and simultaneous underlining and overscoring on the printer is possible.

To Underline characters: End the line of data in which characters are to be underlined with CARRIAGE RETURN (⩤). On next line insert underline character beneath each character to be underlined. Terminate this line with NEW LINE (≡).

When transmitted on-line or printed locally data will be printed as shown below.

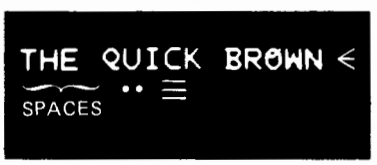
On Display — On Printer



THE QUICK BROWN

To accent characters: Follow same procedure as for underscoring. End first line of data with CARRIAGE RETURN (⩤). On next line insert the accent marks below the character to be accented. Terminate this line with NEW LINE (≡). Printer will copy as shown below.

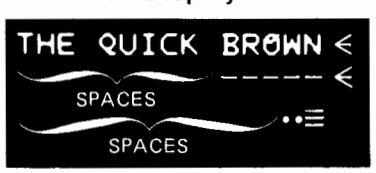
On Display — On Printer



THE QÜICK BROWN

To underline and accent characters at the same time: End first line of data with CARRIAGE RETURN (⩤). Prepare a second line with the underlines under the characters to be underlined and terminate line with CARRIAGE RETURN (⩤). Prepare a third line with accent character(s) beneath characters to be accented and terminate this line with NEW LINE (≡). Printer will copy as shown below.

On Display — On Printer



THE QUICK BRÖWN

TABBING

Tabbing is achieved by sending spaces between the columns in tabulated data.

TAB SET and TAB CLEAR permits you to set and clear tab settings on the display, and CURSR TAB permits rapid movement of the cursor between settings. When the data is read out to the line from the display memory, SP's (spaces) will be sent for all spaces tabbed through by means of the CURSR TAB key. If this is not satisfactory, for receipt by a remote character-at-a-time printer for example, you may want to generate the HT (Horizontal Tabulation) control instead of using the CURSR TAB key. Generation of HT causes the symbol ▶ to be displayed on sending unit only, the function to occur, and HT to be sent.

MAGNETIC TAPE

Each cassette can record 500 blocks of data. Each data block on the tape contains 510 ASCII characters.

The efficiency of recording incoming data is increased by employing two storage buffers in the controller. One buffer feeds data to the recording tape as the other accumulates it from the input.

The Send Tape can be commanded to transmit any of its data blocks except block zero and block numbers greater than 500.

Block zero cannot be used because it is defined as the 'format' block and is required to initialize the tape for use.

Block numbers greater than 500 are rejected because, technically, you are out of tape, even though there is room for another 25 blocks of data. This additional space is used as a safety zone in the event that block 500 contains an extremely long message.

PROTECTED DATA

Protected data is just that. It cannot be replaced or edited without first depressing the FORM ENTER key. Therefore, as you enter or edit unprotected data with protected data already displayed, there will be times when the editing controls will not obey their functions.

For example, when you attempt to insert another unprotected character between protected characters, the CHAR INSRT key will not obey its function if there are no more unprotected spaces left between the protected characters.

A similar insertion situation occurs when inserting an unprotected line between lines having protected data in them. The LINE INSRT key will not obey its function if there are no more lines with only unprotected data in them left in between the lines having protected data in them.

Protected data also affects results obtained by use of either the CURSR TAB or by generation of the control HT. The cursor moves to the first tab stop on the right (after displaying the symbol ▶ in the case of HT), or to the first unprotected character (space is a character) following protected data, whichever comes first.

With regard to protected and unprotected spaces, they look alike on the screen until covered by the cursor, which will display at half intensity when covering a protected space, or until the brightness control is turned up high enough to show a contrast between protected and unprotected spaces.

AUDIBLE TONE

The tone sounds to alert the operator to any one of the following conditions: Nearing end of line, at end of line, attempting to replace protected data with unprotected data, attempting to follow new line (≡) with data, attempting to insert characters or lines where there is no room.

Terminal Vocabulary

KEYBOARD VOCABULARY

Full ASCII Keyboards can generate the 128 characters and controls shown on the ASCII code chart on page 23. (CURSOR LEFT is Backspace).

DISPLAY VOCABULARY

The display can display the 96 characters shown in the last six columns of the ASCII code chart. The symbol // is displayed for the character DEL (Delete). The absence of any other symbol or character indicates display of the character SP (Space). The display can also display 31 of the 32 controls shown in the first two columns of the code chart, by displaying the symbols shown to the right of each control. No symbol is displayed for backspace. The display response to receipt of BACKSPACE by performing a cursor left function; the BACKSPACE character is not stored.

PRINTER VOCABULARY

Full ASCII printers can print 94 of the 96 characters shown in the last six columns of the code chart. They do not print the character DEL (Delete) and SP (Space).

Monocase ASCII printers can print the 63 characters shown in the middle four columns (3-6) of the ASCII code chart. On receipt of a character from the last two columns (7 and 8) of the code chart the corresponding character from columns 5 and 6 or a substitute character will be printed. A selectable field option will determine which one is to be printed.

CODE CONVERSION

When operating in a Baudot environment, all characters that appear on the ITA2AV chart (page 23) will be code converted to their ITA5/ASCII (page 23) counterpart in the controller and then transmitted to the receiving unit (printer, tape, or display).

TELETYPE™

ITA5 (International Telegraph Alphabet)
ASCII (American Standard Code for Information Interchange)

Controls				Characters								
NUL	N_U	DLE	D_L	SP	0	@	P	`	p	0	0	0
SOH	S_H	DC1	D_1	!	1	A	Q	a	q	1		
STX	S_X	DC2	D_2	"	2	B	R	b	r	0	0	1
ETX	E_X	DC3	D_3	#	3	C	S	c	s	1		
EOT	E_T	DC4	D_4	$	4	D	T	d	t	0	1	0
ENQ	E_Q	NAK	N_K	%	5	E	U	e	u	1		
ACK	A_K	SYN	S_Y	&	6	F	V	f	v	0	1	1
BEL	B_L	ETB	E_B	'	7	G	W	g	w	1		
BS		CAN	C_N	(	8	H	X	h	x	0	0	0
HT	▶	EM	E_M	)	9	I	Y	i	y	1		
NL	≡	SUB	S_B	*	:	J	Z	j	z	0	1	0
VT	V_T	ESC	E_C	+	;	K	[	k	{	1		
FF	F_F	FS	F_S	,	<	L	\	l	¦	0	0	1
CR	⇐	GS	G_S	—	=	M	]	m	}	1		
SO	S_O	RS	R_S	.	>	N	^	n	~	0	1	0
SI	S_I	US	U_S	/	?	O	—	o	DEL	1		
										1	2	3

