SPERRY UNIVAC

UNISCOPE

Display Terminal

Concept and Applications

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PRINTED IN U.S.A.

SPERRY UNIVAC
UNISCOPE
DISPLAY TERMINAL

Concept and Applications

UNISCOPE 100 Display Terminal (left) and UNISCOPE 200 Display Terminal (right)

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Concept

Talk to your processor and have it answer right back!

Set up, change, and edit your data exactly as you want it before you send it to the processor!

Have all the versatility and power of both display and printer terminals!

Accumulate data throughout the day and send it all at once in one high-speed transmission — or receive data in the same manner!

All these capabilities and more are available to you with the UNISCOPE 100 and 200 Display Terminals and their auxiliary devices. These economical, desk-top, alphanumeric display terminals are designed for a broad range of applications requiring direct operator interaction with a central data processing system.

The two UNISCOPE display terminals are identical in operation and capability except for the display size and the type of character generation (up to 1024 stroke-generated characters on the UNISCOPE 100 terminal, up to 1920 dot-matrix characters on the UNISCOPE 200 terminal). You can use both terminals on the same communications line.

UNISCOPE terminals are operationally self-contained — all control, buffering, and data manipulation functions are housed in the small cabinet.

You can operate these terminals both as data entry devices and as output display devices. You can place them wherever you want them: connected at remote sites to a communications line, or connected at the central processor site through an appropriate communications adapter. A simple network possibility is shown in Figure 1.

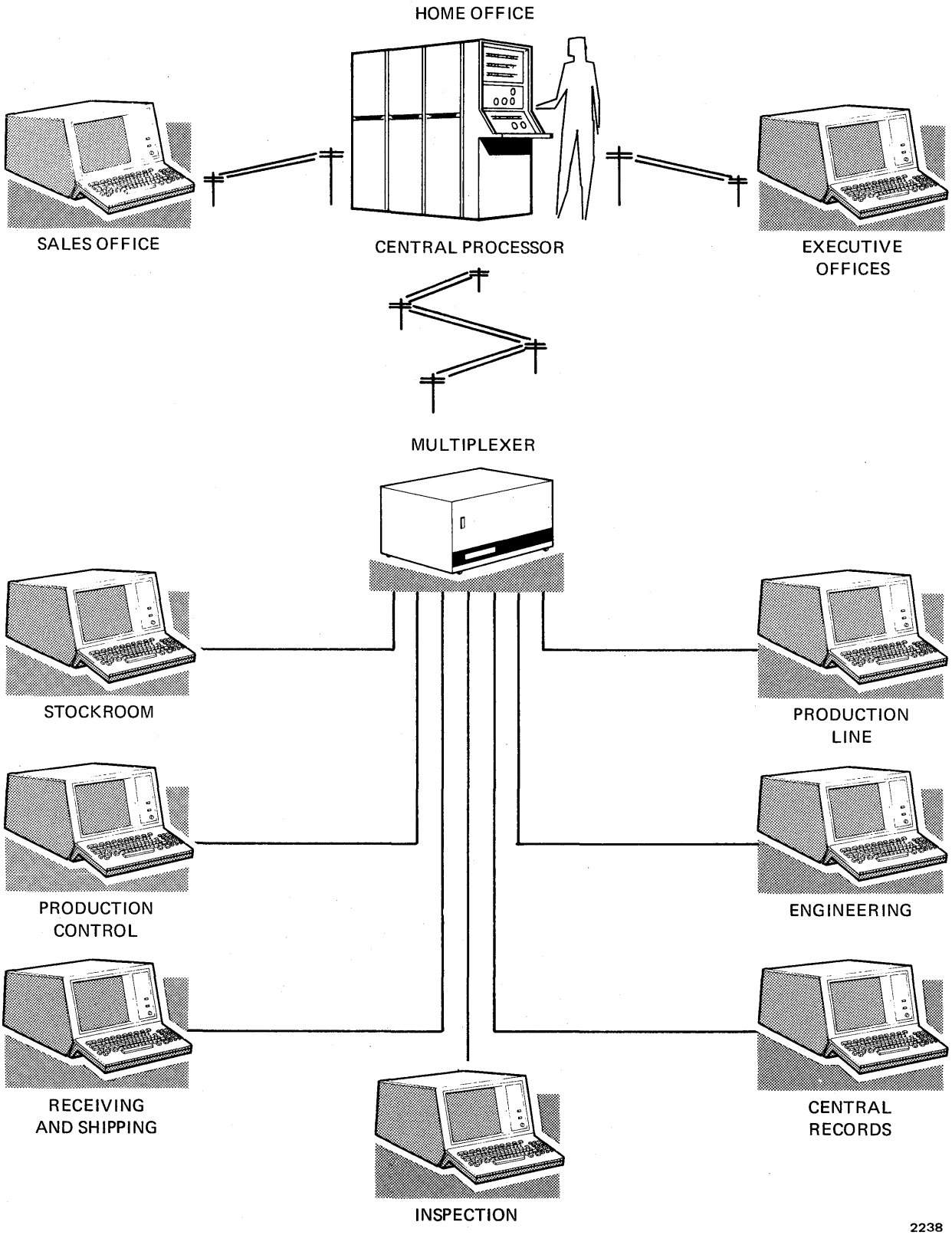


Figure 1. UNISCOPE Terminal Network of Single Control Points

THE CONCEPT OF UNISCOPE DISPLAY TERMINALS

Data input and output — that is, entering information for computer processing and receiving information from the computer in a meaningful form — have always been vital steps in the data processing operation. Various I/O methods are available, and each method is useful in its own way.

The most rapid and useful I/O method for real-time* man-machine interaction, however, is the visual display method, which shows alphanumeric information on a screen. When you are making data entries, you can see exactly what you are going to send to the processor and change it easily until it is just the way you want it. And you can read directly — and immediately — the information sent from the processor. This is the simple, direct usefulness of the display terminal.

Your Expanding Needs

But your communications requirements of today extend beyond simple visual display of data, and you probably want your data communications system to provide more than a temporary readout of the data.

You may want to have more than one display working at the same time, with each display independent of the others.

You certainly want high-speed, error-free data exchange with the processor.

You want to manipulate data not only while preparing it for transmission to the processor but also after receiving it from the processor.

You need to be able to work with a large segment of information in each data exchange so the efficiency of your data handling system can be maximized.

All these attributes are incorporated in the UNISCOPE 100 and UNISCOPE 200 Display Terminals.

The Complete Data Handling Facility

The basic use for the UNISCOPE terminal is as a visual readout communications device with a temporary display of data. But if you also have other types of data handling requirements, consider adding other members of the UNISCOPE terminal family (Figure 2) to your terminal facility.

All you need for each facility is a UNISCOPE display terminal with attached auxiliary devices to provide the other data handling functions. The display terminal, as the primary communications device, controls the auxiliary devices.

**This term and others peculiar to data communications are defined in the glossary at the back of the book.*

Figure 2. UNISCOPE 200 Display Terminal with Auxiliary Devices: Model 610 Tape Cassette System (left), Model 800 Terminal Printer (right rear), and Communications Output Printer (right front)

Given their full complement of auxiliary devices, UNISCOPE terminals have the potential for the most sophisticated applications. Text processing, file management, programmed processor-controlled teaching, online programming, industrial process control, library accessing, processor console control — the list is long and describes your needs.

FULFILLMENT OF YOUR REQUIREMENTS

UNISCOPE display terminals are your answer to most alphanumeric display requirements. In plain terms, these terminals give you almost everything you want or need in a display terminal. Add an auxiliary interface and these terminals can input and output data to any or all of the versatile auxiliary devices: two types of hard-copy printers and a highly sophisticated magnetic tape cassette unit. Then you have a full-range data communications capability.

The screen displays are large, bright, and easy to read. For a look at your data, you don't have to generate a stack of paper. Just scan through your file, using the display, and dispose of the image after you've had your look. No stuffed file cabinets, no piles of paper that you can't quite decide to throw away, and no overflowing wastebaskets.

And when you do need a printed copy of data to take with you or to write on, a peripheral printer will give it to you — a screen at a time, part of a screen, or a whole file — whatever you designate.

Editing data on the screen is simplicity itself with a nondestructive cursor, horizontal and vertical wraparound, tab setting capability, protected format, insertion and deletion within lines and within the display, and replacement of characters by overwriting.

UNISCOPE terminals are capable of transmission speeds to 9600 bits per second. They can transmit either synchronously or asynchronously in ASCII code, the industry standard. Their efficiency of transmission line use contributes to greater economy in your data handling system.

The communications control procedures, largely self-contained, are very thorough. These procedures anticipate every communication problem and provide simple, straightforward solutions. Most of the solutions do not require any human intervention; all of them are available with little or no special programming.

Finally, the network configuration possibilities are immense. In theory, up to 256 UNISCOPE 100 and UNISCOPE 200 terminals can be connected, through multiplexers, to a single communications-line interface point — and a communications line can accommodate dozens of such interface points. (In practice, such a large number of multidropped terminals usually exceeds the capability of the processing system.) This theoretical possibility should give you some idea of how UNISCOPE terminals can be put to work.

Details of these terminals are described in the rest of this book, including some interesting examples of how businesses are using the UNISCOPE Display Terminals.

The UNISCOPE 100 and 200 Display Terminals

The UNISCOPE 100 and 200 Display Terminals have been developed to fulfill the market requirement for data terminals of dependability and quality at the lowest possible price. Offering all the advantages of an alphanumeric display, these terminals are designed to be efficient, versatile communications devices.

The UNISCOPE terminal is completely self-contained. This desk-top device interfaces with your operator on one side and with the communications line on the other. It consists basically of a cathode-ray tube display screen, storage for the display data, a control section, an input/output (I/O) section, a character generator, and the operator's controls and keyboard.

Each terminal contains its own display-refreshing buffer, which allows the terminal to continuously display a message, independently of the communications line, after the initial output from the processor. This independent operation capability gives you great flexibility in arranging station configurations.

These terminals are addressable. Each terminal is assigned a unique code that singles it out from all others on the communications line when the processor has traffic for it – or several of them can be addressed simultaneously.

DESIGN PHILOSOPHY

UNISCOPE terminals have been designed to be an integral part of a processor communications system. A major consideration in designing an integrated system is telephone line cost, which may account for as much as one-third of the total cost of the system. To keep line costs down, the number of telephone lines must be kept to a minimum. UNISCOPE terminal transmission techniques are designed for maximum efficiency, limiting the amount of line time to the minimum for each data transaction. Further, the terminal is designed to condense each transmission by sending only significant spaces; nonsignificant spaces are automatically stripped out (suppressed). Many other design provisions which reduce line time without reducing machine capability are mentioned throughout this book.

HUMAN FACTORS

Underlying the design effort was the broad premise that the total processor communications system operates efficiently only if the operator of the system functions effectively. Extensive human factors studies, evaluations, and experiments were conducted to determine the optimum design for an effective man-machine interface. As a result, the UNISCOPE terminals are designed for easy, straightforward operation, eliminating completely any need for awkward head movements or body positions. The operator, seated at the keyboard, has a viewing angle and a viewing distance to the display surface that remain almost constant. The field of view to the operator is well within normal eyespan.

