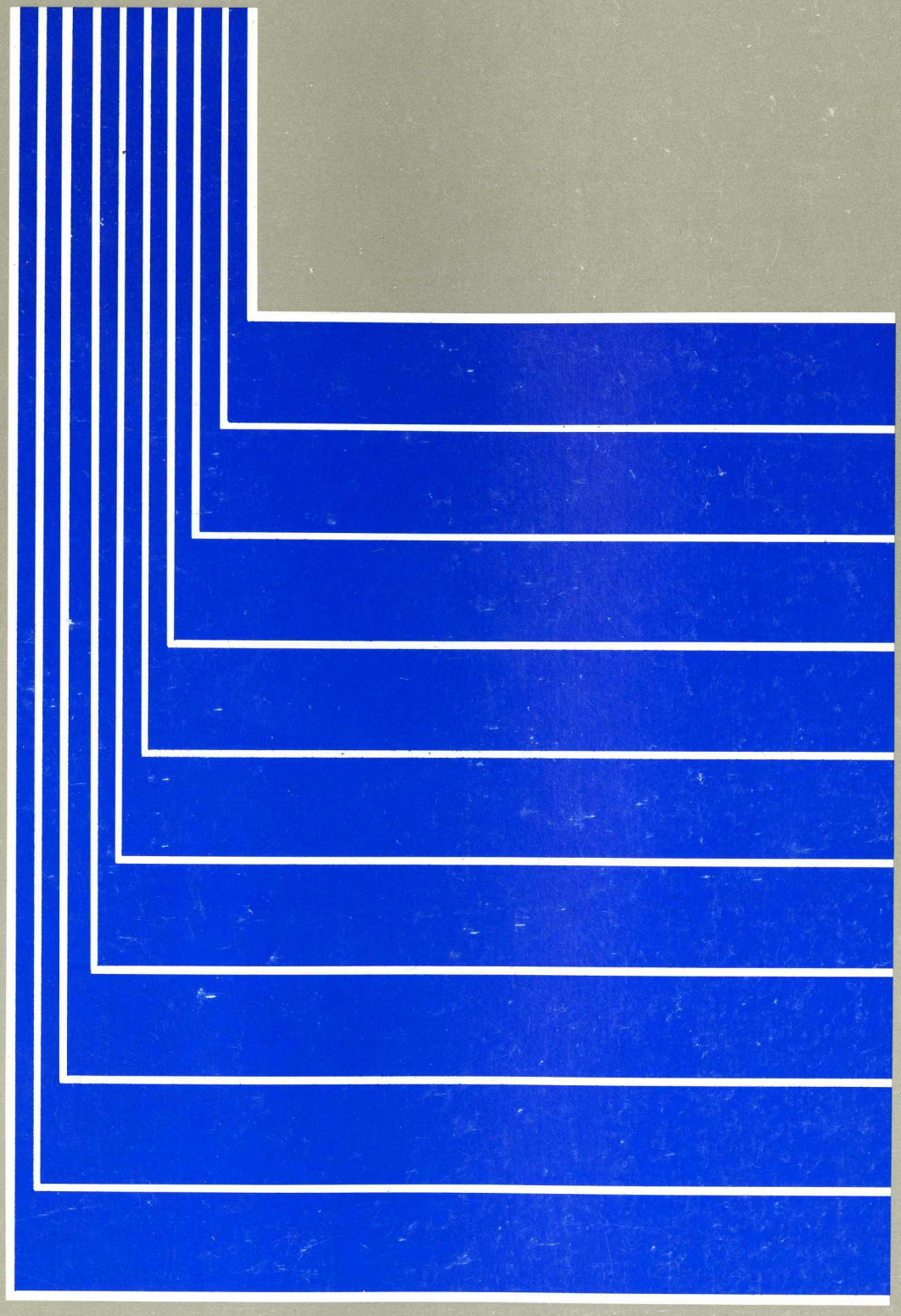
Planning and Installation

IBM 3708
Network
Conversion Unit



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Network
Conversion Unit

GA27-3766-03

Fourth Edition (February 1988)

This edition obsoletes GA27-3766-2.

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If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

This booklet is available from the following:

FOB Public Contact Branch
Room 725
1919 M St. NW
Washington, DC 20554
Tele. (202) 634-1940

Consumer Assistance and
Small Business Division
Room 254
1919 M St. NW
Washington, DC 20554
Tele. (202) 632-7000

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About This Book

This book contains planning and installation information about the IBM 3708 Network Conversion Unit.

This information is for people who plan for and install the 3708. To use the information, you should be familiar with the following:

- American National Standard Code for Information Interchange (ASCII)
- Asynchronous (start-stop) devices
- IBM 3270 Information Display System
- Systems Network Architecture (SNA).

It is recommended that you read the information in the planning chapters before installing the 3708. If the configuration planning and site preparation are complete, begin with the procedures in "Installing the 3708."

How This Book Is Organized

This book is divided into three parts:

"Introducing the 3708" contains the following chapters:

- Chapter 1, "The 3708 and Its Advantages" provides general information about the 3708.
- Chapter 2, "Operating Mode Functions" describes the functions that the 3708 provides in protocol conversion, protocol enveloping, and ASCII pass-through modes.
- Chapter 3, "Host and ASCII Device Interfaces" describes the connections between the 3708 and the hosts, and between the 3708 and the ASCII end-user devices.

"Planning for the 3708" contains the following chapters:

- Chapter 4, "Planning Checklist" provides a planning checklist and planning forms.
- Chapter 5, "Planning for Installation" describes the physical requirements for installing the 3708.
- Chapter 6, "Planning for Service" provides service and warranty information for the 3708.
- Chapter 7, "Planning for Microcode Updates" describes the 3708 microcode update procedure.
- Chapter 8, "Planning for Central Site Configuration" provides planning information for IBM 3708 Network Conversion Unit Feature 3525 (Pluggable Cartridge with Central Site Configuration).

- Chapter 9, "Planning for File Transfer" describes supported file transfer programs.
- Chapter 10, "Planning for Cables" provides information to help you plan for the cables and the cable connections for the 3708.
- Chapter 11, "Ordering the 3708" describes items that can be ordered for the 3708.

"Installing the 3708" contains the following chapters:

- Chapter 12, "Installation Procedures" explains how to configure the 3708 ports for SNA and ASCII hosts and for end-user devices.
- Chapter 13, "Configuration Procedures" describes the screen sequences that are used for configuring the 3708.
- Chapter 14, "Defining the General Definition" describes the "General Definition" screen.
- Chapter 15, "User-Defined Terminal Tables" describes user-defined terminal tables and explains how to create new ones.
- Chapter 16, "Converting Between Standard and Enhanced UDTs" explains how to convert standard terminal tables to enhanced, and vice versa.
- Chapter 17, "Creating a User-Defined Translate Table" describes user-defined translate tables and explains how to create new ones.

This manual also contains 14 appendixes:

- Appendix A, "IBM-Supplied Configuration"
- Appendix B, "3708 Configuration Example"
- Appendix C, "3708 Configuration Forms"
- Appendix D, "Cable Requirements"
- Appendix E, "Screen Sequences"
- Appendix F, "3708 Control Terminal Messages"
- Appendix G, "Default Terminal Tables"
- Appendix H, "Predefined User-Defined Terminal Tables and Keyboard Mappings"
- Appendix I, "Terminal Switch Settings"
- Appendix J, "Terminal XON/XOFF Pacing Support"
- Appendix K, "Manuals for Default Protocol Conversion Displays"
- Appendix L, "IBM-Supplied Translate Tables"
- Appendix M, "End-User-Device Reference Cards Order Form"
- Appendix N, "Binary to Hexadecimal Conversion Table."

Related 3708 Library Publications

The following lists manuals and information for the 3708:

- *IBM 3708 Network Conversion Unit Setup*, GA27-3611, is shipped with the 3708 and describes how to set up and test the 3708, how to handle setup problems, and how to prepare the 3708 for relocation.
- *IBM 3708 Network Conversion Unit Description*, GA27-3768, describes the external interfaces and operational characteristics of the 3708.
- *IBM 3708 Network Conversion Unit Problem Determination*, GA27-3767, provides procedures for solving 3708 problems.
- Unpacking instructions are printed on the 3708 shipping carton and show how to unpack the 3708.
- *IBM 3708 Network Conversion Unit Problem Report*, GA27-3638, which is shipped with the 3708, provides a means of recording problem diagnosis information that is used by repair center representatives.
- *IBM 3708 Network Conversion Unit End-User Reference*, GA27-3765, describes the procedures for operating terminals attached to the 3708.
- *IBM 3708 Network Conversion Unit Registration Address Form* is shipped with the 3708. This form must be completed and returned to IBM for you to automatically receive notification of changes in the 3708 microcode.
- IBM 3708 reference cards describe the keyboard functions of ASCII displays that can be connected to a 3708 and describe the general procedures for terminal users. See Appendix M, "End-User-Device Reference Cards Order Form," for a list of the end-user devices and the 3708 reference card order numbers.

Service Information

For service on 3708 hardware and microcode problems, call the following number in the United States or Puerto Rico:

1 800 428-2569 (toll free)

In other countries, call the appropriate support group.

Changes Since the Last Edition

This edition contains the following new information:

- Descriptions of enhanced terminal support
  - IBM 3270 Model 2, 3, 4, and 5 emulation
  - Customized UDT names
  - Customized Terminal Logon Initialization Sequence.
- Default terminal tables and switch settings for the following terminals:
  - IBM 3151
  - FALCO-500®
  - WY-50®.
- A description of a new host port inactivity time out option
- A description of a new printer capability option, "Perform Newline at Begin Bracket (LU_3)"
- Descriptions of additional support in the non-standard operations field.

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Introducing the 3708

This part contains the following chapters:

Chapter 1. The 3708 and Its Advantages

This chapter provides the following general information about the 3708:

- Overview
- Physical description
- Operating modes
- Network configurations
- Monitoring and controlling the 3708
- Summary of advantages.

Overview

The 3708 provides a physical and logical interface for connecting ASCII end-user devices[1] to an SNA network. It has 10 communication ports that can be defined for various network configurations and operating modes. The network can contain ASCII hosts, which include personal computers, as well as SNA hosts.

Physical Description

The 3708, which is shown in Figure 1-1 on page 1-2, is small, lightweight, and portable. It consists of two modular, customer-replaceable hardware components: a *base* and a *cartridge*. The back panel of the base contains 10 numbered ports for connecting hosts and ASCII end-user devices.

The 3708 measures 400 mm by 355 mm by 105 mm (15.8 in. by 14.0 in. by 4.1 in.), weighs approximately 5.6 kg (12.3 lb), and can be placed on a shelf in a standard 19-inch rack.

[1] ASCII end-user devices use asynchronous start-stop data transmission and include displays, printers, keyboard printers, keyboard displays with attached printers, plotters, personal computers, and devices that use ANSI X3.64.

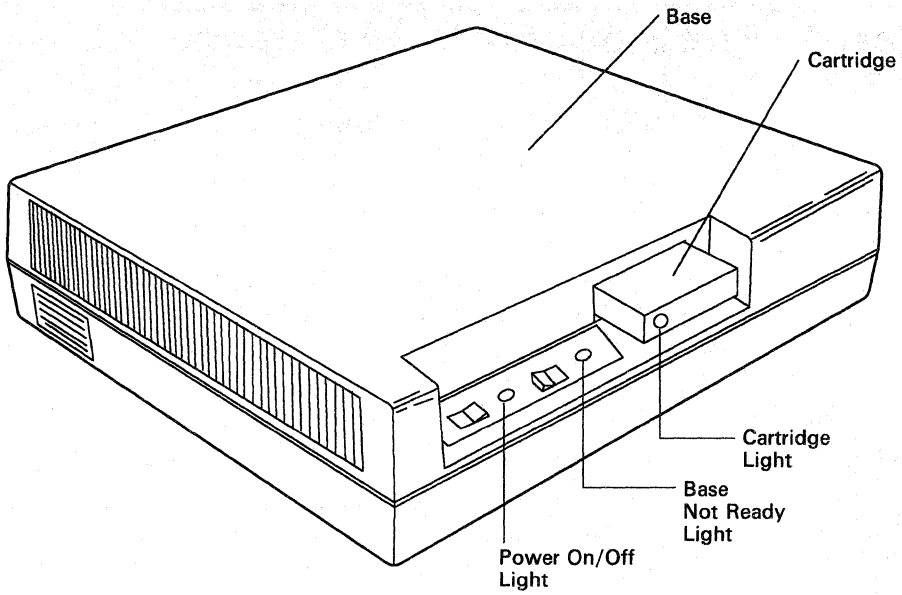

Figure 1-1. 3708 Network Conversion Unit

Operating Modes

The 3708 provides three modes of operation, which it can perform simultaneously, for different network configurations:

- *3270 applications running on an SNA host.* The 3708 provides *protocol conversion* mode for communication between an ASCII end-user device and 3270 applications running on an SNA host. This mode changes a start-stop data stream from an ASCII device into a 3270 data stream and provides 3274 Control Unit functions, including 3270 full-screen support.
- *Line-by-line applications running on an SNA host.* The 3708 provides *protocol enveloping* mode for communication between an ASCII end-user device and line oriented applications running on an SNA host. In this mode, the 3708 surrounds the data stream from an ASCII device with SNA headers. Devices that normally communicate with host applications through the start-stop support of the Network Terminal Option (NTO) can communicate through the 3708. NTO start-stop support is not required for 3708 operations and can be eliminated from the communication controller.
- *Applications running on an ASCII host.* The 3708 provides *ASCII pass-through* mode for communication between an ASCII display and applications running on an ASCII host. This mode passes a start-stop data stream between an ASCII display and an ASCII host without changing the data stream in any way.

Network Configurations

The 3708 provides 10 communication ports that can be defined for various configurations of SNA hosts, ASCII hosts, and ASCII end-user devices. The host may be directly attached or may be remotely attached over nonswitched (leased) lines. ASCII devices may be directly attached or may be remotely attached over switched or nonswitched lines. Line speeds of up to 19200 bps can be used.

As many as two ports can be defined for SNA hosts. Each of these ports can connect to separate hosts, or both can connect to the same host.

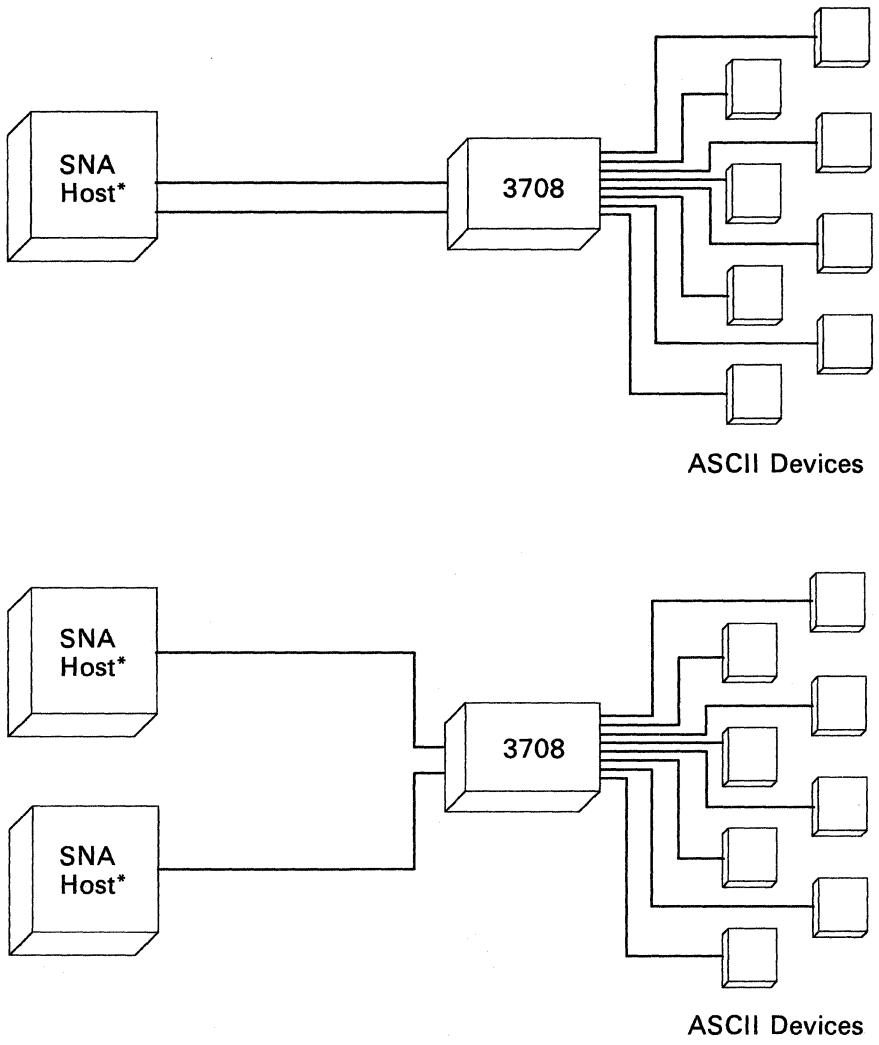

Figure 1-2. Two Kinds of SNA Host Connections

* For a list of SNA hosts that the 3708 supports, refer to "SNA Hosts" on page 3-1.

As many as nine ports can be defined for ASCII hosts. Each of these ports can connect to separate hosts, or multiple ports can connect to the same host, depending on the host. Figure 1-3 on page 1-4 shows a configuration with one SNA host and one ASCII host.

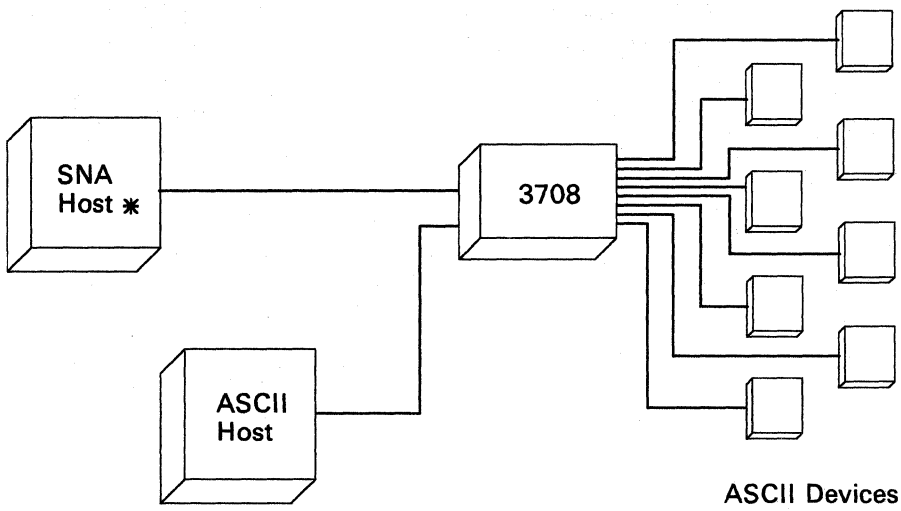

Figure 1-3. SNA and ASCII Host Connections

* For a list of SNA hosts that the 3708 supports, refer to "SNA Hosts" on page 3-1.

When a 3708 port is connected to an SNA host, multiple end-user devices can communicate at the same time over that one line. When a 3708 port is connected to an ASCII host, only one end-user device at a time can communicate over that line. However, multiple devices can communicate at the same time with an ASCII host if each device has a separate line to the host.

Control Terminal

A control terminal can be used for monitoring and controlling the 3708. Any display that operates in protocol conversion mode can be the control terminal if it is logged on to the 3708 in *control terminal mode*. The 3708 allows only one display at a time to be logged on in control terminal mode. The control terminal can be either directly or remotely connected to the 3708.

The control terminal is also used to define the configuration of the 3708. An IBM-supplied configuration allows many types of displays to be used as a control terminal for defining the initial configuration of the 3708. The 3708 provides default keyboard mappings for these terminals. (Refer to "ASCII End-User Devices" on page 3-2 for a list of the default terminals.) You must have one of these terminals to define the initial configuration for the 3708. After initial configuration, other types of displays can be defined for use as a control terminal. "Step 3. Logging onto the Control Terminal" on page 12-5 contains step-by-step procedures for logging on to the control terminal.

The control terminal operator can perform the following functions:

- Define or change:
  - Host ports and host access
  - Device ports
  - Control terminal access
  - Control terminal password
  - Port passwords
  - Translate table
  - Keyboard mappings
  - Printer access
  - World Trade language to be used for 3708 logon
  - Suppression of 3708 logon screens.
- Display information, such as:
  - Configuration data
  - Response time statistics
  - Alert log and other error information.
- Monitor the 3708 by checking:
  - Port status
  - Data transmitted on lines connected to the 3708.

Note: If a printer is connected to the 3708, the control terminal screens showing configuration information can be printed as a local copy operation.

Summary of Advantages

The 3708 provides the following advantages:

- *It reduces communication costs* by reducing the number of telecommunications lines needed, by reducing the number of communication controller ports needed, and by allowing a display with a connected printer to share a single communication downstream line.
- *It supports personal computer file transfer* through the IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM).
- *It allows you to manage the configuration and microcode fixes* of the 3708s in a network from a central control point. This management capability is provided by 3708 Feature 3525 (Pluggable Cartridge with Central Site Configuration) and its associated PC aid.
- *It supports network management* by sending alert messages to NetView or to the Network Problem Determination Application (NPDA) and response time statistics to NetView or to the Network Logical Data Manager (NLDM) for displays that are connected for protocol conversion, and by notifying an SNA host of changes in the power status of attached ASCII end-user devices.
- *It supports multiple modes of operation.* Protocol conversion, protocol enveloping, and ASCII pass-through modes can be supported simultaneously.
- *It eliminates the need for NTO start-stop support in the communication controller* by providing protocol enveloping for ASCII end-user devices that are compatible with TWX 33/35.

- *It connects to most ASCII displays* using standard 128-character ASCII in protocol conversion mode. The 3708 provides ASCII-to-3270 keyboard mappings for many displays and allows additional keyboard mappings to be defined at the control terminal.
- *It supports IBM 3270 Models 2,3,4, and 5 emulation* when operating in protocol conversion mode.
- *It allows the sharing of printers.* The printer can be defined to allow output from the host, local screen copies from one or more ASCII displays operating in protocol conversion mode, or both host output and local screen copies. It also supports printers that are connected to displays (MLU).
- *It reduces terminal costs* by allowing inexpensive ASCII end-user devices to be used in an SNA network.
- *It provides flexibility* by allowing a single ASCII device to be connected to either an SNA host or an ASCII host (which may be a personal computer) and by allowing access to ASCII and 3270 applications at an SNA host.
- *It helps in migrating to SNA* by allowing end users to access 3270 application programs through ASCII devices.
- *It provides security for data and applications* by allowing an optional password for each port, by allowing host and printer access to be defined, and by ending a session whenever it detects an abnormal disconnection.
- *It provides an optional inactivity time-out* that may be used to disconnect terminals, thus reducing security exposures and limiting dial charges on switched lines.
- *It connects to devices that use special characters or nonstandard codes* by providing ASCII-to-EBCDIC *translate tables.* An additional translate table can be defined using the control terminal.
- *It allows the SNA host to dial out to devices* in protocol enveloping mode.
- *It allows a display to dial out* to an ASCII host in ASCII pass-through mode.
- *It supports transparent operations* in protocol enveloping. Ports can be defined to allow transparent data flow to and from the host. This feature provides support for devices such as graphics displays, printers, and plotters.
- *It allows an operator to define the 3708 configuration* and to monitor and control the 3708 by using an ASCII display as a *control terminal.* A password protects access to control terminal functions. When not used as a control terminal, the ASCII display is available as an end-user device.
- *It allows a port to be defined to allow protocol conversion, protocol enveloping, or both* depending on the type of session requested by a host. All ports can be defined to allow ASCII pass-through.
- *It allows a port to be defined to automatically determine the parity and line speed* (from 110 to 4800 bps and 9600 bps) for both switched and nonswitched lines.
- *It attaches to the IBM cabling system.*

- *It has a built-in diagnostic test* that runs each time you power on or initiate a restart at the control terminal.
- *It has a built-in, optional, extended diagnostic test program* that is available with port external wrap testing.
- *It provides a one-year warranty* and is supported by IBM service.

Chapter 2. Operating Mode Functions

This chapter describes the functions that the 3708 provides in protocol conversion, protocol enveloping, and ASCII pass-through modes.

Protocol Conversion

In protocol conversion mode, the 3708 provides all the functions in IBM 3274 Configuration Support A, as well as additional functions, such as alert and response time monitor (RTM) data support and power on/off notification to the SNA hosts.

Display Support

An ASCII display operating in protocol conversion mode appears to the SNA host as an IBM 3278 or 3279 Display Station, Model 2, 3, 4, or 5, or as an IBM 3178 or 3179 Display Station. The 3708 supports an ASCII display operating in protocol conversion mode as a logical unit (LU) type 2.

To support ASCII displays in protocol conversion mode, the 3708 does the following:

- It uses keyboard mappings to define keystroke sequences that are equivalent to IBM 3270 key functions. The 3708 provides mappings for many types of ASCII displays. In addition, up to six mappings can be user-defined for other types of ASCII displays. A display that has a user-defined mapping is referred to as a *user-defined terminal.*
- It supports the following ANSI X3.64 functions:
  - Cursor Backward
  - Cursor Down
  - Cursor Forward
  - Cursor Up
  - Cursor Position
  - Erase in Display.
- It translates ASCII data into EBCDIC and vice versa using one of two standard translate tables or a user-defined translate table.
- It supports the following screen sizes:

Display Model	Rows x Columns	Status Line
Model 2 Emulation	24 x 80	25
Model 3 Emulation	32 x 80	33
Model 4 Emulation	43 x 80	44
Model 5 Emulation	27 x 132	28

- It provides a 3270-like status line, using either the terminal's status area or the last line of the data area. When the last data line is used, the user can turn the status line on and off. If the status line is turned off and input is inhibited, the 3708 notifies the user by placing the cursor in the lower right corner of the screen.

