UTS 30 SYSTEM DESCRIPTION

R SPERRY

UP-9796 Rev. 2

SPERRY

PUBLICATIONS REVISION

UTS 30

SPERRY Z2 UAS
6TH FLOOR
8008 WESTPARK DRIVE
MCLEAN VA
22102

**SPERRY®
Universal Terminal
System 30 (UTS 30)
Single Station**

System Description

UP-9796 Rev. 2

This library memo announces the release and availability of "SPERRY® Universal Terminal System 30 (UTS 30) Single Station System Description," UP-9796 Revision 2. It is a Standard Library Item (SI.I).

The UTS 30 is a low-cost, intelligent display terminal specially tailored in two versions. The basic UTS 30 has functional capabilities provided by a program cartridge easily installed through a door in the top of the terminal. The programmable UTS 30 functional characteristics are provided by a software program loaded from a 5¼-inch diskette via the SPERRY 8439 Diskette Subsystem.

In addition to the capabilities provided by the various operating modes, many utilities are available to enhance UTS 30 operations. This book describes the functional capabilities of the UTS 30 in general terms. Revision 2 provides information on added communications modes and the RS-232 peripheral interface.

Additional copies may be ordered by your Sperry representative.

Destruction Notice: This revision supersedes and replaces "SPERRY Universal Terminal System 30 (UTS 30) Single Station System Description," UP-9796 Rev. 1, released on library memo dated January 1984. Please destroy all copies of UP-9796 Rev. 1 and the associated library memos.

LIBRARY MEMO ONLY	LIBRARY MEMO AND ATTACHMENTS	THIS SHEET IS
Lists MAC, MBSU, MBR, MCZ, MMZ, 8, 9, 9U, 10, 11, 18, 19, 20, 21, 30, 31U, 37, 37U, 38, 60, 61, 62, 63, 63U, 64, 64U, 65, 66, 75, 76, 77, 78, 81, 81U, 83, 83U, 89, 89U	**Lists MCS, MCT, MZZ, 82 (46 pages plus library memo)**	**Library Memo for UP-9796 Rev. 2**
		RELEASE DATE: **November 1985**

UTS 30 SYSTEM DESCRIPTION

R SPERRY

UP–9796 Rev. 2

This document contains the latest information available at the time of preparation. Therefore, it may contain descriptions of functions not implemented at manual distribution time. To ensure that you have the latest information regarding levels of implementation and functional availability, please consult the appropriate release documentation or contact your local Sperry representative.

Sperry reserves the right to modify or revise the content of this document. No contractual obligation by Sperry regarding level, scope, or timing of functional implementation is either expressed or implied in this document. It is further understood that in consideration of the receipt or purchase of this document, the recipient or purchaser agrees not to reproduce or copy it by any means whatsoever, nor to permit such action by others, for any purpose without prior written permission from Sperry.

PRINTED IN U.S.A.

Contents

1. **OVERVIEW** 1

Basic UTS 30 2
Programmable UTS 30 2
Graphics Dimension 4
Terminal Adaptability 7
Significant UTS 30 Advantages 7
Customer Setup 9
Memory 9
Character Sets 9
Communications 9

2. **UTS 30 CHARACTERISTICS** 10

The Display Screen 10
Low-Profile Keyboards 11
Terminal Controls and Indicators 13
Power-On Confidence Test 14
Communications Configurations 14
UTS 30 Applications 19

3. **OPERATING MODES** 21

UNISCOPE Mode 21
CP/M Plus Mode 29
DCA Mode 30
SPERRYLINK Office System Mode 30
Videotex Mode 31
X.25 PSCS Mode 31

4. **PERIPHERAL AND AUXILIARY DEVICES** 32

General Peripheral Information 32
8439 Double-Sided Diskette Subsystem 32
Model 15 Printer 33
Model 25B Printer 34

Model 31 Printer 34
Model 35 Printer 35
8609 Terminal Multiplexer 35
8610 Direct Connection Module 36
8613 Signal Distribution Module 36
Magnetic Stripe Reader 37
2712 Document Reader 37

APPENDIXES

A. UTS 30 SPECIFICATIONS 39

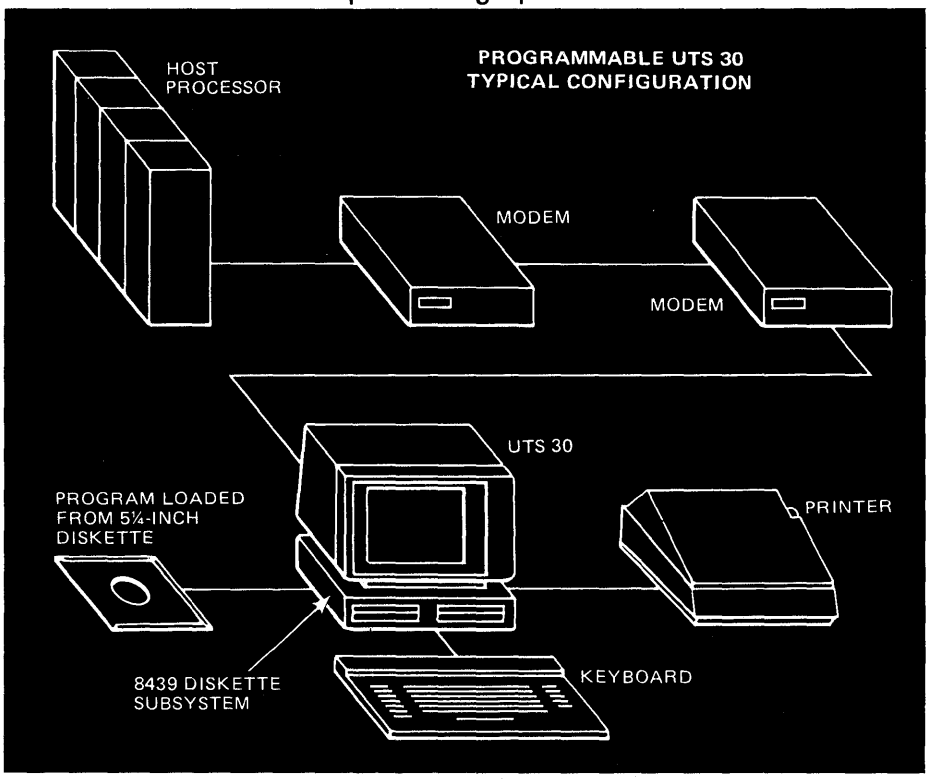
UTS 30 Functional Characteristics 39
Size and Weight 40
Power Requirements 40

B. PERIPHERAL AND AUXILIARY DEVICE SPECIFICATIONS 41

1. Overview

The SPERRY Universal Terminal System 30 (UTS 30) Single Station is a low-cost intelligent display terminal specially tailored in three different versions for sending, receiving, manipulating, and displaying data.

The powerful UTS 30 capabilities are loaded from diskette by a SPERRY 8439 Double-Sided Diskette Subsystem or provided by a program cartridge that is easily installed through a door in the top of the terminal. The functions of the UTS 30 can be further enhanced by program products and by user programmability implemented through the low-cost 8439 diskette subsystem. The UTS 30 with functions provided by the program cartridge is called the "basic" UTS 30. The "programmable" UTS 30 has functions provided through the diskette subsystem. Both versions of this terminal offer functional advantages combined with very real economies for total data processing operation.



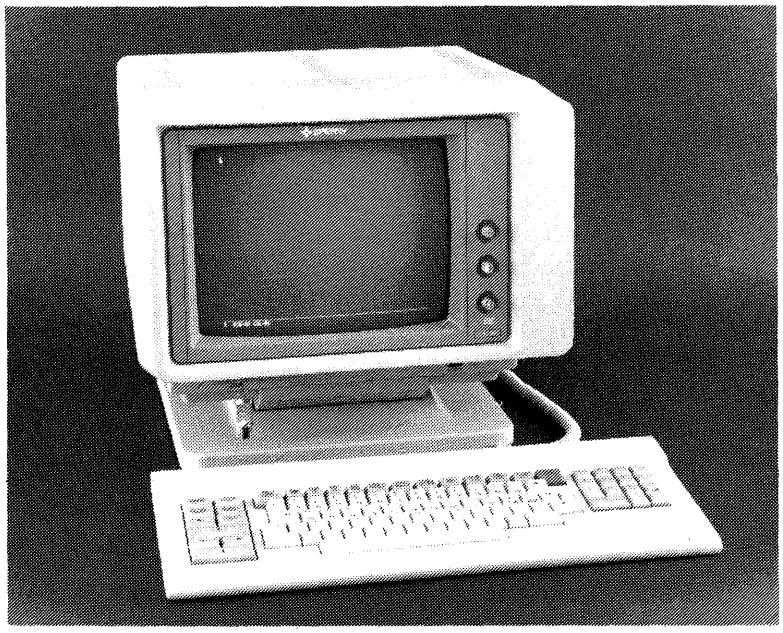
OVERVIEW

The UTS 30 with a twisted pair interface (UTS 30T) offers a third version, which can be downline loaded without a program cartridge or a system diskette.

BASIC UTS 30

The basic UTS 30 operates in UNISCOPE mode and can be used in a communications network with other SPERRY terminals. This version, used primarily for online applications, does not have a diskette subsystem for storage. Program products, such as a COBOL interpreter, can be downline loaded to the basic UTS 30 from the host. Data received from the host can be printed on a printer attached to the terminal.

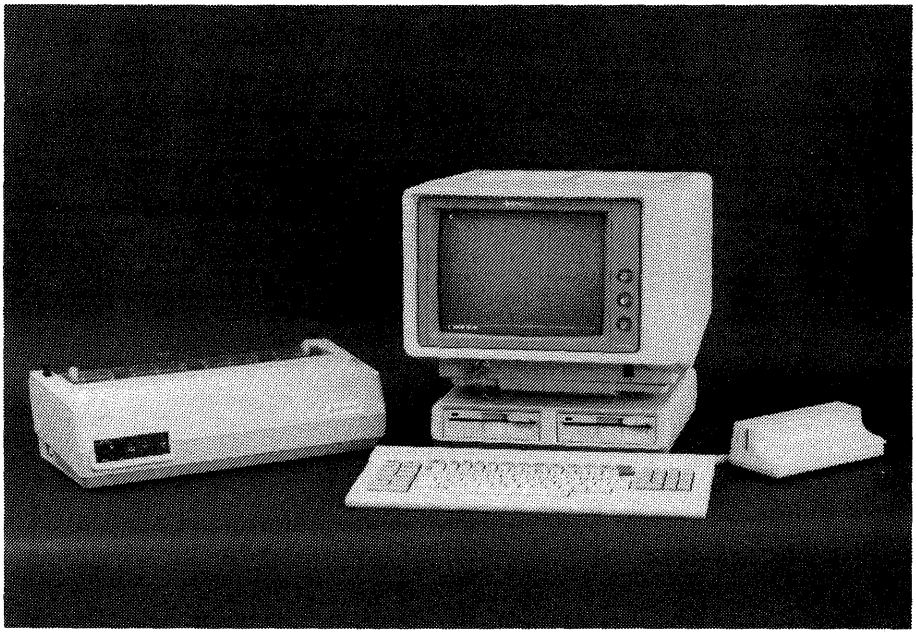
The basic UTS 30 can be upgraded to a programmable version by replacing the program cartridge with a diskette subsystem interface and adding up to four diskette drives.