Clear, Legible Display

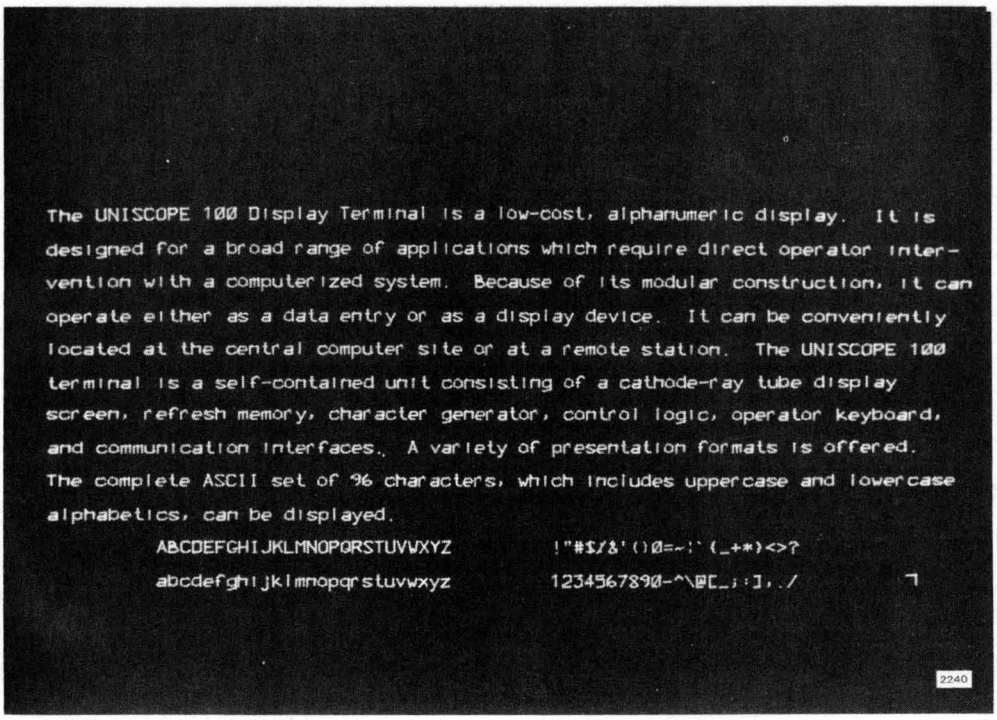
The visual display (Figure 3) consists of green characters on a dark background. The entire display is flicker free. All characters are sharp and bright and closely resemble conventional printed characters. Each character appears of equal thickness and with equal brightness over the entire screen. The result is excellent legibility and clarity of presentation at all times.

Character brightness can be adjusted to the preferred level by the operator. And the nonglare screen further adds to viewing comfort.

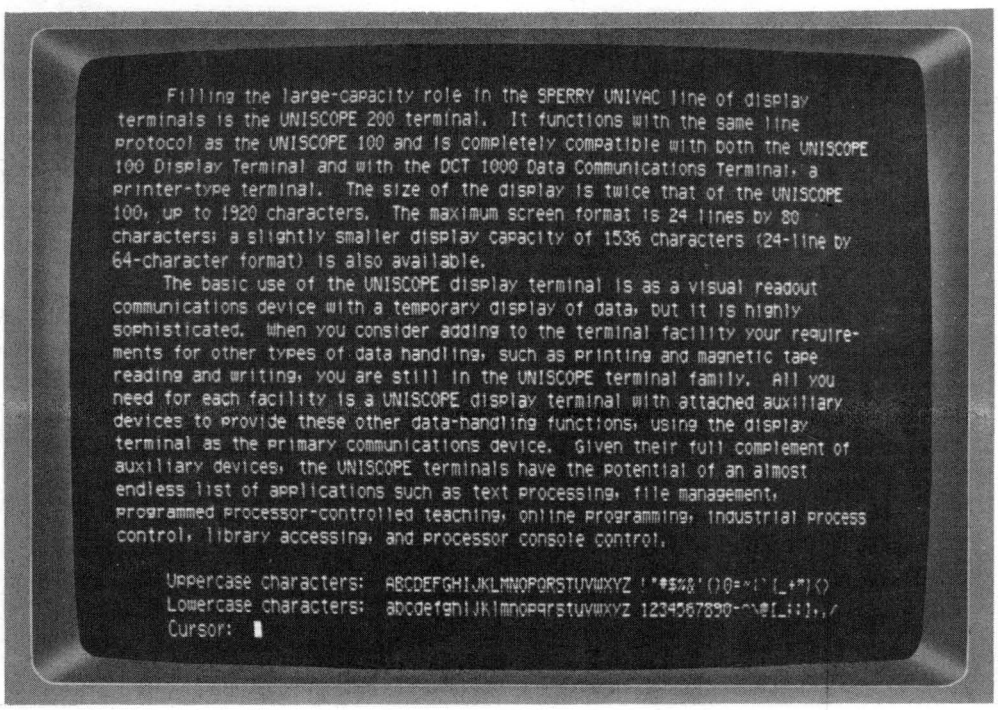
Touch-Typing Controls

All the control keys required to operate the terminal and to initiate data transfers are located on the front of the terminal, in the same area as the keyboard, and can be reached with the same type of stroke as required for the alphanumeric keys.

Because the keyboard is similar to that of a typewriter, little additional training is required to operate the UNISCOPE terminals. All variations of the terminal keyboard include control keys.



UNISCOPE 100 terminal with 96 characters in 12-line by 80-column format



UNISCOPE 200 terminal with 96 characters in 24-line by 80-column format

Figure 3. Typical UNISCOPE Display Terminal Screen Presentations

TERMINAL ADAPTABILITY

Since UNISCOPE terminals are intended for use in widely varying conditions, several different keyboards and screen presentation formats have been designed to suit almost any application. From these selections (Figure 4) you may choose the display format and data entry keyboard most nearly meeting your requirements.

Add an auxiliary interface and you can increase the UNISCOPE terminal's capability by connecting auxiliary devices that operate through the terminal. You can read more about auxiliary devices on page 24.

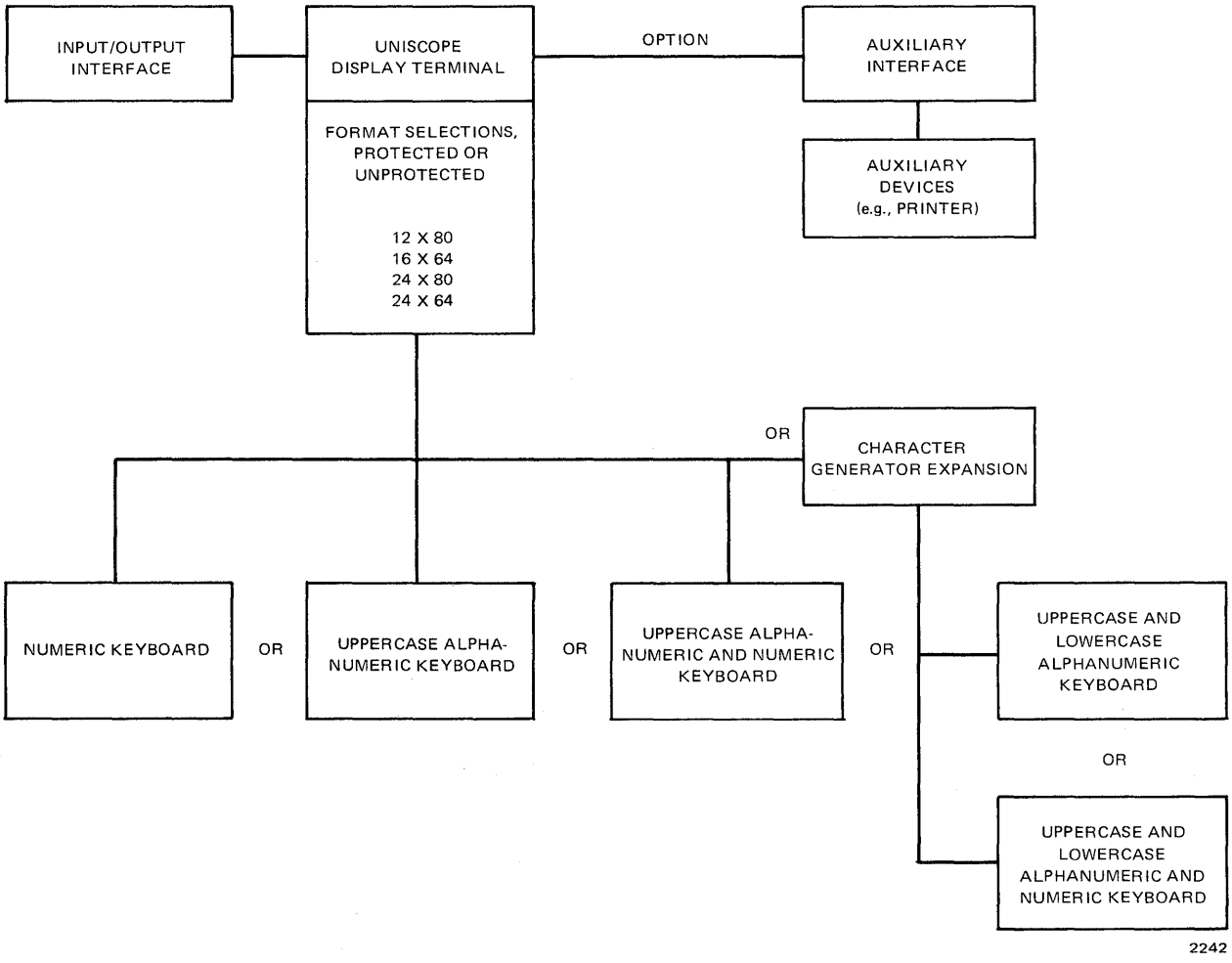


Figure 4. UNISCOPE Display Terminal Selections

Screen Formats

The UNISCOPE 100 terminal has a display capacity of either 960 or 1024 characters and the UNISCOPE 200 terminal has a capacity of either 1536 or 1920 characters. The complete ASCII set of 96 characters, including uppercase and lowercase alphabetics, can be displayed.

The available screen format selections are listed in Figure 4. The UNISCOPE 100 terminal screen, which accommodates the 12 x 80 and 16 x 64 formats, is 10 inches wide by 5 inches high. The UNISCOPE 200 screen is 10 inches wide by 7 inches high and accommodates the 24 x 80 and 24 x 64 formats. Typical screen presentations of both terminals can be seen in Figure 3.

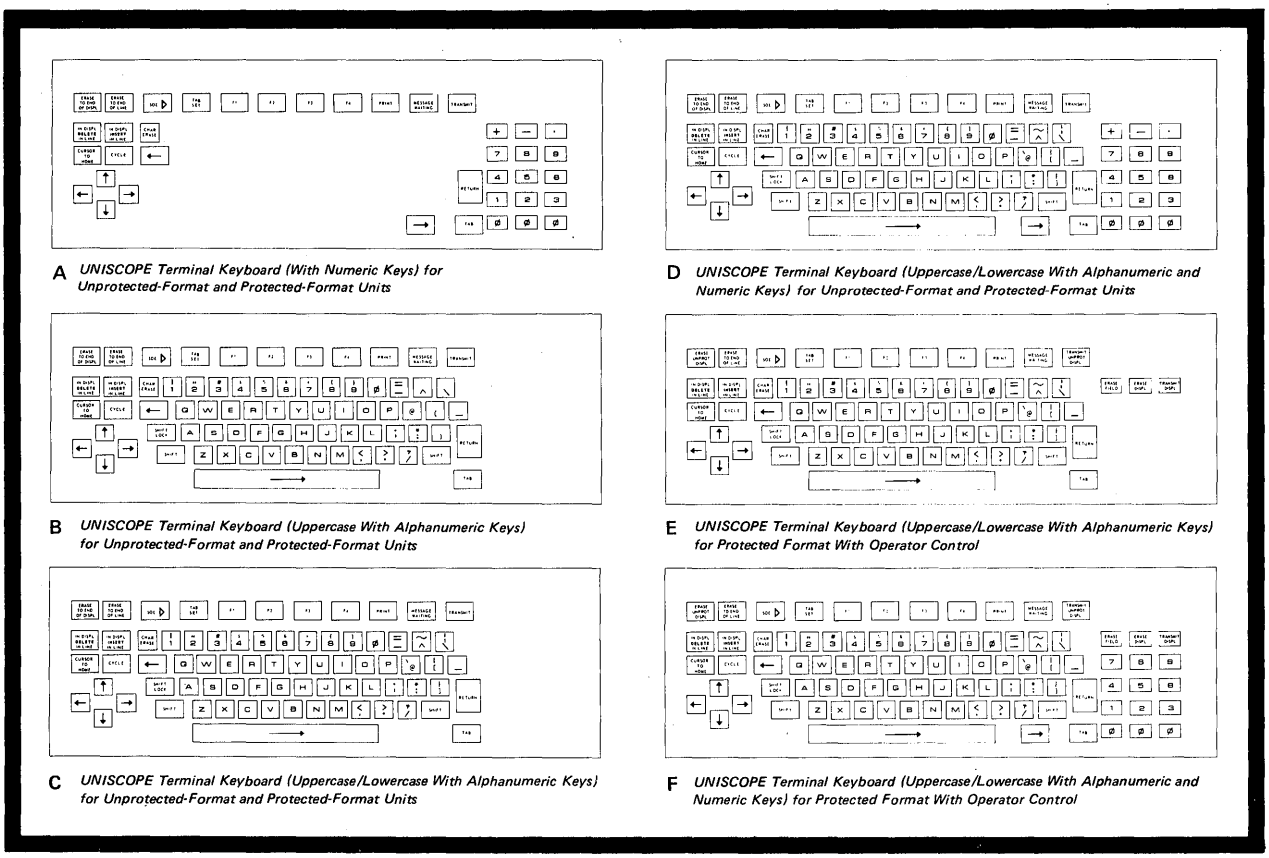
Keyboard Types

Six of the nine available keyboard types are shown in Figure 5, and the characteristics of all nine keyboards are summarized for you in Table 1. These keyboards are easily removed and installed, although functionally they must be used with units having a matching type of character generator.