0	1	0	1	0	1	0	1	5
0		1		0		1		6
0				1				7

4 BITS

Controls:
NUL – Null
SOH – Start of Heading
STX – Start of Text
ETX – End of Text
EOT – End of Transmission
ENQ – Enquiry
ACK – Acknowledge
BEL – Bell
BS – Back Space
HT – Horizontal Tabulation
NL – New Line
VT – Vertical Tabulation
FF – Form Feed
CR – Carriage Return
SO – Shift-Out
SI – Shift-In
DLE – Data Link Escape
DC1 – Device Control 1
DC2 – Device Contrbl 2
DC3 – Device Control 3
DC4 – Device Control 4
NAK – Negative Acknowledge
SYN – Synchronous Idle
ETB – End of Transmission Block
CAN – Cancel
EM – End of Medium
SUB – Substitute
ESC – Escape
FS – File Separator
GS – Group Separator
RS – Record Separator
US – Unit Separator

ITA2AV Code (Baudot)

BLANK	SP	CR	,	5	#	9	.
BLANK	SP	CR	N	T	H	O	M
3	BELL	$	!	"	6	?	/
E	S	D	F	Z	Y	B	X
L.F.	8	4	:	)	ø	&	;
L.F.	I	R	C	L	P	G	V
—	7	'	(	2	1	FIGS	LTRS
A	U	J	K	W	Q	FIGS	LTRS

0	1	0	1	0	1	0	1	3
0		1		0		1		4
0				1				5

0	0	
1		
0	1	
1		
1	2	

3 BITS

Controls:
SP – Space
CR – Carriage Return
LF – Line Feed
FIGS – Figures Shift
LTRS – Letters Shift

On-Line Terminal Controls

RECEIPT OF ASCII CONTROLS

Receipt of the following ASCII controls cause the following actions to be performed:

Receipt of Baudot controls (CR, LF, BELL) will have an equivalent effect.

NUL (Null)—Displays symbol N_U but performs no function.

DELETE—Displays // but performs no function.

ETX (End of Text)—Displays symbol E_X and switches terminal from receiving mode to local mode, unless option elected not to. Also feeds out 16 blank lines of paper from printer, if option elected. GS (Group Separator) displays symbol G_S and performs same function as ETX.

EOT (End of Transmission)—Displays symbol E_T and switches terminal from receiving mode to local mode, unless option elected not to. Ignored by printer terminal.

BEL (Bell)—Displays symbol B_L and causes alarm to sound, and cursor to increment.

BS (Back Space)—Moves cursor left, one character.

HT (Horizontal Tab)—Moves cursor to first tab stop on right. If there is no tab setting on right, cursor moves to start of next line. If there is protected data en route the cursor stops instead at first unprotected character following protected data.

NL (New Line)—Displays symbol ≡ and moves cursor to start of next line, and causes printer to print next character at start of next line. Also scrolls display up one line if cursor was on last line on screen.

VT (Vertical Tab)—Causes printer to print next character at start of next line.

FF (Form Feed)—Performs the same function as line feed. Can be optioned to feed out paper to the end of form.

CR (Carriage Return)—Displays symbol ⋖ and causes printer to print next character at start of line, or optionally to perform new line function.

RECEIPT OF ESC (ESCAPE) SEQUENCES

Receipt of the following ESC (Escape)—Character sequences cause the following actions to be performed:

ESC 0 (zero)—Sets a tab stop at the cursor location, on that line only.

ESC @ sequence—Moves cursor to first tab stop on right; if none, to start of new line. If protected data on the way, stops at first unprotected space past protected data.

ESC 1 sequence—Sets tab stops on that line and all lines below, to the end of the memory.

ESC 2—sequence—Clears tab stops from the cursor location to the end of the line, on that line and all tabs in the column(s) below and to the right.

ESC 3—Causes characters that follow to be highlighted.

ESC 4—Causes characters that follow to not be highlighted.

ESC 7—Moves cursor up, one line.

ESC B—Moves cursor down one line.

ESC C—Moves cursor right, one character.

ESC G—Moves cursor to start of line.

ESC H—Advances display to first segment and moves cursor to start of first line.

ESC J—Clears all unprotected data from all lines below line cursor is on and to the right of the cursor on the line the cursor is on.

ESC R sequence—Advances display to first segment, moves cursor to start of first line and clears all data from display memory, whether protected or unprotected, and all tab stops followed by FORM ENTER off.

ESC L—Creates a space for additional line of data.

ESC M—Deletes a complete line of data.

ESC ∧ —Allows addition of a character to a line.

ESC P—Deletes a character from a line.

ESC S—Causes display to scroll up.

ESC T—Causes display to scroll down.

ESC U—Causes display to advance one complete segment.

ESC W—Puts terminal in protected data mode, during which all received data will be displayed as protected data, and during which receipt of ESC J will cause protected as well as unprotected data to be cleared.

ESC X—Removes terminal from protected data mode.

TRANSMISSION OF ASCII CONTROLS

Transmission of the following ASCII controls from the terminal cause the following actions to be performed by the terminal:

ETX (End of Text)—Halts transmission and switches terminal from send mode to receive or local mode, depending on option elected, or does not switch mode at all if option elected not to.

EOT (End of Transmission)—Halts transmission and switches terminal from send mode to receive mode, unless option elected not to.

TRANSMISSION OF ESC (ESCAPE) SEQUENCES

Transmission of the following ESC (Escape)-character sequences can be elected to accompany the transmission of data in display memory:

ESC 3—Precedes transmission of each block of highlighted characters.

ESC 4—Follows transmission of each block of highlighted characters.