PROGRAMMABLE UTS 30

The programmable UTS 30 includes a SPERRY 8439 Diskette Subsystem, used for loading a variety of system control software programs and for data storage.

This efficient and versatile display terminal provides all of the capabilities a user could want or use at any remote location. The operating modes of the programmable UTS 30 give the user the advantages of hard-copy printers, peripheral data storage, online interactive data transfers, offline data-handling potential, user programmability, and host-processor-initiated retrieval of data in peripheral storage.



Operating Modes

Six operating modes, available on diskettes, are provided for the programmable UTS 30 single station. These modes of operation are in the form of stand-alone system control software, requiring no other programs to be loaded from diskette. The following modes offer total data processing capabilities.

- UNISCOPE (also available on the basic UTS 30)
- CP/M Plus™
- SPERRYLINK Office System
- Videotex
- X.25 Packet-Switched Communications Software (PSCS)
- Distributed Communications Architecture (DCA)

Some of these modes support additional software application packages to further enhance UTS 30 functions.

CP/M Plus™ is a trademark of Digital Research, Inc.

PROGRAMMABLE UTS 30

Stand-Alone Capability

The stand-alone capability of the programmable UTS 30 allows the user to select software application programs from a great number of existing business and other programs.

This capability allows a UTS 30 to operate as a desk-top computer, with offline applications that supplement the traditional data communications terminal role.

User Programmability

User programmability allows the user to write his own programs and tailor the functional capabilities of the UTS 30 to his unique requirements.

In UNISCOPE mode, UTS COBOL is required for user programs. CP/M Plus mode allows the use of various computer languages to develop software programs.

UTS 30 CP/M Plus is a single-user, single-thread operating system configured for operation on the UTS 30. Loaded from a flexible diskette, it provides for program construction and storage and allows a user to:

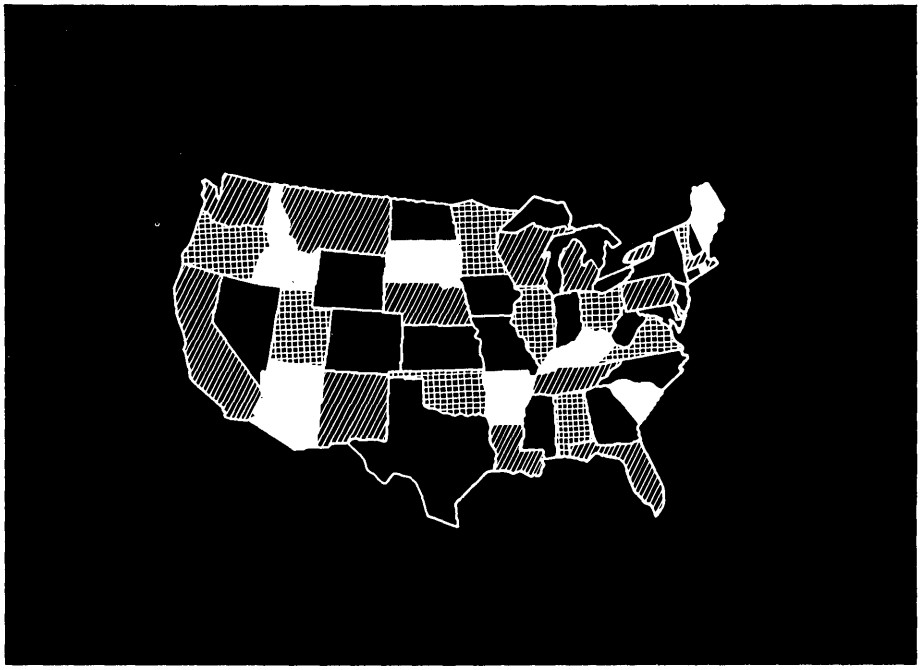
- Select business and other software packages from many software vendors.
- Use the provided utilities for program construction, storage, and editing.

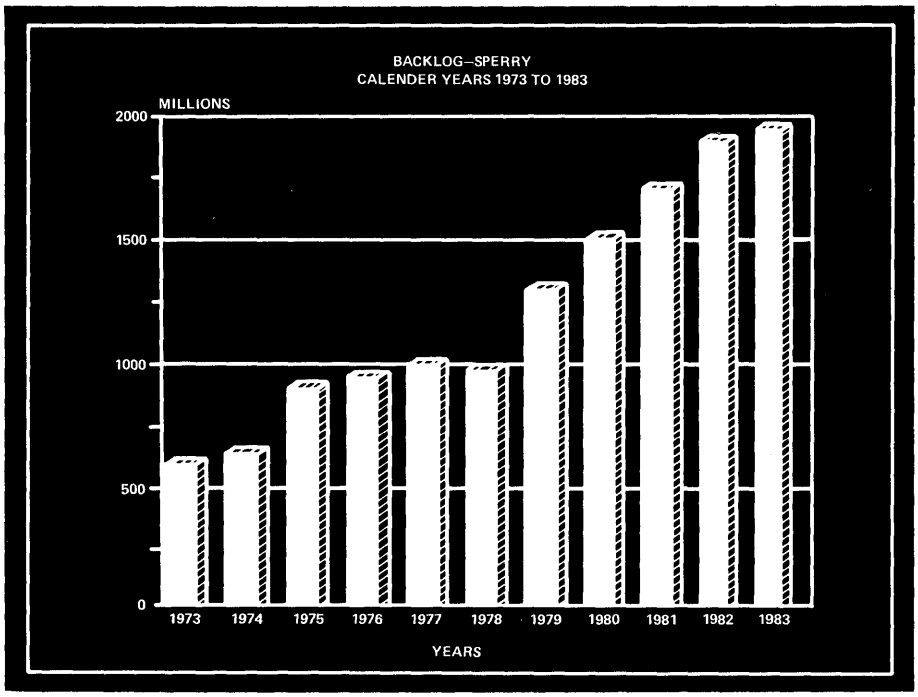
CP/M Plus provides rapid program access through a comprehensive file management package.

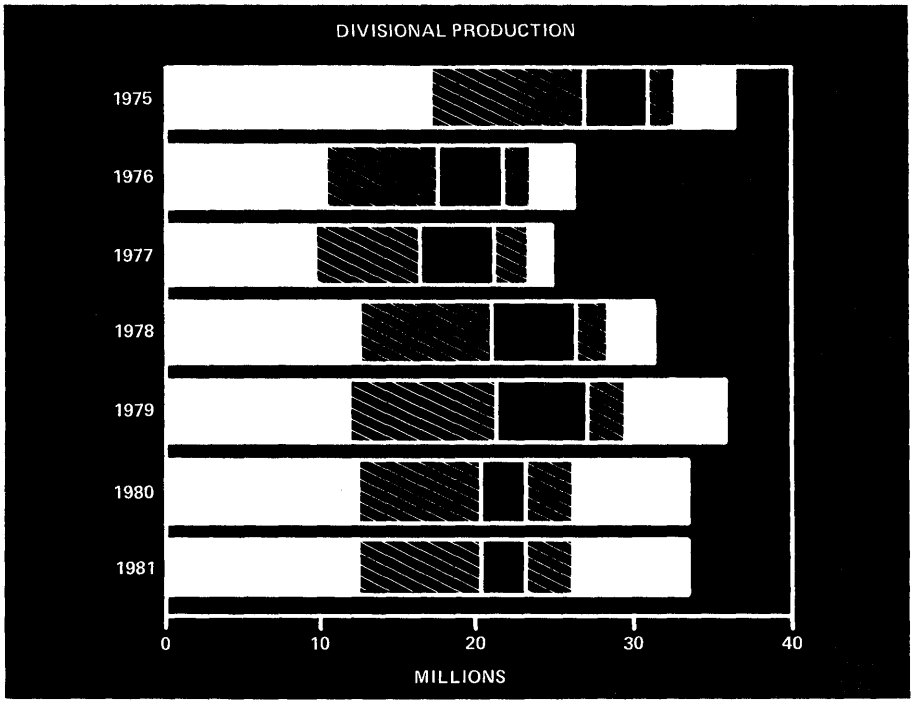
GRAPHICS DIMENSION

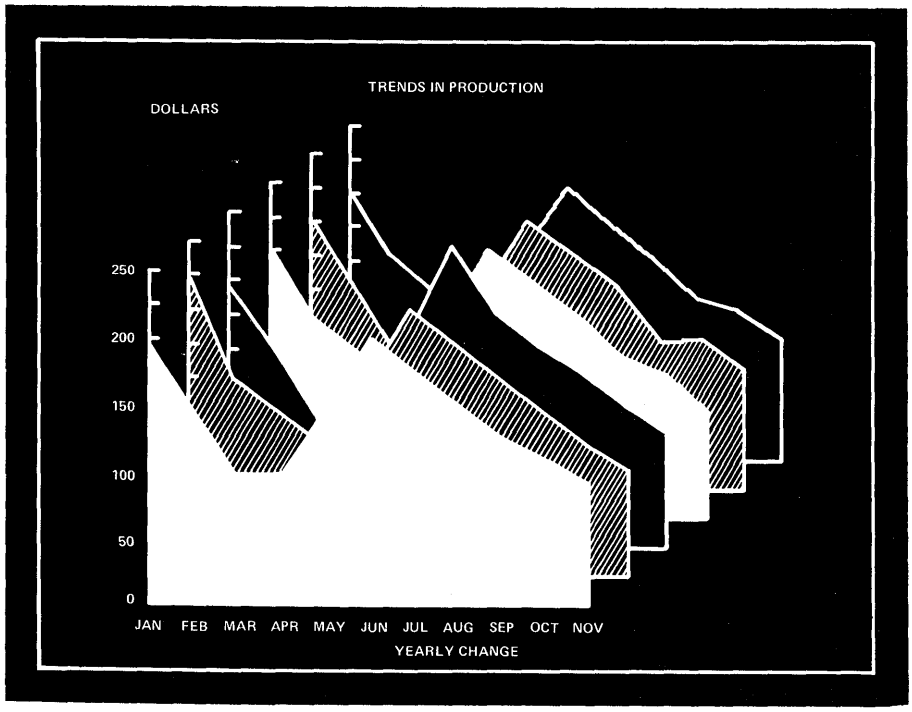
A new feature for the UTS 30 is a graphics capability that enables a user to prepare bar graphs, pie charts, or line graphs from available data.

The dot graphics module provides control, memory, and processing for the SPERRY Business Graphics Utility, the SPERRY CP/M Plus graphics, and graphics received from a host processor on a communications line. Typical graphics that can be produced on the UTS 30 are as follows:




BACKLOG–SPERRY
CALENDER YEARS 1973 TO 1983
MILLIONS
2000
1500
1000
500
0
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
YEARS


DIVISIONAL PRODUCTION
1975
1976
1977
1978
1979
1980
1981
0
10
20
30
40
MILLIONS


TRENDS IN PRODUCTION
DOLLARS
250
200
150
100
50
0
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV
YEARLY CHANGE

Compatibility

The UTS 30 can be added to host systems configured with SPERRY Universal Terminal System 400 (UTS 400) display terminals, UTS 20, UTS 40, and UTS 60 single stations, and UTS 4020/UTS 4040 cluster controllers.