- It provides a numeric lock function that reduces the chance of the end-user entering non-numeric data when the application expects numeric data. The 3708 allows the end-user to override this function by typing:
  - Any upper case character or symbol into the numeric field.
  - A blank into the first position in the numeric field. While the blank occupies the first position in the field, the user can type any character into the numeric field.
- It provides type-ahead key queuing, that allows the user to enter new keystroke sequences on the keyboard while a preceding keyboard sequence is being processed. This function allows a user to request the next screen before the current screen is completely displayed. The user can turn type-ahead key queuing on and off.
- It provides enhanced null/blank processing, that allows the user to use either the space bar or the cursor move keys to edit and separate fields. The 3708 allows trailing blanks or nulls to move off the end of a line when the user is inserting data in that line. When the data is sent to the host, the 3708 converts imbedded nulls to blanks. The user can turn enhanced null/blank processing on and off.
- It supports highlighting and color for certain classes of displays. Refer to *IBM 3708 Network Conversion Unit Description* for more information. Light-pen operations can be simulated using a Cursor Select key sequence.
- It supports the following 3270 commands:
  - Erase All Unprotected
  - Erase/Write
  - Erase/Write Alternate
  - Read Buffer
  - Read Modified
  - Read Modified All
  - Write.
- It supports the following buffer formatting and control orders:
  - Start Field
  - Set Buffer Address
  - Inset Cursor
  - Program Tab
  - Repeat to Address
  - Erase Unprotected to Address.
- It notifies the user when it detects a framing or parity error by updating the status line. To continue, the user must reset the display using the 3270 reset function. This function can be suppressed by configuring the nonstandard operating bit 5 to 1. Refer to "Non-Standard Operations" on page 14-3 for more information.
- It allows the control terminal operator to display response-time statistics and error information, such as the alert log, at the control terminal. In addition, the response-time statistics and alerts can be displayed at the host using NetView or Network Logical Data Manager (NLDM) and the Network Problem Determination Application (NPDA). Full support for 3708 alerts is available only through NetView.

Printer and Keyboard Printer Support

In protocol conversion mode, an ASCII printer or keyboard printer looks like an IBM 3287 Printer, Model 1 or 2 to the SNA host. The ASCII printer or keyboard printer can be configured to operate in three ways:

System mode. The host sends print data to the printer, which is either an LU type 1 or an LU type 3. The output format for an LU type 1 printer is controlled by SNA character string (SCS) characters. For an LU type 3 printer, the output can be formatted or unformatted. Unformatted output is controlled by 3270 data stream compatibility (DSC) print orders.

Local mode. A copy of the screen of a display that is operating in protocol conversion mode is printed at the printer. The host can start a local copy by sending a command, or the user of the display can select it with a print key sequence. When a printer port is configured for local mode, it cannot be used for LU type 1 or LU type 3 print operations.

Shared mode. The printer is available for both system mode and local mode operation. A local copy can be performed whenever the printer is not being used for an LU type 1 or LU type 3 print operation.

Keyboard printers operating in protocol conversion mode are supported as output devices and must be defined as printers.

Up to 256 characters (8-bit data with no parity) can be used with an output device operating in LU type 1 SCS transparency mode.

The 3708 supports the following input from a keyboard printer that is directly connected to the 3708:

- Hold Print/Enable Print
- Cancel Print (LU type 1 SCS only)
- PA1 and PA2 (LU type 1 SCS only).

Multiple Logical Unit Support

A printer connected to an auxiliary port on a display that supports remote access to its auxiliary port can be defined as a second LU on the 3708 port to which the display is connected. The printer can then be used in system mode, local mode, or shared mode. This support is referred to as multiple logical unit (MLU) support and operates only in protocol conversion mode.

If a printer is connected to an auxiliary port on a display and is not defined to the 3708, the printer can be used only for screen copy operations that are initiated by the user. The user enters a predefined key sequence that the 3708 echoes back to the display.

Input from devices that are connected to the auxiliary port of a display is not explicitly supported; any such input is assumed to be for the display.

Protocol Enveloping

In protocol enveloping mode, the 3708 supports an ASCII end-user device as an LU type 1 with a Network Terminal Option (NTO) appearance. The 3708 does not provide any device-specific support other than that provided by NTO for devices that are compatible with TWX 33/35. The application program must provide any device-specific support. The 3708 supports the following functions in protocol enveloping mode:

- It may or may not modify the ASCII data, depending on how the port is configured. The data can be modified by using a translate table, delay characters, substitution characters, and other options that are defined during configuration. If the data is translated from ASCII to EBCDIC, the 3708 can use one of two standard translate tables or a user-defined translate table.
- It can provide a delay after a Carriage Return, Vertical Tab, Form Feed, or Horizontal Tab.
- It can use either a default substitution character or a user-defined substitution character when it detects a data error. When it detects a parity error in a character, the 3708 can replace the character with the Parity Error Substitution character configured in the 3708. When it detects a framing error, the 3708 always replaces the framing error with the Parity Error Substitution character.
- It can use up to five different turnaround characters, which are defined during configuration, to control communication. When the 3708 receives a line turnaround character from an end-user device, the 3708 sends data from the device to the host.

  Because the 3708 does not control the keyboard in protocol enveloping, users must know when they can and cannot enter data. A character string that tells the user when to enter data can be defined for each port. To define the character string, see "Send Read Prompt" on page 13-40. In addition, a port can be configured to enable the 3708 to echo characters that are entered at the keyboard.
- It can provide for transparent data flow. The 3708 can support 256-character sets and output-only devices, such as printers and plotters.
- It can allow the host to dial out to devices. For more information, refer to *IBM 3708 Network Conversion Unit Description.*

ASCII Pass-Through

In ASCII pass-through mode, the 3708 serves as a wire connection between an ASCII end-user device and an ASCII host. The host and the end-user device are responsible for data and protocol error checking.

Note: A programmable modem can be installed on a port configured as an ASCII host. The 3708 allows the user to dial out through the programmable modem in ASCII pass-through mode and gain access to an ASCII host, printer, or other device.

Function Summary

The following table summarizes the functions that the 3708 provides.

Function	Protocol Conversion	Protocol Enveloping	ASCII Pass-Through
IBM 3178/3278/3279 Model 2, 3, 4, or 5, Display Station emulation	Standard	n/a	n/a
IBM 3287 printer, Models 1 and 2 emulation	Standard	n/a	n/a
Four color support (3279-2A and 3179 emulation)	Optional	n/a	n/a
Highlighting support	Optional	n/a	n/a
Light pen emulation	Optional	n/a	n/a
Type-ahead	Optional	n/a	n/a
Enhanced null/blank processing	Optional	n/a	n/a
User-defined terminals	Optional	n/a	n/a
3270 status line emulation	Standard	n/a	n/a
Response time monitor (RTM)	Standard	n/a	n/a
Alerts (Alerts generated for ASCII pass-through are transmitted to SNA hosts.)	Standard	Standard	Standard
NTO-like function (LU type 1 NTO emulation)	n/a	Standard	n/a
Full duplex operations	Standard	Optional	Standard
Half duplex operations	n/a	Optional	n/a
Parity and framing checking	Standard	Optional	n/a
Ignore parity	n/a	Optional	Standard
Character echoplexing	Standard	Optional	n/a
No character echoplexing	n/a	Optional	Standard
128-ASCII-character support	Standard	Optional	Optional
256-ASCII-character support	n/a	Optional	Optional
256-ASCII-character support (LU type 1 SCS)	Optional	n/a	n/a
Choose one of two standard translate tables	Optional	Optional	n/a
User-defined translation table	Optional	Optional	n/a
No translation	n/a	Optional	Standard
3708 accepts XON/XOFF pacing	Optional	Optional	n/a
3708 transmits XON/XOFF pacing	Optional	Optional	n/a
LU type 1 SCS printer data stream support	Optional	n/a	n/a
LU type 3 DSC printer data stream support	Optional	n/a	n/a
System, local, or shared printer support	Optional	n/a	n/a
MLU support (a printer attached to the auxiliary port of a display.)	Optional	n/a	n/a

Function	Protocol Conversion	Protocol Enveloping	ASCII Pass-Through
Autobaud/parity for 110 through 4800 and 9600 bps for downstream devices	Optional	Optional	Optional
Line speeds up to 19200 bps	Optional	Optional	Optional
EIA 232C support for (SNA and ASCII) host connection	Standard	Standard	Standard
EIA 232C support for downstream device connection	Optional	Optional	Optional
EIA 422A support for downstream device connection	Optional	Optional	Optional
Selection of 3708 logon screens	Optional	Optional	Optional

Chapter 3. Host and ASCII Device Interfaces

This chapter describes the connections between the 3708 and the hosts and between the 3708 and the ASCII end-user devices.

SNA Hosts

The 3708 can be connected to as many as two SNA hosts using either point-to-point or multipoint links. It is defined as a separate physical unit (PU) to each SNA host link.

In addition, the connection to the host can be direct, or it can be remote using a nonswitched (leased) line. Line speeds as high as 19200 bps can be used. SNA host connections use the EIA 232C interface.

The 3708 uses the SDLC protocol to communicate with an SNA host, and it uses half duplex data transmission on either full duplex or half duplex communication facilities.

If a particular end-user device will always be used with one specific SNA host, the 3708 port to which the device is connected can be defined to suppress the 3708 logon and/or host-selection screens.

Because the service priority of the 3708 is in descending order, ports 10 and 9 are recommended for SNA host connections. Connect the first SNA host to port 10 and the second SNA host to port 9.

The 3708 can be connected to an SNA host through any of the following:

- IBM 3720 Communications Controller
- IBM 37x5 Communications Controller
- IBM 3710 Network Controller
- IBM 43xx with an Integrated Communication Adapter
- IBM 4701 Model 003 Finance Communication Controller (using Alternate Line Attachment adapter, SNA Primary to attach to the 4700)
- IBM 4702 Branch Automation Processor (using the Alternate Line Attachment adapter, SNA Primary to attach to the 4700)
- IBM 8100 System Data Link or Direct Attach
- IBM System/36 Communications Attachment (using the 3274 Remote Attach Support)
- IBM System/38 Communications Attachment (using the 3274 Remote Attach Support).

For network management at the host, the following programs can be used:

- NetView fully supports the 3708 alerts and response time monitor (RTM) data. NetView contains both Network Problem Determination Application (NPDA) and Network Logical Data Manager (NLDM).
- Network Problem Determination Application (NPDA), Version 3 or later, supports only the specific and general cause codes of 3708 alerts.
- Network Logical Data Manager (NLDM), Release 2 or later, supports response time statistics.

ASCII Hosts

The 3708 can be connected to multiple ASCII hosts using point-to-point links. The connection can be direct, or it can be remote using a nonswitched (leased) line. ASCII host connections use the EIA 232C interface.

Line speeds as high as 19200 bps can be used. The speed used by the host and the speed used by the end-user device should be the same.

Full duplex transmission must be used.

ASCII End-User Devices

The 3708 can be connected to ASCII end-user devices using either a direct or remote connection. End-user device connections use the EIA 232C interface or, for distances over 15 meters (50 feet), the EIA 422A interface. A remote connection can use either switched or nonswitched lines. Line speeds can be as high as 19200 bps.

Protocol Conversion Mode

For protocol conversion mode, the 3708 supports various displays, printers, and keyboard printers.

Default Mappings

The 3708 provides default keyboard mappings for the following displays:[1]

- IBM 3101 Display Terminal Models 10, 12, 13, 20, 22, and 23
- IBM Personal Computer (PC) in 3101 emulation mode with standard 3101 keyboard functions
- IBM PC with a color monitor running the IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM)
- IBM PC with a monochrome monitor running the IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM)
- IBM 3151 ASCII Display Station
- IBM 3151 with cartridge to emulate IBM and DEC® terminals (Feature No. 8235)
- IBM 3151 Connectivity Feature Cartridge (Feature No. 8525)
- IBM 3151 with Expansion Feature Cartridge (Feature No. 8535)
- IBM 3161 ASCII Display Station
- IBM 3161 with Enhanced 3708 Attachment (Feature No. 8371)
- IBM 3162 ASCII Display Station
- IBM 3162 with 3708 Support Functions (Feature No. 8232)
- IBM 3163 ASCII Display Station
- IBM 3164 ASCII Color Display Station
- IBM 3163/3164 VT100/3708 Emulation Cartridge (Feature No. 8313)
- ADDS (Applied Digital Data Systems) Viewpoint®
- Beehive™ ATL-078
- Data General Dasher® D210 Display Terminal
- DEC® (Digital Equipment Corporation) Models VT52, VT100, and VT220
- FALCO 500®
- Hazeltine 1500, ESPRIT I™, and ESPRIT II™
- Hewlett-Packard 2621B Interactive Terminal
- Lear Siegler ADM 3A Dumb Terminal®
- Northern Telecom Displayphone™
- ROLM Cypress, Cedar, and Juniper (connected through ROLM CBX II)
- Teletype 5410 Asynchronous Display Terminal and 5420 Buffered Display
- TeleVideo® 910 and 950
- WY-50® (Wyse 50)
- Other terminals and personal computers emulating and compatible with one of the named devices.

Appendix K, "Manuals for Default Protocol Conversion Displays" contains a list of sources for more information about these displays. Refer to Appendix M, End-User-Device Reference Cards Order Form for the reference cards.

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[1] The list of displays contains several trademarks and registered trademarks. Viewpoint is a registered trademark of Applied Digital Data Systems, Inc. Beehive is a trademark of Beehive International. Dasher is a registered trademark of the Data General Corporation. DEC is a registered trademark of the Digital Equipment Corporation. ESPRIT I and ESPRIT II are trademarks of Esprit Systems, Inc. FALCO 500 is a registered trademark of Falco Data Products, Inc. Dumb Terminal is a registered trademark of Lear Siegler, Inc. Displayphone is a trademark of Northern Telecom, Inc. TeleVideo is a registered trademark of TeleVideo Systems, Inc. WY-50 is a registered trademark of Wyse Technology.

User-Defined Keyboard Mappings

In addition, the user can define as many as six user-defined keyboard mappings for other ASCII displays that have the following characteristics:

- Operate in character mode using asynchronous full duplex communications
- Use either EIA 232C interface or the EIA 422A signaling
- Use standard 128-character ASCII (7-bit data with odd, even, or no parity)

  Note: The 3708 does not support Shift-In and Shift-Out.
- Use duplex communications on a 2- or 4-wire communication facility
- Position the cursor using one of the seven predefined cursor addressing classes (see page 15-8)
- Provide settings for host echo instead of local terminal echo only
- Use DC1 and DC3 as XON and XOFF for pacing.

Printers and Keyboard Printers

The 3708 supports ASCII printers and keyboard printers that have the following characteristics:

- Use asynchronous duplex full communications
- Use the EIA 232C serial interface
- Use standard 128-character ASCII (7-bit data with or without parity)
- Have a maximum line length of 132 characters
- Support X'0D' for carriage return and X'0A' for Line Feed
- Do not generate a Line Feed upon receipt of a Carriage Return
- Do not generate a Carriage Return upon receipt of a Line Feed
- Ignore delete characters (X'7F')
- Use DC1 and DC3 as XON and XOFF for pacing
- Operate at speeds from 110 bps to 19200 bps
- Do not require any special sequences to be sent by the 3708 for initialization.

Note: Keyboard printers operating in protocol conversion mode are supported only as printers.

Protocol Enveloping Mode

For protocol enveloping mode, the 3708 supports ASCII devices that have the following characteristics:

- Operate in character mode
- Use either the EIA 232C interface or EIA 422A signaling
- Use 8 bits, which may or may not include parity
- Use DC1 and DC3 as XON and XOFF for pacing
- Are compatible with TWX 33/35.

ASCII Pass-Through Mode

For ASCII pass-through mode, the 3708 supports ASCII devices that have the following characteristics:

- Operate in character mode
- Use either the EIA 232C interface or EIA 422A signaling
- Use 8 bits, which may or may not include parity.

Planning for the 3708

This part provides the following planning information:

Chapter 4. Planning Checklist

This chapter provides a planning checklist to help prepare for the installation of the 3708.

The steps in the planning process are:

1. Plan the 3708 network. The following section, "Planning Configuration Parameters" on page 4-2, contains the forms and information for planning the network.
2. Plan for the site and other physical requirements of the 3708. See Chapter 5, "Planning for Installation" for more information.
3. Plan for service. See Chapter 6, "Planning for Service" for more information.
4. Plan for microcode updates. See Chapter 7, "Planning for Microcode Updates" for more information.
5. Plan for central site configuration. See Chapter 8, "Planning for Central Site Configuration" for more information.
6. Plan for file transfer. See Chapter 9, "Planning for File Transfer" for more information.
7. Plan for cables. See Chapter 10, "Planning for Cables" for more information.
8. Plan for the parts that need to be ordered. See Chapter 11, "Ordering the 3708" for more information.
9. When the site and configuration planning is complete, follow the procedures in Chapter 12, "Installation Procedures" to install the 3708 and to enter the configuration parameters.

Planning Configuration Parameters

Use the following procedures to plan the 3708 configuration:

- Complete the Network Planning Form on page 4-4 to help visualize the physical connections to the 3708.
- Complete the Port Definition Form on page 4-5 to help organize and plan the network connections for the terminals, hosts, and printers. "Protocol Conversion Mode" on page 3-2 lists the terminals that the 3708 supports.
- After you have defined the types of devices (hosts, terminals, printers) that are connected to each port, plan the configuration parameters for each device. Follow the procedures in Chapter 13, "Configuration Procedures" to configure each port. Chapter 12 provides the following information about the parameters for each type of device:
  - The screens that are displayed on the control terminal for each type of device
  - The options that you can enter for each field on the screens.

  Before starting the configuration, you need the following information:
  - Host configuration. Prepare the host system generation. Refer to *IBM 3708 Network Conversion Unit Description* for more information.
  - Downstream devices. Gather information about XON/XOFF, line speed, parity, interface type (EIA 232C or EIA 422A), and line type (switched or leased) for the devices that you are connecting to the 3708. Refer to the user manuals for the devices for more information. For a list of device manuals, see Appendix K, "Manuals for Default Protocol Conversion Displays." Use the Device Information Form on page 4-3 to collect the information for each device.
  - Communications network environment. When attaching devices to the 3708 through modems, telephone lines, and public access networks, you should be aware of certain parameters associated with the connection facilities that can affect the 3708 operation, such as XON/XOFF, parity, stop bits, and communication speed.

To plan each port before entering the configuration parameters at the control terminal, use the configuration forms in Appendix C, "3708 Configuration Forms" to indicate the correct option for each configuration parameter. Appendix B, "3708 Configuration Example" contains an example configuration, that may be helpful when you are deciding what to enter on the configuration screens.

Appendix A, "IBM-Supplied Configuration" contains the IBM-supplied configuration that is shipped with the 3708. This configuration allows you to connect a control terminal for initially configuring the 3708. Because the SNA host port is excluded, the IBM-supplied configuration is not an operating network configuration.

Device Information Form

Use the Device Information Form to collect device-specific information for each port.

Device Names	Switched or Leased Line	Interface Type EIA 232C or EIA 422A	Line Speed	Parity	XON/XOFF
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Network Planning Form

The Network Planning Form (Figure 4-1) allows the planner to identify the hosts and end-user devices and the 3708 ports to which they connect.

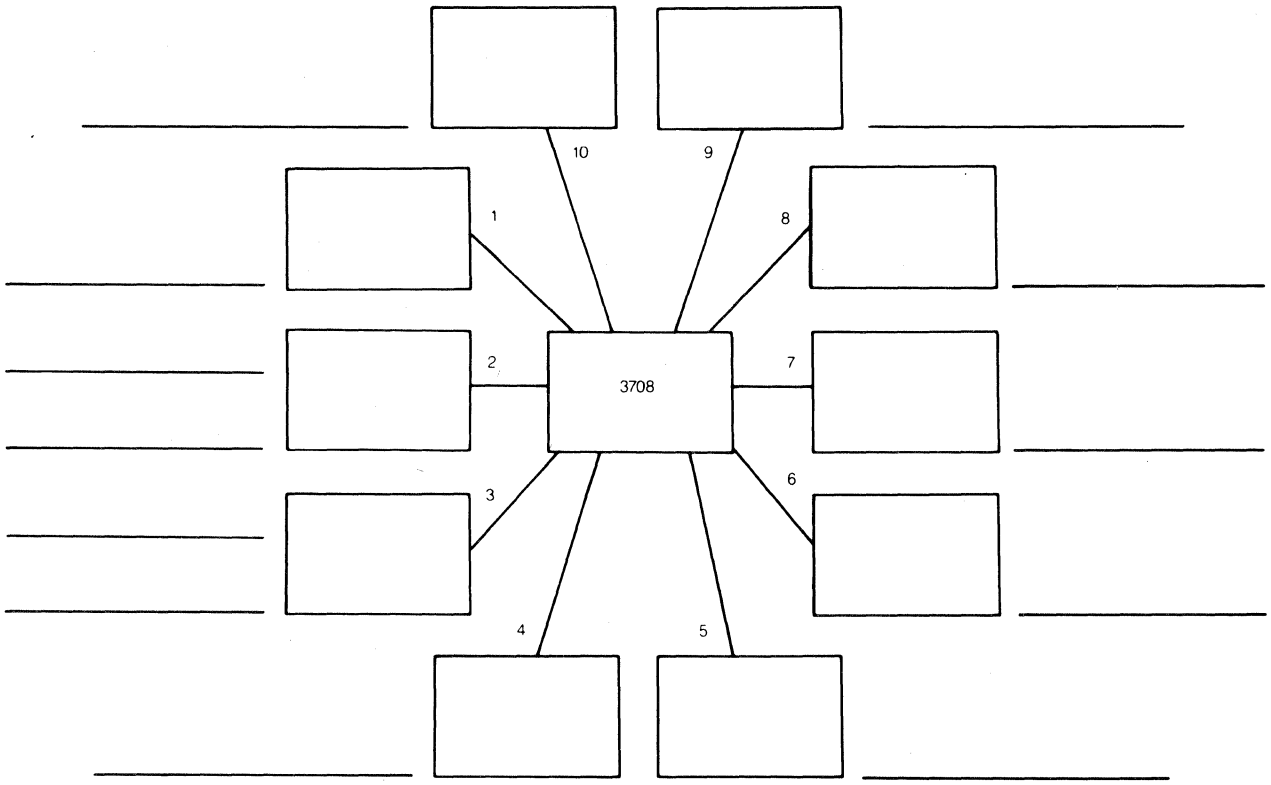


Figure 4-1. Network Planning Form

To complete the Network Planning Form, do the following:

1. In each box, write the host or end-user device that connects to the 3708. The lines between the 3708 and the boxes correspond to the ports on the 3708.
2. In the blank beside each box, write the other port numbers with which the host or end-user device can communicate.

   Figure 4-2 on page 4-5 shows a completed example of the Network Planning Form.

See Appendix B, "3708 Configuration Example" for details on the network configuration.

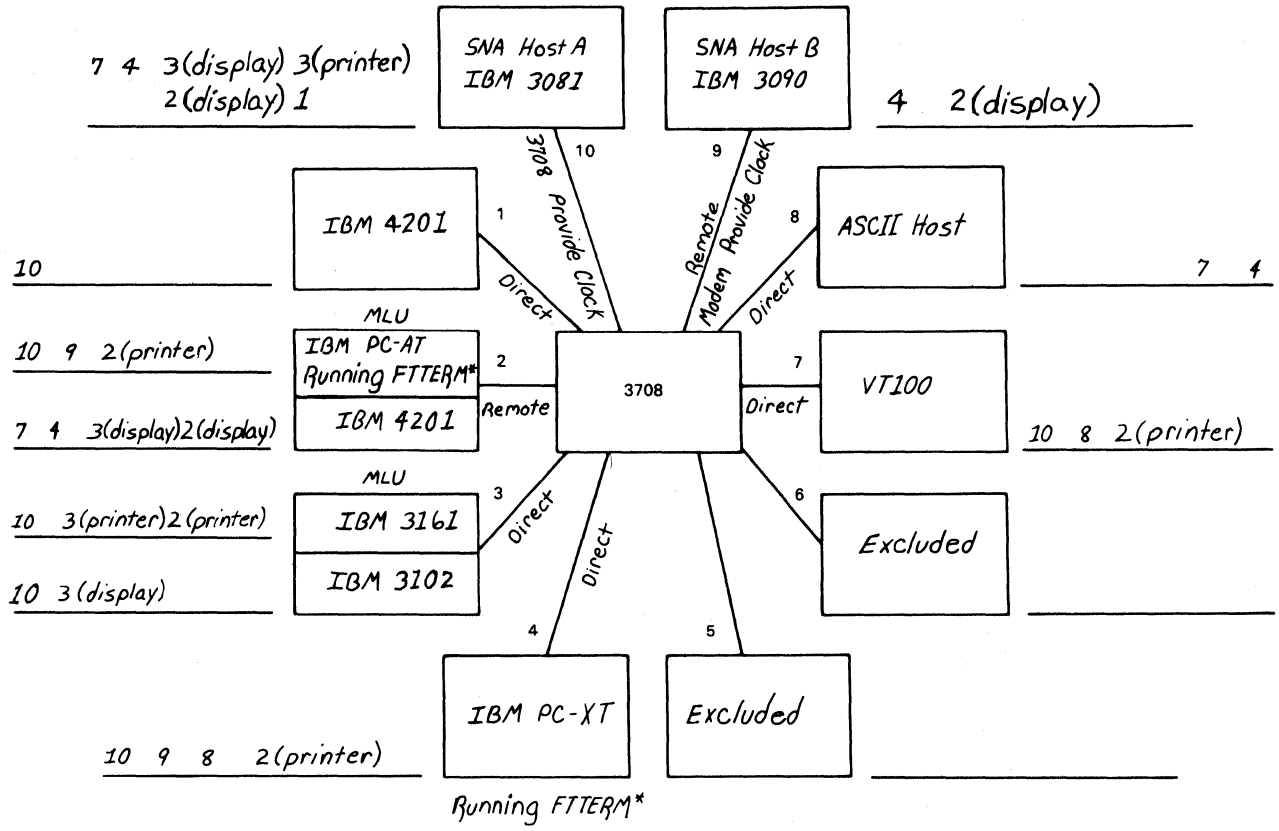


Figure 4-2. Network Planning Form Example

Port Definition Form

The Port Definition Form (Figure 4-3 on page 4-6) can be used to enter data for each port on the 3708.