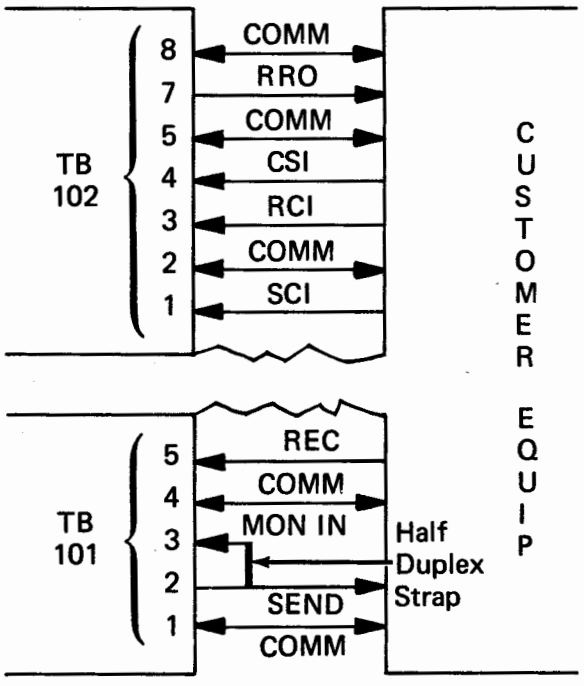
ESC W—Precedes transmission of each block of protected characters.

ESC X—Follows transmission of each block of protected characters.

ESC 0 (zero)—Transmitted ahead of character at any location where there is a tab stop setting.

Terminal Interface

(Conforms to MIL-Std-188C)

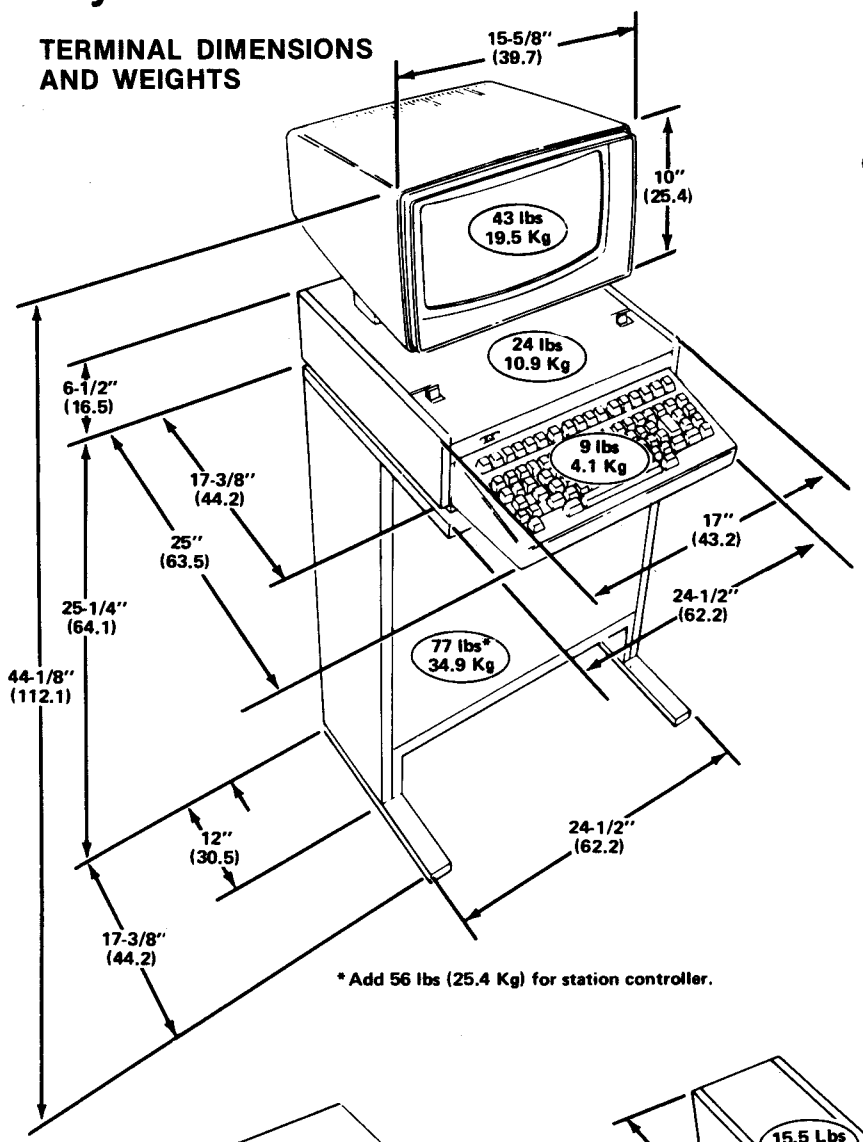


COMM	—	Common Lead
RRO	—	Receive Ready Out
CSI	—	Clear To Send In
RCI	—	Receive Clock In
SCI	—	Send Clock In
REC	—	Serial Signal Input
MON IN	—	Monitor input
SEND	—	Serial Signal Output

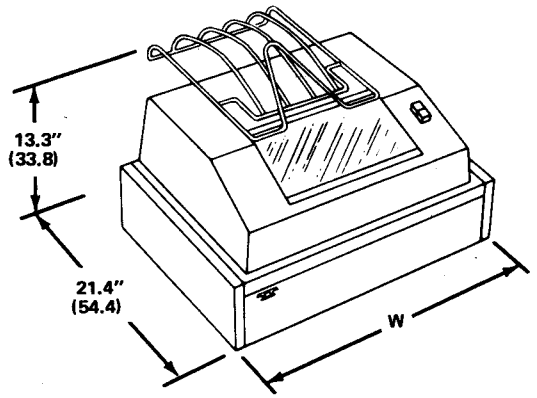
MIL-Std.-188C	EIA Equivalents
RRO	DTR—Data Terminal Ready
CSI	CTS—Clear To Send
RCI	SCR—Serial Clock Receive
SCI	SCT—Serial Clock Trans.
Send	TD —Send Data
Rec.	RD —Receive Data