Operator Control

An operator can become proficient on the UTS 30 with little or no formal training. The simple-to-operate keyboard is arranged much like a typewriter keyboard, with the addition of some data manipulation and communication keys. In UNISCOPE mode, the UTS 30 can be conditioned so that routine information can be entered in any desired arrangement, the wrong type of data will automatically be rejected, selected elements of data will be highlighted, and only changed or variable data will be transmitted.

Host Processor Control

Through the UTS 30, a host processor can control a printer or subsystem attached to the terminal. With the second (or alternate) screen capability, the host can use the peripherals without interrupting the UTS 30 operator input through the display screen.

SIGNIFICANT UTS 30 ADVANTAGES

Sophisticated Data Preparation Tools

- Characters or fields on the screen can be highlighted with reverse video, high or low intensity, blinking, or by combinations of these characters.
- Emphasis attributes such as nondestructive underscore, character strike-through, and column separation expand data preparation capabilities.
- A standard second (alternate) screen memory allows the host or the operator to initiate peripheral operations on the second screen. A single keystroke permits the operator to change from one screen display to the other.
- Optional peripherals offered with the UTS 30 include one of five printers (including a graphics printer) and diskette subsystem storage device, which may be operated either online or offline.

SIGNIFICANT UTS 30 ADVANTAGES

Operator Convenience

- Many terminal function parameters can be accessed and controlled by the operator from the keyboard.
- An indicator line on the screen replaces many of the typical indicator lights, consolidating operating information in one area.
- Peripheral device functions can be controlled from the terminal keyboard.
- Human-engineering design considerations such as the movable keyboard and an optional tilt/rotate base for the display unit contribute to operator comfort.

Cost-Effectiveness

- Microprocessor-controlled logic increases terminal reliability.
- Terminal data transmission characteristics reduce line costs.
- Program updates are easily accomplished by changing the program cartridge or diskette.

Security

- The security keylock prevents unauthorized use of the terminal.
- The optional magnetic stripe reader can be used for operator identification as well as for data entry.

Built-in Maintenance Tools

- An easy-to-read power-on confidence (POC) test display aids in failure analysis and is an effective means for the user to communicate a problem to the customer services representative.
- A displayable communications-line monitor function facilitates failure isolation in UNISCOPE mode.
- Control page procedures utilized with loopback adapters can test peripheral devices and interfaces in UNISCOPE mode.

Built-in Diagnostics

Automatic internal verification tests aid in problem analysis.

CUSTOMER SETUP

- To reduce setup costs, the equipment can be installed or relocated by the customer.
- A full complement of comprehensive UTS 30 publications is additional support for users.

MEMORY

- Initially, 128K bytes of RAM is provided for program and data storage.
- Expansion is possible by adding another 128K bytes of RAM.
- A dot graphics module with 128K bytes of RAM is available.

CHARACTER SETS

- From the initial character set, the operator can easily select any of the following character sets:

United States	United Kingdom
France	Germany
Italy	Sweden/Finland
Denmark/Norway	Spain

- A character set with memory expansion provides space for an additional 256 characters.
- A character set generator utility is available for creating custom character sets.

COMMUNICATIONS

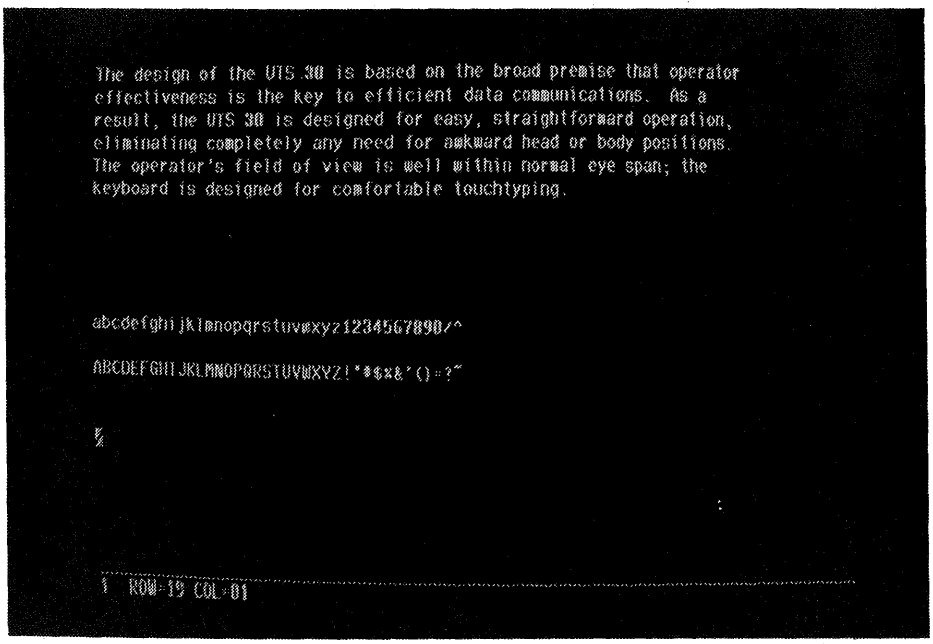
The UTS 30 can communicate to a host processor through a direct connection, or in a multidrop, multiplexed, or cascaded configuration. The UTS 30 can communicate over standard communications cables, over existing twisted pair telephone lines, or to a remote host over foreign public data networks.

2. UTS 30 Characteristics

Because operator effectiveness is the basis of efficient data communications, human-engineering considerations and experience on similar terminals were combined to develop the optimum design for the UTS 30. As a result, the UTS 30 is easy and straightforward to operate; there is no need for awkward head or body positions. The operator view of the display is well within normal eye span, and the keyboard is designed for rapid and comfortable touchtyping. The keyboard is similar to a typewriter keyboard so that little additional training is required to operate the UTS 30 and to use its many extra capabilities.

THE DISPLAY SCREEN

The visual display consists of sharp, bright green characters on an adjustable background. All characters are of uniform thickness and brightness over the entire screen, resulting in excellent legibility and clarity of presentation at all times. The display allows a maximum of 24 lines and 80 characters per line.



Designed for Operator Comfort

Some UTS 30 design considerations that ensure operator comfort during operation are:

- Adjustable display intensity
- Adjustable contrast control to minimize glare
- An optional tilt/rotate base that allows the operator to adjust the screen angle for individual needs
- The SPERRY 8439 Diskette Subsystem has a built-in rotate base. An optional tilt base for the terminal is built into the top of the diskette subsystem. These features allow the operator to install the terminal on the diskette subsystem and adjust the screen angle for comfortable operation.

The self-turnoff display is another useful attribute in UNISCOPE mode. After a preselected time without keyboard or communications activity, the screen display turns off, reducing unnecessary power consumption and alleviating the screen phosphor "ghosts" caused by a constant display. (The screen turnoff time can be changed by the operator.)

While the display is turned off, the international standby symbol (⏻) appears at the bottom of the screen to signal that power is still applied to the terminal.

LOW-PROFILE KEYBOARDS

The UTS 30 low-profile keyboard is attached to the terminal by a coiled cable, allowing the operator to move the keyboard to the most comfortable and efficient work position.

LOW-PROFILE KEYBOARDS

Two keyboard models are available for the UTS 30:

- Low-profile keyboard
- SPERRYLINK Office System keyboard

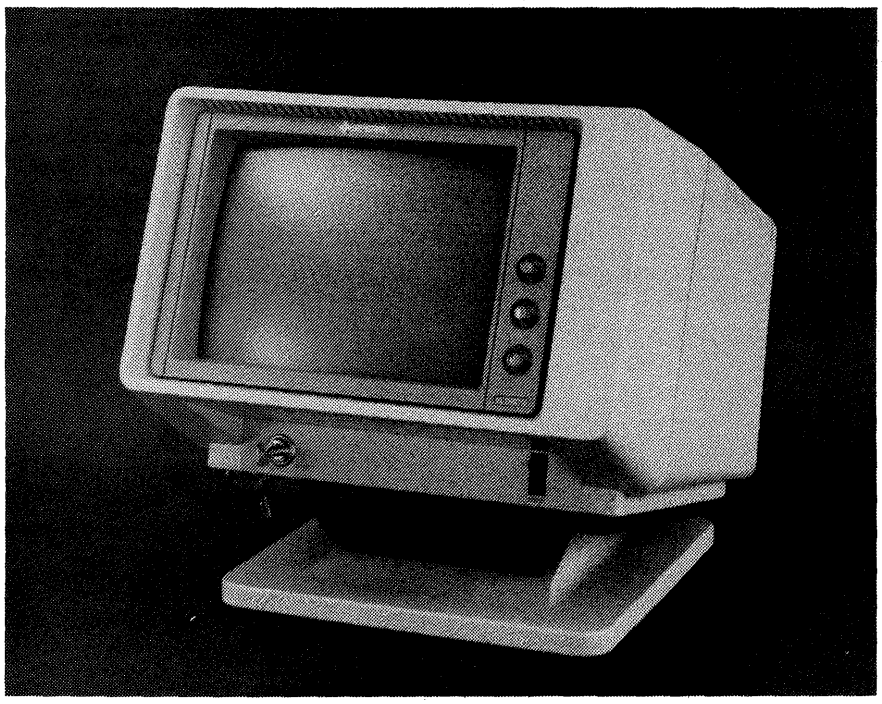
Increased Operator Productivity

The keyboards are designed to increase operator productivity with features such as:

- Light, responsive key action to minimize operator fatigue
- Control keys for related types of terminal operations strategically grouped on the keyboard
- Unique F and J keycaps that enable the operator to quickly identify keyboard "home position" by touch to avoid keyboard errors
- An optional keyclick when a key is pressed to reduce operator dependence on visual display during data entry
- A numeric keypad (similar to that on a calculator) to improve the speed and accuracy of numeric data entries
- Keycaps are available for special characters used in the following countries:

United States (ASCII)	Spain
United Kingdom	Denmark/Norway
Germany	Sweden/Finland
France	Italy

In UNISCOPE mode, terminal status information and messages are presented on an indicator line at the bottom of the screen. The data on this line is protected and cannot be destroyed or reconstructed. Messages in the indicator line include the number of the screen in use, cursor location, locked keyboard, message waiting, and indication of an active communications line. Other messages relate to the peripherals or the magnetic stripe reader.



Other controls and indicators used in the UTS 30 operation are:

- POWER switch – applies or removes primary power.
- Intensity control – adjusts the display brightness.
- Contrast control – adjusts the display background.
- Volume control – adjusts the volume of the audible alarm and keyboard click.
- Audible alarm – sounds for an error or unusual condition and alerts the operator to a message from the host.

TERMINAL CONTROLS AND INDICATORS

- RESET PUSH button – may be used instead of the POWER switch to reload the system control program. This switch is combined with the volume control. Pressing it activates the reset function.

- Over-temperature indicator (mounted on the top of the power supply and visible through the top of the terminal) – lights when the terminal is overheated and nonfunctional.

- Shift-lock indicator (located in the SHIFT LOCK key) – lights when the keyboard is in the uppercase state.

- Security keylock – a security keylock on the left side of the terminal enables the operator to lock the keyboard so that data cannot be entered. This single 3-position lock accepts two keys. One key locks or unlocks the keyboard. The second key operates the same way as the first, but has a third position to access user setup parameters.

POWER-ON CONFIDENCE TEST

The power-on confidence (POC) test is an internal diagnostic test of key terminal functions. The POC test is executed automatically by the UTS 30 when power is applied. This built-in function assists in equipment maintenance and assures the user that the terminal is operating properly.