Table 1. Keyboard Types

Figure Reference	Keyboard Type	Description
5-A	Numeric	This keyboard includes 12 data keys (numerics 0 through 9 and the plus, minus, and decimal point); editing, cursor control, space, tab, and cursor return keys; three message-control keys; and four special-function keys.
5-B	Uppercase alphanumeric	This keyboard provides a full alphanumeric keyboard (26 alphabetic characters, 10 numeric characters, 27 symbols, and a space bar), editing and cursor control keys, three message-control keys, and four special-function keys.
5-C	Uppercase/ lowercase alphanumeric	This keyboard is the same as the uppercase alphanumeric keyboard above except that lowercase alphabetic characters and five additional symbols are provided. Character generator expansion is required for this keyboard.
Not illustrated	Uppercase alphanumeric and numeric	This keyboard combines the uppercase alphanumeric keyboard and the numeric keyboard described previously.
5-D	Uppercase/ lowercase alphanumeric and numeric	This keyboard combines the uppercase/lowercase alphanumeric and numeric keyboards described previously. Character generator expansion is required for this keyboard.
Not illustrated	Uppercase alphanumeric with protected-format control	This keyboard is the same as the uppercase alphanumeric keyboard previously described except that two keys are relabeled and three keys are added to give the operator control of protected format.
5-E	Uppercase/ lowercase alphanumeric with protected-format control	This keyboard is the same as the uppercase/lowercase keyboard previously described except that two keys are relabeled and three keys are added to give the operator control of protected format.
Not illustrated	Uppercase alphanumeric and numeric with protected-format control	This keyboard is the same as the uppercase and numeric keyboard except that two keys are relabeled and three keys are changed in the numeric section to give the operator control of protected format.
5-F	Uppercase/ lowercase alphanumeric and numeric with protected-format control	This keyboard is the same as the uppercase/lowercase and numeric keyboard previously described except that two keys are relabeled and three keys are changed in the numeric section to give the operator control of protected format.

2250



A *UNISCOPE Terminal Keyboard (With Numeric Keys) for Unprotected-Format and Protected-Format Units*

D *UNISCOPE Terminal Keyboard (Uppercase/Lowercase With Alphanumeric and Numeric Keys) for Unprotected-Format and Protected-Format Units*

B *UNISCOPE Terminal Keyboard (Uppercase With Alphanumeric Keys) for Unprotected-Format and Protected-Format Units*

E *UNISCOPE Terminal Keyboard (Uppercase/Lowercase With Alphanumeric Keys) for Protected Format With Operator Control*

C *UNISCOPE Terminal Keyboard (Uppercase/Lowercase With Alphanumeric Keys) for Unprotected-Format and Protected-Format Units*

F *UNISCOPE Terminal Keyboard (Uppercase/Lowercase With Alphanumeric and Numeric Keys) for Protected Format With Operator Control*

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Figure 5. Keyboards

ADDITIONAL FEATURES

Protected Format

When the UNISCOPE terminal has the protected format feature, the processor can specify a particular character position, or positions, to be protected; this means that the operator cannot change the characters in these positions. One way you can use this feature is to create "forms" for routine data entry — words and phrases used as guides for entering the variable data. These forms are displayed for your operator's convenience but are suppressed when the display is transmitted. Your operator just "fills in the blanks" and transmits the data. The newly entered information is transferred but the form is not.

Obviously, this protected format feature will save you transmission time, one of the big advantages of UNISCOPE terminals. Only variable (unprotected) information is transmitted. This provision is similar to the suppression of nonsignificant spaces but works on the protected characters instead. The protected format feature will also save your operator a lot of time when entering variable information.

Protected format can also be used as a way of splitting the screen into active and reference areas. This function is described on page 13.

Special Function Keys

The four special functions keys are handy, economical message generators that can be used to initiate special sequences or functions as designated in your program. Each key generates a single-character message, properly placed in UNISCOPE terminal message format (terminal address, the 1-character message, and the end-of-message indication). This is the shortest independent message that can be transmitted. The processor will interpret the single-character message as a command to perform the special function or sequence. In other words, the message of a special function key represents a complete program subroutine, causing the processor to perform that special subroutine when the message is received. An example of a function using such a subroutine is rolling the display slowly upward while the operator reads it. Display rolling is described in more detail below.

As an alternate, you may specify three special function keys and a disconnect (HANG UP) key which your operator can use to disconnect the UNISCOPE terminal from the line when operating in a switched telephone network.

The special function keys, labeled F1, F2, F3, and F4, are located with the other message control keys on the top row of the keyboard (Figure 5).

Embedded Messages

By means of the embedded message provision, a message being sent to one terminal may be interrupted to send a message to another terminal, and then the original message is resumed immediately thereafter. This is a processor-controlled function and cannot be directed or changed by the terminal keyboard.

Field Blinking

Fields can be highlighted by special blinking markers at the beginning and end of the field. (A field can be any portion of the display, usually a word or series of words.) These blink markers are activated as part of a processor message only, not by the terminal keyboard. They can be extremely useful in highlighting or isolating specific information in a display for easy spotting by your operator.

Display Rolling

By processor control, the display on the screen can be rolled upward or downward at whatever rate you choose, from a discernible line-at-a-time rate to a rapid roll. The effect is achieved by the processor-controlled line-insert and line-delete

functions. The rate of roll depends on the frequency of the insert or delete function in a sequential operation. Special function keys can be designated by the program to initiate this function, to regulate the roll rate, and to end the function.

Line Insert

Under processor control, a blank line can be created anywhere in the display. The data previously in that line location, and in all subsequent lines, is shifted downward one line position. Any data in the bottom line of the screen is removed from the display.

Line Delete

Under processor control, any selected line can be deleted from the display. All data below the line then shifts upward one line position. This creates a blank line at the bottom of the screen.

Split Screen

By using the protected format feature, you can create a split screen effect, designating part of the screen as reference (protected) and part of it as active (receiving operator-entered data for transfer). Only the information in the active areas will be transmitted.

Split screen is also possible with the hardware provision of the UNISCOPE terminals called "partial screen transmission." The UNISCOPE terminals can transmit data from any selected part of the screen without including the rest of the display.

With the split screen capability, you can use portions of the screen for active message interchange without disturbing the remainder of your data display. This capability allows your operator to put multiple messages on the screen at one time, and the processor and the operator can then exchange display segments instead of sending the entire contents of the display with each transmission.

You can split the screen almost any way you find convenient. The active area of the screen is designated by the operator or by the processor and can be any area on the screen that is not designated as protected format.

SYSTEM CONFIGURATIONS

The UNISCOPE terminals are single-station units, each operating independently of all the others. By using the SPERRY UNIVAC Terminal Multiplexer, you can connect up to 16 UNISCOPE terminals to a single modem or to suitable communications equipment and considerably reduce overall system costs.

More extensive networks may be configured by using terminals and multiplexers in various combinations and by cascading and multidropping at many interface points. (Cascading means adding terminal multiplexers to the primary terminal multiplexer and then connecting terminals to this second level of multiplexers.)

Terminal System

You can use UNISCOPE terminals in three basic types of configurations:

- Single-station operation over a direct communications interface or on a communications line to the processor (A and B, Figure 6)
- Multistation operation with terminals multiplexed over a direct communications interface or on a communications line to the processor (C and D, Figure 6)
- Mixed single-station and multistation connections sharing the same communications line to the processor (D, Figure 6)

Communications System

Communications system configurations can be as varied as the applications for which they are intended. A typical communications system configuration with a SPERRY UNIVAC processor is shown in Figure 7. A similar configuration could be shown with an IBM* System/360 or System/370 processor and the IBM-related interfaces, along with all other equipment included in Figure 7.

Cabling

Standard cable lengths are available for connecting the UNISCOPE terminals to modems and multiplexers or directly to SPERRY UNIVAC Communications Terminal Module Controller (CTMC) or SPERRY UNIVAC Data Communications Subsystem (DCS) systems. Additional cabling can be assembled up to 5000 feet for a single terminal-to-multiplexer connection.