Figure 4-4 on page 4-7 and Appendix B, "3708 Configuration Example." illustrate completed forms for the example in Figure 4-2.

PORT #	DEVICE NAME	LOCATION		PORTS TO COMMUNICATE WITH									
		LOCAL	REMOTE										
		DIRECT/ NULL MODEM/ MODEM ELIM.	MODEM DESC.	1	2	3	4	5	6	7	8	9	10
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

Figure 4-3. Port Definition Form

PORT #	DEVICE NAME	LOCATION		PORTS TO COMMUNICATE WITH									
		LOCAL	REMOTE										
		DIRECT/ NULL MODEM/ MODEL ELIM.	MODEM DESC.	1	2	3	4	5	6	7	8	9	10
1	IBM 4201	Direct											X
2	IBM PC-AT	—	IBM 5841		X							X	X
	IBM 4201	Attach to PRT Port of PC-AT	—		X	X	X			X			
3	IBM 3161	Direct	—		X	X							X
	IBM 3102	Attach to Aux. Port of 3161	—			X							X
4	IBM PC-XT	Direct	—		X						X	X	X
5		Excluded	—										
6		Excluded	—										
7	VT100	Direct	—		X						X		X
8	ASCII Host	Direct	—				X			X			
9	IBM 3090 SNA Host B	—	IBM 3865		X		X						
10	IBM 3081 SNA Host A	Direct	–	X	X	X	X			X			

Figure 4-4. Port Definition Form Example

Chapter 5. Planning for Installation

This chapter provides the following information about planning a 3708 installation:

- Specifications and location requirements
- Interface requirements
- Power requirements
- Safety and security considerations.

Specifications and Location Requirements

This section provides information about the size, weight, environment, and power specifications for the 3708.

Size and Weight

The following table shows the weight and dimensions of the 3708.

Weight	5.3 kg (11.7 lb) without cartridge 5.6 kg (12.3 lb) with cartridge
Width	400 mm (15.8 in.)
Length	355 mm (14.0 in.)
Height	105 mm (4.1 in.)

Service and Setup Clearances

The following table shows the recommended service and setup clearances for the 3708.

Front	600 mm
Back	600 mm
Sides	40 mm

Note: If the 3708 is shelf-mounted in a 19-inch rack, center it in the rack for proper ventilation. Ventilation slots are located on both sides of the 3708. If the 3708 is table-mounted, allow 40 mm (1.5 in.) on each side for proper ventilation.

Environment

The 3708 operates in normal business environments. The following table shows the environmental specifications.

Environment	Temperature	Relative Humidity	Maximum Wet Bulb
Operating	10° to 40.6° C (50° to 105° F)	8% to 80%	26.7° C (80° F)
Non-Operating	10° to 51.7° C (50° to 125° F)	8% to 80%	26.7° C (80° F)
Storage	0.6° to 60° C (33° to 140° F)	5% to 80%	0.6° to 29.4° C (33° to 85° F)
Shipment	-40° to 60° C (-40° to 140° F)	5% to 100%	0.6° to 29.4° C (33° to 85° F)

Interface Requirements

The 3708 uses two types of interfaces, EIA 232C and EIA 422A. The following table shows the hosts and end-user devices with which each interface can be used.

Host/Device Type	Interface Type
SNA host	EIA 232C
ASCII host	EIA 232C
ASCII printer	EIA 232C
ASCII display	EIA 232C or EIA 422A
ASCII keyboard printer	EIA 232C or EIA 422A

Power Requirements

The following table shows the electrical specifications of the 3708.

Phase	Single phase
Power	0.1 kVA
Frequency	50/60 Hz $\pm$ 3 Hz
Voltage range:	Low voltage (90 to 137 V) High voltage (180 to 257 V)
Nominal voltage:	Low voltage (120 V) High voltage (230 V)
Power Cord Length	4.3 meters (14.1 feet), shipped with the 3708

Notes:

1. You can order a 1.5-meter (6-foot) power cord in addition to the cord that is shipped with the 3708.
2. High voltages are not available in the USA and Canada. Make sure that your site has the electrical power to match the order.

Branch Circuits and Grounding

A dedicated branch circuit of 15 amperes is recommended for the 3708. For safety and proper machine operation, each branch circuit must be grounded to a dedicated equipment ground, not to a neutral ground. The branch circuit must have an insulated grounding conductor that is equal to the size of the phase conductor and is tied to a common ground point at the distribution panel. A single insulated and isolated grounding wire should run from the distribution panel ground point to the service ground or to a suitable building ground. Conduit must not be used as the only means of grounding.

Power Plugs

Figure 5-1 shows, by country, which power plugs are shipped with the 3708. The alphabetic references in this table refer to the power plugs shown in Figure 5-2 on page 5-4.

Country	Low-Voltage	High-Voltage
Argentina		B
Australia		F
Austria		G
Belgium		H
Brazil		B
Bulgaria		G
Canada	A	
Chile		L
Czechoslovakia		G
Denmark		J
Finland		G
France		H
Germany DR		G
Germany FR		G
Greece		G
Hungary		H
Ireland		C
Israel		E
Italy		L

Country	Low-Voltage	High-Voltage
Japan	A	B
Korea		B
Netherlands		G
New Zealand		F
Norway		G
Peru		B
Poland		G
Portugal		G
Rumania		G
South Africa		D
Spain		G
Sweden		G
Switzerland		K
Taiwan		B
United Kingdom		C
United States	A	
Venezuela		B
Yugoslavia		G

Figure 5-1. Power Plugs by Country

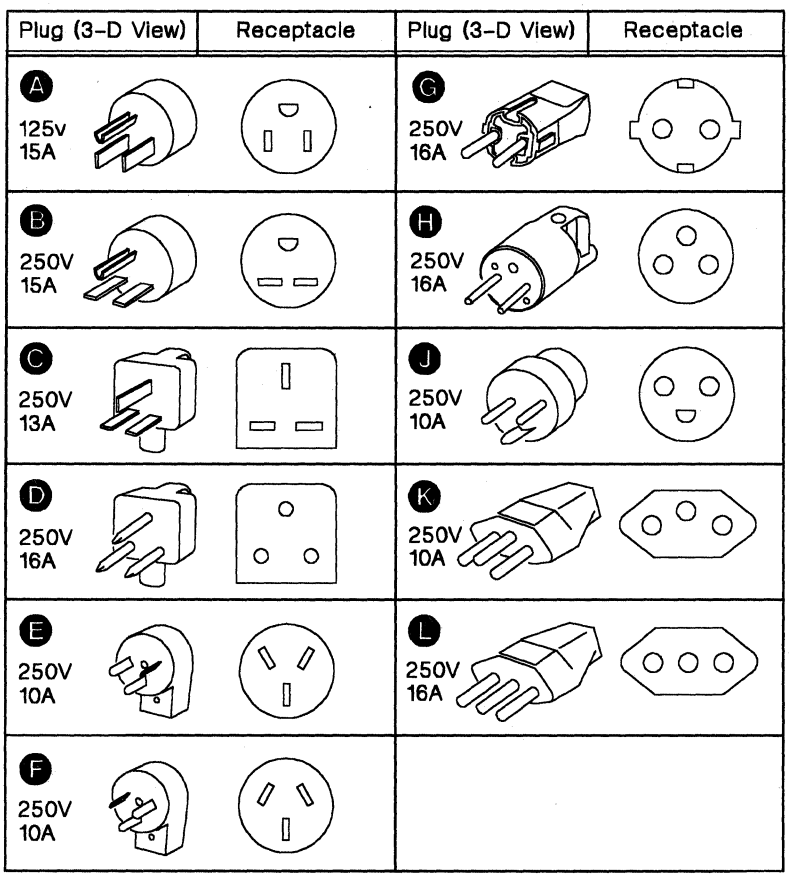


Figure 5-2. Power Plugs and Receptacles

Safety and Security Considerations

Electrical grounding of the 3708 is essential for safety and proper machine operation, so be sure the power receptacle is properly grounded. If you have any questions about the grounding of the receptacle, contact an electrician.

Since the 3708 is small and lightweight, one person can move it safely during installation or relocation.

If the 3708 cables are not installed under a raised floor, be sure the cables are arranged so there is adequate space for people to move around the 3708 safely.

The 3708 cables, particularly those for a direct connection using the EIA 422A interface, are not protected against lightning. They must not be placed outdoors.

To ensure the physical security of the 3708, do the following:

- Allow only authorized persons to press switches on the 3708 and to use the control terminal.
- Use unique passwords for port access and control terminal functions rather than the default passwords.
- Exclude control terminal access to public ports.

Chapter 6. Planning for Service

This chapter describes the 3708 maintenance service offerings, tells who to call for installation technical assistance, outlines how to get remote assistance for problems not solved by problem handling-procedures, and gives the location of the repair identification number.

The 3708 problem determination and service procedures provide the following:

- Comprehensive internal diagnostics
- Only two replaceable elements, which are a base and a plug-in cartridge
- Communication network management support by providing alerts and by collecting performance statistics
- Control terminal support for configuration, monitoring, and problem determination for either local or remote connection
- Remote assistance for diagnosing machine problems and for applying microcode fixes through a modem and phone line access that you provide.

These features reduce the cost of maintenance and the problem resolution time.

Reviewing the Service and Warranty Options

This section describes various service and warranty options that are available for the 3708.

Service Options

The IBM Maintenance Agreement provides maintenance service options. The following service options are available:

Service Option	Description
Customer on-site exchange	IBM arranges for the delivery of an exchange unit to your location and for pick up of the failing unit.
IBM on-site exchange	An IBM representative comes to your location and exchanges a functioning unit for the failing unit. If you purchase the IBM on-site exchange option, you can also purchase optional periods of maintenance service, which extend the hours in which service is available.

Warranty Options

The warranty period is for 1 year and is serviced under the customer on-site exchange service option. However, you can select the IBM on-site exchange service option during the warranty period for an additional charge. Contact the local IBM branch office for more information on warranties and maintenance agreements.

Remote Access Capability

The 3708 is designed for remote access by both you and IBM service representatives. For example, the network personnel using a control terminal from a remote location can access 3708 alert data and review error logs to perform problem determination. You can also use the control terminal to monitor data and signaling lines on the 3708's downstream ASCII ports.

Remote assistance is part of the 3708 maintenance service offerings. It allows an IBM service representative to dial out to a 3708, to run extensive diagnostic tests, and to apply microcode fixes if necessary. Remote assistance can minimize outages that would otherwise require the unnecessary replacement of the base or cartridge and can minimize the delay in waiting to receive a new cartridge with updated microcode. To receive remote assistance, you must provide a *modem and phone line access* for the IBM service representative.

Installation Technical Assistance

Contact the marketing representative where the 3708 was purchased if you have technical questions about any of the following:

- Ordering information for the 3708 base, cartridge, and cables
- Installation
- Configuration
- System integration
- Application/host programming considerations.

Replacement Elements and Remote Problem Assistance

Before calling for service, use the problem-determination procedures in *IBM 3708 Network Conversion Unit Problem Determination* to isolate the problem to a failing unit if possible. After completing problem determination, contact IBM for service as described in "Calling for Service" on page 6-3. To be eligible for this assistance, the 3708 must be either under warranty or covered by an active IBM service agreement.

Calling for Service

Use the following telephone number to receive replacement units, existing microcode fixes (MCFs), or problem assistance:

- In the continental United States or Puerto Rico, call the following number:

1 800 428-2569 (toll free)

- In other countries, call the appropriate support group.

Note: The telephone numbers are subject to change. If the number has changed, call the IBM marketing representative or the local IBM branch office.

Calling the 800 Number

When you call the 800 number, an IBM customer service coordinator briefly discusses your situation and asks for the type of machine, the machine serial number, the repair identification (RID) number (see page 6-5), the name of your company, and a phone number where you can be reached. The customer service coordinator also performs an entitlement check to determine the type of contract or warranty agreement in effect. The IBM customer service coordinator is not the IBM service representative for the 3708.

If you wish to obtain existing microcode fixes (MCFs) for your level of microcode, the customer service coordinator will forward your request to the IBM service representative, who will make arrangements with you for the installation of the MCFs.

If you have a problem and have successfully completed the problem determination procedures and isolated the problem to a unit, you are given instructions on how to receive a replacement unit.

If you are unable to complete the problem determination procedures or if the procedures indicate a microcode problem, further assistance in problem determination will be provided. The information about the problem will be forwarded to a 3708 specialist who will call you back. The service representative will call you and either provide a solution for the problem or work with you to solve the problem.

Receiving Remote Assistance

IBM can help through remote assistance if you are unable to resolve a 3708 problem using the procedures in *IBM 3708 Network Conversion Problem Determination* and if one of the following is true: (1) the 3708 is still under the 1-year warranty, or (2) you have purchased IBM maintenance service.

Remote assistance can include consultation with an IBM service representative for problem diagnosis by IBM through a remote connection (through a modem and phone line access that you provide). The network management personnel can also use the modem for configuration and problem management of devices that are connected to the 3708.

Hardware and Configuration Requirements

For remote assistance, you must provide telephone facilities for a 1200 bps switched, auto-answer connection. This includes a modem with the following characteristics:

- For the USA only, use a direct-connect, Bell 212A-compatible modem with operating speeds up to 1200 bps in full duplex mode when connected to the direct distance dial network. The modem must operate over a 2-wire switched line. For countries other than the USA, use a V.22-compatible modem.
- EIA 232C compatible interface.

Any downstream port used for remote assistance must be configured identically to port 3 as described in Appendix A, "IBM-Supplied Configuration." If this is not compatible with the normal mode of operation, reconfigure a port for that mode before receiving remote assistance by temporarily reinstating the IBM-supplied configuration. (Refer to *IBM 3708 Network Conversion Unit Problem Determination* for more information.) When not in use for remote assistance, the port is available for connection to an end-user device. The 3708 can be configured to deny access to the host from a port that is assigned to remote service.

Microcode Fixes (MCFs), patches, and diagnostic traps are applied and stored in the base unit hardware (EEPROM). They are not stored in the cartridge. If you replace your base unit, you must have any MCFs, patches, or traps applied to the new base unit.

Traces and Logs

As part of the problem determination process, the IBM representative often requires you to provide certain additional materials.

The most frequently requested are an NCP Line Trace, a VTAM Buffer Trace, or a PT2 Trace of both upstream link and the failing downstream line. Please be prepared to obtain and provide these traces when requested.

Also, you may be requested to obtain and provide copies of the 3708 Error Log and 3708 Alert Log at the time of failure.

Making this information available can greatly enhance problem determination and speed the resolution of your problem.

Locating the RID Number

The repair identification (RID) number enables the IBM customer service coordinator to perform an entitlement check to determine the warranty or service option that is in effect.

Locate the machine type and repair identification (RID) number of the failing unit. The RID number is in the following locations:

- Just above the power cord on the back of the base
- On the cartridge. Apply the RID label that is shipped with the 3708 to the cartridge when the 3708 first arrives.
- In the vital product data storage area on the logic board of the 3708 base. The RID number is displayed on the 3708 logon screens when logging on to the 3708.

Generally, the RID number located on the cartridge and the base is the same as the RID number displayed on the 3708 logon screens. If they are not (they will differ if you have exchanged the base element), use the control terminal to enter the RID number located on the base (and cartridge) into the 3708's vital product area (EEPROM). EEPROM is a nonvolatile logic circuit in the 3708 that retains information regardless of whether the 3708 power is on or off.

Maintaining the same RID number on the base, the cartridge, and within the 3708's vital product area ensures smoother and faster service if you need to exchange 3708 elements or need remote service for microcode.

Chapter 7. Planning for Microcode Updates

This chapter describes the 3708 microcode update procedure. It includes how to register for microcode update notification, what to expect in the notification, how to order microcode updates, and what to do with outdated microcode.

Note: The cartridge holds all of the 3708's operational microcode. This code cannot be downloaded from a host. Microcode fixes (MCFs) and patches are stored in the base unit and can be downloaded from the host. Refer to Chapter 8, "Planning for Central Site Configuration" for more information.

How to Register

To register for microcode update notification, you MUST fill out the registration form that comes with the 3708 and send it to the address indicated on the form.

You must fill out and send in this registration form to be notified of any microcode updates.

What to Expect

After you send in your registration form, IBM 3708 Microcode Support personnel will notify you with Engineering Change (EC) Memos as new engineering changes for microcode become available. The memo gives you the new EC number for the microcode and a list of the improvements and corrections contained in the update. Even if you have not encountered any problems, it is recommended that you install the updated microcode level to prevent possible future problems that may occur because of any changes in your operating environment.

How to Order

To order microcode updates without charge do one of the following:

1. Fill out the IBM 3708 Enhanced-Cartridge Ordering Form that is attached to the notification memo and send this form to the address indicated on the back of the ordering form. No postage is necessary.
2. Call the 800 number shown below, and be ready to give your RID number, customer number, address, and your name or the name of a person to contact. If you reach a recording when you call, please leave a message on the recorder and someone will return your call as soon as possible.

If you have questions about receiving replacement cartridges:

- In the continental United States or Puerto Rico, call the following number:

1 800 247-7118 (toll free)

- In other countries, call the appropriate support group.

What to Do with Outdated Cartridges

The new microcode will be accompanied by a copy of 3708 Enhanced Cartridge Receive/Exchange/Return Instructions. The instructions tell you how to do the following:

1. Install the new 3708 microcode
2. Return the old cartridge by:
   a. Packing the old cartridge in the shipping carton used to send you the new microcode.

      Please be sure the RID number is identified on all cartridges being returned.

   b. Attaching the prepaid mailing label enclosed in the carton
   c. Mailing the old cartridge within 5 working-days of receiving the new microcode.

      To receive future releases of updated microcode, you must return outdated cartridges to IBM.

Chapter 8. Planning for Central Site Configuration

This chapter provides planning information about IBM 3708 Feature 3525 (Pluggable Cartridge with Central Site Configuration). Feature 3525 consists of a plug-in cartridge and a set of diskettes. Together, the cartridge and the diskettes allow you to manage and distribute configuration updates and microcode fixes to 3708s in a network from a central location. This feature eliminates the task of entering repeatedly the same configuration or MCF/Patch data into all 3708s in a network.

IBM 3708 Pluggable Cartridge with Central Site Configuration

IBM 3708 Central Site Configuration (CSC) uses the IBM PC to support configuration and Microcode Fix (MCF) management for the IBM 3708 Network Conversion Unit. For central site configuration, you must install the 3708 Feature 3525 plug-in cartridge.

Central site configuration provides the following advantages:

- A single data base of configuration information for all of the IBM 3708s in an installation
- Menu-driven, user-friendly facilities for the creation, replication, and modification of IBM 3708 configuration information including these features:

  Port definition for host links and downstream terminals
  User-defined terminal definitions
  User-defined translate table definition.
- A check of configuration information as it is entered and a warning to the user if potential errors exist
- Configuration summary screens, including a quick reference port summary, a detailed port summary, a host configuration summary, and printer configuration summary
- A method to retrieve existing configuration information from an IBM 3708 through a downstream port
- A method to load configuration information through a downstream port or the SNA host link with NetView or NCCF V2R2
- A method to retrieve a microcode patch area from a 3708 that has been upgraded by IBM and the ability to distribute the microcode patch area to other 3708s in the network
- Item-specific help screens and an online user's guide.

Hardware Requirements

The following hardware is required for central site configuration:

- A 3708 with Feature 3525 (Pluggable Cartridge with Central Site Configuration)

  Note: Central site configuration is available with 3708 Feature 3525 only.

- An IBM PC with:
  - A 5.25-inch diskette drive
  - A fixed disk
  - An IBM Color/Graphics or Monochrome adapter attached to an 80-column display
  - A minimum of 512K bytes of storage (640K bytes of storage are required if the PC is to run in control terminal mode).

You can use an IBM Personal System/2. To run CSC on the Personal System/2, you must first convert the 5.25-inch diskettes shipped with the CSC Cartridge to the 3.5-inch format.

If you plan to perform central site configuration through one of the 3708's downstream ports, you will need:

- An asynchronous communications adapter operating in primary mode
- A normal voice-grade, switched communications line (for switched connections only)
- Modems (for switched connections only).

  A manual-dial Bell 212A-compatible or auto-dial modem that supports the Attention Command Set and result codes, such as an IBM PC 2400 bps or IBM 5842 2400 bps Modem is required for switched connections.

  Modem eliminators, null modems, or 3708 DTE cables may also be used to attach the IBM PC to the 3708. For a description of modem connections as well as modem eliminator, null modem, and 3708 DTE cabling configurations, refer to, "ASCII Hosts and End-User Devices to a 3708" on page 10-8.

Software Requirements

The following software is required for central site configuration:

- IBM PC DOS Version 2.0 or later
- EZ-VU II Runtime Facility Version 2 (6317025).

Software Options that Enhance CSC

The following features are enhanced by the 3708 central site configuration feature and other network software options.

Configuration Downloads from an SNA Host

The IBM 3708 central site configuration aid can prepare configuration information in the form of NetView CLISTs for downloading through the SNA host link to the IBM 3708. NetView and NCCF Version 2 Release 2 support this method of transfer.

The file transfer software support that sends the CLIST from the IBM PC to the SNA host must be provided by the end-user. For example, the IBM PC/HOST File Transfer and Terminal Emulator Program, FTTERM, (6476052) can be installed in the IBM PC to upload CLIST files to the SNA host.

New 3708s with the CSC feature have port 10 defined as an active host port with the following characteristics:

Option	Field Length	Port 10
Station Address	(2)	X'08'
NRZI Data Encoding	(1)	1 (Yes)
Permanent Request to Send	(1)	0 (No — Use Controlled Request to Send)
Line Speed	(2)	00 (External Clocking)
Line Type	(1)	L (Leased)

This configuration allows new 3708s to be configured remotely from the host site. For multipoint lines, no other devices on the line can have SDLC Station Address of X'08'. If two or more 3708s are to be installed on a single line, each 3708 needs to be configured from the host one at a time. The SDLC Station Address X'08' should be reserved as a utility address because 3708 hardware or software errors and user interaction can temporarily or permanently re-instate the IBM-supplied configuration. If the host line parameters are not compatible with the user's environment, new 3708s can be configured for host line characteristics at a main site, shipped to remote locations, and configured over the SDLC links.

Control Terminal Emulation

The 3708 control terminal diagnostic routines can be accessed through the use of the IBM PC and the central site configuration aid running in control terminal mode. In this mode, the IBM PC can retrieve the alerts and error logs. IBM software products that can support this feature are FTTERM, and the IBM 3101 Emulator Program (6024042).

Notes:

1. If you plan to use your PC as a control terminal for the 3708 and you want CSC to log you on as a control terminal automatically, you must have the FTTERM or the IBM 3101 Emulation program installed. The emulation program must reside in the same directory on your fixed disk as the central site configuration program.
2. The IBM PC must have 640K bytes of memory to support this function.

3708 Configuration Requirements

If central site configuration is performed through one of the 3708's downstream ports or the IBM PC is to run in control terminal mode, at least one downstream 3708 port must be defined for the following parameters:

- Port Excluded = N
- Logon Screens Excluded = N
- Terminal Type Screen (C2) = Y
- Host Selection Screen (C3) = Y
- Control Terminal Access = Y
- Password Retry Limit = 3 or greater
- Transmit XON/XOFF = 1
- Line speed = 1, 2, 4, 5, 6, 8, 10, 12, or 19 (110, 150, 300, 600, 1200, 2400, 4800, 9600 bps, or Autobaud)
- Device Class = 1 (Keyboard Display)
- Operating Mode = 1 or 2 (Protocol Conversion or Dynamic)
- Interface Type = 0 (EIA 232C)
- Parity = 2, 3, or 6 (Odd, Even, or Autoparity)
- Receive Queue Size = M or L
- Bits/Character = 7
- Auto On-Hook = 1 (for switched lines)
- Send Answertone = 0 (for switched lines)
- Full Duplex Line = 1
- Echoplex = 1
- Permanent Request to Send = 1.

Note: Ports 3 and 7 in the IBM-supplied configuration for the 3708 are compatible with central site configuration.

Refer to Chapter 13, "Configuration Procedures" for a complete description of these and other 3708 configuration parameters.

Modem Configuration Requirements

If modems are used, the modem at the PC and the modem at the 3708 must be configured as follows:

- Modems detect a change in Data Terminal Ready (DTR) signal and go on hook when DTR drops.
- Data Set Ready (DSR) is raised only when a connection is established (not applicable for internal modems).
- Carrier Detect shows whether or not Carrier is on.
- Modems use the Attention Command Set and send the modem responses in words (verbose mode) and not in number codes (terse mode).
- PC modem does not answer incoming calls.
- The 3708 modem does answer incoming calls.
- Modems do not echo characters.
- Modems do not take over flow control (that is, the modem does not strip out XON/XOFF characters from the IBM PC or the IBM 3708).

Technical Assistance

See your IBM representative for assistance with problems related to the central site configuration aid.

Ordering Information

The Pluggable Cartridge with Central Site Configuration can be ordered with an IBM 3708 Network Conversion Unit. Spare Pluggable Cartridges with Central Site Configuration can be ordered by part number. A set of 5.25-inch, double-sided, double-density diskettes containing the central site configuration aid is included with each Pluggable Cartridge with Central Site Configuration feature.

Chapter 9. Planning for File Transfer

This chapter describes 3708 support for the following file-transfer programs:

- IBM PC/HOST File Transfer and Terminal Emulator program (PN 6476052)
- IBM Personal Services/PC program (Version 1.4 or higher)
- A user-written file transfer program.

