

**Systems**

**An Introduction to the  
IBM 3101 Display Terminal**

**IBM**

## Preface

This publication provides introductory information about the IBM 3101 Display Terminal and is intended for those responsible for the management, planning, and analysis of data processing systems.

This publication is divided into the following chapters:

Chapter 1, "Overview," highlights the most important aspects of the product.

Chapter 2, "Models and Characteristics," describes the various 3101 models and their functional characteristics.

Chapter 3, "Host Attachment," describes communication facilities and host support for the attachment of the 3101.

Chapter 4, "Setup and Problem Resolution by Customer," introduces the philosophy of setup and problem analysis and resolution performed by the customer.

This publication assumes that the reader has a basic knowledge of data processing. Those who read chapters related to programming are expected to have an understanding of operating systems, access methods, and communications between a host and a terminal.

More detailed information regarding the IBM 3101 can be found in the following manuals.

*IBM 3101 Display Terminal Description, GA18-2033*  
*IBM 3101 Display Terminal Operator Reference Information, GA18-2035*  
*IBM 3101 Display Terminal Setup Instructions, GA18-2034*  
*IBM 3101 Display Terminal Customer Problem Analysis and Resolution (CPAR) Guide, GA18-2036*

### | Third Edition (August 1980)

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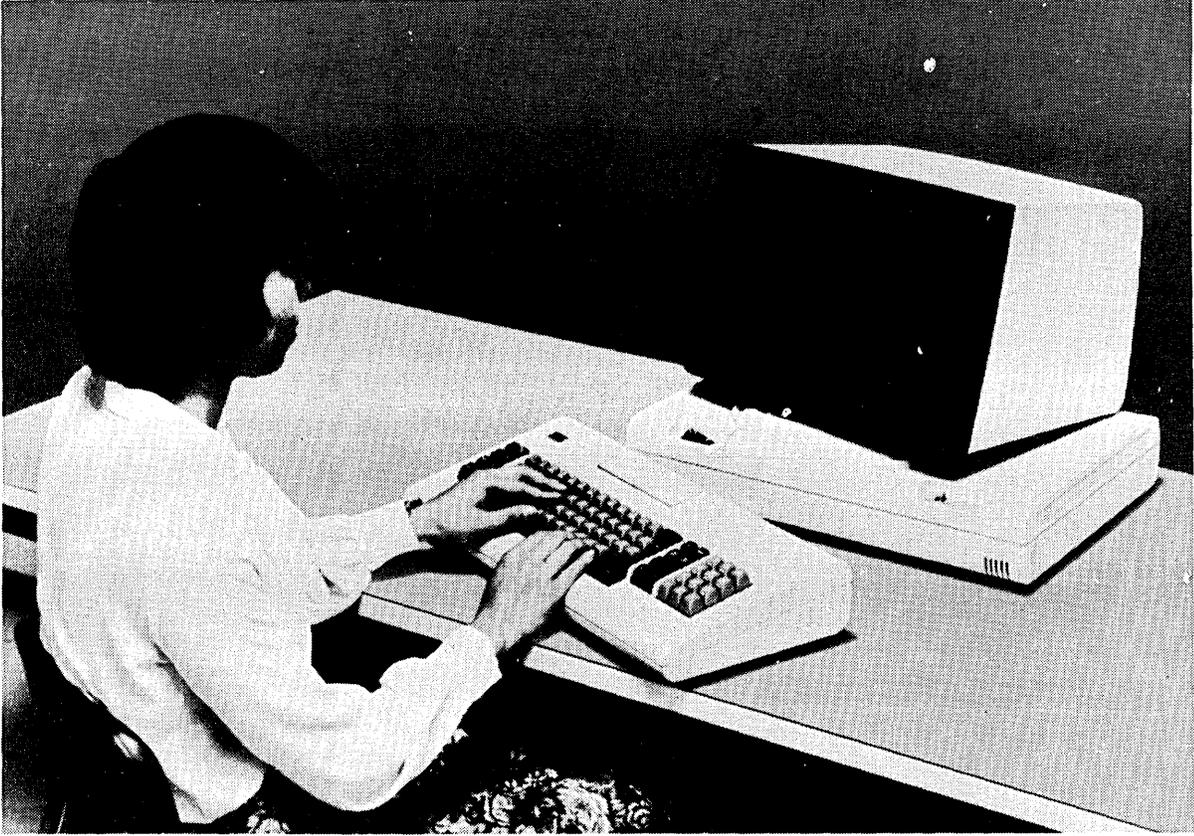
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**IBM 3101 Display Terminal (Design Model)**

## Chapter 1. Overview

The IBM 3101 Display Terminal is a flexible tabletop terminal designed to meet various display applications. It communicates with a host, using start-stop line control, and the line transmission code of the American National Standard Code for Information Interchange (ASCII), or the International Organization for Standardization 7-bit extended code (ISO 646).

Hereafter in this manual, the ISO 7-bit extended code is referred to as the ISO code.

The IBM 3101 Display Terminal is designed according to the specifications of the ISO code, and to the specifications of the following industry and federal standards as understood and interpreted by IBM as of May 1979:

ANSI	FIPS Pub	Name of Standard
X3.4-1977	1	ASCII
	15	Subsets of ASCII
X3.15-1976	16-1	Bit Sequencing of ASCII
X3.16-1976	17-1	Character Structure and Character Parity Sense for Serial-by-bit Data Communication in ASCII
X3.32-1973	36	Graphic Representation of the Control Characters of ASCII
X3.41-1974	35	Code Extension Techniques

Note: *ANSI = American National Standard Institute*

*FIPS Pub = Federal Information Processing Standards Publication*

The 3101 has a cathode-ray tube (CRT) that measures 30 centimeters (12 inches) diagonally. The screen can display 24 lines of 80 characters each (1920 characters). All 128 ASCII characters can be displayed: the 95 ASCII graphic characters are displayed as they are entered from the keyboard or received from the host; the 33 ASCII control characters (including DEL) also may be displayed, if so specified either from the host program or by the operator.

The 3101 also supports the following character sets:

- Bilingual English/Canadian French (126 graphic characters, 33 control characters)
- English-U.K. (95 graphic characters, 33 control characters)
- French (95 graphic characters, 33 control characters)
- German (95 graphic characters, 33 control characters)
- Italian (95 graphic characters, 33 control characters)
- Japanese Katakana (158 graphic characters\*, 33 control characters)

\* includes 26 lowercase alphabet characters that can be transmitted by a host, but cannot be transmitted from the 3101.

For more information about the supported character sets, refer to the *IBM 3101 Display Terminal Description*, GA18-2033.

The physical characteristics and environmental requirements of the 3101 allow it to be used in a variety of situations from a normal office to a computer room.

The design of the 3101 emphasizes operators' ease of use:

- Each character is presented within a 7-by-14 dot matrix. This matrix is within a 9-by-16 matrix to provide adequate space around the character. Figure 1-1 shows examples of character presentation.