**Trademark of International Business Machines Corporation*

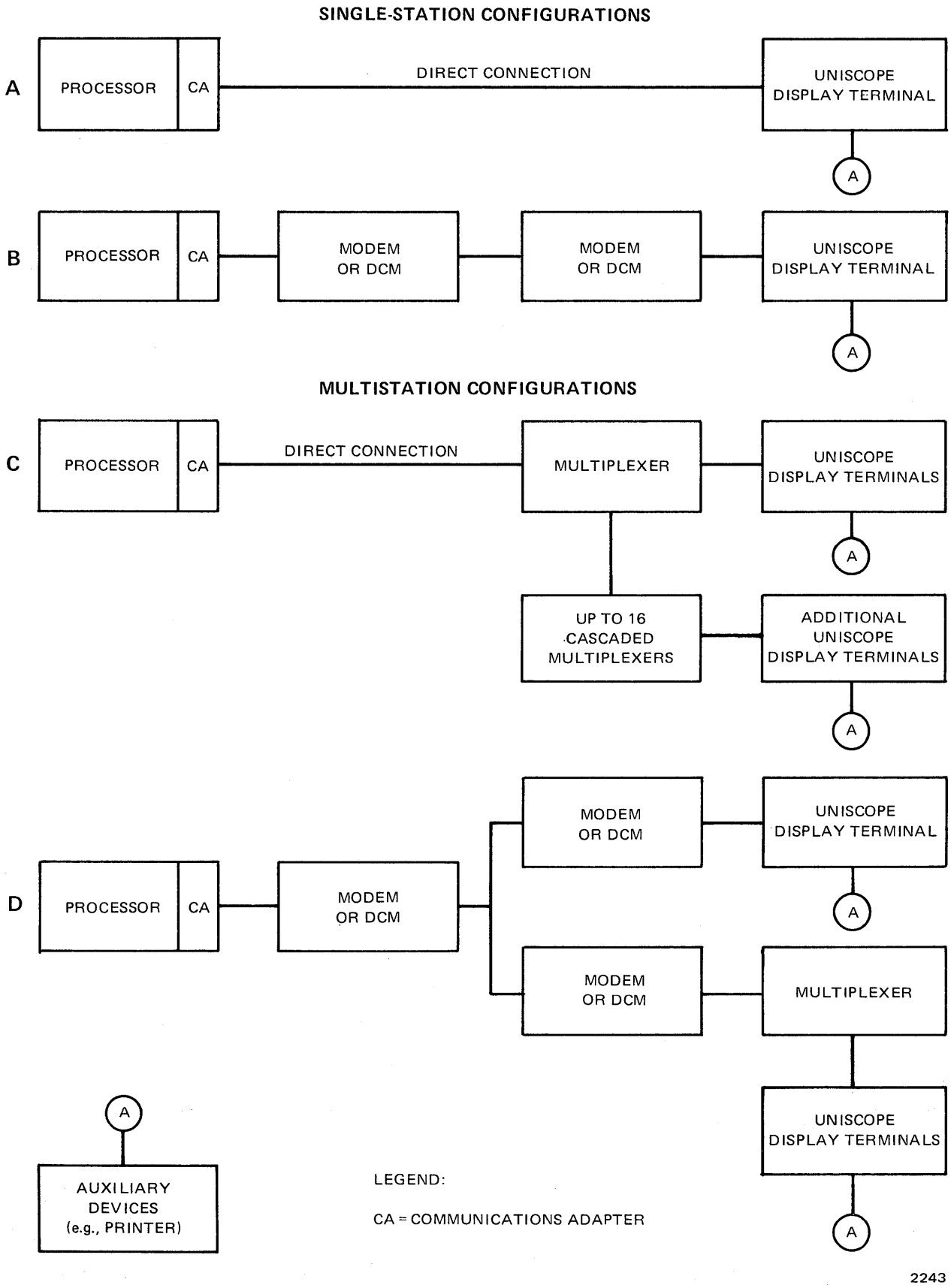

Figure 6. UNISCOPE Display Terminal System Configurations

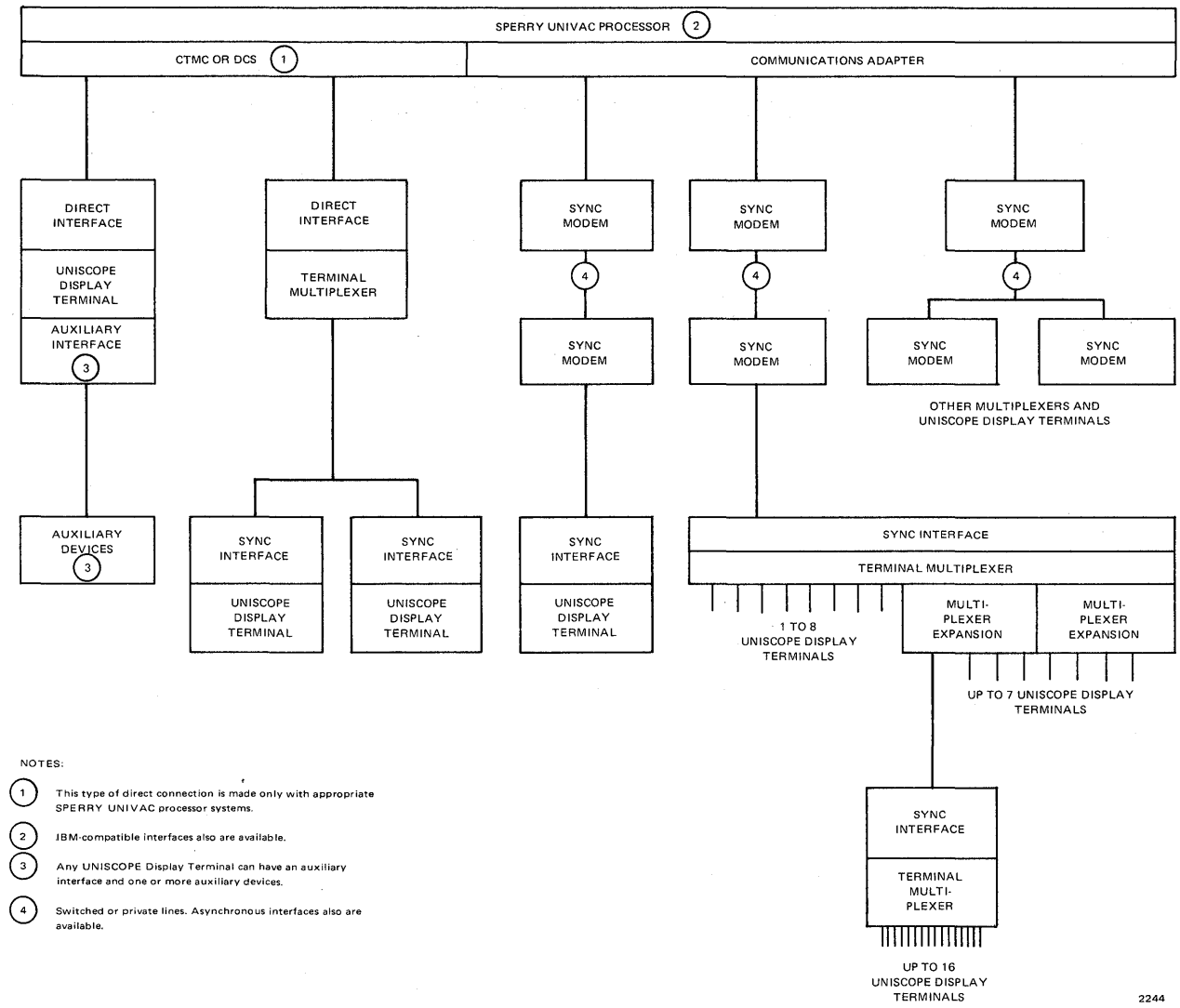

Figure 7. Typical Communications System Configuration Using UNISCOPE Display Terminals

Functional Description

LINE CONNECTIONS

UNISCOPE 100 and UNISCOPE 200 Display Terminals can be operated over the public telephone network, on leased common-carrier voice-grade lines, or directly over a communications line. These terminals can be connected to the communications line either singly or in multiplexed clusters, or a combination of these two methods can be used on a single line.

If multiple terminals are connected to a communications line at a single interface point, the multiplexer provides the electrical interface to the line and determines priority when more than one terminal tries to respond to a processor poll.

Two of the communications-line connection methods are shown in Figure 8. Figure 1 shows a variation of either method using multiplexers.

TRANSMISSION CHARACTERISTICS

The data transmission code is standard 7-level ASCII plus character parity. Transmission between the processor communications equipment and the terminal is bit-serial.

Each terminal operates in half-duplex mode; however, the terminal control logic is so designed that a full-duplex line can be put to very efficient use if shared by several terminals. Since each terminal contains its own storage and control logic, the processor can interrupt transmission to one terminal and poll or initiate data transmission from another terminal (or cluster) connected to the full-duplex communications line.

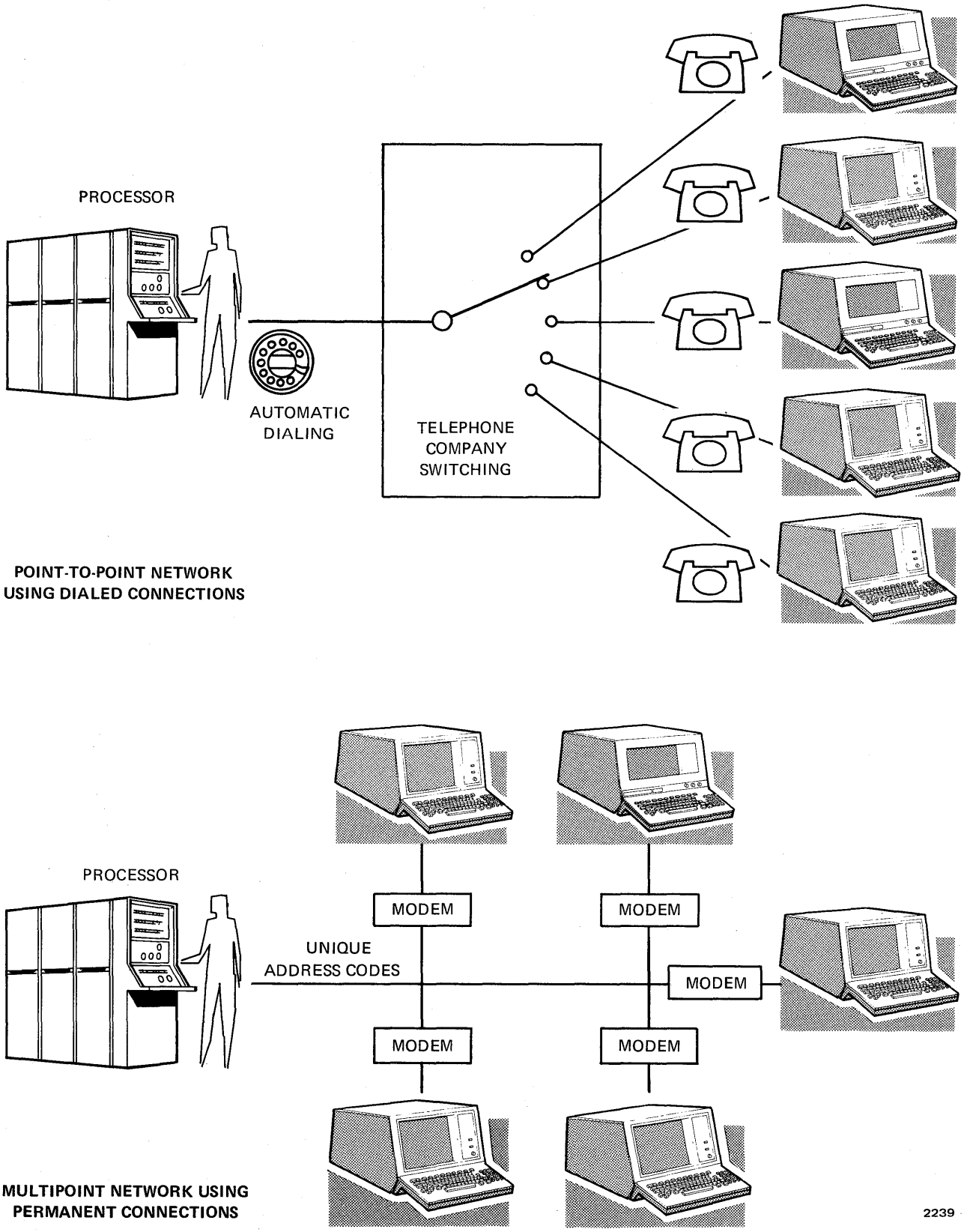

Figure 8. Typical Network Connection Methods for UNISCOPE Display Terminals

DATA TRANSMISSION

Message Format

UNISCOPE terminals are designed to operate in a polling environment. All transmissions between the processor and the terminal are initiated by the processor. Communications line protocol requires that terminal and device addressing be used in every transmission and that messages between the terminal and the processor be acknowledged by the recipient. In UNISCOPE terminals, line protocol and message formatting functions are automatic. The operator is concerned only with message content.

All message functions required in processor—terminal communication are standard in UNISCOPE terminals:

- Status information
- Text
- Parity (both character and block)
- Acknowledgment

Messages to the Processor

A message to be transmitted from a terminal to a processor is composed by the operator, who positions the cursor and enters the desired data from the keyboard. The operator then presses the TRANSMIT key. When the processor next polls the terminal for traffic, that message is transmitted to the processor. Waiting time is a function of the processor activity, poll rate, and line propagation time; normally there is only a momentary delay.

Messages to Auxiliary Devices

Messages can be manually transferred from the UNISCOPE terminal to an auxiliary device by the operator. After composing the message, the operator presses the PRINT key and, if the device is properly conditioned to accept the transfer, the message is immediately transferred.

Data can also be transferred through the UNISCOPE terminal to an auxiliary device automatically, under processor control.

Messages From the Processor

If a terminal receives an unsolicited processor message while the operator is composing a message, the terminal alerts the operator but the message being composed is not interrupted. After the operator's message has been sent, the operator presses the MESSAGE WAITING key and the terminal accepts the processor message.

The processor can override any operator action, as determined by the program, and cause an urgent message to be displayed immediately, regardless of whether a message is being composed at the terminal. In this case, the data being entered at the time of processor override must be reentered after the processor message has been displayed.

DATA ENTRY AND MESSAGE EDITING

Cursor and Cursor Control Keys

For data entry, the cursor is an indispensible provision of the UNISCOPE terminal. The operator uses it in preparing data for transmission to the processor, the terminal uses it to identify the end position of data to be transmitted to the processor or transferred to an auxiliary device, and auxiliary devices use it for positioning data in display storage.

The cursor is a unique character which is displayed on the screen at all times except, briefly, during transmission or data transfer to an auxiliary device. It appears as ⌐ for the UNISCOPE 100 terminal and as ◪ for the UNISCOPE 200 terminal. The cursor advances one position each time a data key is pressed to indicate the location where the next data character will be entered. If the next data character is to be entered somewhere other than the next sequential position, the cursor is moved to the desired position with one or more of the cursor control keys.

The familiar cursor control keys are the space bar and the backspace key; when pressed, they move the cursor one space at a time. Less familiar are the other cursor control keys: four scan keys that move the cursor forward, backward, up, or down; the CURSOR TO HOME key; and the TAB key.