IBM PC/HOST File Transfer and Terminal Emulator Program

This section describes the function of the IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM). It also describes the benefits of using FTTERM and lists the environments under which it works.

Benefits and Functions

FTTERM is a licensed program that supports IBM PCs communicating with an IBM SNA host through a 3708. The program gives the user of an IBM PC full-screen 3270 terminal emulation and file transfer capability when operating in protocol conversion mode with the 3708. The connection between the IBM PC and the 3708 is through the IBM PC's asynchronous communication adapter.

An IBM PC running FTTERM can also emulate an IBM 3101 terminal and connect to the 3708 in protocol enveloping mode. This connection provides access to asynchronous applications at the IBM SNA host that formerly interfaced to the Network Terminal Option (NTO) licensed program in the 37x5.

The IBM PC can also operate through the 3708 to an ASCII/asynchronous host connected to another port on the 3708. In addition, FTTERM can access network services independent of the 3708.

The features of the PC/HOST File Transfer and Terminal Emulator program are summarized as follows:

- Provides IBM PC file transfer capability both to and from the IBM host 3270 personal computer file-transfer programs while operating in protocol conversion mode with the 3708. See "Required Host Programs" on page 9-2 for the program product numbers.
- Provides full-screen 3270 emulation, status line support, and four color or highlighting while operating in protocol conversion mode through a 3708.
- Supports the 3708 feature that allows a printer and a display to share a single port in protocol conversion mode.
- Provides 3101 emulation (character mode only) to:
  - Asynchronous applications at an IBM host in protocol enveloping mode
  - An ASCII/asynchronous host connected to another port on the 3708
  - Online information services, such as the IBM Information Network.

- Allows an IBM PC user to redefine the PF and PA keys to 3270 AID functions.
- Provides a resident option that permits the IBM PC user to load FTTERM only once a day.
- Allows concurrent file transfer and IBM PC DOS application operation.
- Provides key sequence switching between the IBM PC DOS session, the host session, and file transfer operation without disconnection or loss of the IBM host session.
- Supports error checking and automatic retransmission of file transfer.
- Provides status messages for monitoring the progress of the file transfer.
- Supports the following text or binary file-transfer operations:
  - An IBM host file to an IBM PC DOS file or to a personal computer printer
  - An IBM PC DOS file to a host file or to an IBM PC printer
  - An IBM host screen to a host file, to an IBM PC DOS file, or to an IBM PC printer
  - An IBM PC DOS screen to a host file, to an IBM PC DOS file, or to an IBM PC printer
  - Multiple files without operator intervention.
- Provides an online help facility.
- Provides for stored keystroke sequences for repetitive operations, such as a modem-dialing keystroke sequence.
- Supports the PROFS PC Support Feature, Version 2 (5664-309) while running FTTERM. This support provides file transfer capability both to and from the host PROFS while operating in protocol conversion mode with the 3708.

Required Host Programs

File transfers are performed with the following IBM 3270 PC file-transfer programs installed at the host. One of the following programs must be installed at the host to run FTTERM.

Environment	Host File Transfer Program
MVS/TSO	5665-311
VM/SP	5664-281
CICS (MVS and VSE)	5798-DQH
VSE 2.1[1]	5666-316

[1] The PC/HOST File Transfer and Terminal Emulator program works with the integrated Intelligent Work Stations (IWS) program, which is shipped with VSE, Release 2.1 and higher.

IBM 3708 Plug-In Support

The 3708 plug-in cartridge supports the PC/HOST File Transfer and Terminal Emulator Program with the following two types of terminals:

- 1A - IBM PC/FTTERM COLOR. Customers using FTTERM with color monitors would select this option.
- 1B - IBM PC/FTTERM MONO. Customers using FTTERM with monochrome monitors would select this option.

Technical Assistance

Eligible customers can receive installation and usage assistance from the IBM Workstation Customer Assistance Center (WSCAC). Assistance is provided through ASKINFO, an electronic data base that provides current information on selected products. Assistance is also provided by telephone call back. When requesting assistance from the ASKINFO personnel, your customer technical coordinators should use the key word FTTERM for search inquiries and questions. The ASKINFO personnel will then call you back. Contact the IBM marketing representative to determine if you are eligible to receive ASKINFO support.

Ordering Information

Both a 5.25- and a 3.5-inch diskette are included with a user's guide when you order the PC/HOST File Transfer and Terminal Emulator Program. Ask the marketing representative to order feature number 0914 of 5875-MMA.

Personal Services/PC

Personal Services/PC is an office-oriented mail management program for the IBM personal computer. It provides a comprehensive and easy-to-use set of office systems functions, such as automatic dialing, receiving and transmitting mail, and printing and viewing documents.

Document transfer to the host is performed in conjunction with the DISOSS program product.

Personal Services/PC is supported by the 3708 in protocol enveloping mode.

For more information about the Personal Services/PC, refer to *How To Use Personal Services/PC*, SC30-3316.

A User-Written File Transfer Program

For information on developing a user-written file transfer program for personal computers connected to a 3708, refer to *IBM 3708 Network Conversion Unit Description.*

Chapter 10. Planning for Cables

This chapter provides information to help you plan for the cables and the cable connections for the 3708.

Cable Descriptions

This section describes the cable requirements for the 3708.

IBM-Supplied Cables

The part numbers for the cables are listed in the following table according to length, interface, and application.

Host devices	SNA and ASCII hosts, ASCII printers and displays	SNA and ASCII hosts, ASCII printers and displays	SNA and ASCII hosts, ASCII printers and displays	ASCII displays (See note 2)
Interface (See note 2.)	EIA 232C	EIA 232C	EIA 232C	EIA 422A
Cable Type (See note 1.)	DCE	DTE	DTE	DTE
Connectors	Male-Male	Male-Female	Male-Male	Male-Male
3 meters (10 feet)	PN 6405390	PN 6405393	PN 6405421	
8 meters (25 feet)	PN 6405391	PN 6405394	PN 6405422	
15 meters (50 feet)	PN 6405392	PN 6405395	PN 6405423	
Up to 122 meters (400 feet) (See note 4.)				PN 6405396
Between 122 meters (400 feet) and 1219 meters (4000 feet) (See note 4.)				PN 6405397 (See note 3.)
38 meters (125 feet) (See note 5.)				PN 6405398

Notes:

1. A 3708 DCE cable connects a 3708 to a modem, a modem eliminator, or a null modem. A 3708 DTE cable directly connects a 3708 to a host or an end-user device.
2. The IBM EIA 422A cables can only be used with an IBM 3101, an IBM 3151, an IBM 3161, an IBM 3162, an IBM 3163, an IBM 3164, or a compatible terminal.
3. Cable PN 6405397 contains surge-suppressing diodes.
4. Variable-length cable is available only in the USA and A/FE countries. See a marketing representative for the availability in your country.
5. The fixed-length cable PN 6405398 is available only in EMEA countries. See the marketing representative for the availability in your country.
6. To make your own cables, refer to Appendix D, "Cable Requirements."

Non-IBM Supplied Cables

Recommendations for cables not supplied by IBM are as follows:

- Do not use 25-pin conductor cables under any circumstances.
- Use cables with the conductors as described in Appendix D, "Cable Requirements."

Examples of 3708 Cable Connections

This section provides examples for cable connections from SNA hosts to a 3708 and from ASCII hosts and end-user devices to a 3708. The examples show connections using modems, null modems, and modem eliminators. See the glossary for a definition of these terms.

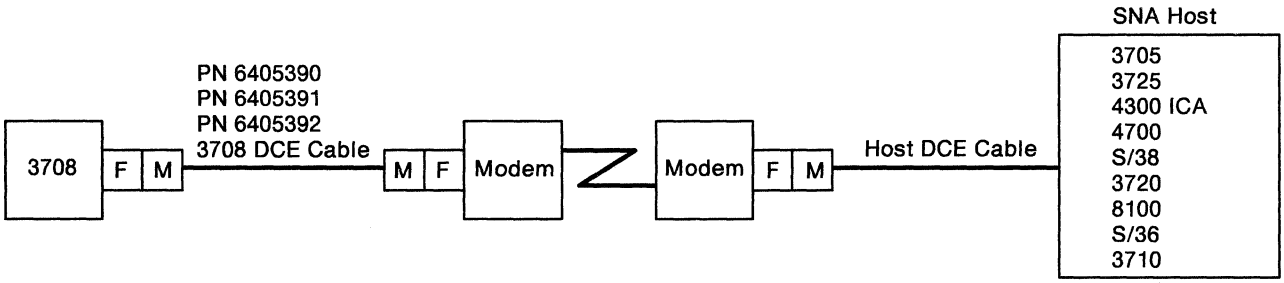
In these examples, the following meanings apply:

F	Female
M	Male
Blank	Device dependent.

SNA Host to a 3708

This section describes the ways that the 3708 can connect to an SNA host.

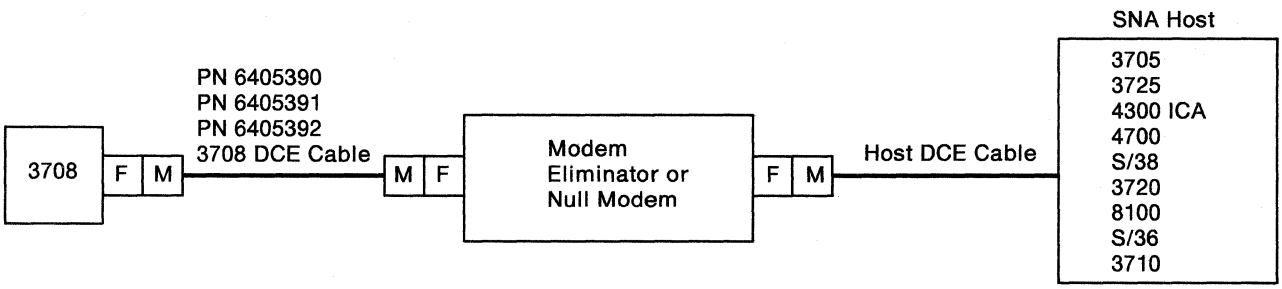
Remote: Using Modems



Notes:

1. The 3708 DCE cable length must not exceed 15 meters (50 feet).
2. The host may use special connectors. If you have this configuration, use the cables that are provided with the host.
3. Configure the 3708 SNA host definition option Line Type for leased connection (LINE TYPE=L).

Local: Using a Modem Eliminator or Null Modem



Notes:

1. The host may use special connectors. If you have this configuration, use the cables that are provided with the host.
2. Ensure that the connector genders are correct.
3. The wiring of the modem eliminator or null modem must match that of the 3708 DTE cable described in "Minimum Connections Required for SNA Host DTE Cables, Modem Eliminators, or Null Modems" on page D-7.
4. If the modem eliminator redrives the signal, then each cable segment must not exceed 15 meters (50 feet). Otherwise, the combined cable length must not exceed 15 meters (50 feet).
5. Clocking is required, and may be provided by one of three different methods:

   Clocking from the 3708

   The 3708 can provide clocking for all line speeds that the 3708 supports. If this method is chosen, then the modem eliminator or null modem must not provide clocking. Configure the 3708 SNA host definition option Line Speed for the desired speed, and configure the host for external clocking.

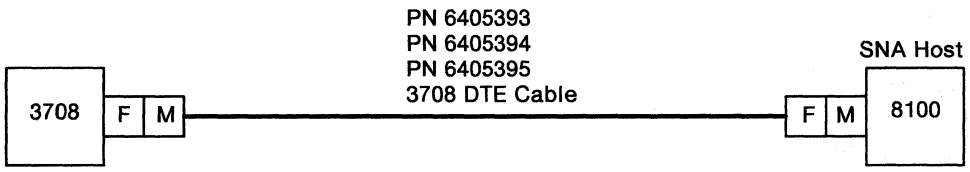
   Clocking from the host

   Some hosts can provide clocking for some line speeds that the 3708 supports. If this method is chosen, then the modem eliminator or null modem must not provide clocking. Configure the host for the desired clocking speed, and configure the 3708 SNA host definition option Line Speed for external clocking (option 00).

   Clocking from the modem eliminator or null modem

   Some modem eliminators or null modems can provide clocking for some line speeds that the 3708 supports. If this method is chosen, then set the modem eliminator or null modem for the desired speed, configure the host for external clocking, and configure the 3708 SNA host definition option Line Speed for external clocking (option 00).
6. Configure the 3708 SNA host definition option Line Type for a leased connection (LINE TYPE = D).

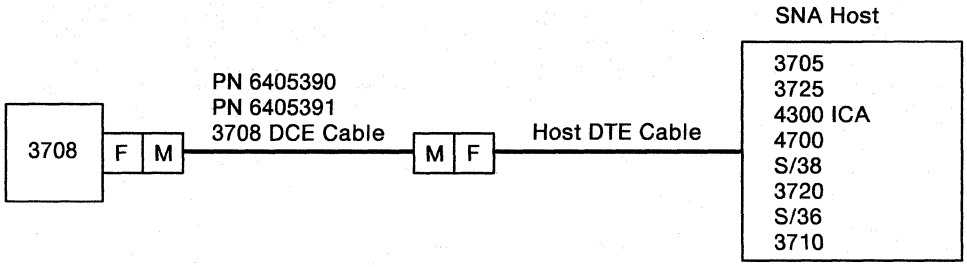
Local: Direct Connection Using an EIA 232C DTE Cable (8100 Only)



Notes:

1. The cable length must not exceed 15 meters (50 feet).
2. The host has standard 25-pin D connectors.
3. Clocking should be provided from the 3708. Configure the 3708 SNA host definition option Line Speed for the desired speed and configure the 8100 for external clocking.
4. Configure the 3708 SNA host definition option Line Type for a direct connection (LINE TYPE = D).

Local: Direct Connection Using a Host EIA 232C DTE Cable and a 3708 EIA 232C DCE Cable



Notes:

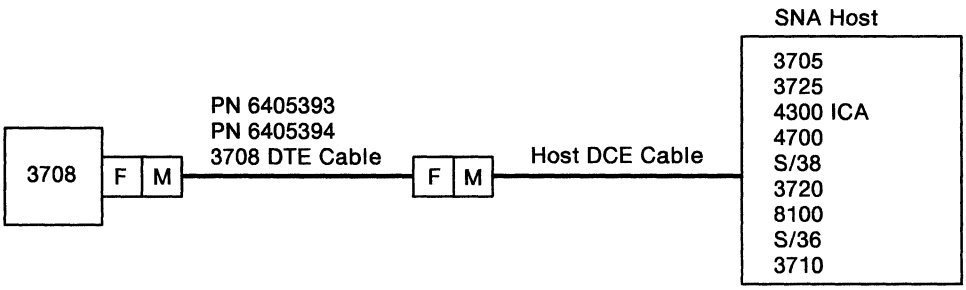
1. The host DTE cable is sometimes called a direct-connect or direct-attach cable.
2. The combined cable length must not exceed 15 meters (50 feet).
3. The host may use special connectors. If you have this configuration, use the cables that are provided with the host.
4. Ensure that the connector genders are correct.
5. The host system must be configured to provide clocking. The 3708 must be configured for external clocking. (Choose 00 for the 3708 SNA host definition option Line Speed.)

   For the 3705, this particular configuration is not supported, except by RPQ number EH0170.

   For the 3720, the NCP gen must have CLOCKING=EXTERNAL, ATTACH=DIRECT, and SPEED=(the desired line speed, 2400 bps or greater). The actual line speed is configured by the MOSS. A 3725 Internal Clock Card ("ICC Card") feature is required for this configuration.

   For the 3725, the NCP gen must have CLOCKING=EXTERNAL, ATTACH=DIRECT, and SPEED=(the desired line speed, 2400 bps or greater). The actual line speed is determined by jumpers on the 3725 LAB board. A 3725 Internal Clock Card ("ICC Card") feature is required for this configuration.
6. Configure the 3708 SNA host definition option Line Type for a direct connection (LINE TYPE=D).

Local: Direct Connection Using a Host EIA 232C DCE Cable and a 3708 EIA 232C DTE Cable



Notes:

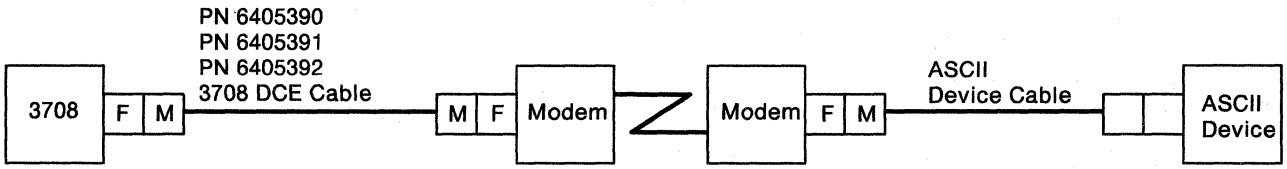
1. The combined cable length must not exceed 15 meters (50 feet).
2. The host may use special connectors. If you have this configuration, use the cables that are provided with the host.
3. Ensure that the connector genders are correct.
4. Clocking must be provided by the 3708 by configuring the 3708 SNA host definition option Line Speed with the desired speed (specifically, this parameter must not be 00). The host system should be configured for external clocking.

   For the 3705, 3720, or 3725, the NCP gen must have CLOCKING=EXTERNAL, ATTACH=MODEM, and SPEED=(the desired line speed). The actual line speed is determined by the clock rate of the 3708. A standard external modem cable should be connected to the communications controller.
5. Configure the 3708 host definition option Line Type for a direct connection (LINE TYPE=D).

ASCII Hosts and End-User Devices to a 3708

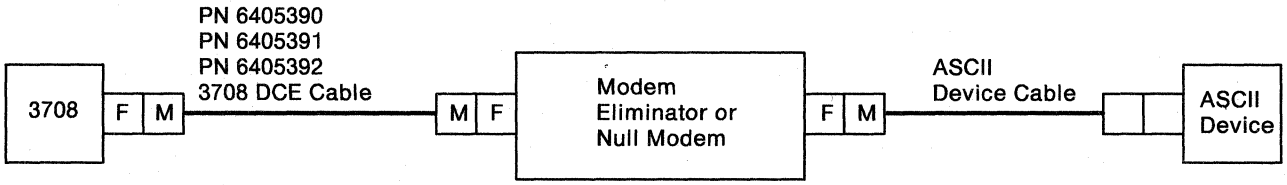
This section describes the ways that the 3708 can connect to ASCII hosts and end-user devices.

Remote: Using Modems



Note: Check the gender and the pin configuration of the equipment's interface before ordering cables.

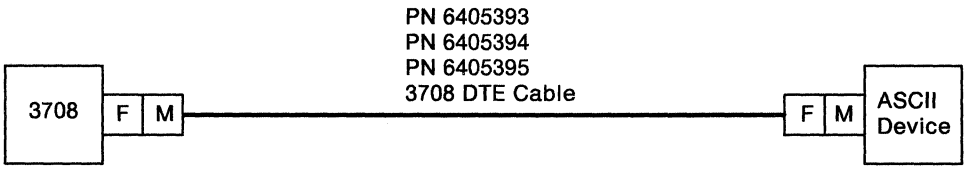
Local: Using Modem Eliminators and Null Modems

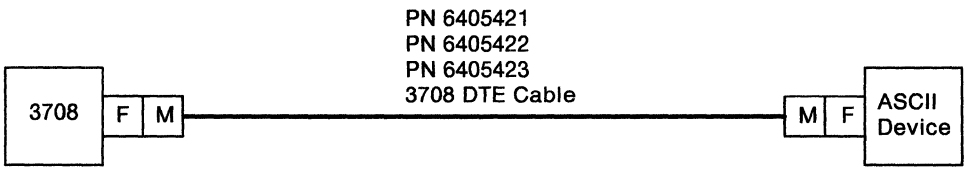


Notes:

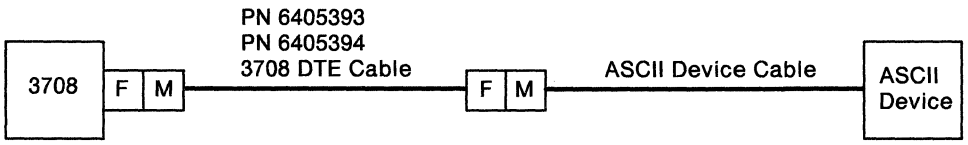
1. Check the gender and the pin configuration of the equipment's interface before ordering cables.
2. The wiring of the modem eliminator or null modem must match that of a 3708 DTE cable. (See "Minimum Connections Required for Asynchronous ASCII DTE Cables, Modem Eliminators, or Null Modems" on page D-9.)
3. If the modem eliminator redrives the signal then each cable segment must not exceed 15 meters (50 feet). Otherwise, the combined cable length must not exceed 15 meters (50 feet).

Local: Direct Connection Using a 3708 EIA 232C DTE Cable (Male - Male and Male - Female)





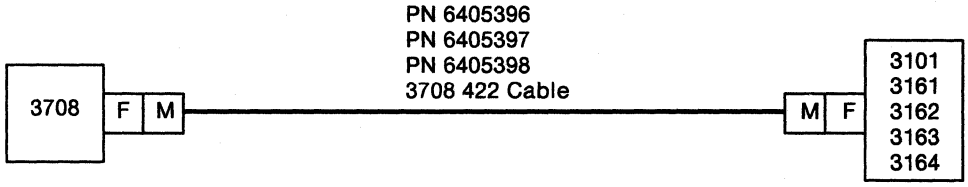
Note: Check the gender and the pin configuration of the equipment's interface before ordering cables.



Notes:

1. The combined cable length must not exceed 15 meters (50 feet).
2. Check the gender and the pin configuration of the equipment's interface before ordering cables.

Local: Direct Connection Using a 3708 EIA 422A Cable

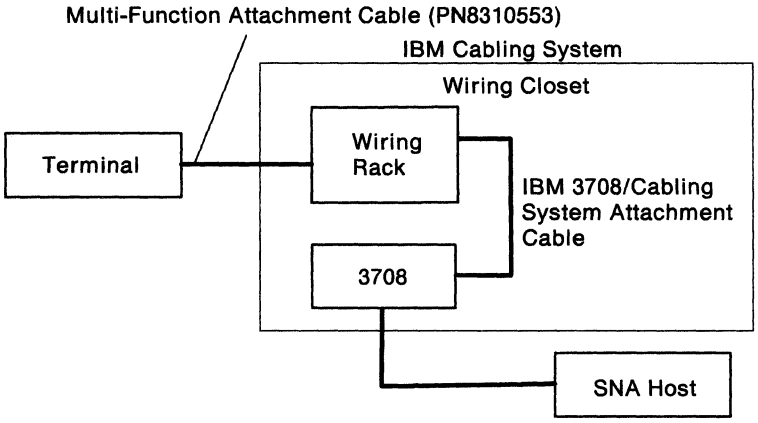


Notes:

1. The 3708 supports a direct connection using the EIA 422A interface to the following IBM terminals:
   - IBM 3101, Model 13
   - IBM 3101, Model 23
   - IBM 3151 Model 310/410
   - IBM 3161, Model 12
   - IBM 3162, Model 12/32
   - IBM 3163, Model 12
   - IBM 3164, Model 12.
2. The length of the cable must not exceed 122 meters (400 feet) unless surge suppressing diodes are installed, in which case the length can be up to 1219 meters (4,000 feet).
3. Because there is no standard for the EIA 422A pin connections, IBM does not supply a cable for non-IBM ASCII terminals.
4. The ends of the EIA 422A cable are not identical. The 3708 end of the cable (marked V.11 on the IBM manufactured cable) has 6 pins and the terminal end has 4 pins.

3708 Connection to the IBM Cabling System

This diagram shows the cable connections from the 3708 to an IBM cabling system.



Notes:

1. Terminal support includes:
   - IBM 3101, Model 13
   - IBM 3101, Model 23
   - IBM 3151 Model 310/410
   - IBM 3161, Model 12
   - IBM 3162, Model 12/32
   - IBM 3163, Model 12
   - IBM 3164, Model 12
2. The multi-function attachment cable (PN 8310553) is approximately 2.4 meters (8 feet) in length and may be ordered through normal local area network (LAN) channels.
3. A description of the 3708/Cabling System Attachment cable is contained in Appendix D.

   Note: This cable is NOT available from the IBM Corporation.
4. The connection between the 3708 and SNA host may be accomplished with one of the host cabling configurations described in this book.
5. Maximum cable path to the 3708 from the terminal is 1220 meters (4000 feet).

For more information on the IBM Cabling System, refer to *IBM Cabling System Planning and Installation Guide*, GA27-3361, and *Using the IBM Cabling System with Communication Products*, GA27-3620.

3708 Problems Related to Cables or Equipment

An incorrectly wired cable or incorrectly operating equipment (modem, modem eliminator, host, or end-user device) that is connected directly to a 3708 port can prevent the 3708 from operating. This problem occurs if the cable or equipment applies a signal to one of the following port connector pins: 2, 4, 12, 14, 18, 20, 21, 23, or 24.

Example 1: ROLM DTI users must ensure that the DTI is configured correctly and that the DTI switch S1-1 is set to OPEN (No). Otherwise, the DTI applies a signal to pin 20 of the 3708, which may prevent the 3708 from turning on.

Recommended switch setting for the ROLM DTI are as follows:

Switch #1 (S1):	
Forced DTR On	OPEN (No)
Carrier Detect and CTS Display	Either OPEN or CLOSED
Audible Signal Enabled	Either OPEN or CLOSED
Terminal/Computer Option	OPEN (TERMINAL)
Originate Answer/Answer	CLOSED (ANSWER)
Off Hook Control Switch	OPEN
Slide Switch (S3):	
Modem/Terminal Option	TERMINAL

Example 2: IBM 5841 users must set configuration switch 8 (Data Set Ready option) to OFF. Setting this switch to ON causes the modem to hold Data Set Ready high (active) at all times. If the 3708 port is switched, and Data Set Ready is active all the time, the 3708 does not enable the port.

To avoid signals on pins 2, 4, 12, 14, 18, 20, 21, 23, or 24, it is recommended that 25-pin conductor cables not be used.