COMMUNICATIONS CONFIGURATIONS

The UTS 30 single station can communicate with a host processor through a modem, a terminal multiplexer, a SPERRY Direct Connection Module (DCM), or a direct connection to the host. The UTS 30T can communicate with a host processor through a Signal Distribution Module (SDM). Data can be transmitted over the public telephone network, on leased common-carrier voice-grade lines, or directly over a private communications line. The UTS 30 can be configured to use the UNISCOPE, the DCA, or the X.25 PSCS communications protocol.

The SPERRYLINK Model 30 desk station can communicate with a Distributed Office Processing Station Model 20 (DOPS/20) or a SPERRY Series 1100 host computer, through a Distributed Communications Processor (DCP). With the twisted pair interface, the Model 30T desk station can communicate with the DOPS/20 or Series 1100 through a Signal Distribution Module (SDM) over standard telephone lines. The Model 30T desk station can be configured to use the SPERRYLINK and the twisted pair communications protocol.

Depending on system requirements, UTS 30 terminals can be configured in a data communications system with the host processor by any of the following methods:

- Point-to-point (one terminal connected via modem or DCM and communicating over an exclusive communications line to the processor)
- Multidrop (multiple terminals communicating with the host, each through its own modem or DCM, but on the same communications line)
- Multiplexed (up to 16 terminals connected through a multiplexer, which, in turn, communicates with the host through a modem or DCM)
- A combination of multidrop and multiplexed terminals in a system configuration
- Direct connection to a SPERRY host processor at 9600 bits per second in half-duplex mode
- Connection to a remote host processor over foreign public data networks (PDN) at 9600 bits per second in full-duplex mode
- Connection of UTS 30T terminals to a host via a Signal Distribution Module (SDM) over standard telephone lines
- Connection of SPERRYLINK Model 30 Desk Stations to a Distributed Office Processing Station (DOPS) and to a Series 1100 host computer through a Distributed Communications Processor (DCP)
- Connection of SPERRYLINK Model 30T Desk Stations to a DOPS or Series 1100 host through a Signal Distribution Module (SDM) and a DCP over standard telephone lines

UTS 30 terminals may also be intermixed on the same communications line with UTS 400 terminals, UTS 60 terminals, and UTS 40 terminals.

Communications Interfaces

Four communications interfaces are available with the UTS 30:

- The EIA* RS-232-C interface connects the UTS 30 to communications networks and provides a variety of protocols.
- The CCITT** X.21 interface connects the UTS 30 to circuit-switched services of public data networks (PDN).

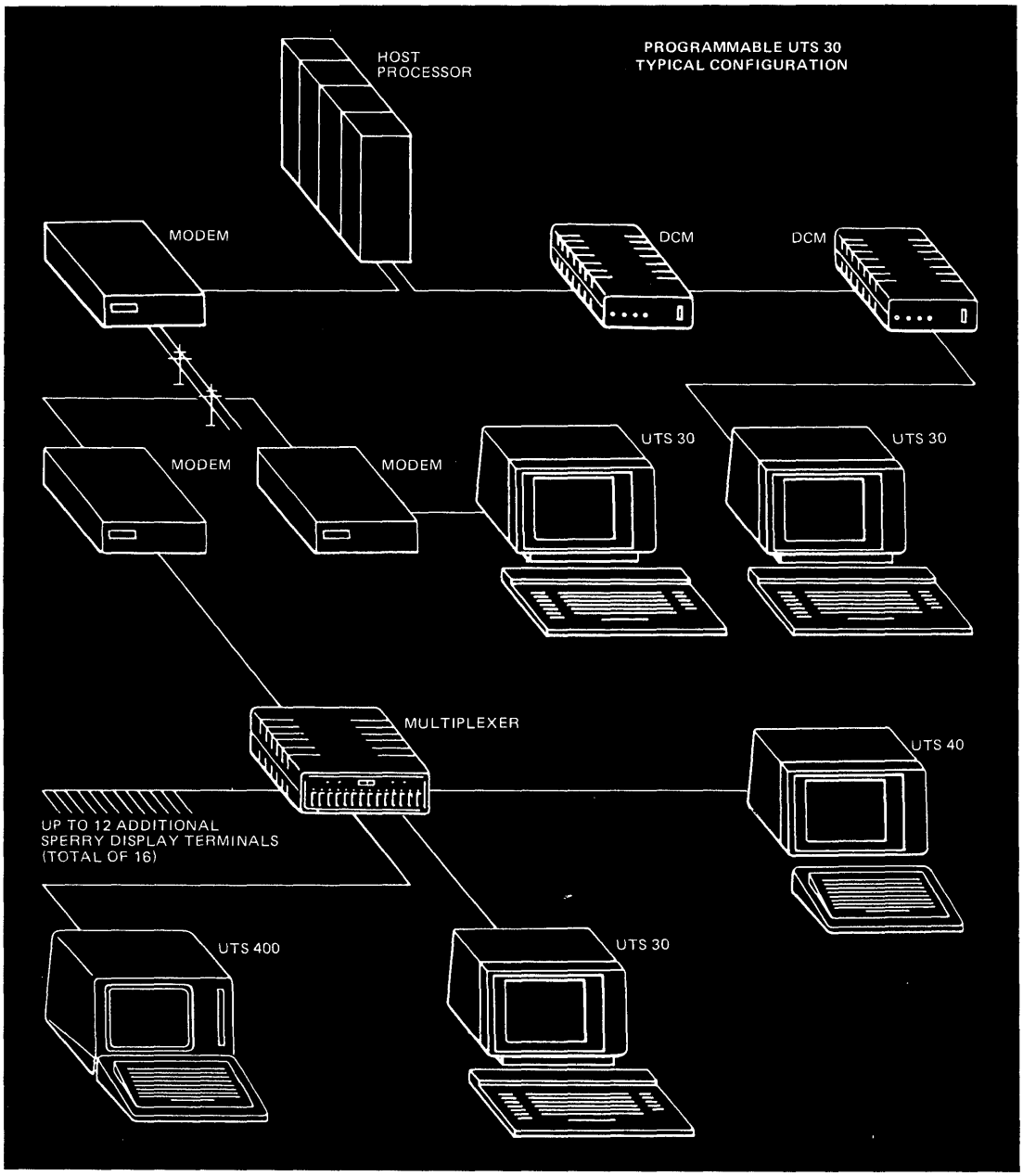
Electronic Industries Association

***International Telegraph and Telephone Consultative Committee*

COMMUNICATIONS CONFIGURATIONS

- The twisted pair interface connects the UTS 30T and Model 30T terminals to existing telephone lines and provides high-speed data transfer.

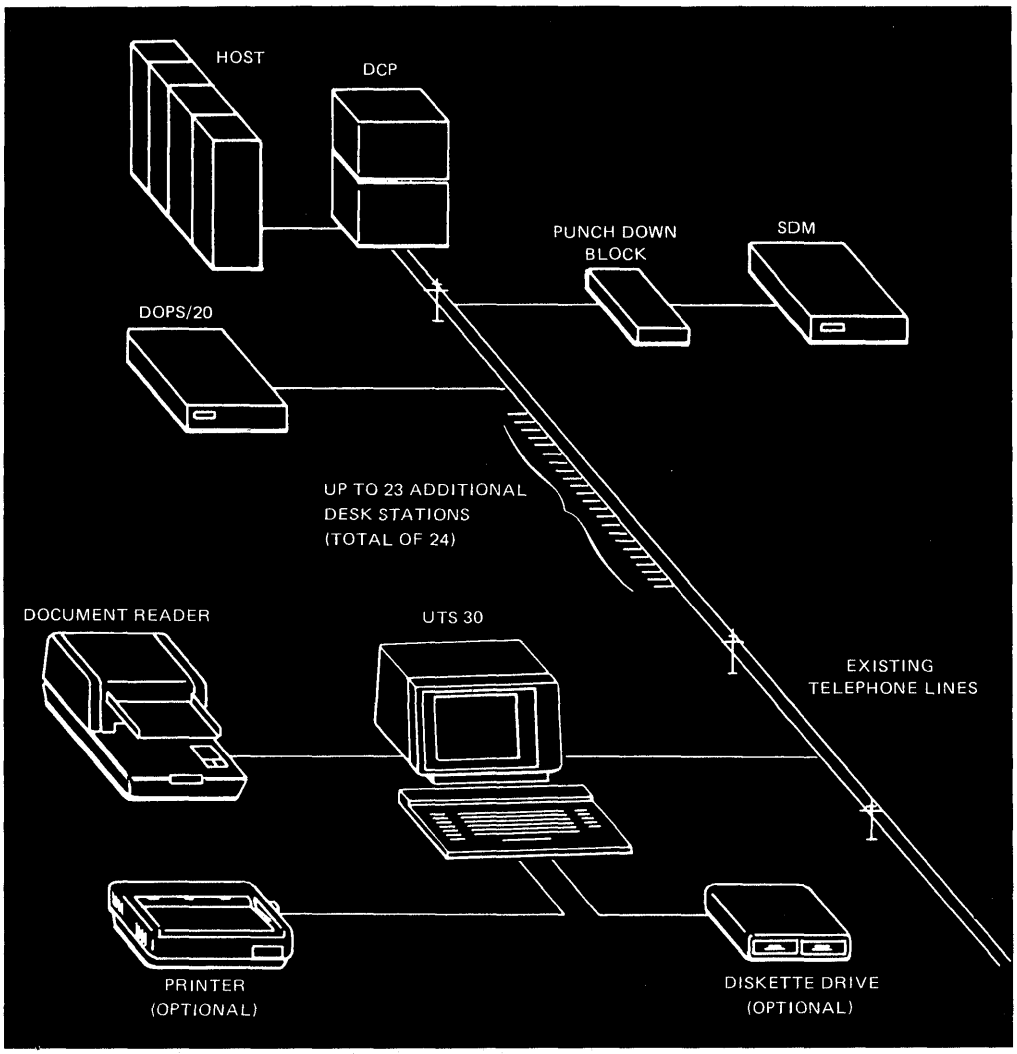
- The telephone interface station (TIS) cartridge with a built-in modem utilizes existing telephone lines for data transfer from the UTS 30 to a host or remote terminal and provides telephone dialing and automatic answering of calls.



The basic UTS 30 can operate in UNISCOPE mode with the RS-232-C, X.21, and twisted pair interfaces and in SPERRYLINK Office System mode with the RS-232-C and the twisted pair interfaces. The programmable UTS 30 can operate in UNISCOPE, CP/M Plus, or SPERRYLINK Office System mode with all three interfaces; however, the programmable UTS 30 operates in the DCA and X.25 modes with only the RS-232-C interface.

The SPERRYLINK Model 30 Desk Station is combined with other hardware and software in a variety of configurations. The desk station can operate in a stand-alone system or can be connected to a distributed office processing station (DOPS) to allow multiple desk stations to exchange information. The desk stations and DOPS can be connected to a SPERRY Series 1100 host through a distributed communications processor (DCP) for additional capabilities.

The SPERRYLINK Model 30T Desk Station can be connected to a DOPS or through a DCP to a Series 1100 computer via the SPERRY 8613 Signal Distribution Module (SDM). The data is transferred from the desk station to the SDM and then to the host through the standard twisted pair telephone lines.