Any one of the scan keys, when momentarily pressed, moves the cursor one space at a time; if the key is held down, the cursor moves in that direction repeatedly until the key is released. The CURSOR TO HOME key, when pressed, immediately moves the cursor from its present location to the home position (first position at the upper left corner of the screen). The TAB key moves the cursor immediately to the next tab stop to the right. If there are no tab stops to the right of the cursor (including all following lines to the last position on the screen), the cursor moves to the home position when the TAB key is pressed.

When the cursor is positioned over a displayable character, the character and cursor blink alternately. (The cursor also blinks when placed over any nondisplayable character except the space.) This blinking helps the operator keep track of the cursor when it is positioned over a character. The cursor is nondestructive; that is, it does not destroy or change the information in the display storage.

Using this highly mobile, highly visible indicator character, your operator can manipulate data with great speed and accuracy — and with ease.

Editing Keys

The UNISCOPE terminal editing capabilities allow the operator to completely edit any message before transmitting it to the processor, or to modify data received from the processor. (Processor-supplied data is *not* changed at the processor when the display is edited; the changed data must be returned to the processor with instructions to change the file data as indicated in the edited transmission.) Using the various editing keys, your operator can erase data on the display and enter new data in the erased area, or insert or delete data without changing the rest of the display.

The CHAR ERASE key, when pressed, erases the character in the cursor position and enters a space in that position of the display. The ERASE TO END OF LINE key replaces with spaces all characters from, and including, the cursor position to the end of the line. The ERASE TO END OF DISPL key erases all the characters from, and including, the cursor position to the end of the display and inserts spaces in all the erased positions.

Two keys are used to insert or delete spaces in the display. Each key has an uppercase and a lowercase function, the uppercase function applying to the entire display and the lowercase to one line only.

The IN DISPL **INSERT** IN LINE key, in the lowercase function, causes all characters in the line to the right of and including the cursor position to shift one space right and a space to be inserted under the cursor. Any character in the last position of the line is discarded. In the uppercase function, all characters to the right of the cursor up to the end of the display shift right, characters at the end of lines shift to the first position of the next line, and any character in the last position on the screen is discarded.

The IN DISPL **DELETE** IN LINE key lowercase function causes all characters in the line to the right of the cursor to shift left one position. The character under the cursor is discarded and a space is inserted at the right end of the line. In the uppercase function all characters from the cursor position to the end of the display shift left one position, the first character on each line following the line with the cursor shifts to the last position of the preceding line, and a space is inserted at the last position on the screen. The character under the cursor is discarded.

The CYCLE key, when pressed, causes the next character chosen by the operator to be repeated as long as both the CYCLE key and the data key are pressed.

CONTROLS AND INDICATORS

UNISCOPE terminal controls used in basic operation of the terminal, rather than in the data entry and transmission process, are listed in Table 2. The controls for each auxiliary device that may be connected to a UNISCOPE terminal are also listed in Table 2. Table 3 lists the indicators for the terminals and auxiliary devices.

Table 2. Controls of UNISCOPE Display Terminals and Auxiliary Devices

Control	Function
UNISCOPE DISPLAY TERMINAL	
POWER	Applies or removes primary power.
WAIT	When pressed, unlocks the keyboard and master clears the terminal.
INTENSITY	Adjusts brightness of the screen display.
VOLUME	Varies the loudness of the audible alarm over a limited range. This screwdriver control is located behind the display screen faceplate.
FOCUS	Adjusts the sharpness of the screen display. This screwdriver control is located behind the display screen faceplate.
ENABLE/DISABLE	Removes or applies high voltage to the screen and locks or unlocks the keyboard. This toggle switch is located on the right underside of the terminal, just back of the keyboard.
POWER CIRCUIT BREAKER	Protects the terminal from power overloads. This control is located inside the unit and is not to be used as a power on/off switch.
TAPE CASSETTE SYSTEM	
READ	Selects or deselects the operator-controlled read operation.
WRITE	Selects or deselects the operator-controlled write operation.
	NOTE: Except during edit mode, the WRITE switch and the READ switch are interlocked so that only one function can be selected at a time.
SEARCH	Selects or deselects the operator-controlled search mode and enables the cassette system to use the auxiliary interface of the UNISCOPE terminal (completion of the function automatically deselects search mode).
REWIND	When pressed, causes the selected tape transport (CASS 1 or CASS 2) to position its tape by rewinding at 120 inches per second to clear leader, homes the tape address circuitry, and automatically deselects the cassette system.
STOP	Terminates operation of the selected tape transport, aborting any function in progress, and master clears the cassette system.
POWER	Applies or removes primary input power to the cassette system.
AUTO TR	Enables or disables the automatic transmit function.
CASS 1	Selects the cassette in tape transport 1 (the left-hand transport) for offline operation.
CASS 2	Selects the cassette in tape transport 2 (the right-hand transport) for offline operation.
	NOTE: The CASS 1 and CASS 2 switches are interlocked so that only one tape transport can be selected at a time.

Control	Function
< 1 BLK	Causes the tape on the selected tape transport to be repositioned from its present interblock gap to the preceding interblock gap.
LIST	Enables or disables the ability of the cassette system to initiate an auxiliary interface data transfer following a read sequence when the unit has this option.
EDIT	Puts the cassette system into a dual transport mode for editing and copying when the unit has this option.
VOLUME	Varies the volume of the audible alarm. Located on the rear of the unit.
R/W	Enables or disables the read-after-write capability when the unit has this option. Located on the rear of the unit.
PROT. FORMAT	Enables or disables the writing of data as protected information when the unit has this option. Located on the rear of the unit.
RECORD SEP.	Enables or disables the writing of record separators when the unit has this option. Located on the rear of the unit.
MODEL 800 TERMINAL PRINTER	
POWER	Applies or removes primary power to the printer.
PRINT MODE	Manually selects or deselects the printer in offline operation.
ADVANCE PAPER	Causes paper to be advanced in the printer for as long as this switch is pressed. When the switch is released, the paper advances one more line space and then stops.
COMMUNICATIONS OUTPUT PRINTER	
SEL/OFF	When pressed to the SEL position, causes selection of the printer if the printer was deselected, or deselects the printer if it was selected; also produces a carriage return/line feed function when the printer is selected.
HOME PAPER/ PRINT TEST	When momentarily pressed once to the HOME PAPER position, causes the printer to advance the paper to the first printable line on the next form. When held in this position, the switch causes the printer to advance the paper continuously until the switch is released, at which time the paper will advance to the first printable line at the top of the next form.
	When momentarily pressed to the PRINT TEST position, causes the printer to print the character E to the end of the line and produce a carriage return/line feed function. This operation will also continue as long as the switch is pressed, concluding as described above after the switch is released.
ON/OFF	Applies or removes power to the printer.
CIRCUIT BREAKER	Interrupts primary power when overloads occur.

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Table 3. Indicators of UNISCOPE Display Terminals and Auxiliary Devices

Indicator	Function
UNISCOPE DISPLAY TERMINAL	
POWER	Lights when power is applied to the UNISCOPE terminal.
WAIT	Lights when a text message is being transmitted to or from the UNISCOPE terminal. At the same time, indicates that the keyboard is locked (functionally disabled). Also lights during an auxiliary interface data transfer.
MESSAGE WAIT	Lights when the processor has a conditional unsolicited message for display. Stays on until the MESSAGE WAITING key or a special function key is pressed and the processor message-waiting request or function key message is sent.
MESSAGE INCOMPL	Lights during the time a text message is being received by the terminal. Goes out when all checks for the message have been satisfied.
AUDIBLE ALARM	Sounds once when the cursor moves into the eighth character position from the right on any line in the display. Sounds once when the cursor first moves into the last line (in any character position) and again when it reaches the eighth character position from the end of the last line of the display. Sounds intermittently during the time that the MESSAGE WAIT indicator is lit. The alarm is turned off when the MESSAGE WAIT indicator is turned off.
TAPE CASSETTE SYSTEM	
READ	Lights as a result of either an operator-controlled or processor-controlled read selection, and stays on as long as the read function is selected.
WRITE	Lights as a result of either an operator-controlled or processor-controlled write selection, and stays on as long as the write function is selected.
SEARCH	Lights as a result of either an operator-controlled or processor-controlled selection of the search function, and stays on until successful completion of the search sequence.
POWER	Lights when primary input power is applied to the cassette system.
AUTO TR	Lights when the automatic transmit function is enabled.
CASS 1	Lights as a result of either an operator-controlled or processor-controlled selection of cassette 1 (left-hand tape transport) for operation and stays on until cassette 1 is deselected.
CASS 2	Lights as a result of either an operator-controlled or processor-controlled selection of cassette 2 (right-hand tape transport) for operation and stays on until cassette 2 is deselected.
ADDRESS INDICATORS	These five indicators, located between the two tape transport doors, show the current tape address for whichever cassette is in operation. The first digit specifies the tape track and the last four digits indicate the tape address on that track.
PROCEED	Lights when an operation (such as read, write, or search) can be attempted; goes out when an operation is in process; and relights when the operation has been successfully completed, indicating that another operation can be accepted.

Indicator	Function
WRITE 1 PROTECT	Lights when a write-protected cassette is in tape transport 1 with the transport door closed, indicating that write selection is inhibited. Stays on until the transport door is opened.
WRITE 2 PROTECT	Lights when a write-protected cassette is in tape transport 2 with the transport door closed, indicating that write selection is inhibited. Stays on until the transport door is opened.
CHECK	Lights when any one of the following conditions occurs: 1. A parity error is detected during a read operation. 2. A timing error is detected during a read or write operation. 3. A character parity or block parity error is detected during a write operation with the read-after-write function enabled. 4. A write selection is attempted when the tape is positioned at the end-of-tape hole. 5. A selection is attempted without a cassette in the tape transport. 6. A selection is attempted with a cassette inserted backwards (side 2 out). 7. A write selection is attempted on a write-protected cassette. In offline operation, the indicator stays on until any one of the following switches is pressed: STOP, READ, <1 BLK, REWIND, SEARCH, LIST, EDIT. In online operation, the indicator stays on until a new selection is made.
LIST	Lights whenever the list function is enabled.
EDIT	Lights whenever the edit function is enabled.
MODEL 800 TERMINAL PRINTER	
PAPER REQUIRED	Lights when there is not enough paper left to allow printing of a full display screen of data.
PRINT CHECK	Lights when the printer detects a timing error condition. When this indicator lights, the printer motor is turned off and the printer is deselected. The indicator goes out when the printer is again selected.
POWER	Lights when power is applied to the printer.
PRINT MODE	Lights when the printer is selected, either by manual or processor action.
COMMUNICATIONS OUTPUT PRINTER	
SELECT	Lights when the printer is selected, either by manual or processor action.
TEMP WARN	Lights when the internal temperature of the printer rises to 140 ± 5 degrees F. The printer does not shut off automatically with a high-temperature condition; the operator must take the necessary corrective action.
PRINT CHECK	Lights and printing stops when the printer is out of paper or if the print actuator fuse, the paper feed solenoid fuse, or the +48V power supply fuse burns out.

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Auxiliary Devices

The UNISCOPE 100 and UNISCOPE 200 Display Terminals are greatly enhanced when you add one or more of their auxiliary devices – the Model 610 Tape Cassette System, the Model 800 Terminal Printer, and the Communications Output Printer. A single terminal may be equipped with any combination of the three devices.

Your terminal will need an auxiliary interface before you start attaching devices. All device activity is controlled through this interface, and only one is needed to connect all three devices. You can see the data transfer relationships of these devices in Figure 9.

DEVICE ADDRESS CODES

For online activity, each device input or output function requires an address code – a unique signal sent by the processor to activate that particular function. The UNISCOPE terminal has 12 device address codes available for use with these devices. The number of address codes required for each auxiliary device varies. Refer to the specific descriptions for details.

CABLE LENGTH

You can use a total of 200 feet of cable to connect auxiliary devices to the auxiliary interface of the terminal. If you are connecting only one device, the entire 200 feet may be used – or any portion of the total length, as your needs dictate. If more than one device is to be connected, the cable length must be divided between these devices so that total cable length does not exceed 200 feet.

Multiple auxiliary devices are connected in a "daisy-chain" fashion: the first device is connected to the auxiliary interface, the next device is connected to the first device, the third device is connected to the second device, and so on.