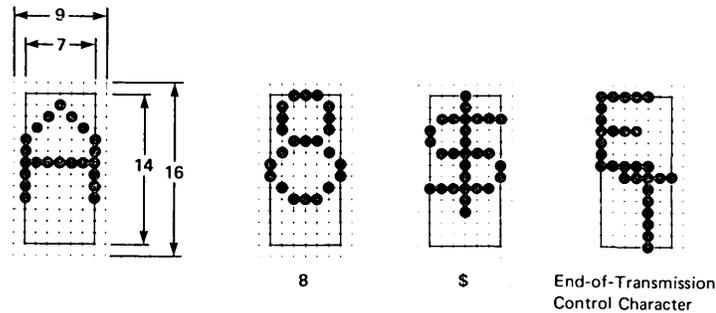


Figure 1-1. Examples of Character Presentation

- Screen presentation of either green characters on a dark background (normal video) or dark characters on a green background (reverse video) is switch-selectable.
- A block-shaped cursor indicates the next character position. The cursor reverses the image of a character when positioned over it. The operator can select either a steady or a blinking cursor.
- A separate (25th) line at the bottom of the screen provides operator information such as operating mode, error status, keyboard lock conditions, and shift status. The messages are in simple, explanatory language. Their timely and continuous presentation minimizes ambiguity of terminal status.
- The contrast and the brightness of the screen can be controlled by the operator.
- A filter over the screen enhances display contrast and significantly reduces the disturbances caused by ambient lighting reflected from the display screen.
- A separate keyboard can be freely positioned for the operator's comfort and efficiency.
- The 87-key keyboard (88 for Japanese Katakana) is available for the languages shown in Figure 1-2.

Legend:

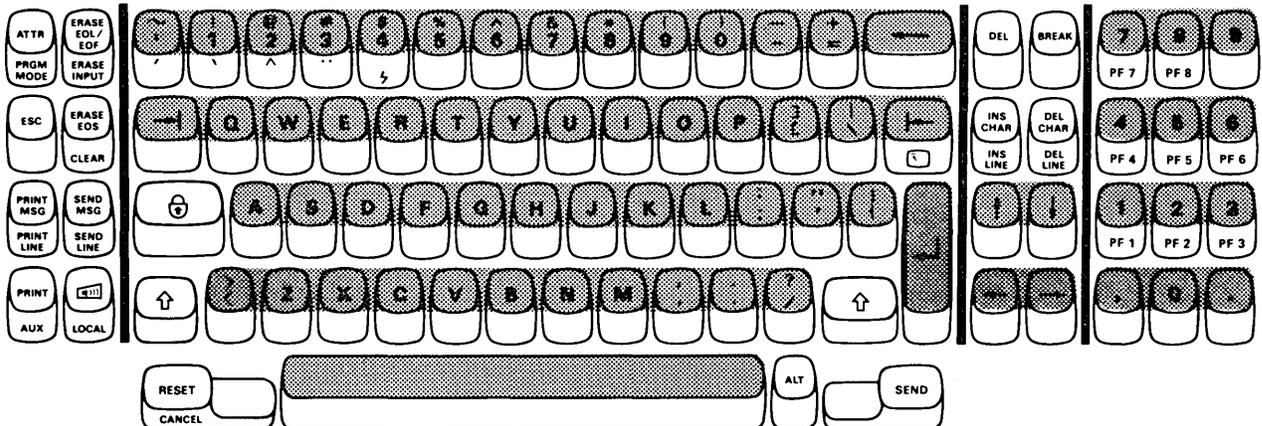


Figure 1-2 (Part 1 of 8). 3101 Keyboard Layout – Bilingual English/Canadian French (English function keys)

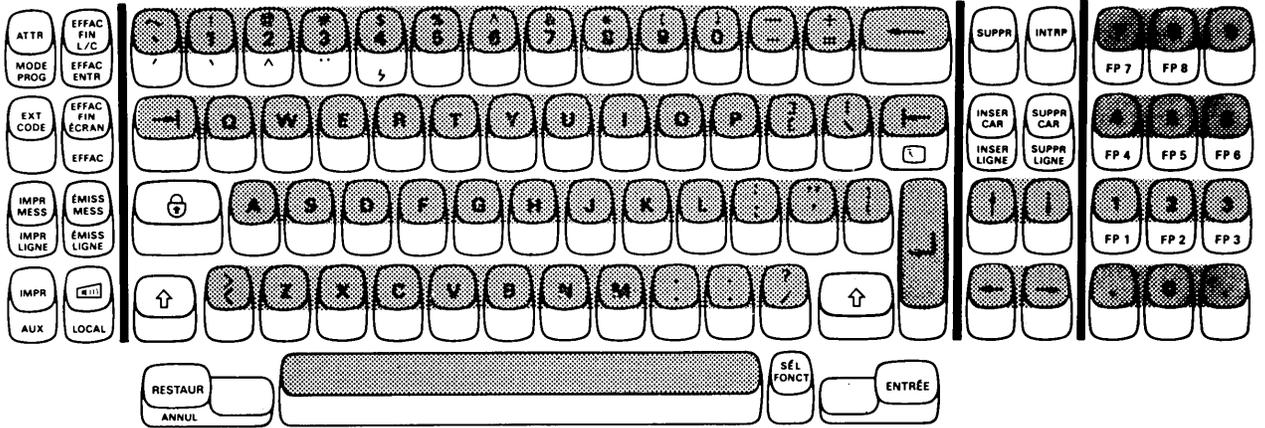


Figure 1-2 (Part 2 of 8). 3101 Keyboard Layout – Bilingual English/Canadian French (Canadian French function keys)

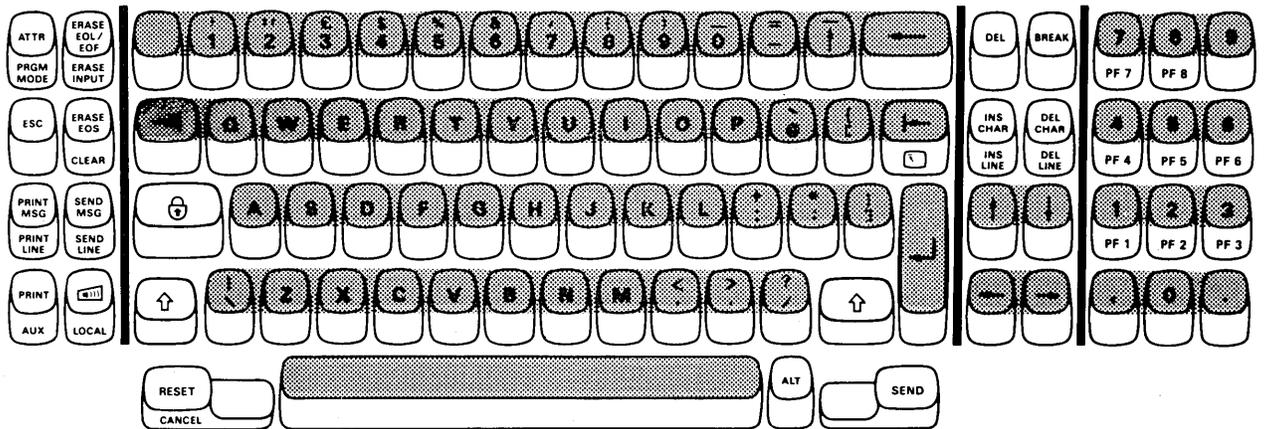


Figure 1-2 (Part 3 of 8). 3101 Keyboard Layout – English-U.K.