Physical Facts

TERMINAL DIMENSIONS AND WEIGHTS

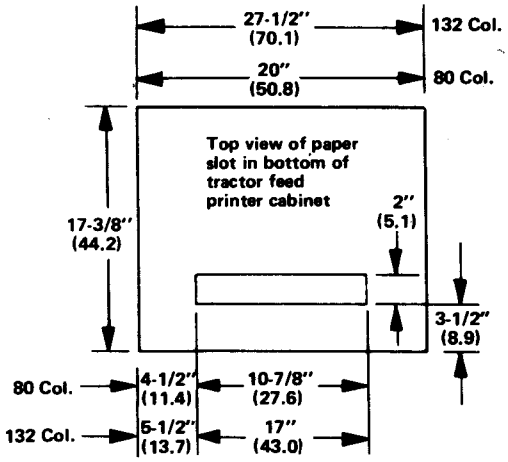


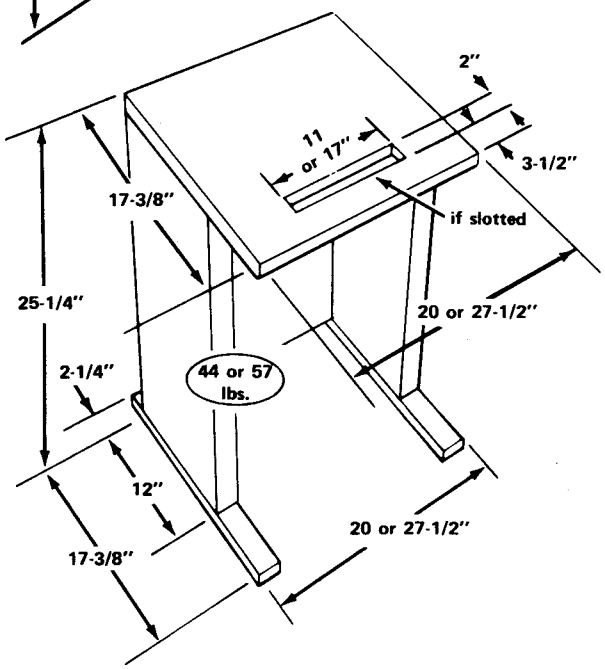
*Add 56 lbs (25.4 Kg) for station controller.

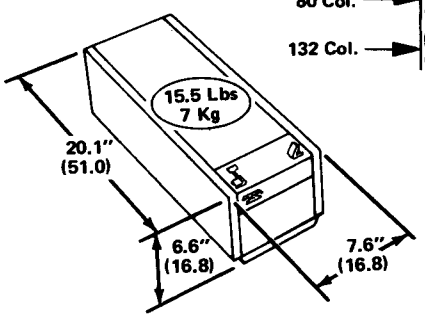


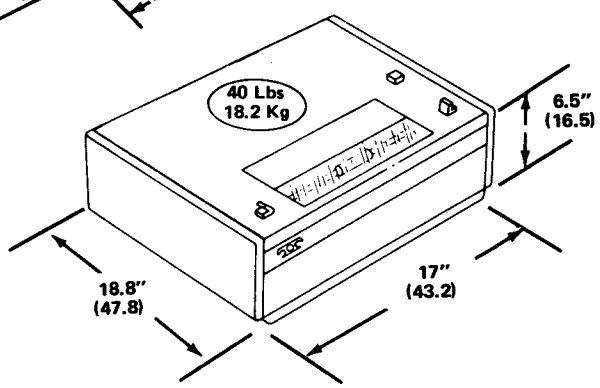
Tractor Feed

Cabinet	Width (W)	Wt.
80 Column	20" (50.8)	84 lbs 38.1 Kg
132 Column	27-5/8" (70.2)	109 lbs 49.4 Kg









NOTE: Measurements in parenthesis are in centimeters unless stated in other metric units.

Electrical Requirements

Supply Voltage 115V ±10% at 48-52 or 58-62 Hz
Starting Current*

KD Terminal	Up to 80 amp.**
KDP Terminal	Up to 80 amp.**
KDPM Terminal	Up to 88.1 amp.**

*A single circuit, fused at 10 amp., has been found capable of withstanding the simultaneous starting load of a KD and ROP terminal without modem.

**Worst case. For up to 3 cycles.

Operating Power and Heat Generation

	amp.	watts	BTU/hr
KD	3.35	365	1250
KDP-Printer Idle	3.75	405	1380
KDP-Printer Operating	4.50	500	1720
KDPM-Printer Idle	5.10	520	1780
KDPM-Printer Operating	5.85	615	2120
KDM	4.70	480	1650

Environmental Requirements

Temperature

Storage.....—40°F to +150°F
—40°C to +65.5°C
Operating.....+40°F to +110°F
+4.5°C to +43.5°C

Relative Humidity

Storage and Operating .....2% to 95%
(non-condensing)

Altitude

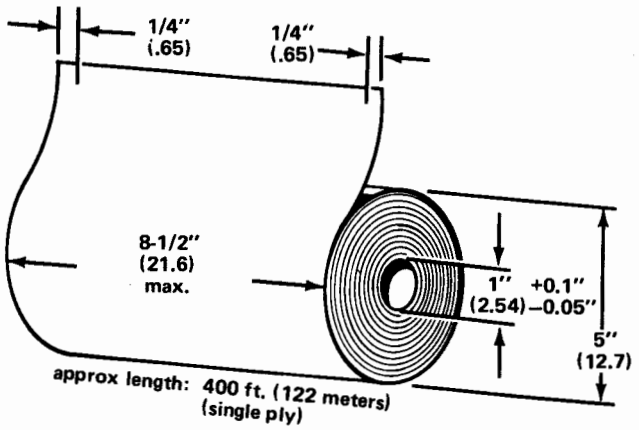
Shipping .....Sea Level to
50,000 feet (15.24 km)
Operating .....Sea Level to
10,000 feet (3.05 km)

RIBBON (402444)

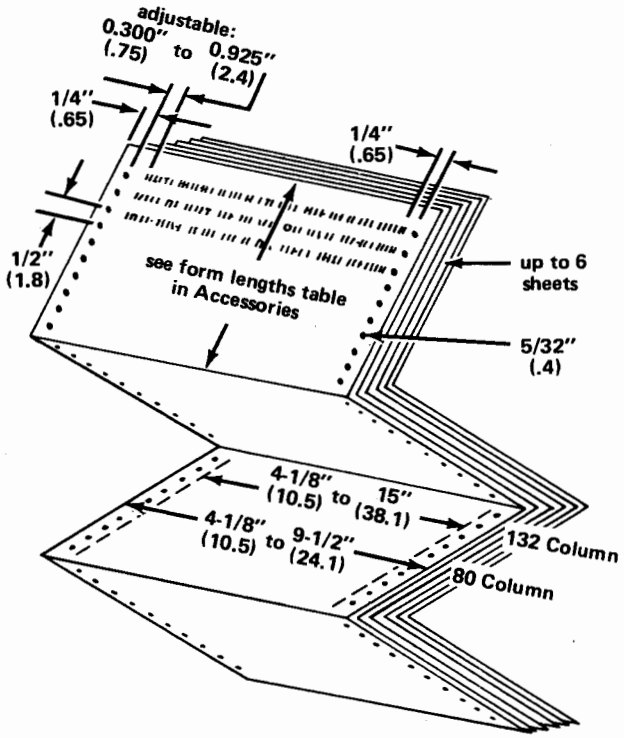
The ribbon is made from nylon ½" (1.27) by 33 yds. (30 meters) by 5 mil thick, on a business machine style 1443 spool.