MODEL 610 TAPE CASSETTE SYSTEM

The SPERRY UNIVAC Model 610 Tape Cassette System provides offline storage on magnetic tape cassettes for your UNISCOPE terminal. This desk-top tape cassette

system will write data onto tape as it is entered on the display screen, storing up to 1,440,000 characters with a single loading of the dual cassette transports. Or the cassette system will read from tape to the terminal, quickly locating any screenful of data that you want.

The tape cassette system enhances your display terminal by giving you offline file accessibility and extensive offline file-building capability — that is, you can have copies of your file stored on tape cassettes at your terminal location and you can build new files directly onto tape cassettes.

Large batch-like transmissions, either to or from the terminal, are possible with the tape cassette system. Such transmissions can be made at low-traffic periods, increasing efficiency of communications line use. Further, by combining the terminal and tape cassette in online and offline activities, you increase the efficiency of your terminal facility and of your personnel. This type of data transfer can even be controlled entirely by the processor without your operator in attendance.

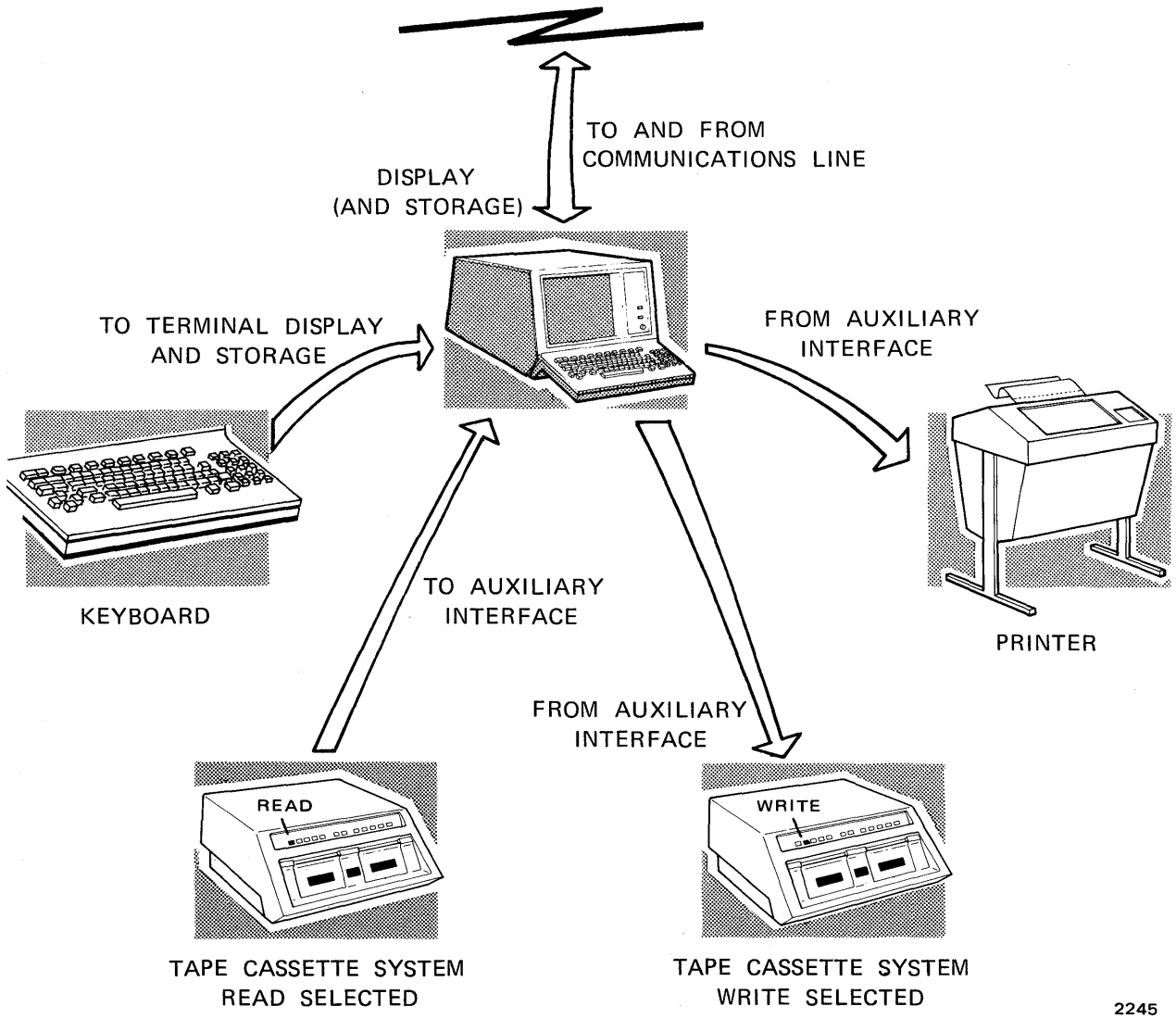


Figure 9. Data Transfer Relationships of the UNISCOPE Terminal and Auxiliary Devices

Add to your terminal/tape cassette system one or more of the printer auxiliary devices and your terminal becomes a versatile, complete data-handling communications station (Figure 10).

The tape cassette system requires four address codes, one for each transport write function and one for each transport read function. Three tape cassette systems can be connected to one UNISCOPE terminal if no other device is attached. One or two of them can be connected to one terminal along with several printers (either or both types).

MODEL 800 TERMINAL PRINTER

The SPERRY UNIVAC Model 800 Terminal Printer, using a nonimpact printing method, produces a single copy of data displayed on your UNISCOPE terminal at rates up to 200 characters per second. Printing in the 80-column business format, this desk-top output device reproduces in clear, easily readable images the full uppercase/lowercase ASCII character set in a 7 x 9 dot matrix. You can see a Model 800 printer in Figure 10 as one of two devices in a display terminal station.

This printer will accept data from the terminal, from the tape cassette system, or from the communications line by way of the terminal display storage and the auxiliary interface.

Figure 10. UNISCOPE 200 Terminal with Model 610 Tape Cassette System (left) and Model 800 Terminal Printer (right)

The Model 800 printer requires one address code. As many as eight of these printers may be connected to one UNISCOPE terminal if no other device is attached. A combination of this printer and the communications output printer or the tape cassette system, or both, is also possible.

COMMUNICATIONS OUTPUT PRINTER

The freestanding SPERRY UNIVAC Communications Output Printer, using an impact method, prints data at rates up to 30 characters per second. It can print multiple copies (up to six) on sprocketed continuous forms, which may be of variable sizes (from 3-5/8 to 14-7/8 inches wide and from 1 to 999 lines long). The printer accepts the full ASCII character set, converting lowercase to uppercase and printing in uppercase only.

The communications output printer will list data from the terminal display storage by way of the terminal auxiliary interface.

This printer requires one address code. If no other devices are attached, as many as eight communications output printers may be connected to a single UNISCOPE terminal. A combination of this printer and the Model 800 printer or the tape cassette system, or both, can also be attached to one terminal. In Figure 11, the communications output printer is functioning as an auxiliary device for the UNISCOPE 200 terminal.

Figure 11. UNISCOPE 200 Terminal with Communications Output Printer

The basic multiplexer provides system connection for 8 terminals and can be expanded in increments of 4 to accept 16 terminals. With a second multiplexer connected to any 1 of the 16 terminal connection points on the primary multiplexer (called "cascading"), up to 31 terminals may be accommodated at the one system interface point. Up to 256 terminals may be connected at one system interface point by cascading in this manner from the primary multiplexer. However, the practical limit will vary according to the expected amount of traffic, the expected length of messages, and the software handler techniques used.

The multiplexer permits synchronous or asynchronous full-duplex communications through common-carrier modems, or full-duplex synchronous operation directly with a central processor equipped with suitable communications terminal adapters.

The primary purpose of the multiplexer is to select, one at a time, those terminals and cascaded multiplexers (with attached terminals) that have information to send to the processor and provide line access to the selected terminal. The terminal with the highest priority condition is selected first. To save time and number of transmissions, the multiplexer also combines with the priority communication certain communications protocol responses from a previously selected terminal. The multiplexer does not detect or recognize characters; this function is performed by the terminal.

UNISCOPE Terminal Applications

The UNISCOPE 100 and UNISCOPE 200 Display Terminals are designed to accommodate a wide range of applications requiring direct operator interaction with a central data processing system. Whether your application involves a narrowly specified function or covers the broadest spectrum of functions, the UNISCOPE terminals can be adapted to your needs.

Display terminal applications fall into one or more of the following general categories:

- Data entry
- Data accessing
- Control and monitoring
- Conversational interaction

DATA ENTRY

UNISCOPE terminals are ideally suited for data entry operations. These operations are basically one way — the data flow is primarily from terminal to processor. Data sent from processor to terminal consists largely of acknowledgments for messages and of data-entry or instructional command forms. Primarily, you use the terminal in this category to fill in the forms or to send instructional commands or other data to the processor for retention or for use in other locations.

The editing capability and display storage of the UNISCOPE terminal are indispensible features in data entry applications. With these features you can enter data and work it over until it is exactly the way you want it before you transmit it. This saves time both in use of the transmission line and in use of the processor.

If you want to use protected forms as guides for data entry, the software can provide as many such forms as your operation requires. By using simple coded commands, your operator can display the forms on the terminal as they are needed.

DATA ACCESSING

When UNISCOPE terminals are used for data accessing, they are basically extracting from the processor information that has previously been stored, although not necessarily by that terminal. The data flow for this function is primarily from processor to terminal. The input activity of the terminal is generally limited to specifying the desired data and acknowledging receipt of a transmission from the processor. This function does not usually give you the capability to change the files, only to look at what is in the files.

By using this limited function, you realize great economy because you can view a relatively large amount of information and expend only a minimum of time — transmission and operator — to specify each input segment. The special function keys are quite useful in such applications. With appropriate software, these keys can be used to issue commands to the processor with a minimum of time required for data entry and transmission. Also, software can be designed to provide many detailed services that respond to minimum terminal commands, making access to and display of data in complex files an almost automatic process.

CONTROL AND MONITORING

In control-station or output-display-monitoring applications, the UNISCOPE terminal functions as a receive-only display with a limited input requirement. Transmission is essentially one way only, from the processor to the terminal, when the application is strictly for monitoring; it is both ways when control is also a function of the application.

Basically, this is the same type of operation as data accessing, but even less message interchange is necessary. The data displayed at the terminal is the output from whatever sensing, monitoring, or control elements are employed in the system. When a change occurs in the sensing element, the processor changes the display. At this point the operator may use the terminal to request the status of various aspects of the operation or to initiate input commands which will correct the condition.

CONVERSATIONAL INTERACTION

The versatility of UNISCOPE terminals is most evident in conversational applications — when your operator and the processor are interacting on a real-time basis. Such interaction makes full use of the UNISCOPE terminal two-way communications capability and also makes efficient use of the storage capacity and high-speed computational capabilities of the processor.

In effect, this type of application combines both the data entry and data accessing applications previously described, but it goes a large step farther by incorporating real-time responses into each input or output transaction and thus creating a constantly changing data base. Applications for UNISCOPE terminals in the conversational category are both numerous and complex, depending only on the extent and sophistication of your software support and your processor system.

APPLICATION EXAMPLES – HOW UNISCOPE TERMINALS AND THEIR AUXILIARY DEVICES ARE PUT TO USE

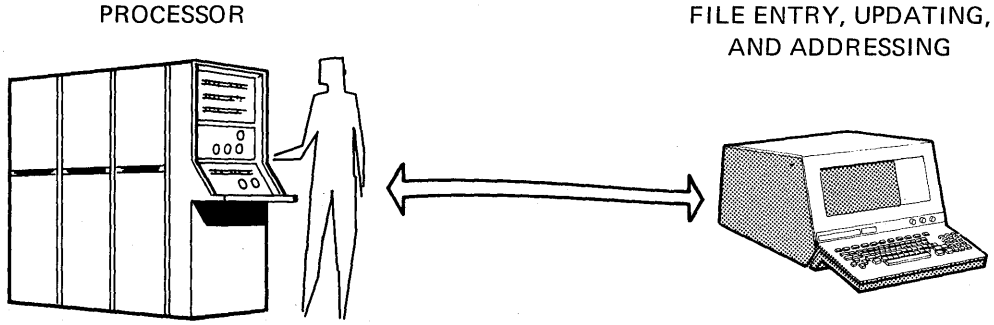
Banking

A bank uses UNISCOPE terminals for data entry at each teller's station. The appropriate account format is automatically selected when the teller enters the name and account number of a customer. The teller enters data pertaining to the transaction in the form on the screen, and only this newly entered data can be changed by the teller. The accounting function for the transaction is performed by the processor, where any necessary changes to existing data are made.