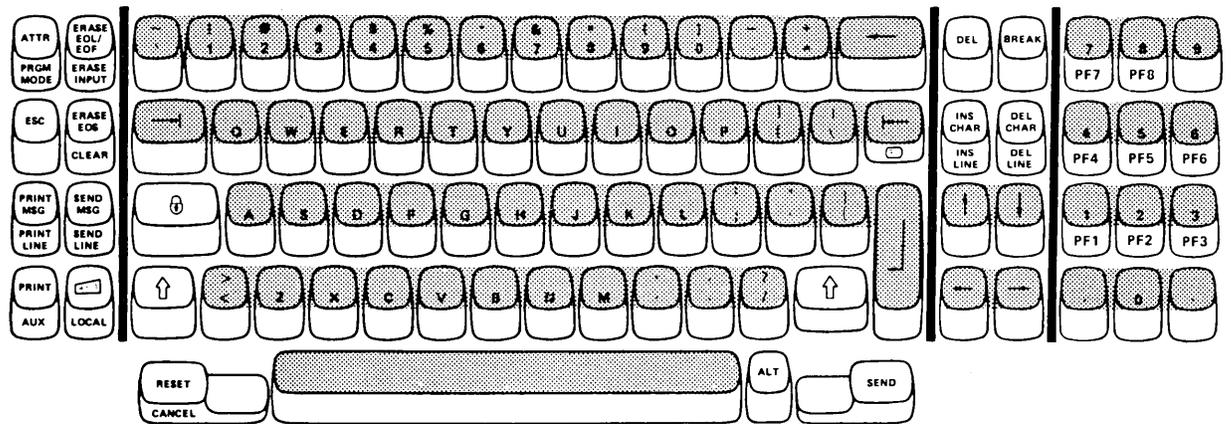


Figure 1-2 (Part 4 of 8). 3101 Keyboard Layout – English (U.S. ASCII)