Peripheral Configurations

When combined with the available peripheral devices, the UTS 30 becomes a powerful and economical means of data processing, data storage, and hard-copy production. The peripheral devices offered with the UTS 30 are:

- SPERRY Model 15 Printer
- SPERRY Model 25B Printer
- SPERRY Model 31 Printer
- SPERRY Model 35 Printer
- SPERRY 8439 Double-Sided Diskette Subsystem
- SPERRY 2712 Document Reader

Cabling

Cables are available for connecting the UTS 30 to modems or multiplexers. The cable between the UTS 30 and a modem or DCM may be up to 15.2 meters (50 feet) long. The cable from DCM to DCM may be up to 1524 meters (5000 feet) long; for transmission speeds up to 2400 bits per second, the DCM-to-DCM cable may be up to 4572 meters (15,000 feet) long. The direct connection to the host may be 15.2 to 91.5 meters (50 to 300 feet) long, depending on the host.

In a twisted pair configuration, data transfer takes place over the existing standard telephone lines providing more flexibility in connecting desk stations and related peripheral equipment to the host. SPERRY provides twisted pair cabling of up to 7.6 meters (25 feet) between the desk station and the telephone wall outlet and up to 7.6 meters (25 feet) between the SDM and the telephone line punch down block.

A printer can be connected to the UTS 30 by a cable up to 15.2 meters (50 feet) long. One or two 8439 diskette subsystems can be connected in a daisy chain to the UTS 30 with a maximum combined cable length of 2.7 meters (9 feet).

The UTS 30 accommodates many applications that require direct operator interaction with a central data processing system. The SPERRYLINK Model 30 desk station provides additional features and software programs for the SPERRYLINK system. Whether your application involves a narrowly specified function or covers the broadest spectrum of functions, the UTS 30 or the SPERRYLINK Model 30 will satisfy your needs for source data entry, data accessing, conversational interaction, and offline operation.

Source Data Entry

UTS 30 terminals are ideally suited for data entry. These operations are basically one way — data flow is mainly from the UTS 30 to the host processor. The terminal system is used in this category for applications such as filling in forms or sending instructional commands or other data to the host processor for retention or for use in other locations.

The editing capability and display storage of the UTS 30 are indispensable for source data entry applications. With these capabilities, data can be entered, manipulated, and edited as necessary before it is transmitted, saving time in transmission line use and in use of the host processor. Field control characters can be used to make an automatic check for erroneous entries (by limiting entries to alphabetic or numeric), catching many errors at their source.

If your application requires protected forms as guides for data entry, the host software can provide them. Then, using simple code commands, the operator can call the forms to the screen as they are needed.

Data Accessing

When the UTS 30 is used for data accessing, it is basically extracting from the host processor information that has previously been stored, although not necessarily by that station. For this function, data flow is primarily from the host processor to the UTS 30. This function is limited and usually does not include the capability of changing files, only of looking at what is in the files.

The program attention keys are helpful in such applications. With appropriate software, these keys can be used to issue commands to the host with a minimum of time required for data entry and transmission. Also, software can provide many detailed services that respond to these and other minimum UTS 30 commands, making access to and display of data in complex files almost automatic.

Conversational Interaction

UTS 30 versatility is most evident in conversational applications, when terminal operator and host processor are interacting on a real-time basis. Such interaction makes full use of the UTS 30 2-way communications capability and the storage capacity and high-speed capabilities of the host processor.

Offline Operation

The offline capabilities of the programmable UTS 30 are outstanding. An operator can command the data-handling capability by means of field control characters and editing functions. The diskette subsystem with its vast storage possibilities provides even more advantages.

Independently of the host processor, an operator can create unique formats, enter data, build complete files of such material, and file the results in diskette storage. The UTS 30 can then be placed online and the accumulated data files can be transferred from diskette storage via the terminal to the host processor at the most advantageous time (when the communications rate or traffic is low, for example).

Also, lengthy files from the host processor can be received in a continuous transmission sequence when most convenient or economical. An operator can edit these files offline at any time and then submit the modified results to the host.

3. Operating Modes

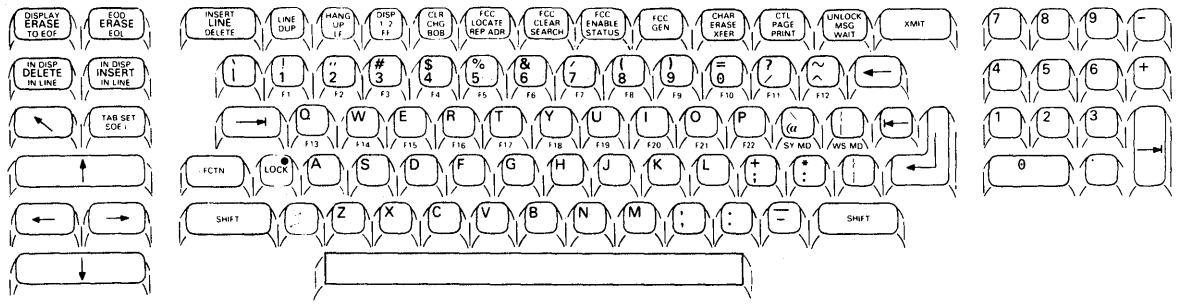
Several different operating modes expand the data processing capabilities of the UTS 30, making it an even more valuable addition to your system. The basic UTS 30 can operate only in UNISCOPE mode or SPERRYLINK Office System mode provided by program cartridges. The programmable UTS 30 operates in all modes (available on 5¼-inch diskettes).

UNISCOPE MODE

This versatile mode of operation allows interactive communication with Series 1100 and Series 90 host processors. The UTS 30 is also available with the twisted pair interface (UTS 30T) providing high-speed data transfer for up to 24 terminals over existing standard telephone lines.

UNISCOPE Mode Keyboard

The low-profile keyboard provided for UNISCOPE mode is shown in the accompanying figure. Data keycaps can be selected to match the unique characters of eight different languages.



NOTE:

The SPERRYLINK office system keyboard can also be used with UNISCOPE mode operation.

Control Page

The control page is a 2-line screen display that can be called to the screen by the operator at any time to change or augment the UTS 30 operating characteristics. Coded commands entered into the control page fields enable the operator to:

- Determine the operating conditions or status of peripheral devices
- Set other characteristics (parameters) of the terminal
- Control data transfer to and from the peripheral devices
- Control the type of transmission from the UTS 30 to the host processor
- Select desired diskette operation

Command Mode

On the programmable UTS 30, communications codes and operating parameters can be set and changed through a series of screen displays. The command mode is a 2-line screen display that allows the operator to create and access files on diskettes and to access the parameter/configurator utility screens to set or change operating parameters.

Field Definition

Field definition, one of the most useful of all UTS 30 functions, gives the operator complete control of data formatting. This function is similar to protected format, but with many more capabilities.

Fields are defined with field control characters (FCCs) to:

- Designate the display intensity of the field
- Specify the type of data that can be entered
- Protect the field from data entry or change
- Right-justify text in a field
- Specify tab stops
- Protect special emphasis characters
- Indicate that a field has or has not been changed by an operator

Generation and modification of the FCCs can be controlled by the host, by a user program, or by the UTS 30 operator. With all of this formatting versatility, the field control character does not interfere with the screen display in any way. Because an FCC occupies a memory location but not a screen location, up to 24 lines of 80 FCCs per line are possible on the display.

Soft Character Sets

The initial latin-alphabet set is provided by the program cartridge for the basic UTS 30 or by the system control software diskette for the programmable UTS 30. This initial character set is loaded into the standard RAM designated for character set storage. From the initial character set, the operator can easily select any of the following character sets:

United States	United Kingdom
France	Germany
Italy	Sweden/Finland
Denmark/Norway	Spain

In UNISCOPE mode on the programmable UTS 30, an optional character set memory expansion feature and the character set generator utility enable a user to create a dot matrix character set for display on the screen and for printing on a dot matrix printer. The dot matrix characters can be any pattern that fits the 10-by-15-dot matrix of the character generator.

The operator can display and print characters stored in the standard character set memory and in the optional character set memory expansion.

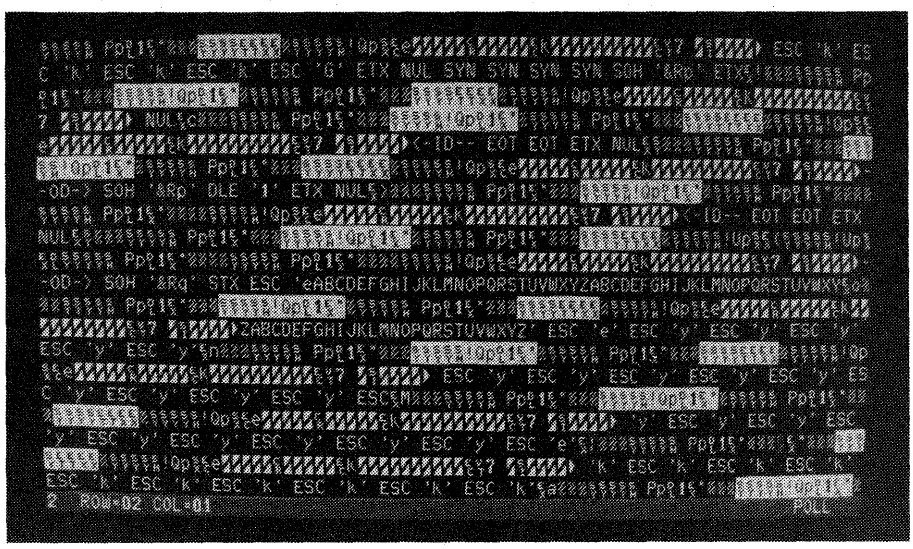
Error Log

In UNISCOPE mode, a log of errors related to the communications line, peripherals, and internal operations is maintained in the UTS 30 memory. This report can be displayed locally and transmitted to the host for examination and analysis. The operator or a Sperry customer services representative has access to this information.

Line Monitor

The line monitoring function displays the communications-line traffic on the screen. This function is intended for use primarily by Sperry customer services representatives in troubleshooting communications problems. The operator may also convey the line monitor information over the telephone to a Sperry representative to aid in problem analysis.

The following illustration of a typical line monitor display shows only control characters.



UNISCOPE Mode Programmability

User programmability complements the UTS 30 in UNISCOPE mode by building on its functional base. The UNISCOPE mode system control software provides the terminal operating system; a user program does not change that system, but adds to it.

COBOL, a language that uses English words, sentences, and mnemonics for instructions, eliminates the requirement for highly experienced programmers to accomplish the terminal programmability. Little experience and training are needed to write programs in COBOL, yet much programming flexibility is gained by using this high-level language.

The COBOL compiler is available for SPERRY Series 1100, Series 90, and System 80 host systems. Programs compiled into interpretable code can be downline loaded directly into the memory of the basic or the programmable UTS 30 or can be loaded from diskette into the programmable UTS 30.

Special Emphasis Characters

A set of special emphasis characters allows an operator to underline characters, place a column separator (a vertical line) to the left of a character position, or place a horizontal "strike-through" (a full-width dash) through the center of a character position. These capabilities allow continuous horizontal and vertical lines to be created as needed. With these capabilities, blocks can be drawn, pages can be divided with a line, or whole tables can be drawn on the screen. These characters are nondestructive and are not printable.

Second (Alternate) Screen Memory

In UNISCOPE mode, the second-screen function is achieved with a second memory that may be used by the host processor or operator. This characteristic allows the host processor to communicate with peripheral devices without affecting data (or entry of data) in the displayed screen memory. The DISP 1-2 key is pressed to allow display of the second-screen memory contents.