This function uses the split screen capability. The current status of the account is displayed on the top half of the screen and the form entry blanks for account information are displayed at the bottom half of the screen. The cursor can be positioned only at the blank spaces in the bottom half. Various short command messages are also included in the bottom half of the display. When invoked, they cause other software-generated functions to take place, such as transforming the terminal into a data-accessing terminal for the duration of that command.

Government

A state highway department uses display terminals to enter data concerning right-of-way acquisitions, the court status of each legal action underway, and the dollars and people involved in the various actions. This function is monitored by the state attorney general, who keeps a UNISCOPE terminal in his office for this purpose. As use and development of the network progress, the department will be adding printers.



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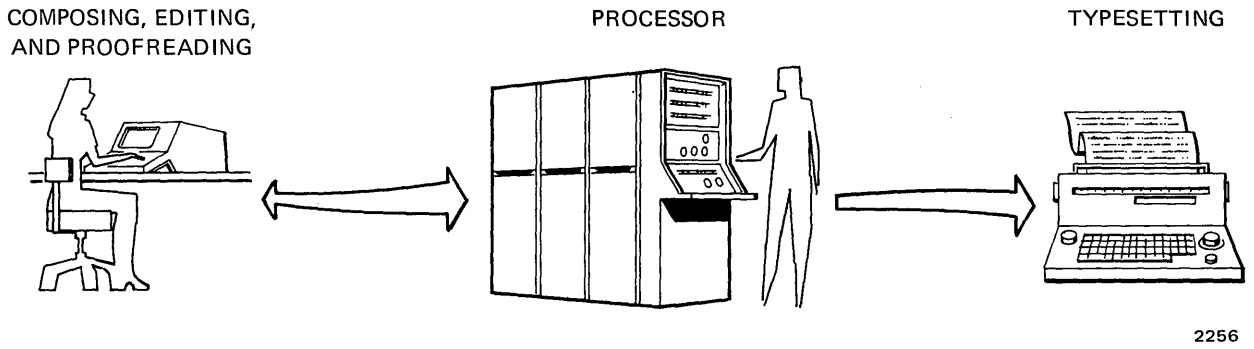
The revenue department of the same state is also using UNISCOPE terminals for inquiry and update of revenue files, accounting of tax payments, and maintenance of vital statistics on taxpayers. Initial emphasis is on business taxes.

Mass Media

A newspaper publishing service sets type by processor control, using the UNISCOPE terminal as the input device for composing and editing. Text is entered into the display, where it is proofread and corrected; when the screen of text is ready, it is transmitted to the master file of the processor for typesetting. The software handlers take care of the final format, but all text entries, editing, proofreading, and other changes to text are made in the terminal and in interactive communications between the processor and the terminal. All codes controlling typesetting (such as size of type, length of lines, and style of type) are entered from the UNISCOPE terminal as the text is entered.



Brokerages

A nationwide stockbroker has a network of UNISCOPE display terminals combined with SPERRY UNIVAC DCT 1000 Data Communications Terminals. The display terminals are used for order entries and for processor-controlled message switching. The DCT 1000 printer terminals are used primarily to print extensive reports.

Sales orders are entered from each of the 80 offices to the home office, where the information is processed and collected in a centralized transactions file.

Message switching is a communications tool used by any of the offices to communicate with any one, several, or all of the other offices. The message can be originated at any terminal and is passed to the addressed terminal or terminals by the processor whenever the addressed terminal is free to receive the message.

The research department of this firm develops and maintains opinion reports on selected stocks. These reports are updated by interactive communications with the processor, using the computational and comparative abilities of the processor as tools for real-time evaluation of the stock activity.

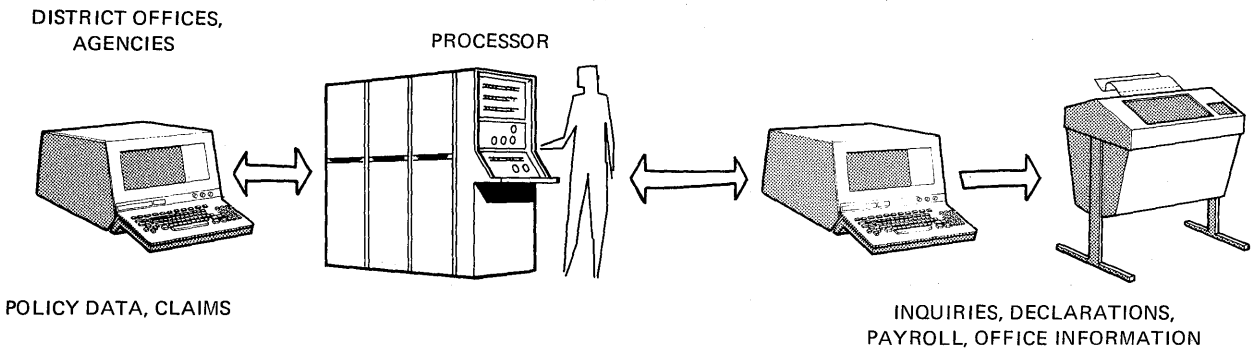
Instruction

A school district uses the UNISCOPE terminal as the student/processor interface in computer-aided instruction programs.

Insurance

An insurance company uses UNISCOPE terminals for input and output activity on virtually every aspect of the business. New-policy data and update information are entered into the data processing system. Claims are input and the processed information is displayed. Inquiries are made concerning policies, policyholders, claims outstanding, and premium rates. Declarations are entered in the terminal and then printed from the terminal.

The terminals are located in all district offices and in some agency offices.



Mailing Services

A direct-mail advertising firm subscribes to a processor-maintained mailing-list service. This firm uses the UNISCOPE terminal to review the categories of mailing lists available. When the appropriate lists have been selected, the firm utilizes tape cassette systems and communications output printers to record an entire list on tape in "batch" mode and then print labels offline from the tape.

The mailing-list service itself also uses the UNISCOPE terminal to build and maintain its mailing lists. With the change and insert features of the terminal, correcting entries is a simple matter and line transmission economies are realized. Further savings are realized through use of the cassette system — preparing and editing lists offline and then transmitting them in low-traffic hours when transmission rates are lower.

The firm supplies lists to its customers directly over communications lines to UNISCOPE terminals, but also produces printed lists and packages of labels for customers who do not have terminals. These lists and label packages are prepared offline in listing operations between the cassette system and the communications output printer.

Small Businesses

A small photofinishing firm uses UNISCOPE terminals and communications output printers to enter customer information and to print labels for job identification and mailing.

Manufacturing and Distribution

A lumber operation combines the UNISCOPE terminal and tape cassette for extensive unattended operation applications. The communications output printer is also used with the terminal and cassette system for offline listing of data received during the unattended operation transmissions. The company uses the terminal to enter orders into the data processing system, to output bills of lading, and for accounting and payroll functions.

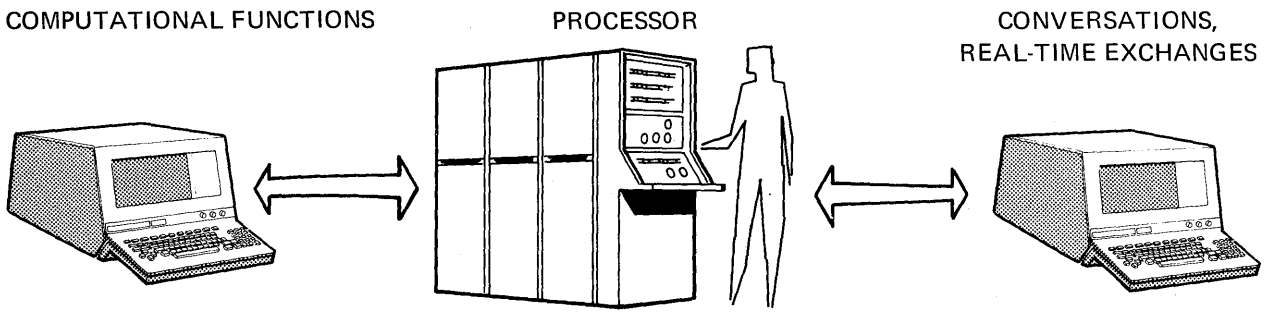
A food processing company uses UNISCOPE terminals in a nationwide network of sales offices, mainly for data entry and data distribution. The sales offices enter orders using a method which is automatically interactive. That is, as an entry is made, it is processed and the next information presented to the operator is based on the previous data entered. This real-time entry system is highly successful in the accurate filling of orders. Accounting and payroll are also handled with the terminals. Data entries are processed in much the same way for these functions as for order entries. Each sales office takes care of the payroll for people in that office, including local printing of the payroll checks on communications output printers.

Retailing

The parts department of a mail-order department store uses UNISCOPE terminals to access extensive parts lists for the machines, appliances, and tools sold by the store and supported by the parts service.

Research and Development

A chemical research company uses UNISCOPE terminals in various research departments. The primary use in some of these locations is to access the processor's high-speed computational capabilities. Some of the users whose work is largely theoretical do a large part of their research in terminal/processor conversations, while others use their terminals for real-time data analysis as laboratory conditions change and as changes are introduced in the experiments in process. In all cases, the processor software is designed to record the daily transactions from each terminal so that any given step in a problem can be recalled for further study.



Transportation

A travel agency uses UNISCOPE terminals to show seat availability. The agent selects the directory of flights by pressing a special function key and selects the flight desired from the directory. Complete information on that flight is then displayed. If all seats on a given flight are sold, the agent can work with the processor to find an alternate schedule or routing.

The terminals are also used to work out routes for various destination combinations, alternate timetables, and other information helpful in planning the best accommodations for the customer.

Hospitals

A large university hospital is presently using a network of 80 terminals with plans to expand up to 250 terminals. Present applications are patient admissions and records, outpatient records, emergency room statistics and reference to records, posting of bills, listing of accounts receiveable and other accounting functions. Printers are used to make paper copies of information for retention by patients or for reference by doctors or nurses, and to print bills and various accounting documents.

A CASE HISTORY

A wholesale hardware firm uses UNISCOPE terminals for making up orders and for shipping. The order desk enters order information in the terminals. These terminals display a simple form for entering such information, along with some coded commands that the order clerk selects to indicate class of material for each item entered, type of shipment desired, how to bill, and various other items of fixed meaning included in the system software.

The processor sorts the data entered and routes the different classes of items ordered to terminals in the appropriate warehouse departments, listing bin location of each item in the optimum sequence for orderly selection. Each terminal station in the warehouse includes a Model 800 printer, which the stock clerk uses to make a reference print of the order. The order information displayed on the warehouse terminals is protected. Only the status of the order on each item is entered (such as quantity shipped or back ordered, substitution sent, brand of merchandise supplied when the clerk has the choice to make).