Example 3: Some synchronous modems and modem sharing devices do not hold the TXD line at a MARK level after RTS is dropped. This prevents devices on the same multi-drop line from communicating with the host. The problem occurs when the line is configured for NRZI data encoding.

The problem can be prevented by doing one of the following:

- Configure the modem/modem sharing device to hold the TXD line at a MARK level when RTS is dropped
- Configure the line for NRZ data encoding.

Chapter 11. Ordering the 3708

This chapter provides ordering forms to help you order the 3708 and its accessories.

Order Forms

The following table shows the items that are required for the 3708. All of these items can be ordered from your Marketing Representative.

Description	Order System	Order Number	Quantity
3708 base, Model 001 (See note 1.)	AAS (See note 4.)	Machine type 3708	
3708 cartridge (See note 2.)	AAS	Feature number 3524	
3708 cartridge with Central Site Configuration (See note 2.)	AAS	Feature number 3525	
3708 manuals			
Planning and Installation	AAS	GA27-3766	
Description	AAS	GA27-3768	
Problem Determination	AAS	GA27-3767	
End-User Reference	AAS	GA27-3765	
Terminal Reference Cards, as needed	AAS	See note 3.	

Notes:

1. The following items are shipped with the 3708 base:
   - 4.3-meter (14 feet) power cord
   - EIA 232C wrap plug for diagnostic testing
   - *IBM 3708 Network Conversion Unit Setup*, GA27-3611
   - *IBM 3708 Network Conversion Unit Problem Report*, GA27-3638
   - IBM 3708 Network Conversion Unit Address Registration Form.
2. A 3708 Cartridge Feature must be ordered with each 3708 base. If you do not specify Feature Code 3524 or 3525, your order for a 3708 base unit will not be processed.
3. Refer to Appendix M, "End-User-Device Reference Cards Order Form" for the order numbers of reference cards for end-user devices.
4. AAS is the Advanced Administrative System.

The following table shows the cables that are additional or optional for the 3708. See Chapter 10, "Planning for Cables" for information about selecting the appropriate cables. All of these items can be ordered from your Marketing Representative.

Description	Order System	Order Number	Quantity
EIA 232C DCE male - male			
3 meters (10 feet)	MES	PN 6405390	
8 meters (25 feet)	(See note 2)		
15 meters (50 feet)	MES	PN 6405391	
	MES	PN 6405392	
EIA 232C DTE male - female			
3 meters (10 feet)	MES	PN 6405393	
8 meters (25 feet)	MES	PN 6405394	
15 meters (50 feet)	MES	PN 6405395	
EIA 232C DTE male - male			
3 meters (10 feet)	MES	PN 6405421	
8 meters (25 feet)	MES	PN 6405422	
15 meters (50 feet)	MES	PN 6405423	
EIA 422A DTE male - male **			
Up to 122 meters (400 feet)	MES		
Specify the length required.			
_____		PN 6405396	
_____		PN 6405396	
_____		PN 6405396	
_____		PN 6405396	
_____		PN 6405396	
_____			
EIA 422A DTE male - male **			
Between	MES		
122 meters (400 feet)			
and			
1219 meters (4000 feet)			
Specify the length required.			
_____		PN 6405397	
_____		PN 6405397	
_____		PN 6405397	
_____		PN 6405397	
_____		PN 6405397	
_____			
EIA 422A DTE male - male			
38 meters (125 feet) *		PN 6405398	

* Only available in EMEA countries
** Only available in U.S.A. and A/FE countries

Notes:

1. Cables are shipped separately from the 3708. Allow 2 weeks for delivery. See "Cable Descriptions" on page 10-1 for more information.
2. MES is the Miscellaneous Equipment Specifications.

The following table shows the items that are additional or optional for the 3708.

Description	Order Contact	Order System	Order Number	Quantity
Optional base or power cord (1.8 meters or 6 feet)	Marketing Representative	AAS	9986	
Spare 3708 cartridge without CSC Spare 3708 cartridge with CSC	Marketing Representative	MES	PN 6405322 PN 6405473	
PC/HOST File Transfer and Terminal Emulator Program (See note 1.)	Marketing Representative	AAS	PN 6476052	
Shelves (See note 2.)	OEM (See note 3.)			
Rack or table	OEM (See note 3.)			
Modems	Marketing Representative	AAS	Machine type	
Telephone lines	Local telephone company			
ASCII device manuals (See note 4.)	OEM (See note 3.)			

Notes:

1. Refer to Chapter 9, "Planning for File Transfer" for more information.
2. The 3708 requires a shelf to be placed in the rack.
3. OEM is Original Equipment Manufacturer.
4. Refer to Appendix K, "Manuals for Default Protocol Conversion Displays" for more information.

Installing the 3708

This part provides the following information on installing the 3708:

Chapter 12. Installation Procedures

This chapter describes how to install the 3708.

Notes:

1. Before installing the 3708 you must complete initial setup of the 3708. Refer to *IBM 3708 Network Conversion Unit Setup* (shipped with the 3708), complete the initial setup procedures, and then, refer to this book for information on how to configure and install the 3708 into the network.
2. You should complete the Address Registration Form that is shipped with the 3708.
3. Before installing the 3708, it is recommended that you acquire any known microcode fixes (MCFs) for your level of microcode. This can be accomplished by calling the service number (see "Calling for Service" on page 6-3) and requesting that all existing MCFs be installed.

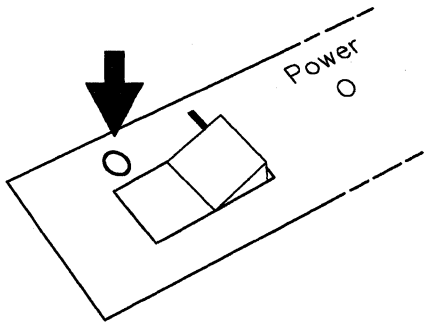
Installation consists of the following steps:

- Step 1. Testing the 3708
- Step 2. Setting Up the Control Terminal
- Step 3. Logging onto the Control Terminal
- Step 4. Entering the Configuration Data
- Step 5. Activating the Configuration
- Step 6. Ending the Control Terminal Session
- Step 7. Connecting the Cables.

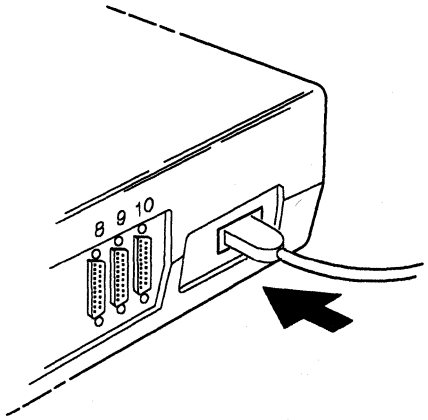
Step 1. Testing the 3708

This procedure verifies that the 3708 is working correctly before the control terminal and other devices are connected.

1. Press the power switch to off (0) and disconnect any connected cables.

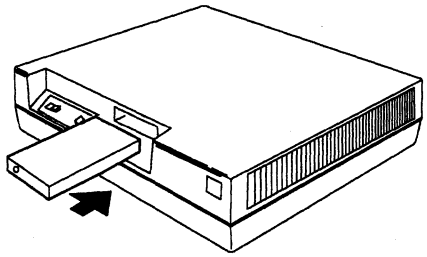


2. Plug the power cord into the back of the 3708, then plug the power cord into an electrical outlet.



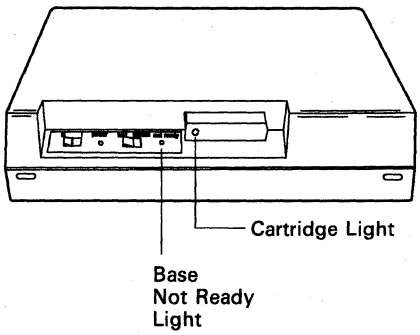
3. Press the 3708 cartridge, with the light on the left, firmly into the slot in the base.

   Note: After the cartridge is plugged in, do not remove it unless you must do so to solve a problem.



4. Turn on the 3708. The 3708 automatically runs a self-diagnostic test.

   After approximately 10 seconds, the base Not Ready light and the cartridge light begin blinking alternately. This means that the 3708 is working correctly. (Refer to Chapter 2, "Using Symptoms to Solve a Problem" of *IBM 3708 Network Conversion Unit Problem Determination* for other light sequence meanings.)



Step 2. Setting Up the Control Terminal

1. Turn off the 3708.
2. Connect the cable from the control terminal to one of the following 3708 ports.

   Note: The control terminal can be any one of the 3708 default terminals listed in the screen on page 12-6.

   - Direct connection: use port 7.

     The terminal must be set for the following:

Interface	EIA 232C
Line Speed	9600 bps
Parity	Odd
Bits per character	7
Stop bits	2

     Note: See Chapter 10, "Planning for Cables" for information about the type of cables to use to connect the control terminal.

   - Remote connection: use port 3.

     The terminal must be set for the following:

Interface	EIA 232C
Line Speed	110 - 9600 bps
Parity	Odd or even
Bits per character	7
Stop bits	2

     Notes:

     a. Port 3 is configured for auto baud/auto parity.

     b. Make sure that the modem settings match the device settings.

     c. See Chapter 10, "Planning for Cables" for information about the type of cables to use to connect the control terminal.

   See Appendix I, "Terminal Switch Settings" for the required switch settings for the terminal.

   You can use other ports besides ports 3 and 7 for the control terminal connection. See Appendix A, "IBM-Supplied Configuration" for the initial port definitions. After configuring the 3708, you can reconfigure all 3708 ports including ports 3 and 7 to connect to any supported device.

   Note: Make sure that the terminal values for XON/XOFF pacing and line turnaround character agree with the IBM-supplied configuration.

3. Turn on the 3708.
4. Turn on the control terminal.
5. If you are using a modem, establish the connection to the 3708.

Step 3. Logging onto the Control Terminal

1. If the control terminal is remotely connected to port 3, press the carriage return key to start the logon screens. If the control terminal is directly connected to port 7, the logon screens should start when the terminal is turned on. If the logon screens do not start, press the carriage return key.

   Notes:

   a. At any time during logon and before the first control terminal screen (M100.0) is displayed, you can disconnect the control terminal from the 3708 by typing #### and pressing the carriage return key.

   b. The 3708 EC number, RID number, and part number may differ from the following examples depending on your microcode level, particular machine, and port.

   c. During logon, the control terminal operates in protocol enveloping (line-by-line) mode. In this mode, use the period key, carriage return key, or a defined line turnaround character as the ENTER key. You also can use the backspace function if you want to correct typing errors. Other cursor-positioning keys are not operational for logon.

   The 3708 displays a port password screen as follows:

```
======IBM 3708===EC   A58809======RID 3708-001 88-0000076========PORT 07======
C1:  Type port password

       To disconnect from the 3708, type "####."

===>_
```

2. Type the port password and press the ENTER key. For initial configuration, the password is PASSWORD. During configuration, this password can be changed to provide security.

   The following screen is then displayed:

```
======IBM 3708===EC   A58809======RID 3708-001 88-0000076========PORT 07======
C2:  Type the number of your terminal:

 1 -IBM 3101                              6 -TV 910          16 -HP 2621B
 1A-IBM PC/FTTERM COLOR                   7 -TV 950          17 -DG D210
 1B-IBM PC/FTTERM MONO                    8 -LS ADM3A        18 -ROLM DISPLAY
 2 -IBM 3161/62/63                        9 -ADDS VP         19 -BEEHIVE ATL078
 2A-IBM 3151/61/62/63 (3708 FEATURE)     10 -HAZEL 1500      20 -UDT01
 2B-IBM 3151                             11 -HAZEL ESP I     21 -UDT02
 2C-IBM 3151/62 (MODEL 5 EMULATION)      12 -HAZEL ESP II    22 -UDT03
 3 -IBM 3164                             13 -NT DISPLAY      23 -UDT04
 3A-IBM 3164 (3708 FEATURE)              14 -TT 5410         24 -UDT05
 4 -DEC VT52                             15 -TT 5420         25 -UDT06
 5 -DEC VT100
 5A-DEC VT220
 5B-FALCO 500 (DEC VT200 MODE)
 5C-WYSE 50
        For trademark acknowledgements, see 3708 publications

        To disconnect from the 3708, type "####."

===>_
```

3. Type the number of the control terminal and press the ENTER key. For initial configuration, the terminal must be one of the devices (1 through 19) listed on the screen. After a user-defined terminal (UDT) is defined, you can use it as the control terminal.

   The following screen is then displayed:

```
======IBM 3708===EC   A58809======RID 3708-001 88-0000076========PORT 07======
C3:  Type the number of the desired connection:

 c-Control Terminal

        To disconnect from the 3708, type "####."

===>_
```

4. Type a *c* to request access to the control terminal functions.

   The following screen is then displayed:

```
======IBM 3708===EC   A58809======RID 3708-001 88-0000076========PORT 07======
C5:  Type control terminal password

       To disconnect from the 3708, type "####."

===>_
```

5. Type the control terminal password and press the ENTER key. For initial configuration, the password is CONTROL.

   The following screen is then displayed:

```
M100.0
                                3708 MAIN MENU

        COMMAND        DESCRIPTION

           1           ALERTS, ERROR LOG, RESPONSE TIME MONITOR - DISPLAY ONLY

           2           CONFIGURATION & PASSWORD DEFINITION

           3           SERVICE AIDS

           4           TERMINATE CONTROL TERMINAL SESSION

           5           SYSTEM RESTART

           6           E C  H I G H L I G H T S

           7           CENTRAL SITE CONFIGURATION (see Note)


TYPE COMMAND NUMBER AND PRESS "ENTER"
==>_


4BMYJOB                                                          P 00
```

Note: Option 7, CENTRAL SITE CONFIGURATION, is for IBM 3708 Feature 3525 (Pluggable Cartridge with Central Site Configuration) and its associated PC aid only. Control terminal operators should not select and use option 7. Refer to Chapter 8, "Planning for Central Site Configuration" for central site configuration planning information.

The terminal is now logged on as the control terminal. The control terminal session operates in protocol conversion (full-screen) mode. Use the ENTER function key sequence as the ENTER key (refer to the IBM 3708 reference cards for the terminal that you are using or to Appendix H, "Predefined User-Defined Terminal Tables and Keyboard Mappings").

6. Check the IBM 3708 reference cards to see which control terminal key or key sequence is used for each of the following functions:

   - BACKSPACE
   - ENTER
   - RESET
   - PF2
   - PF5
   - PF6.

   The following keyboard functions are not supported for control terminal operation:

   - Clear
   - Erase EOF
   - Erase Input
   - Cursor Select
   - PA1
   - PA2
   - PA3
   - Attention
   - Delete
   - System Request.

7. Type a *2* to select the CONFIGURATION & PASSWORD DEFINITION task and press the ENTER key.

   The following screen is then displayed. This screen allows you to select the different configuration tasks for entering the configuration data.

```
M120.0
                        3708 CONFIGURATION & PASSWORD MENU

       COMMAND          DESCRIPTION

          1             CHANGE PASSWORDS
          2             HOST DEFINITION
          3             PORT DEFINITION
          4             PRINTER AUTHORIZATION MATRIX
          5             USER DEFINED TERMINAL TABLES
          6             USER DEFINED TRANSLATE TABLE
          7             GENERAL DEFINITION
          8             CONVERSION BETWEEN STANDARD & ENHANCED UDTS


TYPE COMMAND NUMBER AND PRESS "ENTER" OR PRESS "PF2" TO QUIT
==>_



4BMYJOB                                                    P 00
```

Step 4. Entering the Configuration Data

You can configure the 3708 from the 3708 Configuration & Password Menu (M120.0) for device attachment. Use the information gathered during configuration planning to complete the configuration screens. If you have not already planned the configuration parameters, see Chapter 13, "Configuration Procedures," for a detailed description of the configuration process.

For an example of a network configuration, see Appendix B, "3708 Configuration Example."

Note: The IBM-supplied configuration is the initial configuration that is shipped in the IBM 3708 and that is described in Appendix A, "IBM-Supplied Configuration." This configuration provides the maximum number of control terminal connection possibilities. It does not provide a working network configuration.

After the 3708 is configured and is working correctly, print or copy the configuration on the 3708 configuration forms. Appendix C, "3708 Configuration Forms," contains configuration forms. You can use these forms or printouts to configure other 3708s.

Note: You can permanently reinstate the IBM-supplied configuration by entering special values in the Name and Version fields on the General Definition screen (C127.1). See Chapter 14, "Defining the General Definition," for more information about the values for these fields. You can also temporarily reinstate the IBM-supplied configuration by the procedure described in Chapter 14.

Step 5. Activating the Configuration

To activate the configuration, do one of the following:

- Turn the 3708 off and back on again.
- Restart the 3708 (select option *5* on the Main Menu) using the control terminal.

Otherwise, continue with "Step 6. Ending the Control Terminal Session" on page 12-10.

Notes:

1. If you configure the 3708 from a remote, switched connection, restarting the 3708 causes the line to disconnect. Reestablish the connection to perform any other functions.
2. The configuration data is stored in nonvolatile (EEPROM) memory in the 3708 base, not in the cartridge. You can replace the cartridge or turn off the 3708 and turn it back on again without reconfiguring the 3708. Turn off the 3708 whenever you remove or install a cartridge.
3. Activating the configuration ends the control terminal session. Continue with "Step 7. Connecting the Cables" on page 12-13.

Step 6. Ending the Control Terminal Session

Note: For security reasons, end the control terminal session when you finish using the terminal.

The screen sequence for ending a control terminal session is as follows:

```
M100.0
                                3708 MAIN MENU

        COMMAND        DESCRIPTION

           1           ALERTS, ERROR LOG, RESPONSE TIME MONITOR - DISPLAY ONLY

           2           CONFIGURATION & PASSWORD DEFINITION

           3           SERVICE AIDS

           4           TERMINATE CONTROL TERMINAL SESSION

           5           SYSTEM RESTART

           6           E C  H I G H L I G H T S

           7           CENTRAL SITE CONFIGURATION (see Note)

TYPE COMMAND NUMBER AND PRESS "ENTER"
==>_


4BMYJOB                                                          P 00
```

Note: Option 7, CENTRAL SITE CONFIGURATION, is for IBM 3708 Feature 3525 (Pluggable Cartridge with Central Site Configuration) and its associated PC aid only. Control terminal operators should not select and use option 7. Refer to Chapter 8, "Planning for Central Site Configuration" for central site configuration planning information.

1. Type a *4* to select the TERMINATE CONTROL TERMINAL SESSION task and press the ENTER key. The following screen is then displayed:

```
M140.0
                                    3708 SESSION TERMINATION


TO EXIT CONTROL TERMINAL SESSION

TYPE "4" AGAIN









TYPE COMMAND NUMBER AND PRESS "ENTER" OR PRESS "PF2" TO QUIT
==>_


4BMYJOB                                                          P 00
```

2. Type a *4* and press the ENTER key to confirm that you want to end the session. Once the control terminal session is ended, the terminal can be used as an end-user terminal and the Host Selection Menu is presented.

   The following screen is an example. The list of hosts depends on your configuration.

```
======IBM 3708===EC A58809======RID 3708-001 88-0000076========PORT 07======
C3:  Type the number of the desired connection:

 1-TSOHOST
 2-VMHOST
 c-Control Terminal

        To disconnect from the 3708, type "####."


===>_
```

3. Do one of the following:

   - Select control terminal operation again as follows:

     a. Type *c*.
     b. Press the ENTER key.

   - Select a host as follows:

     a. Type the number that corresponds to the host.
     b. Press the ENTER key.

   - Log off from the 3708 as follows:

     a. Type four # characters (####).
     b. Press the ENTER key.

Step 7. Connecting the Cables

Use the completed 3708 forms in Figure 4-2 on page 4-5 and Figure 4-4 on page 4-7 to determine which cables and devices to connect to which 3708 ports.

Connect the cables and test the 3708 as follows:

1. Turn off the 3708.
2. Use the completed 3708 network forms to make labels for each cable as follows:
   a. Obtain a cable with the desired type and length. The cable type and length are written on the factory labels (IBM cables only) at each end of the cable.
   b. Using a self-adhesive strip or similar material, make two labels that contain the following information from the form:
      - The 3708 name
      - The device name
      - The port number.
   c. Attach one of the new labels to the 3708 end of the cable. This is the end that has a *V.11 (EIA 422A)* or *V.24 (EIA 232C)* on the factory-installed label.
   d. Attach the other new label to the device end of the cable (opposite the 3708).
3. Connect the 3708 end of the cable to the port that is identified on the label. Connect the device end of the cable to the device that is identified on the label. Secure the cable by tightening the connector screws.
4. Repeat steps 1 through 3 for all the cables listed on the network form.
5. Turn on the 3708. The 3708 automatically runs a self-diagnostic test. Do not press the Test/Normal switch.

   After approximately 10 seconds, the base Not Ready light and the cartridge light begin blinking alternately or both will be turned off. This means that the 3708 is working correctly. Refer to Chapter 2, "Using Symptoms to Solve a Problem" in *IBM 3708 Network Conversion Unit Problem Determination* for more information about the light sequences.

Note: If you have any problems, refer to *IBM 3708 Network Conversion Unit Problem Determination.*

Chapter 13. Configuration Procedures

This chapter describes the following configuration procedures:

- Define ports for SNA hosts
- Define ports for ASCII hosts
- Define ports for end-user devices for modes other than protocol enveloping
- Define ports for end-user devices for protocol enveloping
- Define the printer authorization matrix.

Follow the instructions through "What To Do Next" on page 13-35. The information under "What To Do Next" tells you where to go from there. The screen sequences needed to configure your system are shown in Appendix E, "Screen Sequences."

Warning: The PF6 key is the only key that saves configuration data. If you press the PF2 key, all information entered for the port is lost. To modify fields without losing data, continue pressing the ENTER key until a message that tells you to press PF6 is displayed; then press the PF6 key to save the data.

Notes:

1. Press the RESET key sequence if the keyboard locks. See the IBM 3708 reference cards for more information.
2. Some configuration options are not used, depending on the entries for previous options. Enter the suggested values for the fields based on the entries for the previous options.
3. Configuration forms are in Appendix C, "3708 Configuration Forms." Use these forms to plan each port before you enter the configuration data.
4. Screen sequences for the control terminal are given in Appendix E, "Screen Sequences."
5. The following pages show example entries for the screens. These settings are supplied with the base.

Defining a Port for a SNA Host

This section describes the screen sequence for defining a port for an SNA host. The sequence of screens needed is shown in Figure E-1. The fields are explained below each screen.

Warning: After defining a host port, do not use the Port Definition (option 3 on the 3708 Configuration & Password Menu) to redefine the port. This destroys any host configuration for this port.

Port Number Options (Screen M100.1)

To define a SNA host port, you need to select option 2, HOST DEFINITION, from screen M120.0 (see page 12-8). This option takes you to the following screen.

```
M100.1
                        3708 PORT NUMBER


TYPE PORT NUMBER YOU WISH TO USE

        PORT :  10









PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                        P 00
```

Port

[01 — 10]

If you are configuring the first SNA host (SNA host A), it is recommended that you choose port 10.

If you are configuring the second SNA host (SNA host B), it is recommended that you choose port 9.

```
M100.2
                          3708 PORT 10 LOGON OPTIONS

TYPE ANY DESIRED CHANGES :

           N     PORT EXCLUDED









PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                        P 00
```

Port Excluded

[Y,N]

Y—The port is excluded from the configuration and is not operational. Choose the Y option for any port that is not used.

N—The port is not excluded from the configuration and is operational.

When defining a port for an SNA or an ASCII host, PORT EXCLUDED is the only option displayed.

SNA Host Definition (Screen C122.1)

This screen is used for defining an SNA host. The 3708 supports a maximum of two SNA hosts. The first SNA host is host A, and the second SNA host is host B.

```
C122.1
                    3708 HOST DEFINITION FOR PORT 10

TYPE ANY DESIRED CHANGES :


            10  HOST-A PORT            00  HOST-B PORT

                  10          PORT
                  IBMHOSTA    HOST NAME
                  0111111110 HOST KEYBOARD SOURCE FIELD
                  1000000000 HOST PRINTER SOURCE FIELD




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                    P 00
```

Host-A Port

[00 - 10]

If you have already configured SNA host A, verify that Host-A Port contains the port number for host A.

If you have not configured SNA host A, type the port number that host A is connected to. Port 10 is recommended for SNA host A. Type *00* in the field if SNA host A is not used.

Note: Do not enter an ASCII host port number in this field.

Host-B Port

[00 - 10]

If you have already configured SNA host B, verify that Host-B Port contains the port number for host B.

If you have not configured SNA host B, type the port number that host B is connected to. Port 9 is recommended for SNA host B. Type *00* in the field if SNA host B is not used.

Note: Do not enter an ASCII host port number in this field.

Port

[01 - 10]

The 3708 displays the port number of the port that you are defining. You cannot change this field.

Host Name

Type any 8-character name for this name. The host name is displayed for downstream ports on the 3708's Host Selection Screen (C3).

Host Keyboard Source Field

[1,0]

1—The host is allowed to communicate with a keyboard device on the specified ports.

0—The host is not allowed to communicate with a keyboard device on the specified ports.

Type a *1* or *0* for each port. The leftmost position is for port 1; the rightmost position is for port 10 as follows:

1	2	3	4	5	6	7	8	9	10
—	—	—	—	—	—	—	—	—	—

If you have two hosts, use this field to configure a keyboard device to communicate with each host. For example, in the network example in Figure 4-2 on page 4-5, the IBM PC AT communicates with both SNA hosts. To allow access, the Host Keyboard Source Field for both SNA host A and SNA host B must be configured with a *1* in the port 2 position. See "Ports Configured for Hosts" on page B-3 for more information.

Note: If the ports contain hosts or printers instead of keyboard devices choose *0*.

Host Printer Source Field

[1,0]

1—The host is allowed to communicate with a printer on the specified port. This printer must be defined for system or shared mode. See "Printer and Keyboard Printer Support" on page 2-3 for more information about system and shared modes.