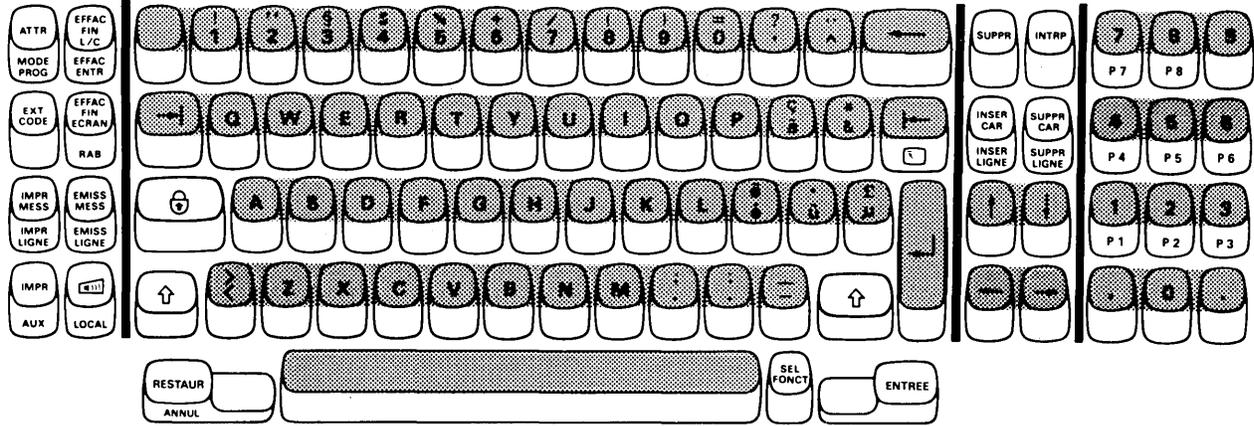


Figure 1-2 (Part 5 of 8). 3101 Keyboard Layout – French

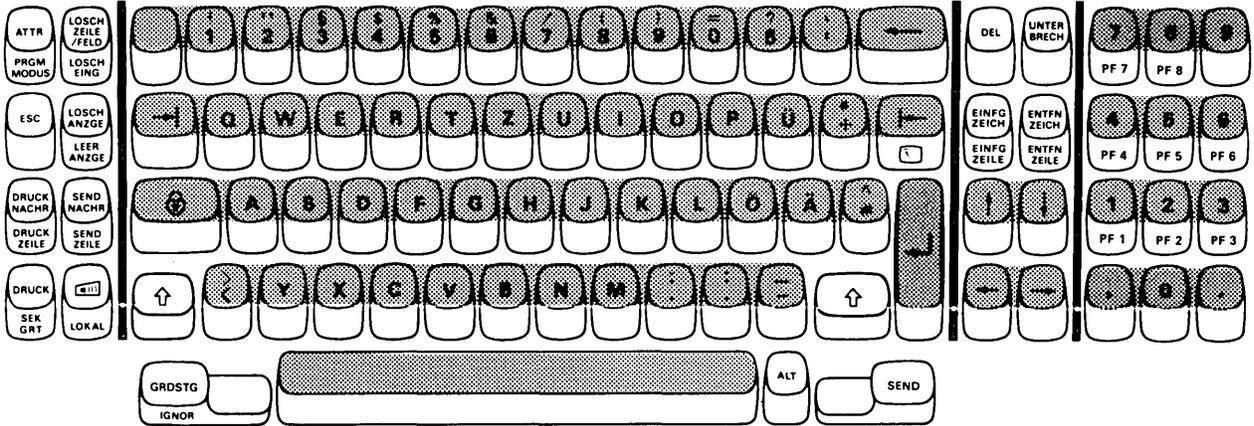


Figure 1-2 (Part 6 of 8). 3101 Keyboard Layout – German

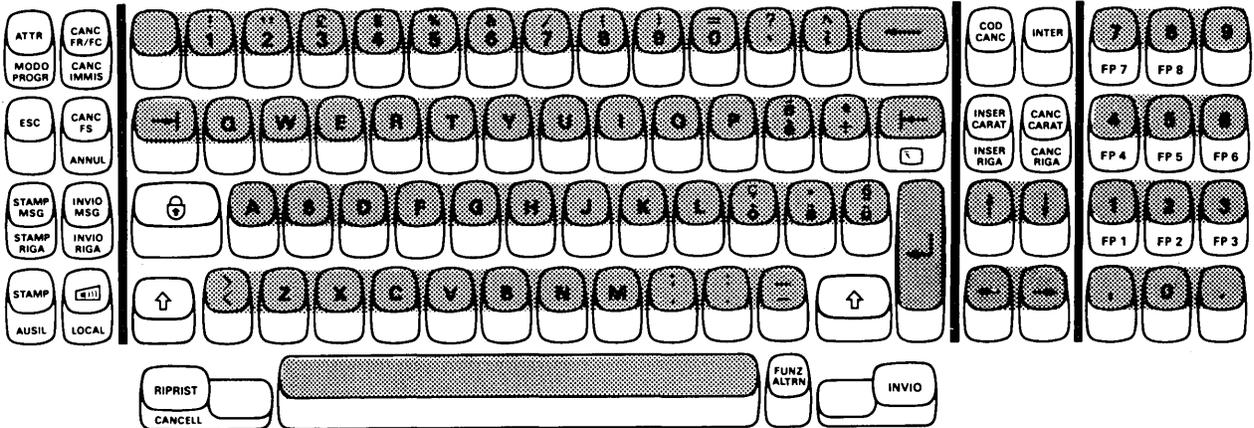


Figure 1-2 (Part 7 of 8). 3101 Keyboard Layout – Italian

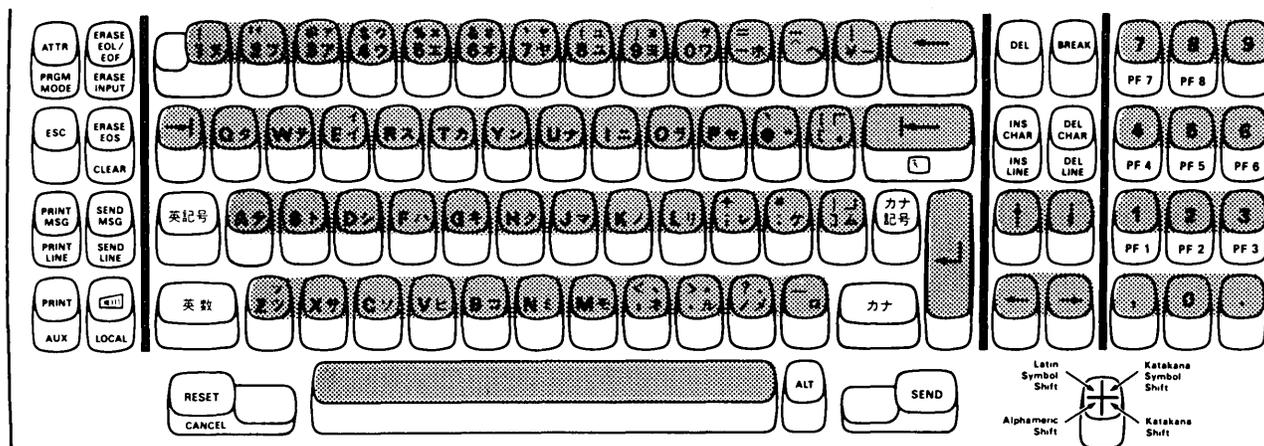


Figure 1-2 (Part 8 of 8). 3101 Keyboard Layout – Japanese (Katakana)

- The function keys include cursor-positioning keys, editing-control keys, and program-function keys. Each of these groups of keys is clustered for ease of use. Cursor-positioning keys enable the operator to move the cursor about the display. Editing-control keys enable the operator to perform editing functions such as erasing characters, fields, lines, or the entire screen, inserting characters or lines, and deleting characters or lines. Program function keys invoke functions defined in the user-written application programs.
- A numeric-key keypad, clustered for effective data entry, is provided in addition to the normal typewriter numeric keys.
- Keyboard separators help to prevent accidental striking of function keys.
- The application program, without interrupting the key-in operation, can call the attention of the operator by sounding an Audible Alarm and by changing the action of the cursor (from steady to blinking, when steady is selected, or vice versa).
- A clicker on the keyboard helps the operator to determine whether the keyboard operation is normal. The operator can activate or deactivate the clicker with the Click key. When the key is activated, the presence of a click indicates the keyboard operation is normal and the absence of a click indicates the keyboard operation is not normal. When the key is deactivated, the reverse is true: the presence of a click indicates the keyboard operation is not normal and the absence of a click indicates the keyboard operation is normal.

- An audible alarm on the 3101 can be activated by the application program to alert the operator. In addition, the alarm sounds at times such as when the operator presses an inoperative key, and when the data being entered is nearing the end of the screen. The volume of the alarm is operator-adjustable by the audible alarm volume control knob, shown in Figure 1-3.

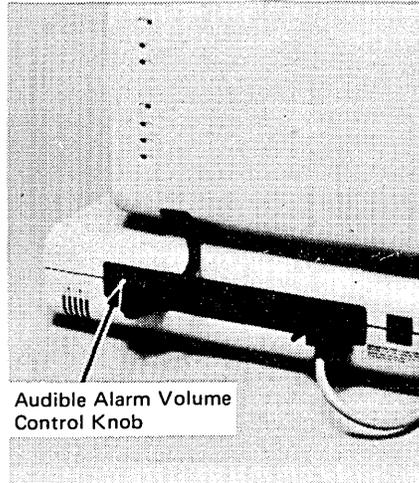


Figure 1-3. Audible Alarm Volume Control Knob (rear view of 3101)

The 3101 is modular and comprises three work-station elements: the video element, the keyboard element, and the logic element. The video and keyboard elements are cable-connected to the logic element. Figure 1-4 shows these elements before they are to be connected; Figure 1-5 shows the connected elements ready for operation. The physical separation of these elements enables the operator to position the keyboard freely and to tilt and swivel the video element to select a comfortable operating position.

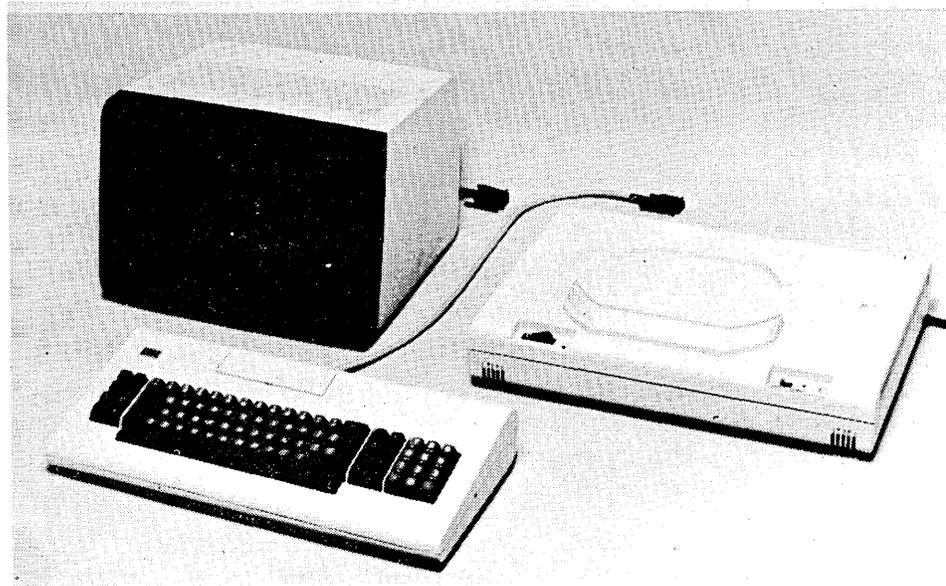
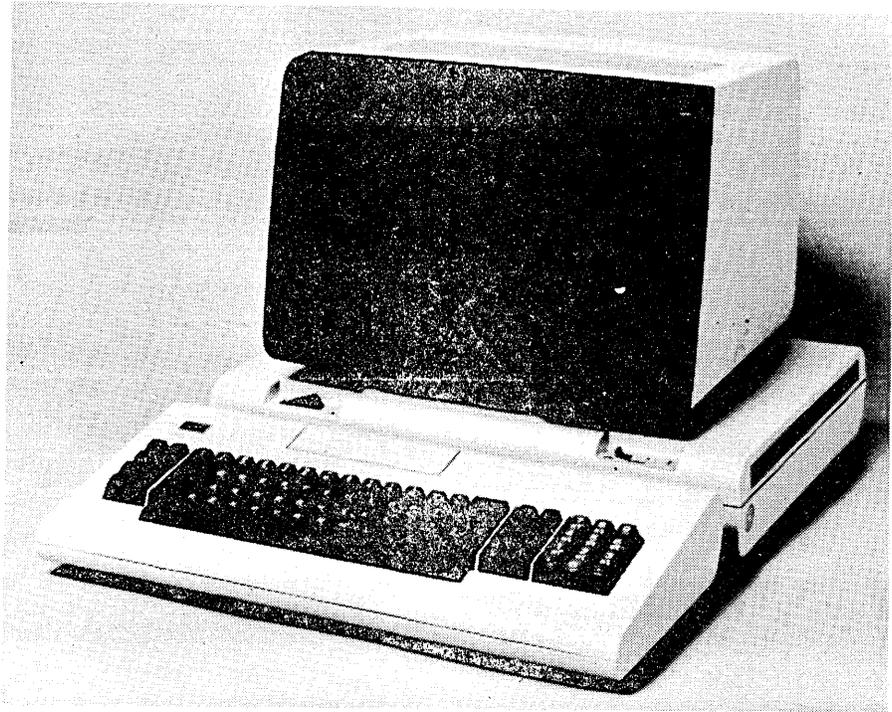