Paper Dimensions

Rolled Paper



Tractor (Pin) Feed Forms



NOTE: Measurements in parenthesis are in centimeters.

SELECTION GUIDE

Standard Features

General

Tempest Performance: A production model of the 40/8 has been tested in accordance with NACSEM 5100, March 1974, and found to comply.

Simultaneous or Non-Simultaneous Send-Receive Operation.

Data Lead Interface: MIL Std 188C (±6V) Interface provides Send and Receive Data, Transmit Clock, Receiver Clock, Receive Ready, and Clear to Send leads.

Field installable options available for EIA or 20/60 ma. neutral DC signaling.

Speeds up to 2400 bit/sec @ 7, 10 or 11 bit/char. using isochronous operation.

Speeds up to 2400 bit/sec @ 7, 7.5, or 10 bit/char using asynchronous operation.

Conversion of ASCII (ITA5) to Baudot (ITA2AV)/ Baudot to ASCII Code.

Modular Design with Built-In Diagnostics.

Pedestal contains Terminal Electronics.

115 VAC ±10%
48-52 or 58-62 Hz*

Display (KD's and KDP's)

Displays 127 symbols via 7x9 dot matrix refreshed 60 times/sec, on 24-line screen at 79 char/line

Character-Size Cursor, doesn't hide characters

72 line memory

Character and Line Delete and Insert keys

Cursor Up, Down; Left, Right, Return and Home keys

Scroll Up, Down, Segment Adv. and Cursor Tab keys

Tilt and Brightness controls

Highlights line containing parity error

Printer (KDP's)

Available in both 80 column and 132 column printers.

Monocase: Prints 64 char alphabet at up to 5.2 line/sec

Full ASCII: Prints 96 char alphabet at up to 3.7 line/sec

Prints 73 to 80 char/line or adjustable; at 10 char/in and 6 line/in, adjustable for double line feed

Friction Feed: Prints on standard 8-1/2 inch single-ply paper

Tractor Feed: Prints on standard fanfolded forms, 4" to 9-1/2" (15" on 132 col.) wide, 3-2/3, 5-1/2 or 11 inches in length, and up to 6-ply in thickness

Automatically new lines at end of line

Prints from 2-line input buffer

Additional 1000 character buffer. Receive Ready goes off at 900 characters.

Print the symbol Asterisk (*) or the received character on receipt of a parity error and lights up parity error lamp.

Print sent or received data when PRINT-ON-LINE depressed

Feed out 16 blank lines of paper on station deselection, also on receipt of ETX, or neither

Monocase: Print (*) or the upper case equivalent on receipt of a lower case character

Full ASCII: Print lower case or upper case equivalent on receipt of a lower case character

MAGNETIC TAPE (KDPM's and KDM's)

Reusable tape cassette

Cassettes can be Write-inhibited

Auto self-check before operation w/visual indicator

Keyboard assignment of drives for either receive, send, or monitor tapes.

Auto rewind of tape cassette

Fully automatic operation

Automatic recognition of beginning and end of tape

On-line monitoring while simultaneously sending or receiving.

*with pulley change on printer

KEYBOARD DISPLAY (KD), AND KEYBOARD DISPLAY WITH 1, 2, or 3 MAGNETIC TAPE DRIVES (KDM), REGULAR AND INVERTED SIGNAL

Tape Drives			Ped. Top (inches)	*Catalog Number
1	2	3		
			34	4025-8PYA
			24	4025-8PYD
●			24	4027-8PYD
	●		24	4028-8PYD
		●	34	4029-8PYD

*These Catalog Numbers define regular signaling only:

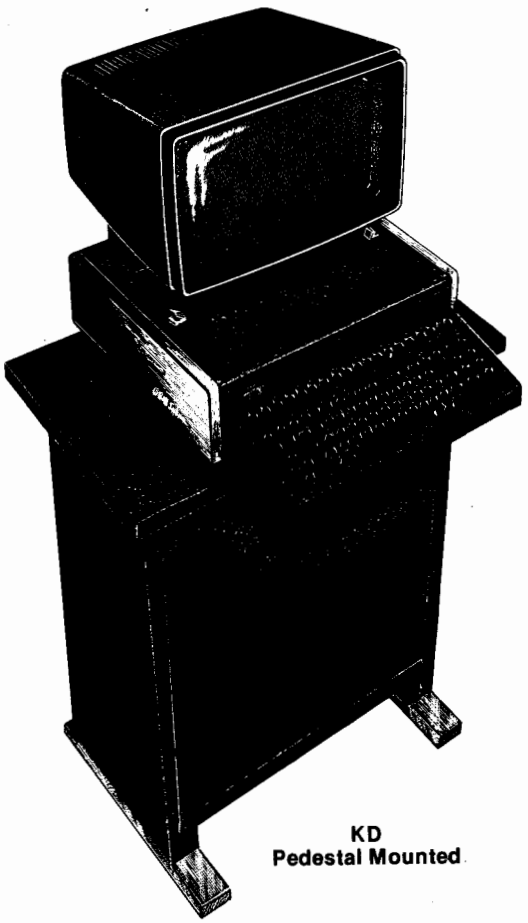
Regular Signaling: Receive ready = +6V = Go;
Clear to send = +6V = Go.

Inverted Signaling: Receive ready = –6V = Go;
Clear to send = –6V = Go.

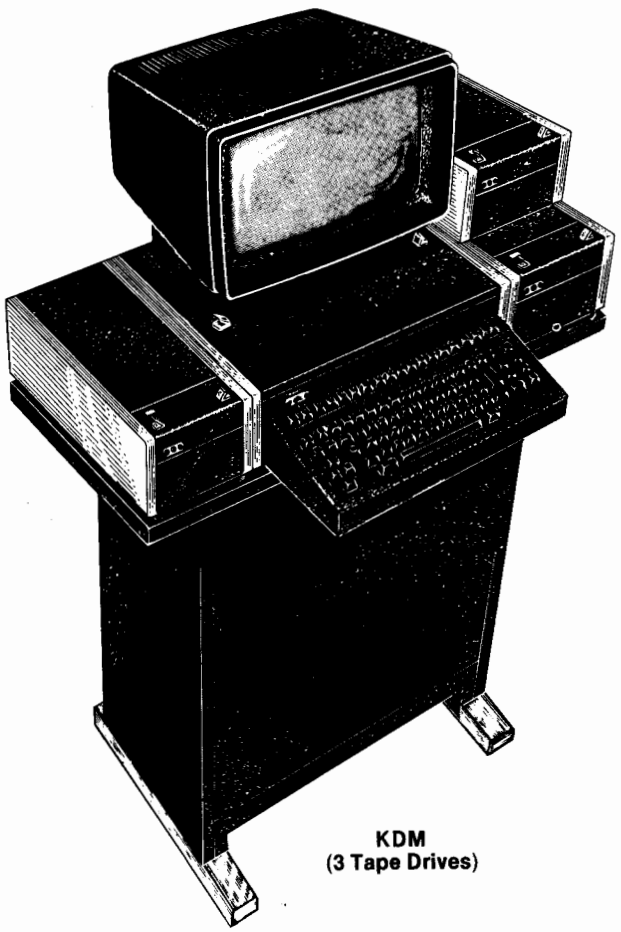
If inverted signaling is required, add a one (1) to the end of the Catalog Number.