0—The host is not allowed to communicate with a printer in system or shared mode on the specified port.

Type a *1* or *0* for each port. The leftmost position is for port 1; the rightmost position is for port 10 as follows:

1	2	3	4	5	6	7	8	9	10
—	—	—	—	—	—	—	—	—	—

For example, to support the example network in Figure 4-2 on page 4-5, define the Host Printer Source Field for SNA host A as 1010000000 to allow access to the IBM 4201 on port 1 and the 3102 attached to the IBM 3161 on port 3. See "Ports Configured for Hosts" on page B-3 for more information.

Notes:

1. You can assign a printer to only one SNA host and not to an ASCII host.
2. Enter *0* if the port does not contain a printer.
3. Enter *1* if the port contains a display with printer (MLU) and if you want the printer to be a system printer for the SNA host being configured.

SNA Host Definition (Screen C122.2)

This screen continues the port definition for SNA hosts.

```
C122.2
                        3708 HOST DEFINITION FOR PORT 10

TYPE ANY DESIRED CHANGES :


              PU_NAME           SNA PU NETWORK NAME
              LN10NAME          SNA PU LINE NETWORK NAME
              08                STATION ADDRESS
              1                 NRZI DATA ENCODING
              0                 PERMANENT RTS
              00                LINE SPEED  (USE 00 FOR EXTERNAL CLOCKING)
              L                 LINE TYPE   (L=LEASED, D=DIRECT)
              U                 TRANSMIT UNBIND OR TERM-SELF FOR SESSION SECURITY
                                          (U=UNBIND, T=TERM-SELF)
              00000             SDLC INACTIVITY TIME OUT (0, 60-16383)


PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                          P 00
```

SNA PU Network Name

[8 characters] **optional**

The 3708 uses the SNA PU Network Name in alerts sent to NetView or NPDA. This name can be any 8-character name. To make problem determination easier, it is recommended that you define the SNA PU Network Name as one of the following:

NCP The name that is associated in the NCP generation with the PU macro, which defines the 3708

43xx ICA The name that is associated with the PU parameter in the VBUILD=CA macro, which defines the 3708

4700 The name that is associated with the ALACU macro, which defines the 3708

Sys/36 This can be any 8-character name

Sys/38 The control unit description (CUD) name that is associated with the System/38 control unit description definition, which defines the 3708

8100 The name that is defined in the NAME column on the adapter configuration panel for the 3708.

SNA PU Line Network Name

[8 characters] **optional**

The 3708 uses the SNA PU Line Network Name in alerts sent to NetView or NPDA. This name can be any 8-character name. To make problem determination easier, it is recommended that you define the SNA PU Line Network Name as one of the following:

NCP The name that is associated in the NCP generation with the LINE macro, which supports the 3708

43xx ICA The name that is associated with the LINE parameter in the VBUILD=CA macro, which supports the 3708

4700 The name that is associated with the ALALINE macro, which supports the 3708

Sys/36 The line number that is defined in the Communication Line parameter in the Sys/36 Remote Controller Definition menu

Sys/38 The line description (LIND) name that is associated with the System/38 line description definition, which supports the 3708

8100 The name that is defined in the NAME column in the system configuration panel for the 8100 LINK, which supports the 3708.

Station Address

[X'01' - X'FE']

Type the SDLC link level address as follows:

NCP The address (ADDR) parameter in the NCP generation for the PU macro, which defines the 3708

43xx ICA The address (ADDR) parameter in the VBUILD=CA macro for the PU parameter, which defines the 3708

4700 The address that is associated with the POLL parameter in the ALACU macro, which defines the 3708

Sys/36 The address that is defined in the Controller Station Address parameter in the Sys/36 Remote Controller Definition menu

Sys/38 The first 2 bytes of the control unit address (CTLADR) parameter in the System/38 control unit description, which defines the 3708

8100 The address that is defined in the STADDR column in the adapter configuration panel for the 3708.

NRZI Data Encoding

[1,0]

1—NRZI
0—NRZ

This is the electronic signaling technique that is used for data transmission. See the glossary for a definition of NRZI. This option must match the definition at the SNA host.

Permanent RTS (Request to Send)

[1,0]

1—The 3708 leaves RTS active at all times. Only use this option for a full duplex point-to-point line (the 3708 is the only secondary control unit on the line).

0—The 3708 raises RTS only when transmit is requested (the 3708 is on a multidrop line).

Line Speed

[00 - 14]

00—**External clocking**
01—110 bps
02—150 bps
03—200 bps
04—300 bps
05—600 bps
06—1200 bps
07—1800 bps
08—2400 bps
09—3600 bps
10—4800 bps
11—7200 bps
12—9600 bps
13—14400 bps
14—19200 bps

Note: Clocking must be provided by either the 3708 or by a modem or a directly connected host. Clocking must not be provided by both the 3708 and by the modem or host. If the host or modem provides a clocking signal, you **must** define 00 for the upstream line speed. Use the values 01 through 14 only if you want the 3708 to provide clocking. See Chapter 10, "Planning for Cables" for cable configuration examples and additional information on host clocking requirements.

Line Type

[D, L]

D—If the 3708 is directly connected to the SNA host (via a 3708 DTE cable, a host DTE direct connect cable, or a null modem or modem eliminator, see Chapter 10, "Planning for Cables"), you should define D for the host's line type.

L—If the 3708 is connected to the SNA host using modems, you should define L for the host's line type.

Transmit UNBIND or TERM-SELF for Session Security

[U, T]

U—The 3708 transmits an UNBIND (0F) to the SNA host to ensure session integrity when the downstream device is disconnected in the middle of a session. U is required for Sys/36 and Sys/38 systems and is recommended as the default option.

T—The 3708 transmits a TERM-SELF (40) to the SNA host to ensure session integrity when the downstream device is disconnected in the middle of a session. T is recommended for those ports that are supporting CICS users and 4700 connections.

SDLC Inactivity Time Out

[0, 60-16383]

Type the amount of the time the host may remain inactive before the 3708 automatically disconnects from the host. This time is in ½ seconds. Valid responses are 0 and any number between 60 and 16383. A value of 0 disables this function.

Non-zero values can be used to determine host availability or allow access to a backup SNA host. This option only works when the SNA host line is in Normal Response mode. See *IBM Network Conversion Unit Description* for more details.

Defining a Port for an ASCII Host

This section describes the screen sequence for defining a port for an ASCII host.

The screen sequence that you will use is shown in Figure E-2. The fields are explained below each screen.

Warning: After defining a host port, do not use the Port Definition option 3 on the 3708 Configuration & Password Menu to redefine the port except to override the previous host definition.

Port Number Options (Screen M100.1)

To define an ASCII host port, you need to select option 2, HOST DEFINITION, from screen M120.0 (see page 12-8). This option takes you to the following screen.

```
M100.1
                        3708 PORT NUMBER


TYPE PORT NUMBER YOU WISH TO USE

       PORT :  08









PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                    P 00
```

Port

[01 - 10]

Choose a port to which you want to connect an ASCII host.

```
M100.2
                          3708 PORT 08 LOGON OPTIONS

TYPE ANY DESIRED CHANGES :

            N     PORT EXCLUDED









PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                        P 00
```

Port Excluded

[Y,N]

Y—The port is excluded from the configuration and is not operational. Choose the Y option for any port that is not used.

N—The port is not excluded from the configuration and is operational.

When defining a port for an SNA or an ASCII host, PORT EXCLUDED is the only option displayed.

ASCII Host Definition (Screen C122.1)

This screen is used for defining an ASCII host. The 3708 supports up to nine ASCII hosts.

Warning: After defining a host port, do not use the Port Definition (option 3 on the 3708 Configuration & Password Menu) to redefine the port. This destroys any host configuration for this port.

```
C122.1
                      3708 HOST DEFINITION FOR PORT 08

TYPE ANY DESIRED CHANGES :


             10  HOST-A PORT            00  HOST-B PORT

                    08          PORT
                    ASCIIHST    HOST NAME
                    0111111010 HOST KEYBOARD SOURCE FIELD
                    0000000000 HOST PRINTER SOURCE FIELD




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

Host-A Port

[00 - 10]

If you have defined an SNA host A, the port number for SNA host A appears in this field. Do **not** enter the ASCII host port number in this field.

Host-B Port

[00 - 10]

If you have defined an SNA host B, the port number for SNA host B appears in this field. Do **not** enter the ASCII host port number in this field.

Port

[01 - 10]

The 3708 displays the port number of the port that you are defining. You cannot change this field.

Host Name

Type any 8-character name for the host name. This name is displayed for downstream ports on the 3708's Host Selection Screen (C3).

Host Keyboard Source Field

[1,0]

1—The host is allowed to communicate with a keyboard device on the specified ports.

0—The host is not allowed to communicate with a keyboard device on the specified ports.

Type a *1* or *0* for each port. The leftmost position is for port 1; the rightmost position is for port 10 as follows:

1	2	3	4	5	6	7	8	9	10
—	—	—	—	—	—	—	—	—	—

Note: If the ports contain hosts or printers instead of keyboard devices choose *0*.

Host Printer Source Field

Type all *0*s in this field. ASCII hosts cannot be accessed by printers.

```
C122.3
                3708 ASCII HOST DEFINITION FOR PORT 8

TYPE ANY DESIRED CHANGES :


             0          SET HOST TERMINATION SEQUENCE
             000000     HOST TERMINATION SEQUENCE(IN ASCII)
             12         LINE SPEED









PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

Set Host Termination Sequence

When the key sequence that is defined by the Host Termination Sequence is entered by the end user after a single BREAK, the 3708 breaks the logical connection between that port and the ASCII host. This enables another (or the same) port to communicate with the host. The terminal is returned to the Host Selection Screen (C3).

[1,0]

1—The 3708 recognizes the Host Termination Sequence.
0—The 3708 does not recognize the Host Termination Sequence.

Host Termination Sequence (in ASCII)

[X'00' - X'7F']

Enter the hexadecimal representation of three ASCII characters to define the termination key sequence for the ASCII host that is connected to the port. See Appendix L, "IBM-Supplied Translate Tables" for more information. Let this value default to 000000 if the Set Host Termination Sequence field is *0*.

Line Speed

[01 - 14]

Enter the number that corresponds to the appropriate line speed:

01 — 110 bps
02 — 150 bps
03 — 200 bps
04 — 300 bps
05 — 600 bps
06 — 1200 bps
07 — 1800 bps
08 — 2400 bps
09 — 3600 bps
10 — 4800 bps
11 — 7200 bps
12 — 9600 bps
13 — 14400 bps
14 — 19200 bps

The line speed of the ASCII host connection and all end-user connections which communicate with that ASCII host should be the same.

Defining a Port for an End-User Device

This section describes the screen sequence that is used for defining a 3708 port for an end-user device.

The screen sequences to follow depend on the device attached to the port you are configuring. The screen sequences shown under Figure E-3 through Figure E-7 show the different sequences to follow for each of the different types of devices.

3708 Port Logon Options (Screen M100.2)

```
M100.2
                          3708 PORT 07 LOGON OPTIONS

TYPE ANY DESIRED CHANGES :


            N     PORT EXCLUDED
            N     LOGON SCREENS EXCLUDED
            01    TERMINAL TYPE ID

      IF YOU ANSWERED "N" TO LOGON SCREENS EXCLUDED, DO YOU WANT :
            Y     THE PORT PASSWORD SCREEN (C1)
            Y     THE TERMINAL TYPE SCREEN (C2)
            Y     THE HOST SELECTION SCREEN (C3)
            Y     THE LOGON INDICATION SCREEN (C4)
            N     SHORT LOGON SCREENS
            Y     CONTROL TERMINAL ACCESS (APPLIES IF C3 SCREEN IS SELECTED)
            0     LANGUAGE CODE


PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT




4BMYJOB                                                          P 00
```

Port Excluded

[Y,N]

Y—The port is excluded from the configuration and is not operational.

N—The port is not excluded and is operational.

Choose the Y option for any port that is not used.

Note: To allow for increased buffer utilization and 3708 performance, exclude all ports that are not required.

Logon Screens Excluded

[Y, N]

Y—All 3708 logon screens are excluded. If you are defining a printer, choose Y. This option may also be chosen to simplify logon procedures if you use a single SNA host and this port supports one terminal type (TERMINAL ID must be specified). Excluding all of the 3708's logon screens prevents control terminal and ASCII host access. The port becomes active when the 3708 receives an ACTLU from the SNA host.

N—One or more 3708 logon screens are defined. When at least one 3708 logon screen is defined, you may selectively exclude individual logon screens, define short logon screens, establish control terminal access, and select the language type of the screens. If LOGON SCREENS EXCLUDED = Y, the following options are ignored:

Note: If this option is Y, the Port Password and Port Password Retry Limit fields are ignored.

Port Password Screen (C1)

[Y, N]

Y—The Port Password screen (C1) is transmitted by the 3708.

N—The Port Password screen (C1) is excluded from the 3708's logon procedure.

Note: If this option is N, the Port Password and Port Password Retry Limit fields are ignored.

Terminal Type Screen (C2)

[Y, N]

Y—The Terminal Type screen (C2) is transmitted by the 3708.

N—The Terminal Type screen (C2) is excluded from the 3708's logon procedure.

Note: If this option is N, the TERMINAL ID field must be defined for the terminal type this port will support.

Host Selection Screen (C3)

[Y, N]

Y—The Host Selection screen (C3) is transmitted by the 3708.

N—The Host Selection screen (C3) is excluded from the 3708's logon procedure.

Note: If this option is N, only one SNA host can be supported and access to an ASCII host or the control terminal is not possible (the Control Terminal Access field is ignored).

Logon Indication Screen (C4)

[Y, N]

Y—The Logon Indication screen (C4) is transmitted by the 3708.

N—The Logon Indication Screen (C4) is excluded from the 3708's logon procedure.

Short Logon Screen

[Y, N]

Y—The 3708 transmits a short version of any defined 3708 logon screens. The short version includes just the screen divider, screen title, and input lines of the 3708 logon screens. An example of the "short" version of the Terminal Type screen (C2) appears below:

```
======IBM 3708===EC A58809======RID 3708-001 88-0000076========PORT 07======
C2:  Type the number of your terminal:
===>_
```

If the user enters a "?" character or an invalid response on the input line, the 3708 responds by transmitting the full version of the logon screen until a valid entry is received.

N—The 3708 transmits its normal logon screens, when defined.

Control Terminal Access

[Y, N]

Y—Access to the control terminal function is allowed for this port.

N—Access to the control terminal function is excluded for this port. The 'C' option does not appear on the Host Selection Screen (C3).

Notes:

1. This field is ignored if the Host Selection Screen (C3) is excluded.
2. For added security, limit the number of ports that can be used by a control terminal.
3. For remote service, you must choose *Y* for at least one switched port.

Language Code

This option defines the language for the logon screens. The control terminal screens are in English. This option is ignored if LOGON SCREENS EXCLUDED = Y.

[0 - 5]

0 — English
1 — French/French Canadian
2 — Spanish
3 — German
4 — Italian
5 — Uppercase English.

Terminal ID

[01 - 25]

If a printer is connected to the port, enter *01*. If this port supports a display in protocol conversion mode and all of the 3708 logon screens are excluded (LOGON SCREENS EXCLUDED = Y) or the Terminal Type Screen (C2) is excluded, TERMINAL ID must be specified. Type the display number that this port will support.

ID	Display Terminal
01	IBM 3101 and IBM PC in 3101 Emulation Mode
1A	IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM) Color
1B	IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM) Mono
02	IBM 3161, 3162, and 3163 ASCII Display Stations
2A	IBM 3151, 3161, 3162, and 3163 with 3708 Features
2B	IBM 3151 ASCII Display Station
2C	IBM 3151/62 (Model 5 Emulation)
03	IBM 3164 ASCII Display Station
3A	IBM 3164 with 3708 Features
04	DEC® Model VT52
05	DEC® Model VT100
5A	DEC® Model VT220
5B	FALCO® 500 (DEC® VT200 mode)
5C	WY-50® (Wyse 50)
06	TeleVideo® 910
07	TeleVideo® 950
08	Lear Siegler ADM 3A Dumb Terminal®
09	ADDS (Applied Digital Data Systems) Viewpoint®
10	Hazeltine 1500
11	Hazeltine Esprit I™
12	Hazeltine Esprit II™
13	Northern Telecom Displayphone™
14	Teletype 5410 Asynchronous Display Terminal
15	Teletype 5420 Buffered Display
16	Hewlett-Packard 2621B Interactive Terminal
17	Data General Dasher® D210 Display Terminal
18	ROLM® Cypress™, Cedar™, and Juniper™
19	Beehive™ ATL-078
20	UDT01
21	UDT02
22	UDT03
23	UDT04
24	UDT05
25	UDT06

End-User Device Definition (Screen C123.1)

This screen is used for defining an end-user device.

```
C123.1
                          3708 DEFINITION FOR PORT 7

TYPE ANY DESIRED CHANGES :


     7         PORT NUMBER
     CU07NAME  DEVICE NAME
     LN07NAME  DEVICE LINE NAME

SNA LU NETWORK NAME       SNA LU DEVICE NUMBER
     LU7ANAME                      06             KEYBOARD - HOST A
     LU7BNAME                      06             KEYBOARD - HOST B
     LU7PNAME                      16             PRINTER ON PREASSIGNED HOST




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                        P 00
```

Port Number

[01 - 10]

The 3708 displays the number of the port that you are configuring. You cannot change this field.

Device Name

Type any 8-character name for the end-user device. The Device Name is sent to NetView or NPDA in 3708 alerts.

Device Line Name

Type any 8-character name for the end-user device. The Device Line Name is sent to NetView or NPDA in 3708 alerts.

SNA LU Network Name (Keyboard, Host A)

If a keyboard display, keyboard printer, or keyboard display with printer is assigned to host A by the Host Keyboard Source field on screen C122.1, type the name that SNA host A uses for this port.

Because the 3708 uses the SNA LU Network Name in the alerts, it is recommended that this 8-character name match one of the following:

NCP The name that is associated in the NCP generation with the LU macro defined for this 3708 port

43xx ICA The name that is associated with the LU parameter in the VBUILD=CA macro for this 3708 port

4700 The name that is associated with the ALATERM macro for this 3708 port

Sys/36 Any 8-character name

Sys/38 The device description (DEVD) name that is associated with the System/38 device description definition for this 3708 port

8100 The name that is defined in the NAME column in the adapter configuration panel for a device that is connected to this 3708 port.

If a printer port is being defined or SNA host A does not exist, this field is ignored. Type *XXXXXXXX* for the SNA LU Network Name.

SNA LU Device Number (Keyboard, Host A)

[00 - 31]

If a keyboard display, keyboard printer, or keyboard display with printer is assigned to host A by the Host Keyboard Source field on screen C122.1, type the device number that SNA host A uses for this port. This number **must** be two less than one of the following:

NCP The LOCADDR parameter in the NCP generation for the LU macro defined for this 3708 port

43xx ICA The LOCADDR parameter in the VBUILD=CA macro for the LU macro defined for this 3708 port

Sys/38 The first two bytes of the device address (DEVADR) parameter in the System/38 device description definition for this 3708 port

8100 The address that is defined in the LOCADR column in the adapter configuration panel for a device that is connected to this 3708 port.

Notes:

1. For the Sys/36 configuration, this value must equal the port number in the Sys/36 Work Station Definition menu. The 3708 supports a value of 50 (3277 display type) in the Sys/36 port number definition fields.
2. For 4700 attachments, this value must equal the SEL parameter defined in the 4700 for this 3708 port.

If a printer port is being defined or if SNA host A does not exist, this field is ignored. Type *00* for the SNA LU Device Number.

SNA LU Network Name (Keyboard, Host B)

If a keyboard display, a keyboard printer, or a keyboard display with printer is assigned to host B by the Host Keyboard Source field on screen C122.1, type the name that SNA host B uses for this port.

Because the 3708 uses the SNA LU Network Name in the alerts, this 8-character name should match one of the following:

NCP The name that is associated in the NCP generation with the LU macro defined for this 3708 port

43xx ICA The name that is associated with the LU parameter in the VBUILD=CA macro for this 3708 port

4700 The name that is associated with the ALATERM macro for this 3708 port

Sys/36 Any 8-character name

Sys/38 The device description (DEVD) name that is associated with the System/38 device description definition for this 3708 port

8100 The name that is defined in the NAME column in the adapter configuration panel for a device attached to this 3708 port.

If a printer port is being defined or SNA host B does not exist, this field is ignored. Type *XXXXXXXX* for the SNA LU Network Name.

SNA LU Device Number (Keyboard, Host B)

[00 - 31]

If a keyboard display, a keyboard printer, or a keyboard display with printer is assigned to host B by the Host Keyboard Source field on screen C122.1, type the device number that SNA host B uses for this port. This number **must** be two less than one of the following:

NCP The LOCADDR parameter in the NCP generation for the LU macro defined for this 3708 port

43xx ICA The LOCADDR parameter in the VBUILD=CA macro for the LU macro defined for this 3708 port

Sys/38 The first two bytes of the device address (DEVADR) parameter in the System/38 device description definition for this 3708 port

8100 The address that is defined in the LOCADR column in the adapter configuration panel for a device attached to this 3708 port.

Notes:

1. For the Sys/36 configuration, make this value equal to the port number that is defined in the Sys/36 Work Station Definition menu. The 3708 supports a value of 50 (3277 display type) in the Sys/36 port number definition fields.
2. For 4700 attachments, this value must equal the SEL parameter defined in the 4700 for this 3708 port.

If a printer port is being defined or if SNA host B does not exist, this field is ignored. Type *00* for the SNA LU Device Number.

SNA LU Network Name (Printer on Preassigned Host)

If a printer or a printer port of a keyboard display is assigned to a SNA host by the Host Printer Source field on screen C122.1, type the 8-character name that the assigned SNA host uses for this port. If this port does not contain a printer or the printer is not assigned to either SNA host, this field is ignored (type *XXXXXXXX*).

Otherwise, to make network management easier, it is recommended that this 8-character name match one of the following:

NCP The name that is associated in the NCP generation with the LU macro defined for this 3708 port

43xx ICA The name that is associated with the LU parameter in the VBUILD=CA macro for this 3708 port

4700 The name that is associated with the ALATERM macro for this 3708 port

Sys/36 Any 8-character name

Sys/38 The device description (DEVD) name that is associated with the System/38 device description definition for this 3708 port

8100 The name that is defined in the NAME column in the adapter configuration panel for a device attached to this 3708 port.

Note: Printers must be assigned to only one SNA host.

SNA LU Device Number (Printer on Preassigned Host)

[00 - 31]

If a printer or a printer port of a keyboard display with printer is assigned to a SNA host by the Host Printer Source field on screen C122.2, type the number that the SNA host uses to refer to this port. If this port does not contain a printer or if a printer is not assigned to the host, this field is ignored. (Enter *00* for the SNA LU Device Number.) Otherwise, this number **must** be two less than one of the following:

NCP The LOCADDR parameter in the NCP generation for the LU macro defined for this 3708 port

43xx ICA The LOCADDR parameter in the VBUILD=CA macro for the LU macro defined for this 3708 port

Sys/38 The first two bytes of the device address (DEVADR) parameter in the System/38 device description definition for this 3708 port

8100 The address that is defined in the LOCADR column in the adapter configuration panel for a device that is connected to this 3708 port.

Notes:

1. For the Sys/36 configuration, make this value equal to the port number in the Sys/36 Work Station Definition menu. The 3708 supports a value of PL (3287 printer type) for printers in the Sys/36 port number definition fields.
2. For 4700 attachments, this value must equal the SEL parameter defined in the 4700 for this 3708 port.
3. Printers must be assigned to only one SNA host.

Default SNA LU Device Number Assignments

The IBM-supplied configuration for the SNA logical unit (LU) device numbers is as follows:

Port	SNA LU Device Number for Host A	SNA LU Device Number for Host B	SNA LU Device Number for Printer LU
01	00	00	10
02	01	01	11
03	02	02	12
04	03	03	13
05	04	04	14
06	05	05	15
07	06	06	16
08	07	07	17
09	08	08	18
10	09	09	19

Notes:

1. The device numbers for each SNA host must be unique.
2. Printers that are assigned to an SNA host must have unique device numbers from all other devices that are defined to that SNA host.

End-User Device Definition (Screen C123.2)

This screen continues the port definition for an end-user device.

```
C123.2
                          3708 DEFINITION FOR PORT 7

TYPE ANY DESIRED CHANGES :


     PASSWORD   PASSWORD                      1   RECEIVE XON/XOFF
     7          PASSWORD RETRY LIMIT          1   TRANSMIT XON/XOFF
     12         LINE SPEED                    1   DEVICE CLASS
     L          LINE TYPE                     2   OPERATING MODE
     2          DISCONNECT                    0   INTERFACE TYPE
     111111     TRANSLATE OPTION              2   PARITY
     M          RECEIVE QUEUE SIZE            2   3270 MODEL EMULATION
     0          RECEIVE QUEUE PACING THRESHOLD
                 (0=NONE,1=50%,2=75%)



PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                          P 00
```

Password

Type the password, which may contain up to 8 characters, for the port that you are defining.

Notes:

1. Leave this field blank to eliminate the need for a port password. Trailing blanks are ignored. Do not use a period (.), ####, or imbedded blanks in the password.
2. This field is ignored if LOGON SCREENS EXCLUDED = Y or the Port Password Screen (C1) is excluded.

Receive XON/XOFF

Some devices, such as printers, send an XOFF character to the 3708 when the device cannot accept any more data from the 3708. The XOFF character causes the 3708 to temporarily stop sending data to the device. When the device can receive more data, it sends an XON character to the 3708, which sends data to the device again. See Appendix J, "Terminal XON/XOFF Pacing Support" to determine if the device supports XON/XOFF pacing.

[1,0]

1—The device uses XON and XOFF to pace the 3708. The 3708 stops sending data to the device when it receives an XOFF character and starts sending data to the device when it receives an XON character.

0—The device does not use XON and XOFF to pace the 3708. If the 3708 receives an XON or XOFF character from the terminal, the 3708 treats the characters as data and passes them to the host application. (The 3708 does not pace.)