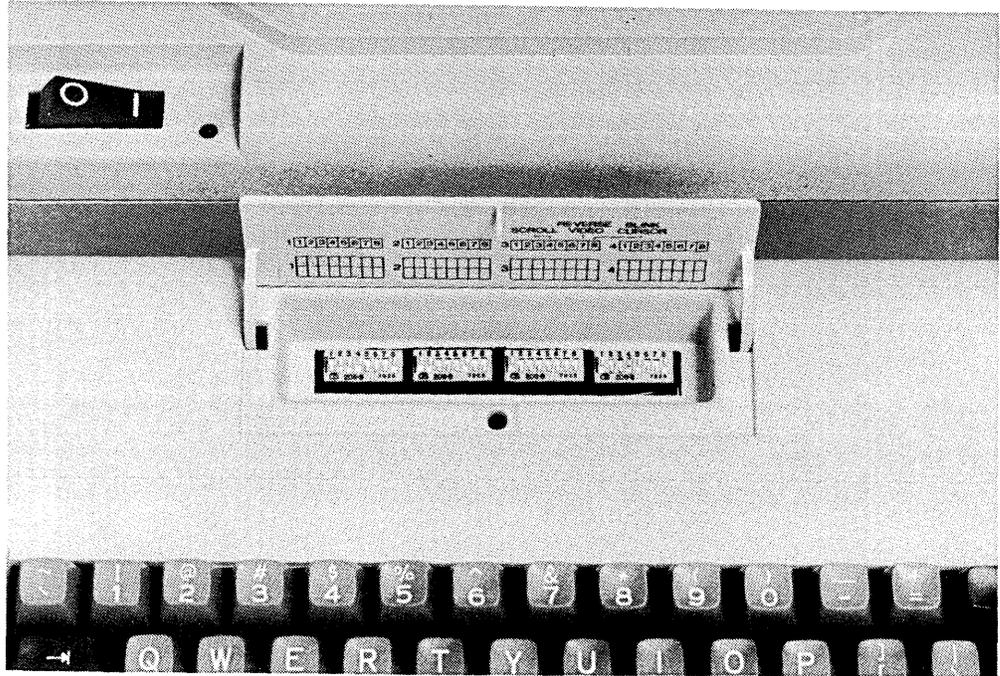
Figure 1-4. 3101 Display Terminal—Separated Work-Station Elements



**Figure 1-5. 3101 Display Terminal—Connected Work-Station Elements**

The modular design of the 3101 elements also offers an advantageous approach to terminal installation and maintenance. The customer can set up, and later relocate, the 3101 by performing a sequence of simple instructions, described in *IBM 3101 Display Terminal Setup Instructions*, shipped with the 3101. The customer can also isolate the failing element and replace it with a new one, with the help of the simple procedures described in *IBM 3101 Display Terminal Customer Problem Analysis and Resolution (CPAR) Guide*, shipped with the 3101.

Using the setup switches integrated in the keyboard element, the customer can select the required functions both at setup time and at any time after. Figure 1-6 shows where the setup switches are located.



**Figure 1-6. Setup Switches**

The setup switches are organized into four groups of eight switches. Group 1 switches are used to select the functions: transmission mode, operating mode (half-duplex/full-duplex), interface type, modem control, reverse channel, line turnaround character, and character set selection. Group 2 switches are for stop bit, parity bit, send line option, null suppress characters, and number of time-fill characters. Group 3 switches are for automatic new line, automatic line feed, carriage return, screen scroll, reverse video, and blinking cursor. Group 4 switches are for line-speed selection for both communication interface and output-device interface.

## Chapter 2. Models and Characteristics

### Models

The IBM 3101 is available in six models: Models 10, 12, 13, 20, 22, and 23. (Japanese Katakana is supported on Model 23 only.) Differences among these models are determined by (1) the mode of transmitting data to the host and (2) the type of interface used.

### *Transmission Mode*

The 3101 communicates with the host in two modes: character and block.

In the character transmission mode, characters are sent to the host as the operator enters them from the keyboard. All six models can operate in this mode.

In the block transmission mode, the characters entered at the keyboard are stored in a buffer and displayed. The data is not transmitted until the operator sends the block of characters to the host, or the host requests that it be sent. The data can therefore be modified before it is transmitted. Data received from the host is likewise stored and subject to modification. Models 20, 22, and 23 can operate in this mode.

### *Interfaces*

All models are provided with an interface that meets EIA RS-232C and CCITT V.24/V.28. In addition, Models 12 and 22 are provided with an interface for a 20-milliampere current loop, and Models 13 and 23 are provided with an interface that meets EIA RS-422 and CCITT V.11. The interface is selected by a setup switch.

Figure 2-1 summarizes transmission modes and interface data with respect to the models.