Parity Generation and Checking

The UTS 30 generates and checks both character and block parity on the communications line. If a parity error occurs on data, the operation is retried.

UNISCOPE Mode Utilities

Several utilities are available on 5¼-inch diskettes for the programmable UTS 30 operating in UNISCOPE mode.

Diskette File Utility. The SPERRY UTS 30 Diskette File Utility enables a user to maintain files on a 5¼-inch formatted diskette. The diskette file utility enables an operator to prep and copy diskettes and provides a full range of file management capabilities, including creating, modifying, copying, and concatenating files.

Edit Processor Utility. The SPERRY UTS 30 Edit Processor Utility is a file-editing program. Edit processor functions include:

- Line location, deletion, insertion, and replacement
- Character string location, deletion, insertion, and replacement
- Line display on screen

The edit processor requires that files be allocated with the UTS 30 diskette file utility.

Character Set Utility. The SPERRY UTS 30 Character Set Utility provides a means of generating user-defined character sets to be used with the soft character set capability on the UTS 30 single station.

This utility enables special character sets to be created in the format required for loading into a programmable UTS 30. These character sets can also be modified or copied with the utility.

When creating a new character set, the user can start either with an existing character set defined for the UTS 30 or can begin with all characters blank. The new characters are saved on a file-formatted diskette and can then be loaded into the UTS 30.

File Transfer Utility. The SPERRY UTS 30 File Transfer Utility is a loadable software product designed to control the transfer of sequential (including text) files or random (including text processor) files between diskette storage on a UTS 30 single station and mass storage on any one of the following SPERRY host systems:

- SPERRY Series 1100 System, Operating System 1100 (OS 1100)
- SPERRY 90/60 System, Virtual Memory Operating System/9 (VS/9)
- SPERRY 90/30 System and System 80, Operating System/3 (OS/3)

The file transfer utility enables an operator to complete transfer requirements between a diskette file and host file and to control offline printing of text from the diskette or host file.

The file transfer utility operates in conjunction with the file transfer utility paired program running on the respective host.

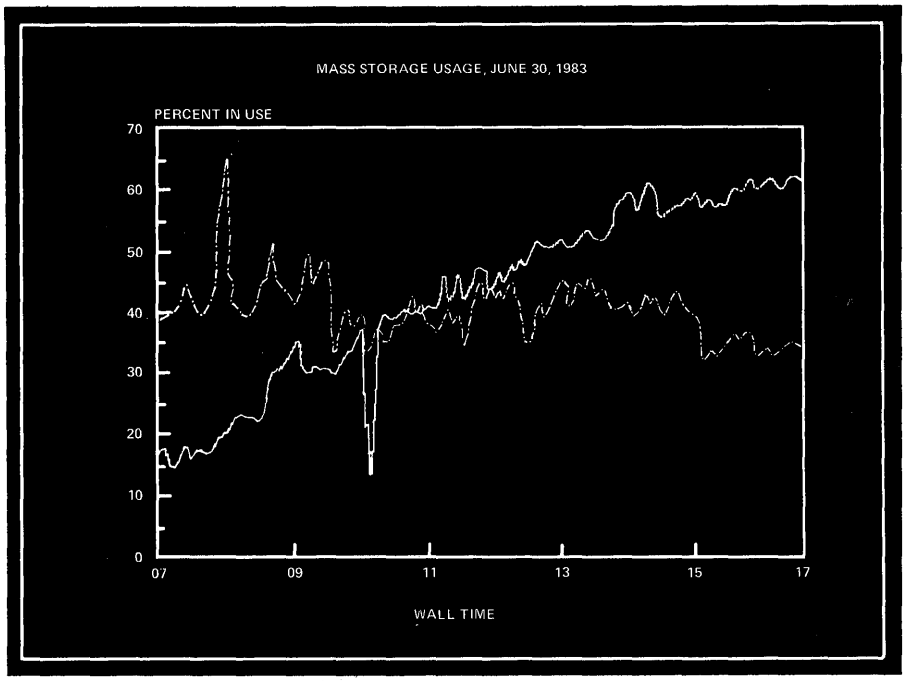
UTS 30 Business Graphics Utility. The SPERRY UTS 30 Business Graphics Utility allows the user to prepare charts and graphs on the UTS 30 such as the following:

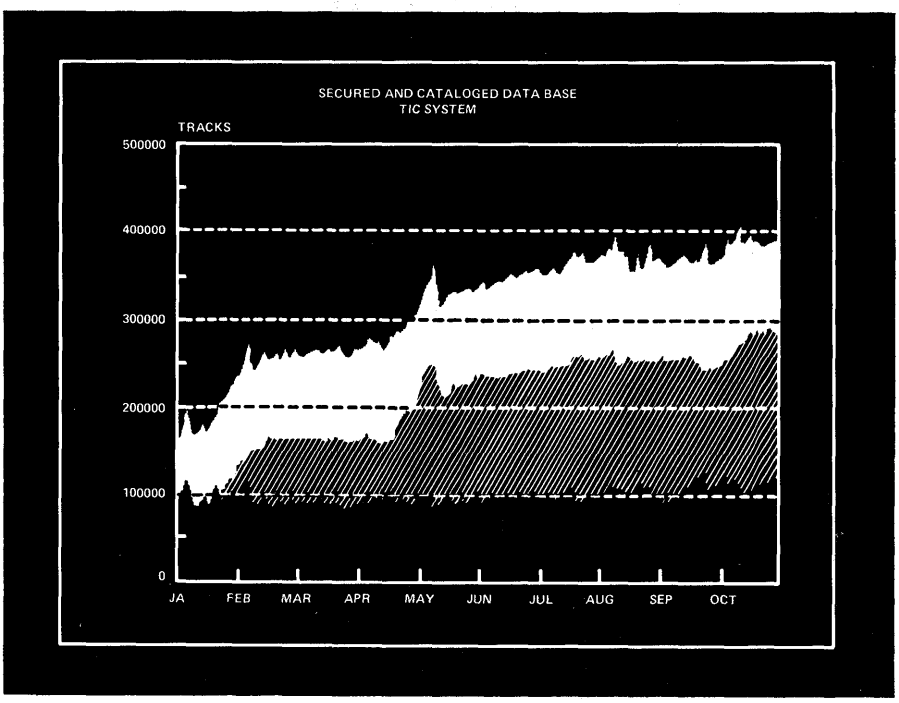
- Bar charts with optional grouping of bars
- Line graphs
- Pie charts
- Text charts utilizing various sizes and styles of text
- Composite charts combining several charts and graphs

The charts and graphs can be created on the screen and stored on diskettes for later use and modification. Data used for the charts and graphs may also be obtained for diskettes created by other program products.

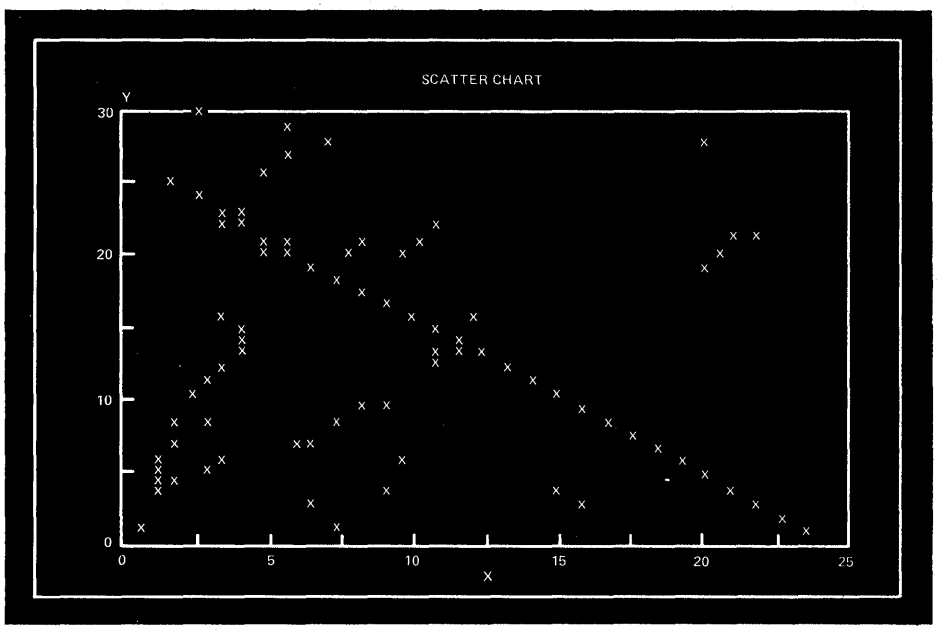
The charts and graphs can be printed in color on the SPERRY Model 35 Printer.

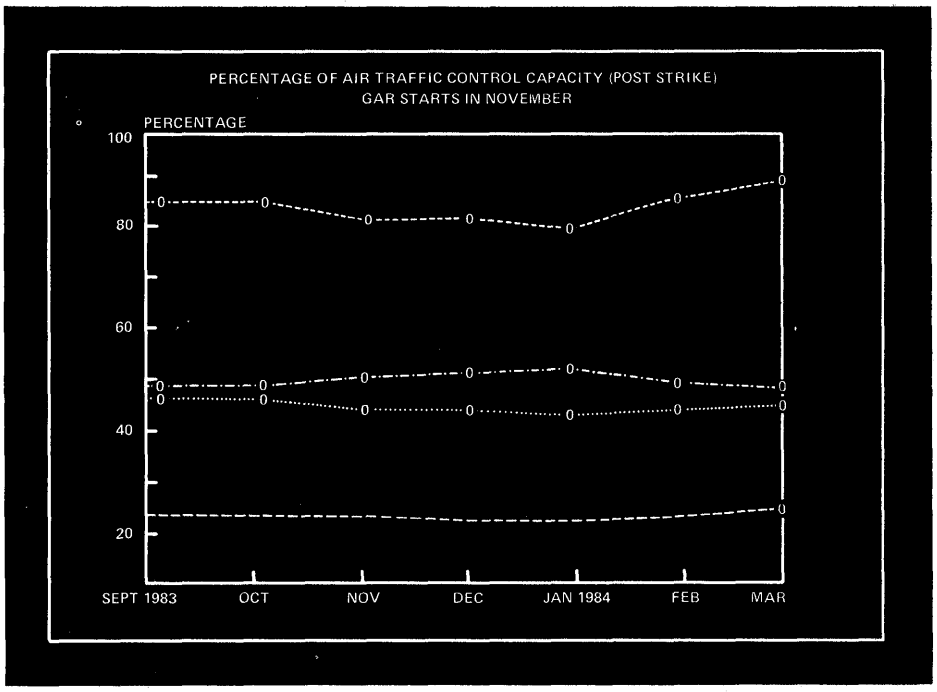
The following are examples of charts and graphs that can be created with this utility.





UNISCOPE MODE





CP/M Plus has been configured for use on the programmable UTS 30. This advanced operating system transforms the UTS 30 into a stand-alone, desktop business computer. Interaction with SPERRY host processors is possible with the UNISCOPE mode communications utility or the TTY* communications utility. A conversion utility program is available that converts hexadecimal program files on CP/M Plus diskettes to UNISCOPE load-program format. The CP/M operating system is also available for use with the twisted pair interface.