Notes:

1. XON = DC1 = X'11'
2. XOFF = DC3 = X'13'
3. Some modems also transmit XON/XOFF characters to pace the 3708.

Password Retry Limit

[0 - 9]

Type the number of retries that are allowed when a user enters a port password.

Notes:

1. If this number is exceeded, alert message A105 is generated and the user is disconnected from the 3708. After the number is exceeded, the retry limit is set to 0 until the correct password is entered.
2. This field is ignored if LOGON SCREENS EXCLUDED = Y or the Port Password Screen (C1) is excluded.

Transmit XON/XOFF

[1,0]

1—The device accepts XON and XOFF characters to allow the 3708 to pace the device. The device stops sending data to the 3708 when it receives an XOFF character and starts sending data to the 3708 when it receives an XON character. The device must be able to accept the XON/XOFF characters as pacing indicators. To determine if the device supports XON/XOFF pacing, see Appendix J, "Terminal XON/XOFF Pacing Support."

0—The device does not accept XON and XOFF characters to allow the 3708 to pace the device.

Notes:

1. XON = DC1 = X'11'
2. XOFF = DC3 = X'13'
3. This field must be set to 1 for the Receive Queue Pacing Threshold to be effective. Refer to "Receive Queue Pacing Threshold" on page 13-31 for more information.

Line Speed

[01 - 14, 19]

Enter the number that corresponds to the appropriate line speed:

01 — 110 bps
02 — 150 bps
03 — 200 bps
04 — 300 bps
05 — 600 bps
06 — 1200 bps
07 — 1800 bps
08 — 2400 bps
09 — 3600 bps
10 — 4800 bps
11 — 7200 bps
12 — 9600 bps
13 — 14400 bps
14 — 19200 bps
19—Autobaud (for speeds from 110 to 4800 plus 9600 bps).

Device Class

[1 - 4]

1 — Keyboard display
2 — Keyboard printer (LU type 1 NTO)
3 — Printer (LU type 1 SCS, LU type 3 DSC)
4 — Keyboard display with printer (multiple-LU configuration)

Notes:

1. Define a keyboard printer that is operating in protocol conversion mode as a printer (option 3).
2. Define a printer that is operating in protocol enveloping mode as a keyboard printer (option 2).

Line Type

[S, L]

S — Switched
L — Leased and direct connect lines

Operating Mode

[0 - 2]

0 — Protocol enveloping only
1 — Protocol conversion only
2 — Dynamic

Notes:

1. Dynamic allows the mode to be determined by the BIND that is sent from the host. Protocol enveloping is used when an LU-LU session type 1 BIND is sent from the host. Protocol conversion is used when an LU-LU session type 2 BIND is sent from the host.
2. If this port is used with a control terminal, specify 1 or 2.
3. Refer to *IBM 3708 Network Conversion Unit Description* for more information about the 3708 modes of operation.

Disconnect

Normally when the end user logs off from a host application, the host program transmits an UNBIND command to the 3708. This option and the UNBIND type determine whether the device is disconnected. If the device is disconnected, the end user must reconnect to the 3708 and logon. If the device is not disconnected, the end user is returned to the 3708 Host Selection Menu (C3), if defined.

[0 - 3]

0—The device is unconditionally disconnected if an UNBIND is sent to the 3708 from the host.

1—The device is not disconnected at UNBIND.

2—The device is conditionally disconnected if the UNBIND sent to the 3708 from the host is other than X'02' or X'03'.

3—The device is conditionally disconnected if the UNBIND sent to the 3708 from the host is anything other than X'01', X'02', or X'03'.

4—The device is conditionally disconnected if the UNBIND is sent to the 3708 from the host is other than X'02', or X'03'; the downstream device is not disconnected on a DACTLU command from the host.

5—The device is conditionally disconnected if the UNBIND sent to the 3708 from the host is anything other than X'01', X'02', or X'03'; the downstream device is not disconnected on a DACTLU command from the host.

Notes:

1. For applications that use UNBIND (02), such as NCCF, use disconnect options 2 or 3.
2. To prevent being disconnected from applications, such as TSO, which transmit a DACTLU during manual logoff procedures, use disconnect option 4 or option 5.

Interface Type

[1,0]

1 — EIA 422A
0 — EIA 232C

Host/Device Type	Interface Type
SNA host	EIA 232C
ASCII host	EIA 232C
ASCII printer	EIA 232C
ASCII display or keyboard printer	EIA 232C EIA 422A

The EIA 422A interface can be used to attach displays or keyboard printers directly or remotely over nonswitched lines to the 3708 for distances up to 1219 meters (4000 feet). The EIA 422A interface may not, however, be used for attaching hosts or printers (output only) to the 3708.

The EIA 232C interface can be used to attach all types of devices directly or remotely over nonswitched lines, or remotely over switched lines to the 3708. Devices may be attached up to 15 meters (50 feet) from the 3708 or attached modem.

Translate Option

_ _ _ _ _ _

The first two blanks are for transmit and receive translate options for protocol enveloping. The first blank defines the translation that is used for data that is transmitted from the 3708 to the ASCII device. The second blank defines the translation that is used for the data that is received from the ASCII device.

The options are:

0 — No translation
1 — Default translate table (See Appendix L, "IBM-Supplied Translate Tables")
2 — User-defined translate table (See Chapter 17, "Creating a User-Defined Translate Table")
3 — Alternate translate table
(See Appendix L, "IBM-Supplied Translate Tables").

The third and fourth blanks are for transmit and receive translate options for protocol conversion for a keyboard display or for the keyboard display part of a keyboard display with printer. The third blank defines the translation that is used for data that is transmitted from the 3708 to the ASCII device. The fourth blank defines the translation that is used for the data that is received from the ASCII device.

The options are:

1 — Default translate table
2 — User-defined translate table
3 — Alternate translate table (see Appendix L, "IBM-Supplied Translate Tables").

The fifth blank defines the translation that is used for data that is transmitted from the 3708 to an ASCII printer or to the printer port of a keyboard display with printer. The sixth blank is reserved. The options are:

1—Default translate table
2—User-defined translate table
3—Alternate translate table (see Appendix L, "IBM-Supplied Translate Tables").

Parity

[1 - 6]

1 — None
2 — Odd
3 — Even
4 — Space
5 — Mark
6—Autoparity (even and odd only can be detected; for speeds from 110 to 9600 bps)

Note: For protocol conversion, options 4 and 5 (space and mark parity) are not supported. Match this parity to the parity that is configured at the device.

Receive Queue Size

The receive queue contains data that is sent from a device to the 3708.

[S,M,L]

Type the desired size of the receive queue for this port:

S — 79 bytes
M — 519 bytes
L — 1079 bytes.

Notes:

1. The IBM PC/HOST File Transfer and Terminal Emulator Program (FTTERM) requires only a 79-byte (S) receive queue.
2. Refer to *IBM 3708 Network Conversion Unit Description* for more information about receive queues.

Type an *S* for printers and for normal interactive applications that transfer small blocks of data from the terminal through the 3708. Type an *M* or *L* for applications that do not employ XON/XOFF pacing and transfer larger blocks of data through the port (for example, file transfer applications).

Note: The receive queue size selection must satisfy this formula:

$P_m + 2(P_l) + 2(P_4) + 2(P_{ls}) < 40 - 2(P_{ne})$

where:

P_m = The number of ports set for a medium (519-byte) receive queue
P_l = The number of ports set for a large (1079-byte) receive queue
P_4 = The number of ports operating as Device_Class_4 (see "Device Class" on page 13-27)
P_{ls} = The number of ports supporting Models 3, 4, or 5 emulation. (see "3270 Model Emulation")
P_{ne} = The number of ASCII ports not excluded.

Warning: If you do not satisfy the formula before invoking the user-defined configuration, you receive the message `C117 BUFFER CONSTRAINT EXCEEDED;` $P_m + 2(P_l) + 2(P_4) + 2(P_{ls}) < 40 - 2(P_{ne})$ followed by the values from the inequality. At the next restart, the 3708 temporarily invokes the IBM-supplied configuration. When logging on to the control terminal the next time, you receive message `C116 BUFFER CONSTRAINT EXCEEDED.` To cause the 3708 to invoke the user-defined configuration, configure the ports to satisfy the formula.

3270 Model Emulation

[2 - 5]

Type the largest screen size (Model 2, 3, 4, or 5) supported by this port. If Operating Mode = Protocol Enveloping Only, Device Class = Printer, or Device Class = Keyboard/Printer, this option must be 2.

Value	Display Model	Screen Size
2	Model 2	24 x 80
3	Model 3	32 x 80
4	Model 4	43 x 80
5	Model 5	27 x 132

Receive Queue Pacing Threshold

[0 - 2]

This option is used to determine whether or not the 3708 transmits XOFFs and XONs to a downstream device based on the number of unprocessed characters in the 3708 receive queue. If receive queue pacing is enabled, the XOFF pacing threshold may be set at either 50% or 75% of the configured size of the 3708's receive queue (RECEIVE QUEUE SIZE).

0—The 3708 does not pace based on its receive queue.

1—The 3708 transmits an XOFF when its receive queue is 50% full. An XON is transmitted when the receive queue is 25% full.

2—The 3708 transmits an XOFF when its receive queue is 75% full. An XON is transmitted when the receive queue is 25% full.

Notes:

1. This field is ignored if TRANSMIT XON/XOFF = 0.
2. For remote service, you must configure at least one switched port for TRANSMIT XON/XOFF = 1 and RECEIVE QUEUE PACING THRESHOLD = 0.

End-User Device Definition (Screen C123.3)

This screen continues the port definition for an end-user device.

```
C123.3
                          3708 DEFINITION FOR PORT 7

TYPE ANY DESIRED CHANGES :


    7      BITS/CHARACTER
    2      NUMBER OF STOP BITS
    00000  INACTIVITY TIME OUT
    00000  TRANSMIT DATA THRESHOLD                0    AUTO ON-HOOK
    00000  TRANSMIT ERROR THRESHOLD               0    CDSTL
    00000  RECEIVE DATA THRESHOLD                 0    SEND ANSWERTONE
    00000  RECEIVE ERROR THRESHOLD

    000    DELAY AFTER FORMFEED
    000    DELAY AFTER CARRIAGE RETURN
    000    MAXIMUM PLATEN LENGTH



PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                          P 00
```

Bits/Character

[7,8]

7—Possible for all modes
8—Possible for only protocol enveloping mode

Notes:

1. For 8-bit data to support LU type 1 SCS transparency, configure for 7-bit data and no parity check.
2. Refer to *IBM 3708 Network Conversion Unit Description* for more information.

Number of Stop Bits

[1,2]

Type the number of stop bits.

The number of stop bits must match the configuration of the device on this port.

Inactivity Time Out

[00000 - 16383]

Type the amount of time for a connected but inactive port to remain connected. The value is in half seconds. Type *00000* for no inactivity time out.

Note: This field is for switched lines and for EIA 422A connections only and is a way to reduce line costs. Type *00000* for nonswitched lines.

Transmit Data Threshold

[00000 - 65535] optional

Type the transmit data threshold count that, when exceeded, is sent unsolicited to the SNA host. Type *00000* to disable this function.

Note: This count is sent in an NMVT vector to NetView or NPDA when the threshold is exceeded or when the session ends abnormally.

Auto On-Hook

[1,0]

1—Auto On-hook is a security feature that the 3708 provides for switched lines. The 3708 monitors carrier detect (CD) and breaks the connection when CD is dropped.

0—The 3708 does not disconnect the port when CD is dropped.

Note: This field is only for switched full duplex physical facility lines with Permanent Request To Send (PRTS). See "Permanent Request To Send" on page 13-39 for more information. Type a *0* for nonswitched lines.

Transmit Error Threshold

[00000 - 65535] optional

Type the transmit error threshold count that, when exceeded, is sent unsolicited to the host. Type *00000* to disable this function.

Note: This count is sent in an NMVT vector to NetView or NPDA when the threshold is exceeded or when the session ends abnormally.

CDSTL (Connect Data Set To Line)

[1,0]

1—The 3708 raises data terminal ready (DTR) only after a ring is detected from the modem (RI is activated).

0—The 3708 raises data terminal ready (DTR) as soon as the port is enabled.

Notes:

1. This field is for switched lines only. Type a *0* for nonswitched lines.
2. Choose *1* if the modem will not answer an incoming call if DTR is already active from the 3708.

Receive Data Threshold

[00000 - 65535] optional

Type the receive data threshold count that, when exceeded, is sent unsolicited to the host. Type *00000* to disable this function.

Note: This count is sent in the NPDA NMVT vector when the threshold is exceeded or when the session ends abnormally.

Send Answertone

[1,0]

1—The modem does not provide an answertone. The 3708 sends an answertone for 3 seconds.

0—The modem provides an answertone.

Note: This field is for switched lines only. Type a *0* for nonswitched lines.

Receive Error Threshold

[00000 - 65535] optional

Type the receive error threshold count that, when exceeded, is sent unsolicited to the host. Type *00000* to disable this function.

Note: This count is sent in the NPDA NMVT vector when the threshold is exceeded or when the session ends abnormally.

Delay after Form Feed

For LU type 1 SCS, LU type 3, and protocol enveloping, the number of DEL (X'7F') characters that are sent after a form feed (FF) character is the number that is defined by the form feed delay during configuration. This number is also used after a vertical tab (VT) character in protocol enveloping.

[000 - 255]

Type the number of DEL (X'7F') characters that the 3708 is to transmit to the device after sending a form feed to allow time for the print element to move to a new position. Type *000* if you are using a buffered printer.

Delay after Carriage Return

For protocol conversion, the carriage return delay for LU type 1 SCS and LU type 3 print operations is calculated using the ratio of the position of the print element to the platen length that is defined during configuration. This ratio is multiplied by the carriage return delay to obtain the number of DEL (X'7F') characters that are sent to the printer after a carriage return (CR) character.

In protocol enveloping, after a carriage return (CR) or horizontal tab (HT), the number of DEL characters sent is the number that is defined in the carriage return delay; no calculations are performed.

Note: If a device is defined as a display with printer (Device Class = 4), the carriage return delay value applies to the printer, not to the display.

[000 - 255]

Type the number of DEL (X'7F') characters that the 3708 is to transmit to the device after sending a carriage return. This allows time for the printer element to move back to the left margin.

Maximum Platen Length

[000 - 255]

Type the platen length of the printer in characters. This value is the default for the maximum print position, which is the maximum number of characters that fit on one line of the printer.

Note: If the host transmits a set horizontal format (SHF) command during an LU_1 SCS printout and specifies a page width greater than the maximum platen length, the 3708 rejects the data from the host with a sense code of X'1005'.

What To Do Next

The next screen you should go to depends on the type of device that you are configuring and what you want to do with it.

- If you are using protocol enveloping or dynamic mode, continue with the following section, "Protocol Enveloping Definition for an End-User Device (Screen C123.4)." Then, if the device is a printer or a keyboard display with printer, follow the instructions under "Defining the Printer Authorization Matrix" on page 13-41.
- If you are using protocol conversion mode and the device is a printer or a keyboard display with printer, go to "Defining the Printer Authorization Matrix" on page 13-41.
- If you are using protocol conversion mode only and the device is not a printer or a keyboard display with printer, go back to the beginning of this section, "Defining a Port for an End-User Device" on page 13-15.

Protocol Enveloping Definition for an End-User Device (Screen C123.4)

This screen continues the port definition for an end-user device if protocol enveloping or dynamic mode is to be used with it.

```
C123.4
                    3708 PROTOCOL ENVELOPING FOR PORT 7

TYPE ANY DESIRED CHANGES :


    1      FULL DUPLEX LINE                0   FULL DUPLEX CONTROL UNIT
    0      IGNORE PARITY                   6F  PARITY ERROR SUB. CHAR.
    1      ECHOPLEX                        4F  ATTENTION KEY SUB. CHAR.
    0      DELAY AFTER RECEIPT OF CR       1   RECOGNIZE TERM. ATTENTION
    1      ALLOW TERMINAL BREAK            0   DELETE RUBOUT CHARACTER
    000    LINE QUIET TIME                 3   RECOGNIZE SYSTEM REQUEST SIMULATION
    000    TEXT TIME OUT                   1   PERMANENT REQUEST TO SEND

    0D25000000   TURN AROUND CHARACTERS
    0D25C5D5E3C5D940C4C1E3C17A0D250000000000   SEND READ PROMPT




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                          P 00
```

Full Duplex Line

[1,0]

1—Full duplex

0—Half duplex

This field defines the line from the device to the 3708 as either a full or half duplex facility.

Note: Many modems provide a full duplex communication facility over two-wire telephone lines.

Full Duplex Control Unit

This option defines whether communication to the device is full or half duplex mode.

[1,0]

1—Full duplex

0—Half duplex

If the line is half duplex, the control unit must be in half duplex mode. Terminals are normally configured as half duplex control units even when operating on a full-duplex facility.

Note: This field must be set to half duplex for the BREAK function to operate in NTO-like mode.

Ignore Parity

[1,0]

1—Parity errors are ignored on characters from the device.

0—Parity errors are recognized.

The 3708 replaces the data byte received with bad parity with the parity error substitution character.

Parity Error Substitution Character

[X'00' - X'FF']

Type the character in EBCDIC that is to be inserted into the host data stream in place of a character with bad parity that is received from the device. For example, if you type the EBCDIC character X'6F', the 3708 inserts a question mark (?) into the host data stream as a substitute for characters with bad parity. Ignore Parity must be *0* for this function to work.

Echoplex

[1,0]

1—The characters that are received by the 3708 are echoed back to the sending device.

Echoplex provides a visual method of verifying that the 3708 has correctly received data. This option requires full duplex communication facility and Permanent RTS.

0—The characters that were received by the 3708 are not echoed back to the sending device.

Attention Key Substitution Character

[X'00' - X'FF']

Type the hexadecimal value that is to be transmitted to the host when the 3708 recognizes terminal attention. For example, if you type X'4F', the 3708 inserts X'4F' into the host data stream when it recognizes terminal attention.

See "Recognize Terminal Attention" on page 13-38 for more information.

Delay After Receipt of CR

This option tells the 3708 to delay after a carriage return (CR) is received from a device before initiating a host transmission.

[1,0]

1—The 3708 uses the value that is defined in the Delay After Carriage Return field (see Delay after Carriage Return on page 13-34) when it receives a carriage return from the device. This value specifies the number of DEL characters that the 3708 transmits to the device before starting a host transmission.

0—The 3708 does not delay before transmitting when it receives a carriage return from the device.

Recognize Terminal Attention

The 3708 recognizes the break line condition from the device as an attention or signal (SIG). The following table shows how the break line condition works.

	Terminal Transmitting Data to 3708	3708 Transmitting Data to Terminal	No Data
Half Duplex Control Unit	ATTEN	SIG	SIG
Full Duplex Control Unit	ATTEN	ATTEN/SIG*	SIG

[1,0]

1—The Attention Key Substitution Character is sent to the host when the break line condition is interpreted as an attention. The 3708 inserts the Attention Key Substitution Character into the data stream.

0—The 3708 ignores the break line condition when it is interpreted as an attention.

Allow Terminal Break

The 3708 sends a break to the terminal after receiving a signal from the SNA host.

[1,0]

1—Send a break to the terminal.

0—Do not send a break to the terminal.

Delete Rubout Character

[1,0]

1—Rubout characters (X'7F') that are received from the device are deleted.

0—Rubout characters (X'7F') that are received from the device are not deleted.

Note: Normally, Delete Rubout Character is used only for paper tape or magnetic tape.

Line Quiet Time

[000 - 255]

When operating with a half duplex facility (Full Duplex Line is set to 0; see "Full Duplex Line" on page 13-36), this field defines the number of character times that the 3708 waits to allow the line to become temporarily inactive after a line turnaround is received.

The recommended value for this field is *000*.

* If data is coming from the terminal, the 3708 transmits the attention substitute character (ATTEN) to the host. If data is *not* coming from the terminal, the 3708 transmits a SIG command.

Recognize System Request Simulation

[0 - 3]

0—This function is disabled.

1—The 3708 recognizes string 1 (defined in the Chapter 14, "Defining the General Definition").

2—The 3708 recognizes string 2 (defined in the Chapter 14).

3—The 3708 recognizes the default string (99999).

The system request simulation string (options 1, 2, or 3) is recognized only when it occurs at the beginning of a line of data. The rest of the line is then transmitted to the SSCP. The SSCP message can be up to 251 bytes long and must end with a defined line turnaround character.

Note: If you specify 1, 2, or 3, the data received after the specified string is sent on the SSCP - LU session after a line turnaround is received.

Text Time Out

[000 - 255]

Type the time, in half seconds, that the 3708 is to wait before assuming a turnaround character and before sending data to the host. Typing *000* indicates no text time out.

The recommended value for this field is *000*.

Permanent Request To Send

[1,0]

0—Operating in half duplex facility

1—Operating in full duplex facility

See "Full Duplex Line" on page 13-36.

Turnaround Characters

[X'01' - X'FF']

Up to five different line turnaround characters can be defined. To define the line turnaround characters, type the hexadecimal representation of each of the EBCDIC characters. X'00' indicates the end of the field. If no translation is defined (TRANSLATE=0) type the hexadecimal representation of the line turnaround characters.

Each character is accepted as a turnaround character and as the ENTER key during 3708 logon. For example, the default value for this field is X'0D25000000', which defines two different line turnaround characters. (X'0D' is carriage return and X'25' is line feed.)

Send Read Prompt

[X'01' - X'FF']

Type the read prompt that is to appear on the device. If you are using a translation table, code the characters in the hexadecimal representation for EBCDIC. If you are using no translation (TRANSLATE=0), code the characters in the character codes for the device. Send Read Prompt is a 20-character field. X'00' indicates the end of the field.

The read prompt contained in the default configuration for display ports is (CR/LF) ENTER DATA: (CR/LF). Primarily, this is used when running in protocol enveloping mode (LU type 1 NTO), and it is sent by the 3708 to the device after a message from the host has been sent to the device.

If defined, the read prompt can also appear at the device in the time between host selection and actual logon to an application. (If logon screens are excluded for the port, it can appear before and between host sessions).

Fill this field with zeros to prevent the read prompt from appearing on the screen.

Defining the Printer Authorization Matrix

This section describes the screen for defining the printer authorization matrix. Follow the instructions in this section to configure a port for a printer or a display with printer.

Note: See *IBM 3708 Network Conversion Unit Description* for more details about the printer authorization matrix.

Printer Authorization Matrix (Screen C124.0)

```
C124.0
                  3708 PRINTER AUTHORIZATION MATRIX

TYPE ANY DESIRED CHANGES:


           01                PRINTER PORT ADDRESS
           3                 PRINTER MODE
           1111111111111111  PRINT CLASS
           0111111110        SOURCE DEVICE LIST
           66                DEFAULT PRINTER PAGE LENGTH
           N                 PERFORM FORMFEED AFTER LOCAL COPY
           Y                 3708 MAY TRANSMIT FORMFEED (LU_1 SCS)
           Y                 PERFORM FORMFEED AT BEGIN BRACKET (LU_1 SCS)
           Y                 PERFORM NEWLINE AT BEGIN BRACKET (LU_3)




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                        P 00
```

Printer Port Address

[01 - 10]

The 3708 displays the port number that you are defining. You cannot change this field.

Printer Mode

[1 - 3]

1—System mode. The host printer is not used by the local displays.

2—Local mode. The printer can be used by the displays that are assigned in the Source Device List (see page 13-42) for local copy operations.

3—Shared mode. The printer can operate in system or local mode.

See "Printer and Keyboard Printer Support" on page 2-3 for more information about printer mode.

Print Class

The 3708 allows printers to be grouped into print classes (70-85). If a print job is submitted to the class, the 3708 sends the printout to the first available printer in that class.

[1,0]

1—The printer is defined to the class.

0—The printer is excluded from the class.

The leftmost blank is for class 70; the rightmost is for class 85, as follows:

70	71	72	73	74	...	82	83	84	85
—	—	—	—	—	...	—	—	—	—

Note: This field only applies to printers that operate in local or shared mode. For example, 1110001100100000 defines the printer for the print classes 70, 71, 72, 76, 77, and 80. The printer is available to print jobs that are submitted in one of these print classes.

Source Device List

[1,0]

1—The printer accepts local copy requests from the port.

0—The printer does not accept local copy requests from the port. Enter *0* for those ports to which a printer or host is connected.

The leftmost blank is for port 1; the rightmost is for port 10, as follows:

1	2	3	4	5	6	7	8	9	10
—	—	—	—	—	—	—	—	—	—

Note: If you configure the printer port of a keyboard display with printer (Device Type = 4), the display can be included in the Source Device List. This allows local copies from the display to the connected printer. For example, in the example network Figure 4-2 on page 4-5, the IBM 4201 can accept local copies from the displays on ports 7, 4, 3, and 2. Therefore, the Source Device List for the IBM 4201 is defined as 0111001000. See "IBM PC AT/4201 MLU Definition (Port 02)" on page B-11 for more information.

Default Printer Page Length

[01 - 99]

If the host applications do not set the printer page length, type the printer page length.

This option emulates the 3287's lines/page switch. It allows the control terminal operator to specify the number of lines/page to be used for LU type 1 printouts when an application has not previously set the number of lines/page by an SVF command.

This feature is intended for certain applications, such as NCCF, which do not use the SVF command to set the number of lines/page for LU type 1 printouts but rely on end users to set the desired form size on their printers through a printer switch.

The 3708 allows the control terminal operator to choose any integer value from 1 to 99 (defaults to 66) to represent the number of lines/page for each printer supported by the 3708. This value is only used in LU type 1 printouts and only when the application has not previously set the number of lines/page in the SVF command.

The configured lines/page value is set after an UNBIND (with disconnect specified) or when the 3708 is restarted or turned off and back on again. A reset of the lines/page value does not occur after UNBINDs with no disconnect specified or after a DACTLU if DISCONNECT has a value of 4 or 5. Thus, if an application sets the lines/page to some value, such as 72, through the SVF command, then the original session is UNBOUND and is not disconnected; the next session on that particular 3708 port finds the default lines/page set at 72.