Model	Transmission Mode	Interface Application
10	Character	EIA RS-232C/CCITT V.24 and V.28
12	Character	EIA RS-232C/CCITT V.24 and V.28 and 20-mA current loop
13	Character	EIA RS-232C/CCITT V.24 and V.28 and EIA RS-422/CCITT V.11
20	Block and Character	EIA RS-232C/CCITT V.24 and V.28
22	Block and Character	EIA RS-232C/CCITT V.24 and V.28 and 20-mA current loop
23	Block and Character	EIA RS-232C/CCITT V.24 and V.28 and EIA RS-422/CCITT V.11

Figure 2-1. 3103 Model Summary

## Characteristics

### *All Models*

Following are the primary characteristics that are common to all six 3101 models:

- Character transmission in which the data is sent to and received from the host character by character.
- A local operating mode in which the 3101 does not communicate with the host.
- Start-stop, point-to-point line control using ASCII or the ISO code line transmission code.
- A variety of line speeds at which the 3101 operates with the host – 110, 150, 200, 300, 600, or 1200 bits per second (bps) for communication through modems (depending on modem capability), and 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600 bps for direct connection.
- The ability to attach an output device, such as a printer, through an interface that meets EIA RS-232C and CCITT V.24/V.28, at line speeds of 110 through 9600 bps. The operator can initiate and terminate the output operation using the AUX key on the keyboard.
- A screen that can contain 24 lines of 80 characters each (1920 characters).
- A separate (25 th) line at the bottom of the screen for operator information such as operating mode, error status, keyboard lock conditions, and shift status. The messages are in simple explanatory language. Their timely and continuous presentation minimizes ambiguity of terminal status.
- The display of 33 control characters (including DEL), as well as 95 graphic characters (126 for Bilingual English/Canadian French and 158 for Japanese Katakana).
- A choice of screen presentation: either green characters on a dark background (normal video) or dark characters on a green background (reverse video).
- The display and transmission of uppercase characters only (mono case), as well as both uppercase and lowercase characters (dual case). When uppercase is selected, only uppercase characters are displayed and transmitted, even if lowercase characters are typed or received from the host. For Japanese Katakana, the character set selection setup switch (mono/dual) is disabled, and lowercase alphabetic characters can be displayed only when they are received from the host.
- A clustered 12-key numeric keypad that has numerals 0 through 9, the period, and the comma. (See Figure 1-2.)
- Program function keys, which invoke functions defined by user-written application programs.
- A keyboard clicker that helps the operator to determine whether the keyboard operation is normal.
- A group of setup switches that the customer sets, at setup, and at any time after, to functions such as transmission mode, interface, blinking cursor, half-duplex/full-duplex facilities, line speed, line speed of an output device, and parity bit. (See Figure 1-6.)
- A cursor that is positioned either by the keyboard or by the host.
- A choice of a steady or a blinking cursor.

- An audible alarm that can be activated by the application program to alert the operator. The alarm also sounds at times such as when the operator presses an inoperative key, or when the data being entered is nearing the end of the screen. The volume of the alarm is operator-adjustable.
- Brightness and Contrast controls with which the operator, for viewing comfort, adjusts the display brightness and the contrast between the characters and the background of the display.
- Erase-function keys that permit functions such as erase entire screen, erase input only, erase from cursor to end-of-screen, and erase from cursor to end-of-line.
- Built-in test procedures that run automatically at power-on time and test the elements of the 3101. When an error is detected during the test, the failing element is indicated on the 25th line.
- A choice, available to the host programmer, of writing at the cursor location or at any other position on the screen. This enables the programmer to write on any part of the screen without using the cursor.
- A choice of scroll mode, in which all the screen data moves up one line when new data appears on the bottom line, and nonscroll mode, in which the cursor may move from line to line and wrap from the end of the last line to the beginning of the first line.
- Tabs that may be set at any column and may be set or cleared either from the host or from the keyboard.

### ***Models 20, 22, and 23***

In addition to the characteristics common to all six 3101 models, Models 20, 22, and 23 have the following characteristics when set for the block mode:

- Block transmission mode, in which blocks of data are sent to the host. The operator or the host program can initiate the transmission of a part of the screen, or the entire screen.
- Editing controls such as insertion and deletion of characters and lines.
- Portions of the display that can be formatted into fields by assigning attributes:
  - Protected: the operator cannot manipulate the data in the designated field.
  - Highlighted: the data in the designated field is more intensified than the rest of the display.
  - Blinking: the data in the designated field blinks.
  - Nondisplayed: the data entered into the designated field is not displayed.
  - Modified data tag: the designated field has been modified by the operator.
- Operator-adjustable contrast between the normal field and the highlighted field.
- Program mode, which allows the operator to enter or alter attribute characters.
- Ability to initiate and terminate the transmission of a line, a part of the screen, or the entire screen to the output device; initiation and termination can be either from the host or from the keyboard.
- Erase function, to erase from cursor to end-of-field.
- Back tab, which permits reverse direction (from right to left) of tab operation.

## Physical Characteristics

### *Specifications of Work-Station Elements*

The 3101 weighs approximately 17.3 kg (38.1 lbs). The specifications for the individual elements are as follows:

	Height	Width	Depth	Weight
Video element	272 mm (10.7 in.)	380 mm (15.0 in.)	351 mm (13.8 in.)	7.0 kg (15.4 lbs)
Keyboard element	90 mm (3.5 in.)	490 mm (19.3 in.)	225 mm (8.9 in.)	5.3 kg (11.7 lbs)
Logic element	100 mm (3.9 in.)	490 mm (19.3 in.)	355 mm (14.0 in.)	5.0 kg (11.0 lbs)

### *Power*

Maximum input power allowed is 0.12 kVA and 1.2 A at either 60 Hz or 50 Hz, single phase.

The voltage ranges supported are:

- U.S. and Canada 100 – 127 v
- Countries in Europe, Middle East, and Africas 200 – 240 v
- Japan 90 – 110 v

The power cord provided is 1.8 meters (6 feet) for the U.S. and Canada, and 3.0 meters (10 feet) for countries other than the U.S. and Canada. Also provided is the power plug most commonly used in each country.

Heat output is 100 kcal/h (400 BTU/h). Only natural convection is used for cooling.

### *Communication Cable*

The communication cable required between the 3101 and its host (whether attached directly or through modems) is dependent upon the customer's configuration. This cable is not a part of the 3101. See your IBM representative for communication cables that may be available from IBM.

## Chapter 3. Host Attachment

### Communication Facilities

The 3101 communicates with a variety of IBM or non-IBM hosts, using start-stop line control and the line transmission code of either ASCII or the ISO code. Communication speed can be selected at setup time and changed at any time; selectable are 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, and 9600 bps. Communication options such as half-duplex/full-duplex facilities, stop bits, and parity bits can also be selected by use of the setup switches.

Communication with a host is through interfaces, of which there are three types: (1) an interface that meets EIA RS-232C and CCITT V.24/V.28, (2) an interface for a 20-milliampere current loop, and (3) an interface that meets EIA RS-422 and CCITT V.11.

When using the interface that meets EIA RS-232C and CCITT V.24/V.28, the 3101 can communicate with a remote host through asynchronous modems at line speeds of 110 through 1200 bps, depending on modem capability; or it can connect directly to a host that is within 12.2 meters (40 feet) at line speeds of 110 through 9600 bps. Using this interface, the 3101 operates point-to-point for half-duplex or full-duplex facilities over switched (for modem attachment only) or non-switched networks.

When the interface for a 20-milliampere current loop is used, the 3101 connects directly to a host that is within 12.2 meters (40 feet) at the speeds of 110 through 9600 bps. The actual line speed possible on cables longer than 12.2 meters (40 feet) depends on the length and type of communication cable used.

When using the interface that meets EIA RS-422 and CCITT V.11, the 3101 connects directly to a host that is within a distance of up to 1219 meters (4000 feet) at line speeds of 110 through 9600 bps.