The CP/M Plus operating system is stored on a 5¼-inch diskette and loaded from the 8439 diskette subsystem. The SPERRY version of CP/M Plus includes the following unique utilities and files that enable the user to benefit from the advantages offered by the UTS 30 hardware characteristics:

- PREP — Preps a diskette for the SPERRY 8439 Diskette Subsystem.
- CONFIG3 — Defines the system operating characteristics including CP/M Plus peripheral device configuration.
- DCOPY — Copies the entire contents of a diskette to another diskette.
- FCOPY — Copies files one at a time.
- COPYSYS — Copies the system area of a diskette to the system area or a file on another diskette.
- MAKELCS — Generates custom character sets and limited graphics.
- LOADLCS — Loads the character sets generated by MAKELCS.
- MAKEKBD — Allows the user to redefine and optimize CP/M Plus keyboards for specific applications.
- LOADKBD — Loads the standard keyboard file into terminal memory.
- SPLINK — A loadable keyboard file for users with SPERRYLINK keyboards.
- TISTTY — The Telephone Interface Station (TIS) Communications Utilities (TTY) used to establish dial-up telephone communications between a UTS 30 and remote terminals or host processors.

**TTY (TELETYPE) is a registered trademark of the TELETYPE Corporation.*

CP/M PLUS MODE

A large and constantly growing library of low-cost CP/M®-compatible, high level compilers and applications programs can be purchased directly from independent vendors.

The UTS 30 low-profile keyboard with UNISCOPE keycaps is provided for this mode of operation.

DCA MODE

The UTS 30 Distributed Communications Architecture (DCA) mode, operating in conjunction with DCP/Telcon, provides a migration step from the UNISCOPE mode so that host software applications can take advantage of Universal Data Link Control (UDLC) link protocol. The DCA mode supports programmability applications and national language variations. It is available on a 5¼-inch diskette.

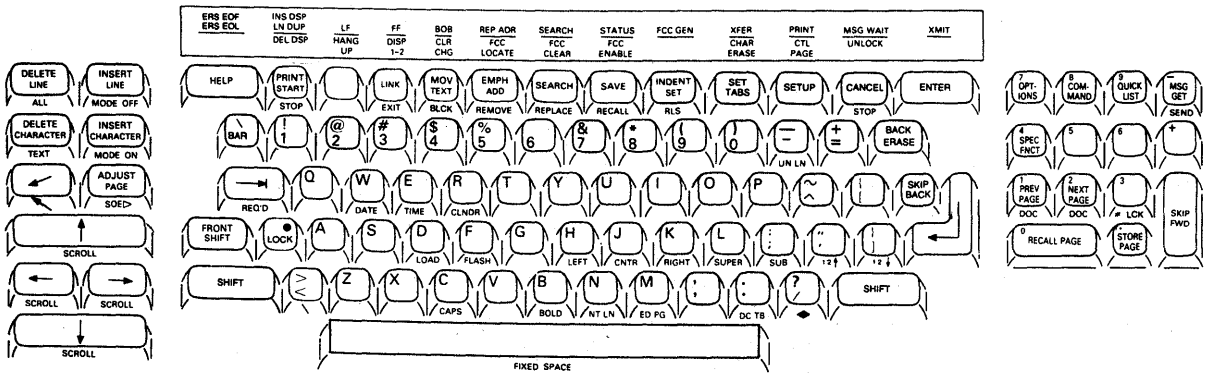
The following optional program products are supported by the DCA mode:

- Edit processor utility
- Loadable character set utility
- UTS COBOL

SPERRYLINK OFFICE SYSTEM MODE

The SPERRYLINK Office System mode utilizes the Model 30 capabilities to provide an efficient system for preparing, storing, printing, and distributing documents, letters, and memos. These capabilities can be downline loaded to the basic Model 30 or can be loaded to the programmable Model 30 from the 8439 diskette subsystem. A separate set of reference manuals is available to aid the user in installing and operating the SPERRYLINK office system. The SPERRYLINK Model 30 is also available with the twisted pair interface (Model 30T).

The keyboard provided for this mode of operation is shown in the following illustration.



CP/M® is a registered trademark of Digital Research, Inc.

Telephone Interface Station (TIS) Cartridge

The telephone interface station (TIS) cartridge is an option that provides the SPERRYLINK Model 30 desk station with several telephone line functions, including automatic dialing of telephone numbers, answering incoming calls with prerecorded messages, and communicating with remote computer systems over existing telephone lines.

VIDEOTEX MODE

The SPERRY UTS 30 Videotex Mode system control software is designed to operate in a programmable UTS 30 attached to an external modem.

This program is a stand-alone product that adheres to British Telecom's Prestel Terminal Specification, edition 1, issue 3, July 1982. It is available on a 5¼-inch diskette and is loaded from the 8439 diskette subsystem. Documentation giving clear and straightforward instructions is supplied for that purpose.

X.25 PSCS MODE

The SPERRY X.25 Packet-Switched Control Software (PSCS) enables the UTS 30 to communicate with remote data terminal equipment (DTE) over foreign public data networks (PDN).

The X.25 PSCS is stored on a 5¼-inch diskette and loaded from the SPERRY 8439 Diskette Subsystem. By using the commands summarized in the Command Mode screen display, the operator can select or change operating parameters; configure devices; create, access and store files on diskettes; and establish communication with a remote host over the PDN.

4. Peripheral and Auxiliary Devices

GENERAL PERIPHERAL INFORMATION

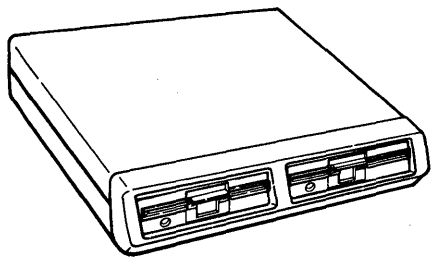
The UTS 30 provides interfaces to connect a printer and the 8439 diskette subsystem to the terminal. With the addition of the RS-232 peripheral interface cartridge, other peripherals such as a 2712 document reader, a plotter, and a second printer can also be connected to the UTS 30.

The diskette subsystem can accept data originating from the UTS 30 keyboard or from the communications line. The printers can accept data from the communications line, from the UTS 30, or from the diskette subsystem.

A total of 15.2 meters (50 feet) of cable can be used to connect a printer to the peripheral interface of the UTS 30.

8439 DOUBLE-SIDED DISKETTE SUBSYSTEM

The SPERRY 8439 Double-Sided Diskette Subsystem provides programmability to the UTS 30. Programs can be loaded into the terminal from 5¼-inch flexible diskettes. The diskette subsystem also provides offline random-access storage. The desk-top device writes onto diskette or reads from diskette upon command from either the UTS 30 or the host processor.

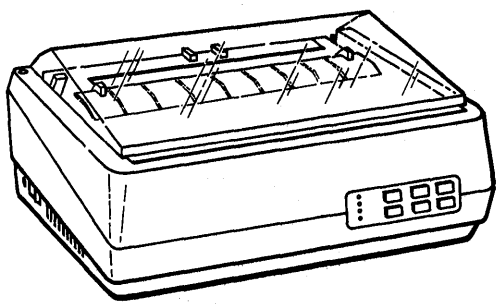


Each diskette will store 1M byte of unformatted data and 736K bytes of formatted data. The basic diskette subsystem has one diskette drive. A second drive is available. Two diskette subsystems with up to four diskette drives can be connected to the UTS 30. The first device is connected to the terminal, and the second device is connected in a daisy chain to the first device. Each drive requires two address codes, one for the read function and one for the write function. The diskette subsystem is equipped with a swivel base and a tilt mechanism on the top cover so the UTS 30 can be mounted on top of the diskette subsystem to save space.

With the diskette subsystem, the UTS 30 gains vast offline file accessibility and extensive offline file-building capability. Files called from the host processor can be stored on diskette, or working files can be prepared and transferred to diskette for later transmission to the host processor.

MODEL 15 PRINTER

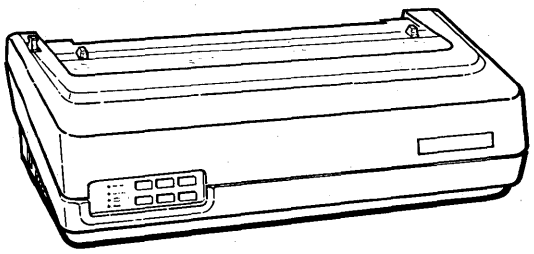
The SPERRY Model 15 Printer is a compact, lightweight printer that combines high performance with low cost. It is available in two versions: a bidirectional draft printer that prints 9 by 7 dot-matrix characters at up to 160 characters per second, and a combination draft and correspondence printer that prints unidirectionally with a matrix of 18 by 40 dots at up to 40 characters per second.



The printer prints at 10, 12.5, 16.7, and 20 characters per inch. It can also print at 5, 6.25, and 8.3 characters per inch. Line spacing can be set at 6 or 8 lines per inch. The printer prints a 96-character set with special characters for the following international character sets: U.S.A., United Kingdom, France, Germany, Italy, Denmark/Norway, Sweden/Finland, and Spain. For more information, see the Model 15 printer general description, UP–10201.

MODEL 25B PRINTER

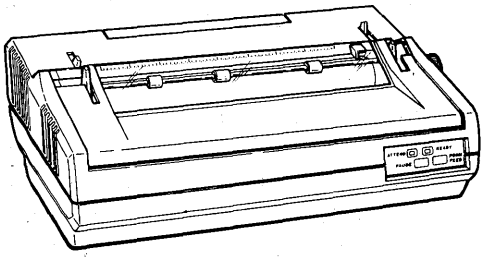
The SPERRY Model 25B Printer is an inexpensive 132-column printer that is both lightweight and compact. This dot-matrix printer can print up to 160 characters per second. It contains a friction-feed platen that will accept manually inserted single-sheet forms from 5.1 to 35.6 centimeters (2 to 14 inches) wide, or continuous sprocket-fed forms 7.6 to 40.6 centimeters (3 to 12 inches) wide.



The printer can operate at 6 or 8 lines per inch vertical spacing and at 10, 12.5, or 16.6 characters per inch horizontal spacing. This printer includes the following international character sets, which are operator selectable: U.S.A., United Kingdom, France, Germany, Italy, Sweden/Finland, Denmark/Norway, and Spain. For more information, see the Model 25B printer general description, UP–10693.

MODEL 31 PRINTER

The SPERRY Model 31 Printer is a compact, correspondence quality impact printer that provides bidirectional printing, proportional spacing, and a printing speed of up to 55 characters per second. The carriage can accept paper up to 13.2 inches wide, continuous sprocket-fed forms up to 15 inches wide, and cut sheet feeders that accept paper up to 12 inches wide.

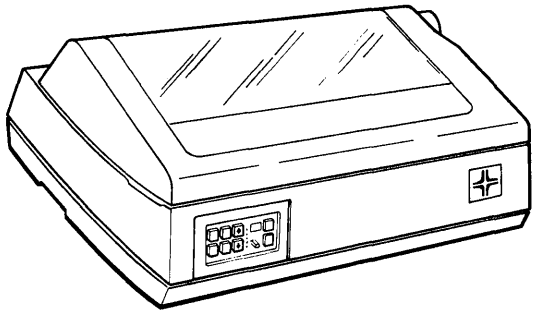


Pressure-sensitive switches are located conveniently on the front control panel. The plastic daisy-wheel print mechanism can print up to 96 different characters in various fonts and pitches. Eight character sets are available: U.S.A., United Kingdom, France, Germany, Italy, Denmark/Norway, Sweden/Finland, and Spain.