Example: 4029-8PYD (regular)
4029-8PYD1 (inverted)

NOTE: All terminals will accept a maximum of 3 tape drives.



KD
Pedestal Mounted



KDM
(3 Tape Drives)

KEYBOARD DISPLAY PRINTER (KDP) AND KEYBOARD DISPLAY PRINTER WITH 1, 2, or 3 MAGNETIC TAPE DRIVES (KDPM), REGULAR AND INVERTED SIGNAL

Printer						Tape Drives			Pedestal Tops (In Inches)		*Catalog Number
80 Column	132 Column	Tractor	Friction	Up-Low	Monocase	1	2	3	KD	PTR	
●			●		●				24	20	4030-8BYS
●			●	●					24	20	4030-8EYS
●		●			●				24	20	4030-8DYS
●		●		●					24	20	4030-8RYS
●			●		●	●			24	20	4031-8BYS
●			●	●		●			24	20	4031-8EYS
●		●			●	●			24	20	4031-8DYS
●		●		●		●			24	20	4031-8RYS
●			●		●		●		24	20	4032-8BYS
●			●	●			●		24	20	4032-8EYS
●		●			●		●		24	20	4032-8DYS
●		●		●			●		24	20	4032-8RYS
●			●		●			●	34	20	4033-8BYS
●			●	●				●	34	20	4033-8EYS
●		●			●			●	34	20	4033-8DYS
●		●		●				●	34	20	4033-8RYS
	●	●			●				24	27	4030-8SKT
	●	●		●					24	27	4030-8TKT
	●	●			●	●			24	27	4031-8SKT
	●	●		●		●			24	27	4031-8TKT
	●	●			●		●		24	27	4032-8SKT
	●	●		●			●		24	27	4032-8TKT
	●	●			●			●	34	27	4033-8SKT
	●	●		●				●	34	27	4033-8TKT

*These Catalog Numbers define regular signaling only:

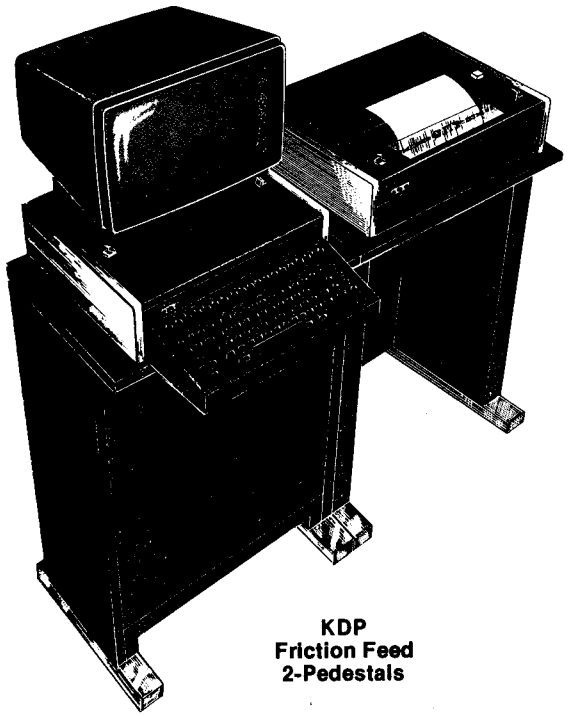
Regular Signaling: Receive ready = +6V = Go; Clear to send = +6V = Go

Inverted Signaling: Receive ready = –6V = Go; Clear to send = –6V = Go

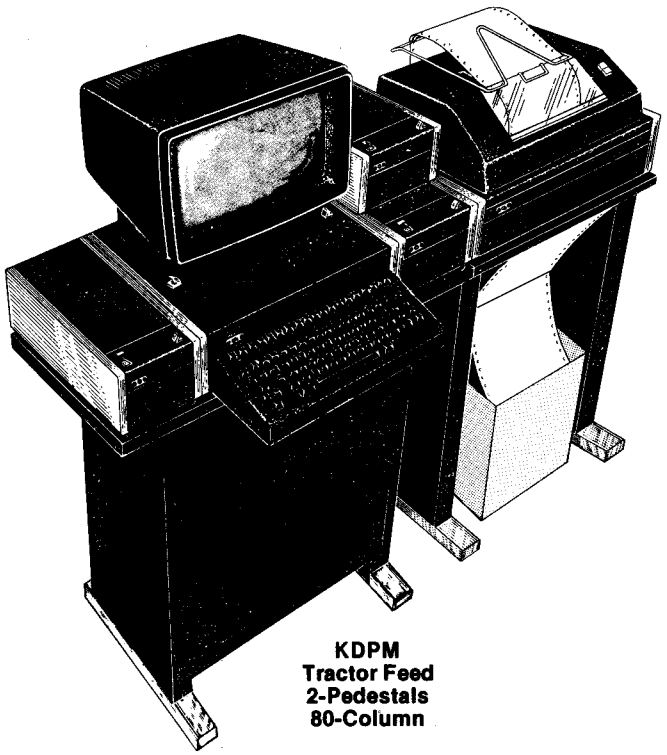
If inverted signaling is required, add a one (1) to the end of the Catalog Number.