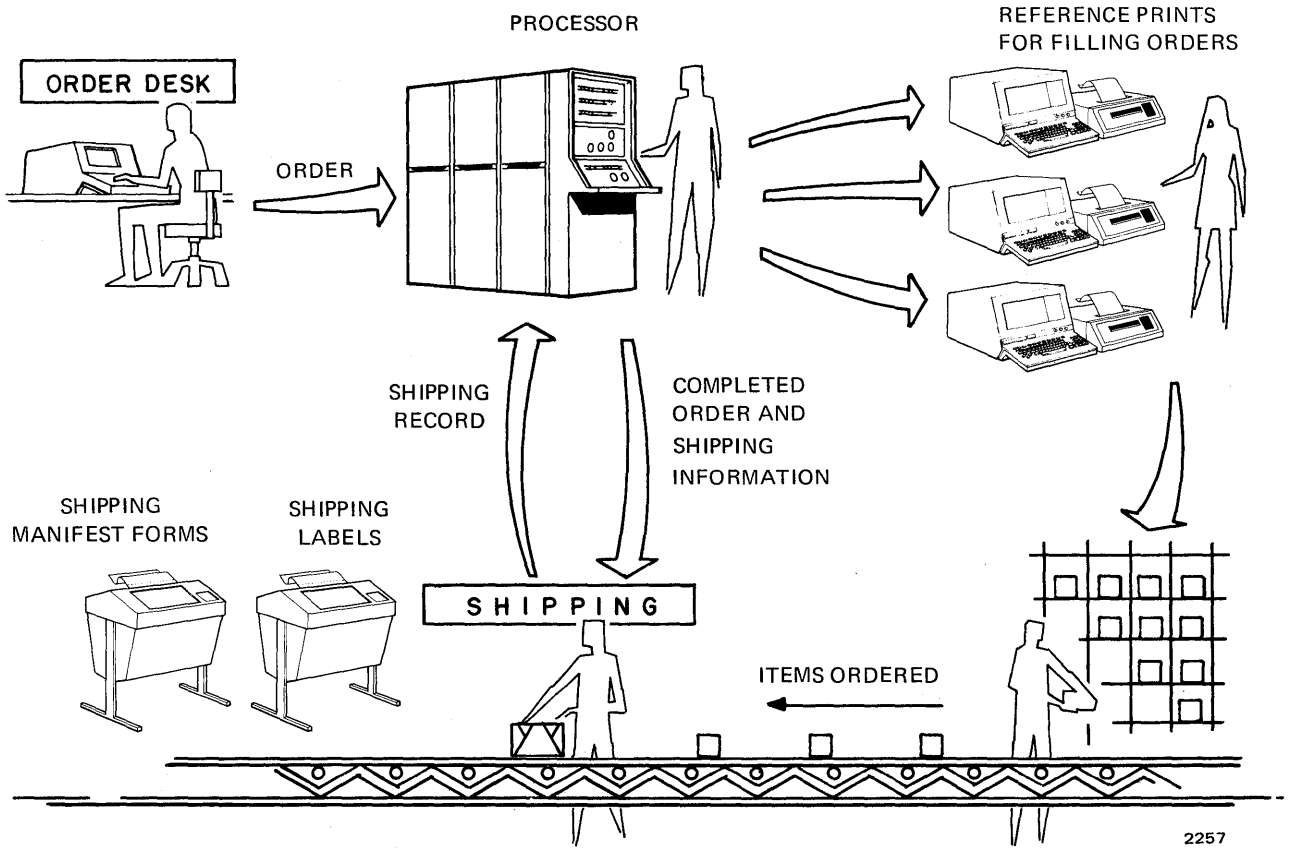
When each department has completed its part of the order, the stock clerk enters the status information and sends the completed order segment to the processor, where all order segments are reassembled.

When the shipping department is ready for a new order, the appropriate code is sent to the processor, which sends the compiled order to a shipping department terminal.

The shipping department has two communications output printers connected to this terminal, one loaded with shipping label forms and one loaded with shipping manifest forms. The operator prints as many labels as required for the order. (Each display can be printed repeatedly by operator control until a new screenful of data is requested.) Then the operator selects the command that brings the shipping manifest information to the terminal. This information is used to check off the items accumulated from the various departments, and it is also printed in multipart forms, each copy signed by the shipping clerk.

At the shipping department terminal, data entry is limited to insertion of date and time of shipment and identification of the shipping clerk. All other data accessing is provided by positioning the cursor at prepared commands that are displayed on the screen.

When an order is to be packaged for shipping, software calculates the number of labels required for optimum packaging, calculates the packaging requirements, and provides this information to the shipping clerk, who then normally follows these instructions for actual packaging.



Specifications

FUNCTIONAL CHARACTERISTICS

Display format selections	
UNISCOPE 100 terminal	960 characters (12 lines by 80 characters) or 1024 characters (16 lines by 64 characters)
UNISCOPE 200 terminal	1536 characters (24 lines by 64 characters) or 1920 characters (24 lines by 80 characters)
View area	
UNISCOPE 100 terminal	10 inches wide by 5 inches high
UNISCOPE 200 terminal	10 inches wide by 7 inches high
Character generation	
UNISCOPE 100 terminal	Closed stroke, refresh rate of 60 or 50 times per second
UNISCOPE 200 terminal	9 x 7 dot matrix, refresh rate of 60 or 50 times per second
Character generator	Basic 64, expandable to 96
Transmission code	7-level ASCII plus parity
Transmission mode	Half-duplex
Transmission facilities	Voice grade (telephone switched network or private line)
Transmission rates	Synchronous (up to 9600 baud) Asynchronous (300, 600, 1200, 1800, or 2400 baud) Direct DCS/CTMC synchronous (2400, 4800, or 9600 baud)

Transmission type	Synchronous Asynchronous
Interfaces	EIA RS-232-C/CCITT V.24 MIL-STD-188 IBM compatible SPERRY UNIVAC Terminal Multiplexer SPERRY UNIVAC DCS and CTMC SPERRY UNIVAC 3760 Communications Controller
Data sets	SPERRY UNIVAC U-201 Synchronous Modem or equivalent SPERRY UNIVAC U-202 Asynchronous Modem or equivalent
Error detection	Character and message block parity with automatic retransmission
Selective calling	Processor can select display terminal or peripheral device or both; processor can initiate data transfer from the display terminal
Keyboards	Uppercase Uppercase/lowercase Uppercase and numeric Uppercase/lowercase and numeric Numeric only
Protected format	Protection of specified data fields as defined by processor program
Special function keys	Four keys that generate unique characters for use as requests or indicators, extending operational and systems control (or three keys and a HANG UP key)

PHYSICAL CHARACTERISTICS

Width	18 inches
Height	13 inches
Depth	27 inches
Weight	91 pounds

POWER REQUIREMENTS

Nominal voltage	100, 120, 200, 208, 220, or 240 volts
Nominal frequency	50 or 60 Hz
Phases and lines	Single phase, 3 wire
Nominal load	0.200 kilowatt
BTU per hour	600

AUXILIARY DEVICES

SPERRY UNIVAC Model 610 Tape Cassette System

Read/write speed	6 inches per second (4800 bits per second)
Dual cassette capacity	1,440,000 characters
Width	16 inches
Height	8 inches
Depth	20 inches
Weight	34 pounds
Nominal primary power	100 or 120 volts at 60 Hz 200 or 220 volts at 50 Hz

SPERRY UNIVAC Model 800 Terminal Printer

Print speed	200 characters per second
Character set	96 characters, uppercase and lowercase
Width	19 inches
Height	6 inches
Depth	15 inches
Weight	32 pounds
Nominal primary power	100 or 120 volts at 60 Hz 200 or 220 volts at 50 Hz

SPERRY UNIVAC Communications Output Printer

Print speed	30 characters per second
Character set	63 printable characters, uppercase
Width	38 inches
Height	36 inches
Depth	31 inches including paper rack
Weight	100 pounds
Nominal primary power	120 volts at 60 Hz 220 volts at 50 Hz

SPERRY UNIVAC TERMINAL MULTIPLEXER

Terminal capacity	Interfaces up to eight terminals with expansion features to interface eight more; accepts one level of cascading
Internal modems	SPERRY UNIVAC U-201 Synchronous Modem SPERRY UNIVAC U-202 Asynchronous Modem
Width	16 inches
Height	12 inches
Depth	8-1/2 inches
Weight	30 pounds
Nominal primary power	120 volts at 60 Hz 220 volts at 50 Hz

NOTE:

All specifications subject to change without notice.

User Documents

The information in this book is general in nature. Written primarily as a general description and for use in planning the data communications system, the book is not intended to take the place of specific operating instructions and other user information. Information pertaining to specific uses and activities of the UNISCOPE display terminals and associated SPERRY UNIVAC equipment is contained in the manuals listed in Table 4.

Table 4. User Documents

Equipment	Type of Manual			
	Operator Guide	Operator Reference	Programmer Reference	Component Description (or other)
UNISCOPE Display Terminals	UP-8147	UP-7788	UP-7807	*
Communications Output Printer	–	–	–	UP-7939
Terminal Multiplexer	–	–	–	UP-7916
Model 610 Tape Cassette System	–	–	–	UP-8012
Model 800 Terminal Printer	–	–	–	UP-8013
U-201 Synchronous Modem	–	–	–	UP-8132
U-202 Asynchronous Modem	–	–	–	UP-8135
Direct Connection Module	–	–	–	UP-7932

*UNISCOPE Display Terminals Preinstallation Planning Guide, SP-2012

The user is also expected to have access to the appropriate manuals on the system in which the UNISCOPE terminals are being used.

Glossary

Accessing	Entering mass storage files from a terminal for purposes of reference, change, or any other file function for which the terminal is equipped.
Addressing	A communications protocol coding method of identifying one communications line interface point and a specific terminal at that location. Also, the same method used in identifying a specific auxiliary device associated with the addressed terminal.
ASCII	Acronym for American Standard Code for Information Interchange.
Asynchronous	Literally "not synchronous." Refers to a method of timing or pacing a data transmission by starting each character with a start element and following it with one or two stop elements.
Auxiliary device	A device that operates from a terminal and is not under continuous control of the processor but depends on the terminal for overall control.
Auxiliary interface	The special interface in a UNISCOPE terminal designed for the auxiliary devices associated with this terminal.
Batch	Refers to the method of transmitting multiple segments of data as a single message.
Buffer	A device (or software routine) used to compensate for a difference in rate of data flow, or in timing of events, when data is being transmitted from one device to another. A place or function for the temporary holding of a data transmission.
Communications control procedures	The means used to control the orderly communication of information between data communications terminals and a data communications link (that is, a processor or another terminal).
CTMC	Acronym for SPERRY UNIVAC Communications Terminal Module Controller.
DCM	Acronym for SPERRY UNIVAC Direct Connection Module (a modem replacement).

DCS	Acronym for SPERRY UNIVAC Data Communications Subsystem.
Deselection	The electronic identification process applied to a communications sequence to discontinue a communications link, effectively turning off the terminal or terminal device previously selected to receive a message.
Display	The visual presentation of information either being prepared for entry into the processor storage or retrieved from processor storage.
Full-duplex	Refers to a mode of transmission in which data travels two ways simultaneously, each direction independent of the other.
Half-duplex	Refers to a mode of transmission in which data travels one way at a time, alternating between the participating stations.
Handler	A software package written for a special purpose; in data communications, it generally controls input and output between the processor and the terminals or other communications devices.
I/O	Acronym for input and output.
Interactive	Refers to the process of communication between two stations in which each station responds alternately to procedural formalities. (Also called "conversational.") A processor and a terminal would be considered two such stations.
List	To print or otherwise produce a permanent copy of a data transmission.
Modem	A contraction of modulator-demodulator. A device that modulates and demodulates signals transmitted over communications facilities.
Multidrop	Refers to a communications method using two or more data communications terminals on a communications line at a single interface point.
Multipoint	Refers to a communications method where two or more data communications stations interface the same communications line, each at a separate interface point.
Offline	Refers to terminal activity performed without access to a processor or communications line.
Online	Refers to terminal activity performed between two or more stations linked together on a communications line or joined in a direct communications link.
Parity	An element added to the basic message or character for the purpose of checking correctness of the data transmission.

Peripheral equipment	In data communications, any item of equipment apart from but associated with the basic data communications terminal.
Point-to-point	Refers to a communications method using data communications terminals at separate interface points on the same line, with communication taking place directly between two terminals rather than by way of the processor.
Polling	A technique for inviting a data communications terminal to transmit status or messages at a given time.
Processor	A device or group of devices, with the supporting software, capable of executing a systematic sequence of operations upon data.
Real time	A description applied to a computation or other data processing sequence that occurs during the actual time the related process is being monitored or controlled so that the results are available for modifying or guiding the process.
Selection	The electronic identification by the processor of one or more terminals or terminal devices which are to receive the message following. By implication, those stations which are not selected will be blocked from reception.
Software	The programs and routines used in the operation of data processing systems, such as assemblers, compilers, handlers, and narrators.
Storage	Refers to a device into which data can be entered, in which it can be held, and from which it can be retrieved at a later time. Loosely, any device that can store data.
Synchronous	Refers to a method of timing or pacing a data transmission by synchronizing the transmitting equipment and the receiving equipment with a series of synchronizing characters.
Timesharing	The use of a processor for two or more purposes or operations during the same overall time interval, accomplished by interleaving portions of each function throughout the processing time. In data communications, this term is popularly applied to processing services sold to independent subscribers who access the system by means of data communications terminals.

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