IBM modems that support the 3101 are:

IBM 3976-001, for non-switched networks at line speeds up to 300 bps

IBM 3976-002, for switched networks at line speeds up to 300 bps

IBM 3976-003, for non-switched networks at line speeds up to 1200 bps

**Note:** *These modems may not be available in your country. Consult your IBM representative.*

The 3.0-meter (10-foot) 3101 modem cable or equivalent is required for attachment to a modem. For attachment to the U.K. Post Office modems, the 0.3-meter (1-foot) adapter cable also is required. For attachment to an NTT-provided modem, the modem cable with the Wrap Test switch is required.

### Attachment to IBM Systems/Processors

Following are IBM systems/processors that support attachment of the 3101:

- IBM System/370 and 4300 Processors via an IBM 2701 Data Adapter Unit or IBM 3704 or 3705 Communications Controller.
- IBM 8100 Information System.

- IBM Series/1.

The individual publications of the IBM systems/processors should be consulted for attachment of the 3101.

Following are the access methods and program products that support attachment of the 3101 to the System/370 or the 4300 Processors:

- Basic Telecommunications Access Method (BTAM) under Disk Operating System/Virtual Storage (DOS/VS), Operating System/Virtual Storage 1 (OS/VS1), or Operating System/Virtual Storage 2 (OS/VS2: SVS or MVS).
- BTAM Extended Support (BTAM-ES) under DOS/Virtual Storage Extended (DOS/VSE).
- Telecommunications Access Method (TCAM) and Advanced Communications Function (ACF)/TCAM under OS/VS1 or OS/VS2 (SVS or MVS).
- ACF/TCAM using Network Terminal Option (NTO) under OS/VS1 or OS/VS2 (MVS only).
- Virtual Telecommunications Access Method (VTAM) and ACF/VTAM under DOS/VS, DOS/VSE, OS/VS1, or OS/VS2 (SVS or MVS).
- ACF/VTAM using NTO under DOS/VS, DOS/VSE, OS/VS1, or OS/VS2 (MVS only).
- Customer Information Control System (CICS)/BTAM/370X Emulation Program (EP) under DOS/VS, OS/VS1, or OS/VS2 (SVS or MVS).
- CICS/ACF/TCAM using NTO under OS/VS1 or OS/VS2 (MVS only).
- CICS/ACF/VTAM using NTO under DOS/VS, OS/VS1, or OS/VS2 (MVS only).
- Time Sharing Option (TSO)/TCAM/370X EP (TSO/TCAM/EP) or 370X Network Control Program (TSO/TCAM/NCP) under OS/VS2 (SVS or MVS).
- TSO/ACF/VTAM using NTO under OS/VS2 (MVS only).
- Virtual Storage Personal Computing (VSPC)/VTAM under DOS/VS, OS/VS1, or OS/VS2 (MVS only).
- Virtual Machine Facility/370 (VM/370).

For more information about 3101 attachment support, refer to the *IBM 3101 Display Terminal Description*, GA18-2033, and the individual publications for the access methods and program products above.

IBM Series/1 programming support includes support for teletypewriter equipment or equivalent ASCII terminals under the Realtime Programming System, the Event Driven Executive, and Control Program Support. This support is the same as that provided for the CPT-TWX 33/35 type terminal.

IBM 8100 Information System programming support for the 3101 includes the Distributed Processing Programming Executive/Base (DPPX/BASE) licensed program. This support is for Models 10, 12, and 13, using only the interface that meets EIA RS-232C and CCITT V.24/V.28. This support is the same as that currently provided for the CPT-TWX 33/35 type terminal at the EXCP level.

**Notes:**

1. For attachment of Models 10, 12, and 13 to the 8100 system, the 3.0-meter (10-foot) 3101 modem cable is required. The length of the 8100 direct-connect cable cannot exceed 9.1 meters (30 feet), thus the maximum cable length from the 8100 to the 3101 is 12.2 meters (40 feet).

2. *Customer application programmers should take into consideration that IBM programming support has limitations with translating control codes for Japanese Katakana and Bilingual English/Canadian French. For more information about these limitations, contact your IBM representative.*

### **Attachment to Non-IBM Systems/Processors**

The 3101 is designed for asynchronous communication using ASCII or the ISO code transmission code. The 3101, depending on models, is provided with three types of interface: (1) the interface that meets EIA RS-232C and CCITT V.24/V.28, (2) the interface for a 20-milliampere current loop, and (3) the interface that meets EIA RS-422 and CCITT V.11. When attachment to a non-IBM system/processor is planned, the attachment capabilities of both the system/processor and the 3101 must be examined in detail. While the 3101 is considered compatible with other teletypewriter type terminals, compatibility among these terminals is specified in a general manner; specific functional implementation by manufacturers of the terminals may vary. Therefore, it is the customer's responsibility to evaluate the impact on his programming support.

## Chapter 4. Setup and Problem Resolution by Customer

The design of the 3101 allows a customer to set it up, maintain it, and replace failing elements.

### Setup

By performing a sequence of simple instructions given in *IBM 3101 Display Terminal Setup Instructions*, the customer can set up the 3101 and make it operational soon after receipt; and the customer can also relocate it at any time.

For the 3101, the customer is responsible for all aspects of installation and setup, including:

- Adequate site and system preparation.
- Receipt, unpacking, and placement of the 3101.
- Physical setup: connection of elements; connection of cables to other equipment, communication lines, and modems; setting of switches; and checkout.
- Price quotations: installation of common carrier equipment and service.

**Note:** *In Japan, if the NTT-provided modem is used, the customer is responsible for performing the inspection described in IBM 3101 Display Terminal - Operating Procedures at NTT Physical Inspection Time, N:GA18-0112.*

For details, refer to the *IBM 3101 Display Terminal Description*, GA18-2033.

### Customer Problem Analysis and Resolution (CPAR)

When the customer has a problem, the customer analyzes it and, if it is a 3101 problem, the customer isolates and replaces the failing element and verifies the proper operation of the new element. This can be done by use of the instructions given in *IBM 3101 Display Terminal Customer Problem Analysis and Resolution (CPAR) Guide*. Then, the customer repairs the failing element or, optionally, sends it to an IBM Repair Center for the repair. The customer may call an IBM service representative for his on-site assistance in performing CPAR procedures.

It is recommended that the customer keep a sufficient number of spares. For the number of spares and replacement parts, consult your IBM representative or an IBM office serving your locality.