Example: 4031-8BYS (regular)
4031-8BYS1 (inverted)

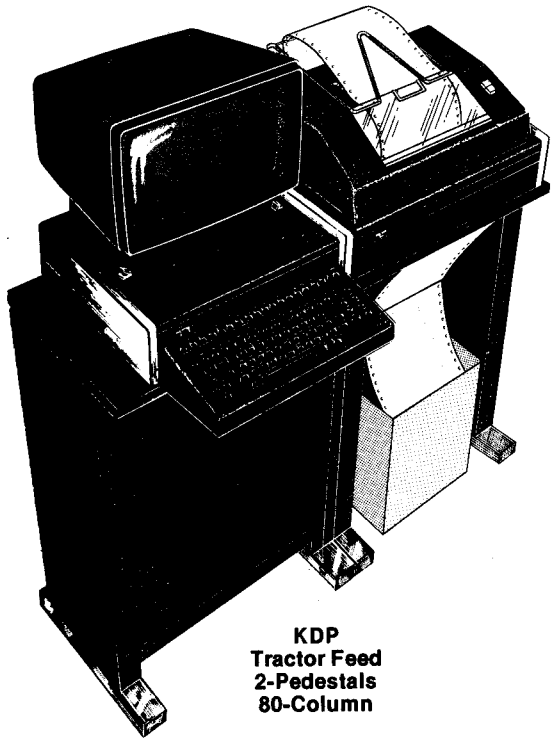
NOTE: All terminals listed will accept a maximum of 3 Tape Drives.



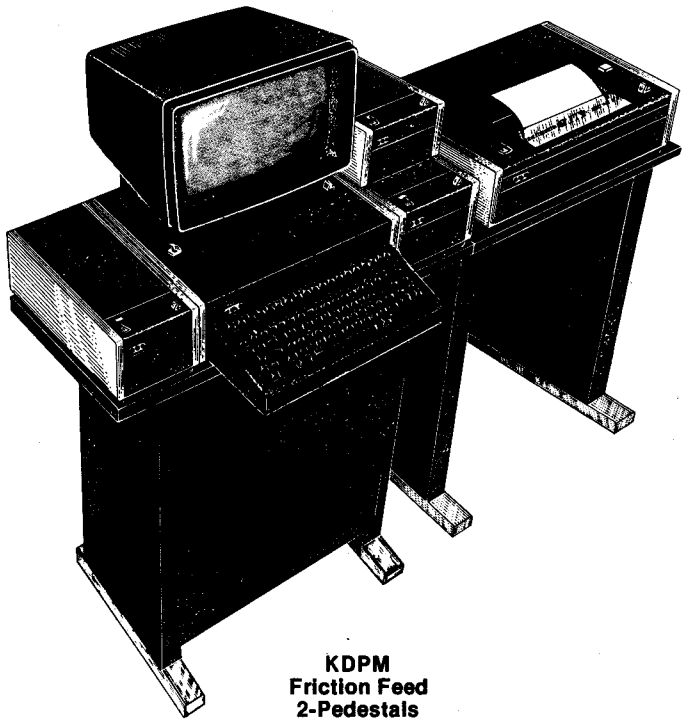
KDP
Friction Feed
2-Pedestals



KDPM
Tractor Feed
2-Pedestals
80-Column



KDP
Tractor Feed
2-Pedestals
80-Column



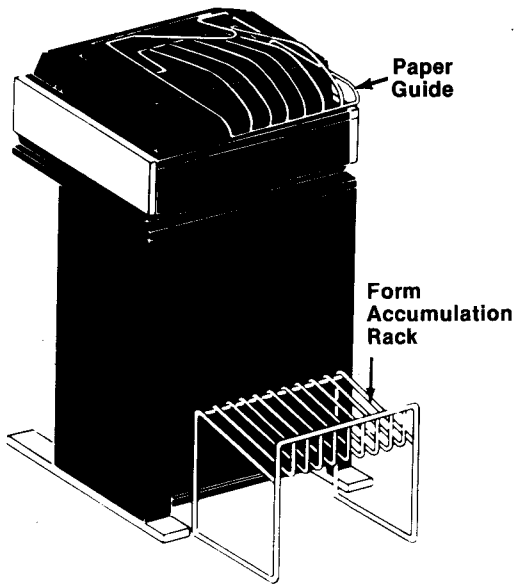
KDPM
Friction Feed
2-Pedestals

ACCESSORIES

FORMS ACCUMULATION RACK 405544
(Tractor Feed only)

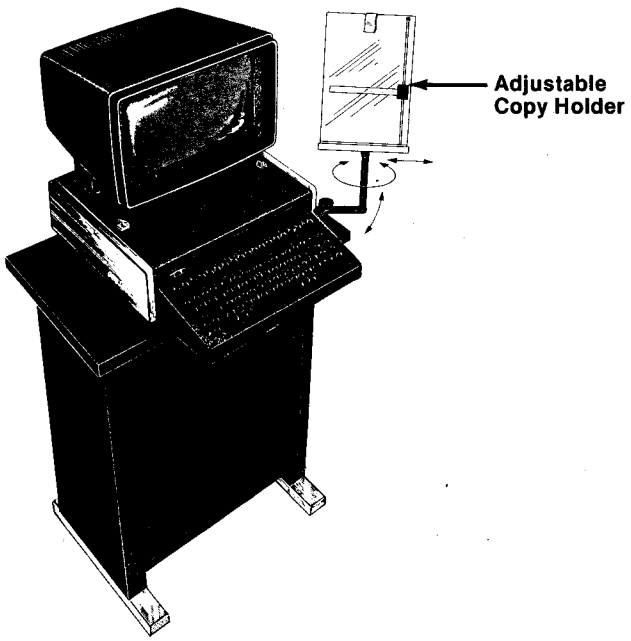
The Paper Guide, which attaches directly to the cabinet and directs the paper movement over the top of the cabinet, is furnished as a part of the cabinet, i.e., not ordered separately.

The Form Accumulation Rack is used to accumulate fan folded forms of all widths. It is an accessory; order separately by number 405544.



ADJUSTABLE COPY HOLDER 401200

Clamps anywhere to edge of pedestal top. Holder rotates about its support post and post rotates around clamp to suit operator viewing convenience. Also, holder slides along its width. Requires 1" x 2½" clamping area. Adds 2" (min) to depth or width of pedestal.



Form Belts

The table below shows the color of belt, part number and form length at each of the four selector settings.

The complete set of belts is packaged as TELETYPE Part 402586. Frequently used (*) belts are packaged as TELETYPE Part 402587. The 402572 belt is provided with all printers.