Additional information is provided in the Model 31 printer general description, UP–9868.

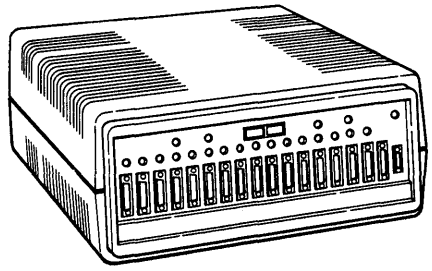
MODEL 35 PRINTER

The SPERRY Model 35 Printer is a lightweight desk-top printer that provides bidirectional printing up to 400 characters per second. The printer offers friction or tractor drive feeding of many form sizes, single part or multipart. The printer forms data-processing quality characters from any of the operator-selectable international character sets: U.S.A., United Kingdom, France, Germany, Italy, Sweden/Finland, Denmark/Norway, and Spain. Color printing of alphanumeric characters and graphics is provided with the color option, using 2-color or 4-color ribbons. For more information, see the Model 35 printer general description, UP–9863.



8609 TERMINAL MULTIPLEXER

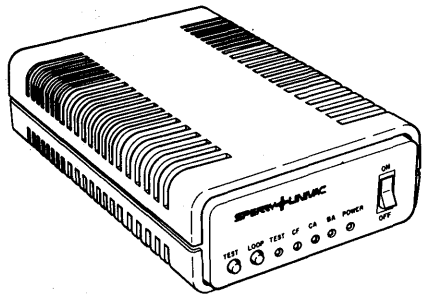
With the SPERRY 8609 Terminal Multiplexer, multiple UTS 30 single stations can be connected into a data communications system at one system interface point. Up to 16 UTS 30 single stations can be connected to one terminal multiplexer, or the UTS 30 can be connected on the same terminal multiplexer with UTS 40, UTS 60, and UTS 400 terminals.



The primary purpose of the multiplexer is to select, one at a time, the terminals and cascaded multiplexers (with attached terminals) that have information to send to the processor, and to provide line access for the selected UTS 30. The terminal with the highest priority condition is selected first. To save time and a number of transmissions, the multiplexer also combines the current message with certain communications protocol responses from a previously selected UTS 30. The multiplexer does not detect or recognize characters; this function is performed by the UTS 30.

8610 DIRECT CONNECTION MODULE

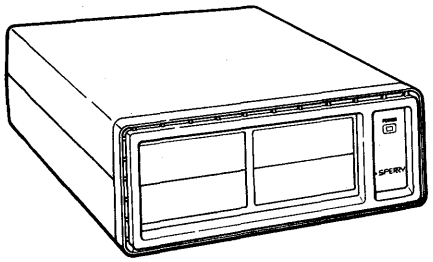
The SPERRY Direct Connection Module (DCM) is a communications device designed as a modem replacement in data communications systems using dedicated lines up to 4572 meters (15,000 feet) long in building installations with a single power source and common power ground. The DCM operates at speeds up to 9600 bits per second and conforms to EIA RS-232-C requirements.



Features of the DCM include switch-selectable transmission speeds, the capability of operating with an internal or external clock, and patchable operational options.

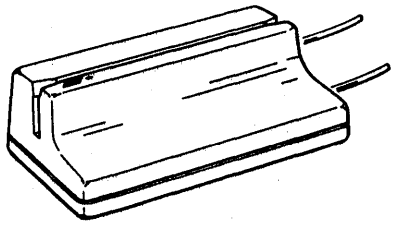
8613 SIGNAL DISTRIBUTION MODULE

The 8613 SPERRY Signal Distribution Module (SDM) is a non-intelligent multiplexer capable of transferring data from a maximum of 24 terminals to a single host. The SDM operates at 64K bits per second, full-duplex, over a twisted pair telephone line. The SDM controls the transmission of data from the terminals and prevents more than one terminal from transmitting at the same time.



MAGNETIC STRIPE READER

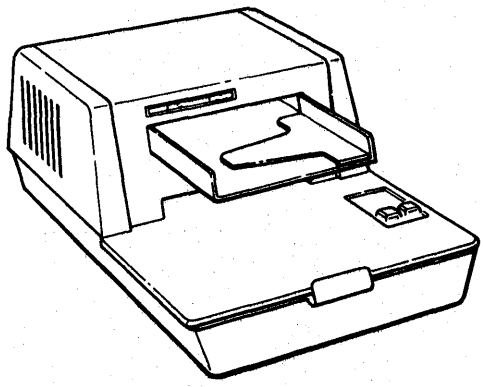
The SPERRY Magnetic Stripe Reader is a read-only device used to enter prerecorded data, read from the magnetic stripe on bank cards or similar media, into the UTS 30. Information stored in a data format consistent with that used by the American Banking Association (40 characters of numeric data) or the International Air Transport Association (79 characters of alphanumeric data) is accepted by the reader.



A device address code is not required for the magnetic stripe reader because the data is treated as keyboard entry. Input from the reader to the UTS 30 cannot be activated by a host processor, since operator intervention is required to generate the input data.

2712 DOCUMENT READER

The SPERRY 2712 Document Reader is a lightweight, compact, medium-speed automatic data entry system designed for office use. The document reader can read up to 90 characters per second and can read and enter into storage a 145-page document in approximately 1 hour.



2712 DOCUMENT READER

The reader consists of a paper-feed mechanism and the associated electronic and optical systems necessary to detect and decode printed characters on a page, digitize them, and send them over a communications cable to a controlling device. The document reader reads 1 through 6 lines per inch and 10 or 12 characters per inch. The reader connects to a controlling device by means of an RS-232 full-duplex, asynchronous serial interface with a 9600-baud rate, 8 bits plus odd parity, and an X-ON/X-OFF control.

Appendix A. UTS 30 Specifications

UTS 30 FUNCTIONAL CHARACTERISTICS

Data format selections	Any display format may be used, from 2 lines of 1 character each to 24 lines of 80 characters each
View area	24.4 centimeters (10.0 inches) wide by 17.8 centimeters (7.0 inches) high
Character generation	10 by 15 dot matrix, refresh rate of 70 times per second
Character generator	96 characters plus
Transmission code	7-level ASCII plus parity
Transmission mode	Half-duplex
Transmission facilities	Voice-grade telephone line (switched network or private line)
Transmission type	Synchronous
Transmission rate	Up to 9600 bits per second
Communications interface	EIA RS-232-C, CCITT X.21, or twisted pair
Peripheral interface	RS-232-compatible peripheral interface
Data integrity provisions	Minimum single-bit error detection on communications-line and peripheral transfers
	Automatic retry with communications line
	Internal parity checks

UTS 30 FUNCTIONAL CHARACTERISTICS

Selective calling	Host processor can select terminal system or peripheral device or both
Keyboard selections	Low-profile keyboard with numeric pad, and SPERRYLINK Office System keyboard
Character sets	U.S.A. United Kingdom Germany France Spain Denmark/Norway Sweden/Finland Italy
Protected format	Protection of specified data fields by field control and SO/SI characters
Program attention keys	Keys that generate unique characters for use as requests or indicators, extending operational and system control

SIZE AND WEIGHT

Width	42.7 centimeters (16.8 inches)
Height	32.4 centimeters (12.8 inches)
Depth	43.2 centimeters (17.0 inches)
Weight	18.2 kilograms (40.0 pounds)

POWER REQUIREMENTS

Nominal input power	85 to 128 or 185 to 255 volts
Nominal frequency	50 to 60 Hertz
Phases and lines	Single phase, 3 wire
Power dissipation (maximum)	468 kilojoules/hour (130 watts)

Appendix B. Peripheral and Auxiliary Device Specifications

	Width (cm/in.)	Height (cm/in.)	Depth (cm/in.)	Weight (kg/lb)	Nominal Input Power (Volts)	Nominal Frequency (Hz)	Operating Characteristics
Model 25B High Quality Printer	50.5/ 19.9	13.7/ 5.4	25.0/ 9.8	10.7/ 23.5	120/220/ 240	50/60	160 char./sec; 8 int'l char. sets
Model 15 High Quality Printer	39.6/ 15.6	13.7/ 5.4	27.9/ 10.7	8.5/ 18.8	120/220/ 240	50/60	160 char./sec; 8 int'l char. sets
Model 35 Color and Graphics Printer	65.5/ 25.8	23.9/ 9.4	46.0/ 18.1	32/ 70	100/120 200/240	50/60 50/60	400 char./sec; 8 int'l char. sets, mosaic graphics
Model 31 Correspondence Quality Printer	58.9/ 23.2	16.8/ 6.6	37.7/ 14.8	16.7/ 37.0	100/120 220/240	50/60 50/60	55 char./sec; 8 int'l char. sets
8439 Double-Sided Diskette Subsystem	36.8/ 14.5	8.3/ 3.3	31.8/ 12.5	5.9/ 13.0	100/120 220/240	50/60 50/60	737 KB storage per diskette
8609 Terminal Multiplexer	41.9/ 16.5	20.3/ 8.0	36.8/ 14.5	8.6/ 19.0	120 220/240	60 50/60	Interfaces max. 16 UTS 30s; accepts one level of cascading
8610 Direct Connection Module	20.3/ 8.0	9.2/ 3.6	30.3/ 12.3	2.5/ 5.5	100/120 220/240	50/60 50/60	
8613 Signal Distribution Module	42.6/ 16.8	16.5/ 6.5	45.1/ 17.8	9/20	100/120 220/240	50/60 50/60	Interfaces max. 24 UTS 30s
2712 Document Reader	42.2/ 16.6	25.4/ 10.0	53.3/ 21.0	18.6/ 41.0	102/127 187/254	50/60 48/62	90 char./sec

PLEASE SEND US YOUR COMMENTS!

We feel that this manual is an essential part of our equipment. We want to be sure it is the best, most usable manual possible. Your comments will help us achieve this goal. When you have become familiar with the manual, please fill in the other side of this form and mail the form to us. Your reply will be carefully reviewed by the persons responsible for writing and publishing this manual.

FOLD

FIRST CLASS
PERMIT NO. 2540
SALT LAKE CITY,
UTAH

BUSINESS REPLY MAIL NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

SPERRY

322 NORTH 2200 WEST
SALT LAKE CITY, UTAH 84116

ATTN: MANAGER, GSD PUBLICATIONS

FOLD

NOTE:

Requests for copies of this manual and other Sperry publications and for assistance in getting the most use out of your Sperry equipment should be directed to your local Sperry representative.

READER'S COMMENT SHEET

Your comments on this manual will help us improve it. Please fill in the requested information.

Name of manual: _____

Manual number: UP-_____ revision number_____, including update numbers _____

Name of your company: _____

Address of company: _____

What is your position? _____

Your level of experience: Professional _____ Knowledgeable _____ Novice _____

With what system is the equipment used? _____

How do you use this manual?

As a reference source ☐ As a self-instructional text ☐

As a classroom text ☐ As _____ ☐

Please rate this manual

As a reference source:	Good ☐	Adequate ☐	Not adequate ☐
As a text:	Good ☐	Adequate ☐	Not adequate ☐
For other uses:	Good ☐	Adequate ☐	Not adequate ☐

Add your specific comments. Give page and paragraph references where appropriate.

Thank you for your cooperation.