## Abbreviations

**ACF/TCAM.** Advanced Communications Function/  
Telecommunications Access Method.

**ACF/VTAM.** Advanced Communications Function/Virtual  
Telecommunications Access Method.

**ANSI.** American National Standards Institute.

**ASCII.** American National Standard Code for Information  
Interchange.

**bps.** bits per second.

**BTAM.** Basic Telecommunications Access Method.

**BTAM-ES.** Basic Telecommunications Access Method-Extended  
Support.

**BTU.** British thermal unit.

**CCITT.** Consultative Committee on International Telephone and  
Telegraph.

**CICS.** Customer Information Control System.

**CPAR.** Customer Problem Analysis and Resolution.

**CPT-TWX.** Customer-Provided Terminal-Teletypewriter Exchange  
Service.

**CRT.** cathode-ray tube.

**DEL.** The delete character.

**DOS.** Disk Operating System.

**DOS/VS.** Disk Operating System/Virtual Storage.

**DOS/VSE.** Disk Operating System/Virtual Storage Extended.

**DPPX.** Distributed Processing Programming Executive.

**EIA.** Electronic Industries Association.

**FIPS.** Federal Information Processing Standards.

**ISO.** International Organization for Standardization.

**MVS.** Multiple Virtual Storage.

**NCP.** Network Control Program.

**NTO.** Network Terminal Option.

**OS.** Operating System.

**OS/VS1.** Operating System/Virtual Storage 1.

**OS/VS2.** Operating System/Virtual Storage 2.

**PF.** program function.

**SVS.** Single Virtual Storage

**TCAM.** Telecommunications Access Method.

**TSO.** Time-Sharing Option.

**VM/370.** Virtual Machine Facility/370.

**VS.** Virtual Storage.

**VSPC.** Virtual Storage Personal Computing.

**VTAM.** Virtual Telecommunications Access Method.

## Glossary

This glossary defines the terms and abbreviations that are used in this manual. If you do not find the term you are looking for, refer to the Index or to the *IBM Data Processing Glossary*, GC20-1699.

IBM is grateful to the American National Standards Institute (ANSI) for permission to reprint its definitions from the *American National Standard Vocabulary for Information Processing* (Copyright © 1970 by American National Standards Institute, Incorporated), which was prepared by Subcommittee X3K5 on Terminology and Glossary of the American National Standards Committee X3.

ANSI definitions are identified with an asterisk. An asterisk between a term and the beginning of a definition indicates that the entire definition is taken from ANSI. Where definitions from other sources are included, ANSI definitions are identified by an asterisk to the right of the item number. The symbol "(ISO)" at the beginning of a definition indicates that it was developed by the International Organization for Standardization, Technical Committee 97, Subcommittee 1.

### A

**access method.** A technique for moving data between main storage and an input/output device.

**adapter.** Hardware that is generally required to transfer data and commands between the processor and an I/O device.

**alphameric field.** A field that may contain any alphabetic, numeric, or special character that is available on the keyboard.

**alphameric keyboard.** A typewriter keyboard used to enter letters, numbers, and special characters into a display station buffer; also used to perform special functions (such as backspacing) and to produce special control signals.

**alphanumeric.\*** Pertaining to a character set that contains letters, digits, and usually other characters, such as punctuation marks. Synonymous with *alphameric*.

**alphanumeric character set.\*** (ISO) A character set that contains both letters and digits and may contain control characters, special characters, and the space character. Synonymous with *alphameric character set*.

**application program.** (1) A program written for or by a user that applies to a particular application. (2) In data communication, a program used to connect and communicate with terminals in a network, enabling users to perform application-oriented activities.

**ASCII.\*** American National Standard Code for Information Interchange. The standard code, using a coded character set consisting of 7-bit coded characters (8 bits, including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters.

**attribute.** A characteristic of a display field. The attributes of a display field include protected or unprotected (against manual input); displayed, nondisplayed, display highlighted; a steady cursor or a blinking cursor and modified or not modified.

**attribute character.** A code that defines the attributes of the display field that follows. An attribute character is the first character in a display field.

### B

**buffer.** The hardware portion of a display station, control unit, or buffered printer in which display or print data is stored.

### C

**character position.** A location in the screen at which one character can be displayed; also, an addressed location in the buffer at which one character can be stored.

**character set.** A defined collection of characters.

**communication controller.** (1) A type of communication control unit whose operations are controlled by a program stored and executed in the unit. Examples are the IBM 3704 and 3705 Communications Controllers.

**communication facility.** Anything used or available for use in furnishing data communication service.

**control character.\*** (ISO) A character whose occurrence in a particular context initiates, modifies, or stops a control operation. A control character may be recorded for use in a subsequent action. A control character is not a graphic character, but may have a graphic representation in some circumstances.

**cursor.** A unique symbol (block shape) that identifies a character position in a screen display, usually the character position at which the next character entered from the keyboard will be displayed.

### D

**display field.** A group of consecutive characters (in the buffer) that starts with an attribute character (defining the characteristics of the field) and contains one or more alphameric characters. The field continues to, but does not include, the next attribute character.

**duplex.\*** (1) (ISO) In data communication, pertaining to a simultaneous two-way independent transmission in both directions. Synonymous with *full duplex*. (2) Contrast with *half duplex*.

## F

**field.** See *display field*.

**formatted display.** A screen display in which a display field (or fields) has been defined as a result of storing at least one attribute character in the display buffer.

**full duplex.\*** Synonym for *duplex*.

## G

**graphic character.\*** (ISO) A character, other than a control character, that is normally represented by a graphic.

## H

**half duplex.\*** (1) In data communication, pertaining to an alternate, one way at a time, independent transmission. (2) Contrast with *duplex*.

**highlighted display.** An attribute of a display field that causes data in that field to be displayed at a brighter level than other data displayed on the screen.

## I

**input field.** An unprotected field in which data can be entered, modified, or erased by any keyboard action.

**interface.\*** A shared boundary. An interface might be a hardware component to link two devices or it might be a portion of storage or registers accessed by two or more computer programs.

## M

**modem.** (1)\* (modulator-demodulator) A device that modulates and demodulates signals transmitted over data communication facilities. (2) Also called *data set*.

## N

**nonswitched line.** (also called *leased line*). A connection between a remote terminal and a host system that does not have to be established by dialing.

**null character (NUL).\*** (1) (ISO) A control character that is used to accomplish media-fill or time-fill, and that may be inserted into, or removed from, a sequence of characters without affecting the meaning of the sequence; however, the control of equipment or the format may be affected by this character. (2) See also *space character*.

**null suppression.** In reading the contents of the buffer for a display or printer, the bypassing of all null characters in order to reduce the amount of data to be transmitted or printed.

## P

**parity bit.** (ISO) A binary check digit inserted in an array of binary digits to make the arithmetic sum of all the digits, including the check digit.

**program function (PF) keys.** Allow input data on the display screen to be transmitted to the program together with a code that identifies which program key was depressed.

**protected field.** A display field for which the display operator cannot use the keyboard to enter, modify, or erase data.

## S

**switched line.** A communication line in which the connection between the computer and a remote station is established by dialing.

## T

**time sharing.** Refers to the interleaved use of the operating time of a device.

**typamatic key.** A repeat-action key.

## U

**unprotected field.** A display field for which the display station operator can use the keyboard to enter, modify, or erase data.

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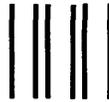
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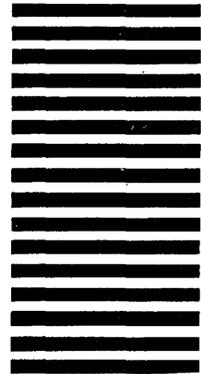


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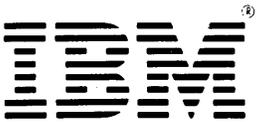
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