†Form Selector Setting				TELETYPE Part Number	Color
1	2	3	4		
Form Length (inches)					
10" (254 mm)	5" (127 mm)	2-1/2" (64 mm)	3-1/3" (85 mm)	*402571	Amber
11" (279 mm)	5-1/2" (140 mm)	2-3/4" (70 mm)	3-2/3" (93 mm)	*402572	Dk. Blue
12" (305 mm)	6" (152 mm)	3" (76 mm)	4" (102 mm)	*402573	Yellow
13" (330 mm)	6-1/2" (165 mm)	3-1/4" (83 mm)	4-1/3" (110 mm)	402574	Brown
14" (356 mm)	7" (178 mm)	3-1/2" (89 mm)	4-2/3" (119 mm)	*402575	Red
15" (381 mm)	7-1/2" (191 mm)	3-3/4" (95 mm)	5" (127 mm)	402576	Pink
16" (406 mm)	8" (203 mm)	4" (102 mm)	5-1/3" (136 mm)	402577	Lt. Green
17" (432 mm)	8-1/2" (216 mm)	4-1/4" (108 mm)	5-2/3" (144 mm)	*402578	Dk. Green
18" (457 mm)	9" (229 mm)	4-1/2" (114 mm)	6" (151 mm)	402579	Lt. Blue
22" (559 mm)	11" (279 mm)	5-1/2" (140 mm)	7-1/3" (186 mm)	402580	White

†Form lengths ending in the fractions 1/4 or 3/4 inch are not compatible with line spacing of 3 or 6 lines/inch; those ending in the 1/2 inch are not compatible with 3 lines/inch; and those ending in 1/3 or 2/3 inch are not compatible with 4 or 8 lines/inch.

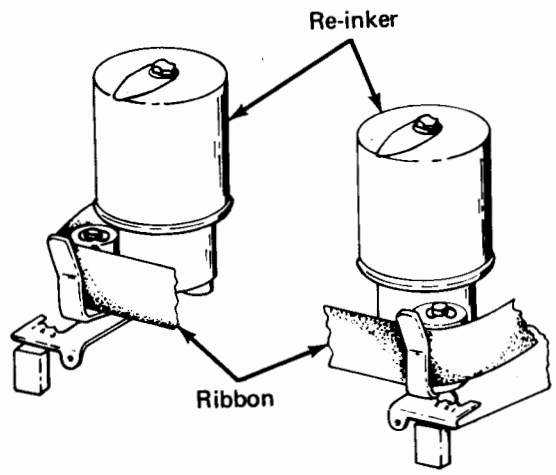
Optional Interface Cards

Interface	Signal	Interface Card Slots				Comments
		Z4	Z5	Z6	Z7	
MIL STD. 188C† RO	Regular	–	303180	303181	–	Rec. Ready = +6V = Go
MIL STD. 188C† KD, KDP	Regular	303181	303180	303181	303180	Rec. Ready = +6V = Go Clear to Send = +6V = Go
MIL STD. 188C† RO	Inverted	–	303185	303181	–	Rec. Ready = –6V = Go
MIL STD. 188C† KD, KDP	Inverted	303184	303185	303181	303180	Rec. Ready = –6V = Go Clear to Send = –6V = Go
*EIA STD. RS-232 RO	–	–	303180	303184	–	–
*EIA STD. RS-232 KD, KDP	–	303181	303180	303184	303185	On inverted signal sets swap cards in slot Z5 with Z7 and cards in slot Z4 with Z6.
20/60 ma	–	303181	303180	303182	303183	Up to 260V open circuit voltage

† See Selection Guide for signal of terminal

* If required, EIA connector must be ordered separately

RIBBON RE-INKER
(Tractor Feed printers only—80 and 132 column)



408990: 80 column, Tractor Feed (all 80 column)
407790: 132 column, Tractor Feed (all 132 column, **except 40P203)**

This kit will extend the life of the ribbon to a minimum of 20 million characters. Ribbon life expectancy is 8.5 million characters without re-inker.

See Technical Reference Part 3, Article 11, Re-Inker Accessory for Model 40 Printer for further information.

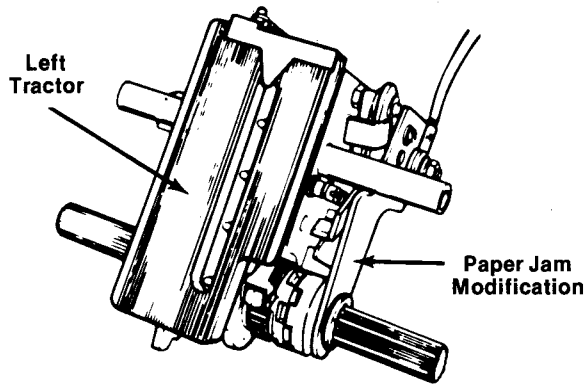
RIBBONLESS PRINTING 402850
(80 Column, Tractor Feed Only)

Modification Kit 402850 allows the user to remove the ribbon from the printer and provides the necessary paper positioning. Useful for those applications where printing is undesirable on the first copy or when using carbonless paper. This mod kit should be installed whenever ribbons are not used to avoid potential paper jams.

MULTIPLE COPY ROLLED PAPER 403380
(80 Column, Friction Feed Only)

Modification Kit 403380 provides facilities to accommodate 3 ply rolls of paper for multiple copy friction feed applications having this requirement.

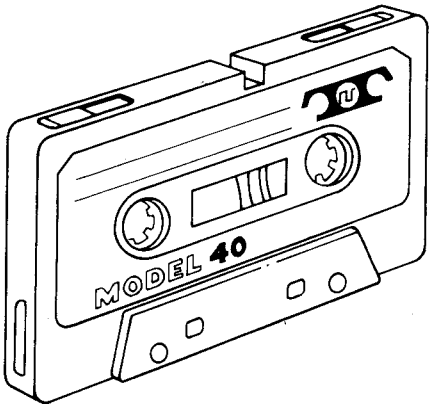
PAPER JAM MODIFICATION KIT 402920
(Tractor Feed Printer Only)



Modification Kit 402920 mounts on the left tractor. It senses the motion of the tractor and the motion of the paper. If motion of the paper is not detected the mechanism trips an alarm and lights the PAPER lamp on the printer cabinet, simulating a paper out condition.

Restrictions:
132 column printers with serial numbers below 28,684 require a cable change per modification kit 408681.

TAPE CASSETTE 403580



REFERENCE PUBLICATIONS

Manual 359	Shop Manual
Manual 405	How To Operate
Manual 404	Installation
Manual 408	Servicing
WDP 0488	40C435/ZZZ/000 Controller w/o Card
WDP 0489	40C435/AEB/088 Controller
WDP 0501	4016 RA 001 RA Tempest Cassette Drive

For further information on any Teletype Corporation product lines, or for the location of your nearest sales or product service representative, please contact:

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In Canada, call 416/745-9474

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