Perform Formfeed After Local Copy

[Y, N]

Y—The 3708 transmits a Form feed (FF) to a printer after each local copy operation.

N—The 3708 does not transmit a FF after a local copy operation. This is the default value.

3708 May Transmit Formfeed (LU_1 SCS)

[Y, N]

Y—The 3708 transmits FF characters when they are detected in the LU type 1 SCS data stream to the downstream printer.

N—When a FF is detected in the LU type 1 SCS data stream, the 3708 transmits a CR LF followed by the appropriate number of LF, to page to the top of the next form.

This feature is intended for printers that do not possess a manual lines/page switch and are required to support several page sizes, or do not perform a CR after receiving an FF.

The top of the next form is determined by the SVF command, if the application transmitted one, or the DEFAULT PRINTER PAGE LENGTH setting.

Perform Formfeed at Begin Bracket (LU_1 SCS)

[Y, N]

Y—For host prints, the 3708 transmits a FF at each SNA Begin Bracket command. This is the default value.

N—The 3708 does not transmit a FF at a Begin Bracket command.

Perform Newline at Begin Bracket (LU_3)

[Y, N]

Y—The 3708 transmits an NL after each SNA Begin Bracket command during an LU_3 DSC printout. This is the default value.

N—The 3708 does not transmit an NL at a Begin Bracket command.

Chapter 14. Defining the General Definition

This chapter describes the screen for defining the general 3708 configuration. It also describes each of the non-standard bits.

General Definition (Screen C127.1)

You can use these fields to identify the configuration.

```
C127.1
                          3708 GENERAL DEFINITION

TYPE ANY DESIRED CHANGES :
CONFIGURATION
        CAT00     NAME
        DEFCAT11  VERSION
        08/26/86  DATE
        1554 HRS  TIME

PROTOCOL ENVELOPING SYSTEM REQUEST SIMULATION
        6E6E6E6E6E  STRING 1
        4C4C4C4C4C  STRING 2

NON-STANDARD OPERATIONS
        XXXXXXXX    XXXXXXXX    XXXXXXXX    XXXXXXXX




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                        P 00
```

To reset the definition to the IBM-supplied configuration, type the following:

NAME: **REPLWIBM**
VERSION: **CONFIG..**

At the next reset or power on, the IBM-supplied configuration is used. The previous configuration is permanently lost and must be redone.

Name

[Any 8 characters] **optional**

Version

[Any 8 characters] **optional**

Date

[Any 8 characters] **optional**

Time

[Any 8 characters] **optional**

String 1

[X'00' - X'FF']

Type the 5 hexadecimal bytes by which the 3708 can identify data for an SSCP-SLU session.

For more information, see "Recognize System Request Simulation" on page 13-39.

String 2

[X'00' - X'FF']

Type the 5 hexadecimal bytes by which the 3708 can identify data for an SSCP-SLU session.

For more information, see "Recognize System Request Simulation" on page 13-39.

Non-Standard Operations

xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx

This field is used to enable certain non-standard 3708 operating features. You should not use these features unless you have a specific need for them in your operating environment.

1xxxxxxx xxxxxxxx...

Bit 1 = 1—Do not accept a CR as a line turnaround (LTA) character during the 3708 logon sequence unless it is specified in the 3708's Line Turnaround Character configuration field. (See "Turnaround Characters" on page 13-39 for more information.) A zero in the bit disables the function.

x**1**xxxxxx xxxxxxxx...

Bit 2 = 1—Default type-ahead key queuing and enhanced null/blank processing are set to ON for displays in protocol conversion mode. A zero in the bit results in a default of OFF.

xx**1**xxxxx xxxxxxxx...

Bit 3 = 1—The 3708 transmits a BAT (Basic Assurance Test) test pattern to verify the readiness of 3708 USARTs during extended diagnostics testing only. This function is useful if the BAT test pattern causes an attached device to enter an undesired operating state. If bit 3 is set to zero, the 3708 transmits a BAT test pattern during power-on, restart, or extended diagnostics testing.

xxx**1**xxxx xxxxxxxx...

Bit 4 = 1—The 3708 transmits a NULL (X'00') instead of a DEL (X'7F'), as an idle character, for delays after form feed or carriage return operations. (Refer to "Delay after Form Feed" on page 13-34 and "Delay after Carriage Return" on page 13-34.) If bit 4 is set to zero, the 3708 transmits a DEL (X'7F') as an idle character. See the description of bit 10 for more information on idle characters.

xxxx**1**xxx xxxxxxxx...

Bit 5 = 1—In protocol conversion mode, the 3708 substitutes a NULL (X'00') when it receives a character with a parity or framing error from the attached terminal. The 3708 does not update status or lock the user's keyboard when parity or framing errors occur. If bit 5 is set to zero and parity or framing errors occur, the 3708 updates status and locks the terminal user's keyboard. The terminal user must then repeat the keystroke.

xxxxx**1**xx xxxxxxxx...

Bit 6 = 1—When set to 1, the 3708 does not put a large screen terminal back into default screen size mode when Clear is entered by the operator. Specifying this bit as 1 causes the Clear key to operate differently than defined in the *IBM 3270 Information Display System: Data Stream Programmer's Reference*. Host applications conforming to this document may react unpredictably.

xxxxxx**1**x xxxxxxxx...

Bit 7 = 1—When set to 1, the 3708 discards all input between receipt of a line turnaround character and the start of a host write in protocol enveloping mode. This function emulates NTO's action between an internal READ and WRITE.

xxxxxxx**1** xxxxxxxx...

Bit 8 = 1—The 3708 translates LU_1 SCS transparency data using the configured translation table defined for printers. When set to 0, the 3708 does not translate LU_1 SCS transparency data.

xxxxxxxx **1**xxxxxxxx...

Bit 9 = 1—The 3708 echos characters during the 3708 logon process. This parameter overrides the ECHOPLEX parameter defined in the 3708. This bit is used only before the BIND. After an LU_1 BIND is received and the 3708 begins protocol enveloping operations, the ECHOPLEX option is used. When this bit is set to 0, the ECHOPLEX option determines whether characters are echoed during 3708 logon.

xxxxxxxx x**1**xxxxxx...

Bit 10 = 1—The 3708 transmits an XON (X'11') instead of a DEL (X'7F'), as an idle character, for delays after form feed or carriage return operations. If this bit is equal to 1, it overrides bit 4.

xxxxxxxx xx**1**xxxxx...

Bit 11 = 1—The 3708 places the rightmost 5 nibbles of the 3708 serial number into the terminal ID of the XID response. This support can be used to uniquely identify each 3708 to the host. If this bit is 0, the 3708 transmits all zeros for the terminal ID of the XID response.

xxxxxxxx xxx**1**xxxx...

Bit 12 = 1—The 3708 prints blank lines for lines consisting entirely of non-displayable characters during a formatted printout. This includes local copy operations. If this bit is 0, the 3708 does not treat CR, NL, and EM as valid print orders and prints them as blanks. If this bit is equal to 1, CR, NL, and EM are treated as valid print orders and are executed. The 3708 treats all formatted printouts as unformatted printouts. This bit overrides non-standard operating bit 13.

xxxxxxxx xxxx**1**xxx...

Bit 13 = 1—The 3708 does not insert a NL before formatted printouts. If this bit is set to 0, the 3708 inserts a NL before each formatted printout.

xxxxxxxx xxxxx**1**xx...

Bit 14 = 1—The 3708 transmits a TERMSELF (4C) to the host if the downstream device is disconnected in the middle of a session. This type of TERMSELF is useful when using gateway applications to cross-domain hosts.

xxxxxxxx xxxxxx**00 00000000 00000000**

Bits 15 - 32—These bits are reserved and should be set to 0.

Chapter 15. User-Defined Terminal Tables

This chapter describes the format of terminal tables and tells how to create a user-defined terminal table.

For each terminal type supported for 3270 protocol conversion, the 3708 uses a terminal table to define the keys that perform certain 3270/3708 functions. For example, the ERASE EOF key on the Beehive™ sends ESC J (X'1B4A') to the 3708, but the same key on the 3161 sends CTRL-e (X'05'). Terminal tables in the 3708 must define ERASE EOF as ESC J for a Beehive™ and as CTRL-e for an IBM 3161.

In addition, the 3708 uses terminal table when controlling a terminal. For example, if the terminal provides highlighting, the table must define the character sequence needed to turn highlighting on and off.

The 3708 contains default terminal tables for terminals that are listed on the 3708 Terminal Selection Logon screen (C2). These tables are listed in Appendix G, "Default Terminal Tables." You can select the desired terminal from the list when logging on to the 3708.

You can change the functions that are provided by one of the default terminal tables, or create an entirely new table, by creating a user-defined terminal table (UDT). Select this user-defined terminal table from the 3708 logon screen just as you would default terminal tables. For some terminals, predefined UDTs are provided. They are listed in Appendix H, "Predefined User-Defined Terminal Tables and Keyboard Mappings."

Standard and Enhanced Terminal Tables

The 3708 has two sizes of terminal tables: standard and enhanced. Standard tables are 300 bytes long, and enhanced tables are 452 bytes long. Enhanced tables must be used for 3270 model 3, 4, and 5 emulation (large screens). Enhanced UDTs can be used to customize the UDT names that are displayed on the terminal selection screen (C2) when a user logs on to the 3708. Enhanced UDTs can also be used to customize the terminal initialization sequence that is sent to the terminal at the start of each protocol conversion session.

There are five restrictions in the use of enhanced UDTs:

1. You can define only four enhanced UDTs. You can use six standard UDTs.
2. You cannot mix standard and enhanced UDTs.
3. Before defining an enhanced UDT, you must convert the standard UDTs to enhanced UDTs. See Chapter 16, "Converting Between Standard and Enhanced UDTs," for instructions.
4. You can also convert enhanced UDTs to standard UDTs. However, you lose the ability to have user-defined UDT names and user-defined initialization sequences, and you are not able to operate in large-screen mode using the UDTs. See Chapter 16 for instructions.
5. If you have enhanced UDTs and you need to convert to a microcode level prior to A58809, you must first convert enhanced UDTs to standard UDTs.

Creating a User-Defined Terminal Table

Before defining a UDT, you must determine if you want enhanced tables or standard tables. You must use enhanced tables if you want the following options:

- Customized UDT names appear on the Terminal Selection Screen
- Customized terminal initialization sequences sent to the terminal
- Large-screen mode operation when using UDTs.

You should also become familiar with the terminal you are using. You may need to refer to the terminal's technical documentation to create your UDT. Refer to Appendix K, "Manuals for Default Protocol Conversion Displays" for a list of the books you may want to use while creating your UDT.

The steps to take in defining a UDT are as follows:

1. To use enhanced tables, convert from standard to enhanced tables. This procedure is described in Chapter 16, "Converting Between Standard and Enhanced UDTs." When you receive your 3708, the UDTs are in the standard format.
2. Normally, you want to model your UDT after an existing, default terminal table. Note the ID number of the table you are using as a model. This ID is the same one that you type in to select that table from the Terminal Selection Logon screen (C2).
3. Determine what function you want to change in the existing table. Study the format of the tables. It is described under "Looking at the Terminal Table Format." Note the items that apply to the function you want to change. Note the hex address of each field that you need to change.
4. Define the UDT by selecting option 5 from the 3708 control terminal Configuration and Password Menu (M120.0). Select the ID of the table you are using as a model and the ID of the UDT you are creating.
5. For each change that you want to make in the table, type in the hex address of the location to be changed, then press ENTER. The "current" data at that location is displayed above the line where you enter your changes. Type in the new data, and press ENTER. Repeat this step for all changes in your table. See "Changing an Existing Table" on page 15-18 for an example of the steps and screens used for making this kind of change.
6. When your changes are complete, press PF6 to save the new table.
7. As with all configuration changes, you must start the 3708 again to use your new UDT.

Looking at the Terminal Table Format

Each terminal table contains three sections:

- General description section (addresses X'00' to X'05')
- Keyboard mapping definition section (addresses X'06' to X'A5')
- Terminal control section (addresses X'A6' to X'12B').

Enhanced terminal tables contain an additional section:

- Customization section (addresses X'12C' to X'1C3').

The content of each section is shown in Table 15-1 through Table 15-4. A description of each section follows the figures. Tables of values that can be used in the various fields follow each description. Addresses are given in hexadecimal format, which you should use when creating or modifying user-defined terminal tables.

Table 15-1. General Description Section of a Terminal Table

Hex Address	Description
00	Terminal ID
01	Flags
02	Cursor addressing class
03	Alternate control sequence character
04	Intermediate control sequence character
05	(Not used, set to X'00')

Table 15-2. Keyboard Mapping Section of a Terminal Table

Hex Address	Description
06 - 25	Function number for X'00' through X'1F'
26 - A5	Function number for ESC X'00' through ESC X'7F'

Table 15-3 (Page 1 of 2). Terminal Control Definition Section of a Terminal Table	
Hex Address	**Description**
A6	Byte count for ERASE EOL sequence
A7-AB	ERASE EOL sequence
AC	Byte count for CLEAR SCREEN sequence
AD-B1	CLEAR SCREEN sequence
B2	Byte count for CURSOR UP sequence
B3-B7	CURSOR UP sequence
B8	Byte count for CURSOR DOWN sequence
B9-BD	CURSOR DOWN sequence
BE	Byte count for CURSOR LEFT sequence
BF-C3	CURSOR LEFT sequence
C4	Byte count for CURSOR RIGHT sequence
C5-C9	CURSOR RIGHT sequence
CA	Byte count for SET CURSOR ADDRESS sequence
CB-CF	SET CURSOR ADDRESS sequence
DO	Byte count for HIGHLIGHT ON sequence
D1-D5	HIGHLIGHT ON sequence
D6	Byte count for HIGHLIGHT OFF sequence
D7-DB	HIGHLIGHT OFF sequence
DC	Byte count for BEL sequence
DD-E1	BEL sequence
E2	Byte count for SET COLOR 1 sequence
E3-E7	SET COLOR 1 sequence
E8	Byte count for SET COLOR 2 sequence
E9-ED	SET COLOR 2 sequence
EE	Byte count for SET COLOR 3 sequence
EF-F3	SET COLOR 3 sequence
F4	Byte count for SET COLOR 4 sequence
F5-F9	SET COLOR 4 sequence
FA	Byte count for STATUS LINE ON sequence
FB-FF	STATUS LINE ON sequence
100	Byte count for STATUS LINE OFF sequence
101-105	STATUS LINE OFF sequence
106	Byte count for ACTIVATE STATUS LINE sequence
107-10B	ACTIVATE STATUS LINE sequence

Table 15-3 (Page 2 of 2). Terminal Control Definition Section of a Terminal Table	
Hex Address	**Description**
10C	Byte count for START PRINTER sequence
10D-111	START PRINTER sequence
112	Byte count for STOP PRINTER sequence
113-117	STOP PRINTER sequence
118-12B	(Used for VT220, FALCO 500, and IBM 3151/61/62/63/64 If the terminal is not one of these, set to X'00'.)

Table 15-4. Customization Section of a Terminal Table	
Hex Address	**Description**
12C	Byte count for Set 24 x 80 mode sequence
12D-13B	Set 24 x 80 mode sequence
13C	Byte count for Set 32 x 80 mode sequence
13D-14B	Set 32 x 80 mode sequence
14C	Byte count for Set 43 x 80 mode sequence
14D-15B	Set 43 x 80 mode sequence
15C	Byte count for Set 27 x 132 mode sequence
15D-16B	Set 27 x 132 mode sequence
16C	Byte count for UDT name
16D-174	UDT name
175	Byte count for user-defined TLIS
176-1B1	User-defined TLIS
1B2-1C3	Reserved

General Description Section

The general description section contains the following fields:

Terminal ID

This number is an **internal** id that specifies the terminal type being used. When you create a UDT, this field is set for you using the terminal type you specify as a base. The ID is used to determine if special processing or initialization sequences are required for the terminal (refer to *IBM 3708 Network Conversion Unit Description* for details). Do not change this field unless you plan to attach a terminal that is not one of the standard supported terminals. If your plan calls for a non-standard terminal, type *00* in this field. Table 15-5 lists the IDs that you can enter in this field.

Note: A *00* in this field disables extended key functions. Refer to, "Modifying Extended Function Keys" on page 15-26.

Table 15-5. Terminal IDs

Internal ID	Terminal Type	External ID
01	IBM 3101 Display Terminal	1
02	IBM 3161/3162/3163 ASCII Display Station	2
03	IBM 3164 ASCII Display Station	3
04	DEC® Model VT52	4
05	DEC® Model VT100	5
06	TeleVideo® 910	6
07	TeleVideo® 950	7
08	Lear Siegler ADM 3A Dumb Terminal®	8
09	ADDS Viewpoint®	9
0A	Hazeltine 1500	10
0B	Hazeltine Esprit I™	11
0C	Hazeltine Esprit II™	12
0D	Northern Telecom Displayphone™	13
0E	Teletype 5410 Asynchronous Display Terminal	14
0F	Teletype 5420	15
10	Hewlett-Packard 2621B Interactive Terminal	16
11	Data General Dasher® D210 Display	17
12	ROLM® Cedar™, Cypress™, Juniper™	18
13	Beehive™ ATL-078	19
1E	FTTERM COLOR	1A
1F	FTTERM MONO	1B
20	IBM 3151/61/62/63 (3708 Feature)	2A
21	DEC® Model VT220	5A
22	FALCO 500 (DEC VT200 Mode)	5B
23	WY-50®	5C
24	IBM 3151/62 (Model 5 Emulation)	2C
25	IBM 3151 ASCII Display Station	2B
26	IBM 3164 (3708 Feature)	3A

Flags

This is a 1-byte field that is broken down into eight 1-bit flags. Each flag is set to either 1 or 0, and the 8 bits together form a hexadecimal value. Refer to Appendix N, "Binary to Hexadecimal Conversion Table" to determine the correct hexadecimal value for the set of flags that you need.

The bits are numbered 1 through 8 and have the following meanings:

Bit 1—ANSI X3.64

If this set to 1, the terminal supports ANSI X3.64 formats. If this bit is set to 0, ANSI X3.64 is not used.

Bit 2—Status line

If this bit is set to 1, the terminal has an addressable information area separate from the normal screen display area, on which the 3708 can display its status line. For example, when the terminal is operating in 24 x 80 (model 2) mode, the 3708 status line would appear on line 25. In this case, the START/STOP/ACTIVATE STATUS LINE sequences described in "Terminal Control Section" are used to control the terminal's information area.

If this bit is set to 0, the 3708 uses the last line of the normal screen display area for the status line information. For example, when the terminal is operating in 24 x 80 (model 2) mode, the status line appears on line 24.

Bit 3—Scroll

If this bit is set to 1, the terminal shifts the entire screen of data up one line when a character is sent to the last column of the last line on the screen. For this case, the 3708 never sends a character for display in the last character position on the screen.

If this bit is set to 0, the 3708 sends characters for display in the last character position on the screen.

Bit 4—Extended Key Sequences

If this bit is set to 1, the extended terminal table function is required for this terminal. It is required for terminals that can send more than 3 characters per keystroke. It is supported for the IBM 3151, IBM 3161, IBM 3162, IBM 3163, IBM 3164, VT220, and FALCO 500. Refer to"Modifying Extended Function Keys" for more information.

Bit 5—Field Attribute Byte

Terminals support two types of attribute processing to determine field characteristics: character attributes and field attributes. A terminal with character attributes remembers the current attribute setting, like highlighting, until it is changed. Character attributes do not occupy a screen character position. To support character attributes, bit 5 should be set to 0.

Field attributes occupy a screen position much like 3270 displays. Unlike character attributes, field attributes are remembered and need to be rewritten only when they change. Whenever a field changes, the cursor must be positioned at the attribute position to change or eliminate it. To support field attributes, bit 5 should be set to 1.

If this bit is set to 1, the terminal being used reserves a position on the screen display every time a field attribute sequence is transmitted by the 3708. Of the default terminal tables, the WY-50® is the only one that operates in this manner. If this bit is 0, the terminal does not reserve a position of the screen for field attributes.

Bit 6—Exclude 3708 Initialization

If this bit is set to 1, the 3708 does not send the 3708 default terminal initialization sequence provided for the terminal type. This bit is used along with the user-defined terminal initialization sequence (see "Customization Section") to determine what should be sent to initialize the terminal.

If this bit is set to 0, the 3708 sends its default terminal initialization sequence provided for the terminal type, if one is defined. Refer to *IBM 3708 Network Conversion Unit Description* for a description of the 3708 default initialization sequences.

Bit 7—Reserved

This bit is not used, and it should be set to 0.

Bit 8—Terminal Table Type

If this bit is set to 1, the table is an enhanced table (452 bytes long). If this bit is 0, the table is a standard table (300 bytes long). If you attempt to set this bit to 1 when standard tables are in use, or to 0 when enhanced tables are in use, the control terminal does not accept the change.

Cursor Addressing Class

This field contains the screen addressing class for the terminal. It defines the format of the character sequence that is accepted by the terminal to position the cursor. Table 15-6 lists the values that you can enter in this field.

Table 15-6 (Page 1 of 2). Cursor Addressing Classes

Class	Line Numbers	Column Numbers	Set Cursor Sequence
00	0-43	0-131	1. Any three ASCII characters 2. Line number (in ASCII characters)* 3. Any ASCII character 4. Column number (in ASCII characters)* 5. Any ASCII character Example: ESC & a 1 0 y 2 1 C In hex: 1B2661313079323143 * The numbers are ASCII representations of the decimal number; 10 = X'3130'; 21 = X'3231'. (This example positions the cursor at the 11th line, 22nd column.)
01	1-43	1-132	1. ESC 2. Left bracket 3. Line number (in ASCII characters)* 4. Any ASCII character 5. Column number (in ASCII characters)* 6. Any ASCII character Example: ESC [11; 22 H In hex: 1B5B31313B323248 * The numbers are ASCII representations of the decimal number; 11 = X'3131'; 22 = X'3232'. (This example positions the cursor at the 11th line, 22nd column.)
02	0-23	0-79	1. Any two ASCII characters 2. Line number in hex plus X'20' 3. Column number in hex plus X'20' Example: ESC A X'2A' X'35' In hex: 1B412A35 (This example positions the cursor at the 11th line, 22nd column.)
03	0-23	0-79	1. One or two ASCII characters 2. Column number in hex 3. Line number in hex Example: ESC A X'15' X'0A' In hex: 1B41150A (This example positions the cursor at the 11th line, 22nd column. See note.)
04	0-23	0-79	1. One or two ASCII characters 2. Column number in hex plus X'20' 3. Line number in hex plus X'20' Example: ESC A X'35' X'2A' In hex: 1B41352A (This example positions the cursor at the 11th line, 22nd column.)

Table 15-6 (Page 2 of 2). Cursor Addressing Classes

Class	Line Numbers	Column Numbers	Set Cursor Sequence
05	0-23	0-79	1. Any two ASCII characters 2. Line number in hex 3. Column number in hex Example: ESC A X'0A' X'15' In hex: 1B410A15 (This example positions the cursor at the 11th line, 22nd column. See note.)
06	0-42	0-131	1. Any three ASCII characters 2. Line number in hex plus X'20' 3. The first 3 bits of the column number in hex plus X'20' 4. The 5 rightmost bits of the column number in hex plus X'40' Example: ESC y b X'0A' X'20' X'56' In hex: 1B79200A2056 (This example positions the cursor at the 11th line, 22nd column.) Example: ESC y b X'0A' X'23' X'5A' In hex: 1B79200A235A (This example position the cursor at the 11th line, 122nd column.)

Note: These cursor classes use hex values X'11' and X'13' for row and column addressing. Some modems may interpret these values as flow control (XON/XOFF), and data being sent from the 3708 to the terminal may be interrupted.

Alternate Control Sequence Character

If the terminal uses a control sequence that introduces characters other than, or in addition to, an ASCII ESC (X'1B'), this 1-byte field contains the alternate character. The TeleVideo® 925 and 950, for example, use the SOH (01) character as a control sequence introducer in addition to ESC.

Intermediate Control Sequence Character

Some terminals generate an intermediate control sequence character when sending an ESC sequence to the 3708. This field defines the intermediate control sequence character to the 3708. The 3708 discards and ignores this character when the character is received after the ESC (or after the alternate control sequence character). For example, the IBM 3161 sends ESC ! *nn* for certain keys. The ! (X'21') is defined as the intermediate control sequence character for these terminals. If the terminal is an ANSI X3.64 terminal, there is no need to define the left bracket as an intermediate control sequence character. The intermediate control sequence character cannot be the NULL (X'00') character.

Keyboard Mapping Definition Section

The keyboard mapping definition section contains two parts: one for mapping 1-byte ASCII control codes (X'00' through X'1F') and one for mapping the second characters of ESC sequences (X'00' through X'7F'). For each code, the table contains a 1-byte entry that contains the number of the function that the 3708 should perform when the character (or ESC plus the character) is received.

These function numbers, which are listed in Table 15-7, identify particular 3270 functions that are performed by the 3708.

Table 15-7. Keyboard Functions

Function Number	Function	Function Number	Function
00	PF01	21	CURSOR SEL
01	PF02	22	CURSOR UP
02	PF03	23	CURSOR DOWN
03	PF04	24	CURSOR LEFT
04	PF05	25	CURSOR RIGHT
05	PF06	26	TAB
06	PF07	27	BACK TAB
07	PF08	28	NEW LINE
08	PF09	29	HOME
09	PF10	2A	TYPE AHEAD
0A	PF11	2B	NULL/BLANK
0B	PF12	2C	FIELD MARK
0C	PF13	2D	DUP
0D	PF14	2E	ERASE EOF
0E	PF15	2F	ERASE INPUT
0F	PF16	30	INSERT
10	PF17	31	DELETE
11	PF18	32	ECHO
12	PF19	33	CLICK KEY
13	PF20	34	PRINT
14	PF21	35	IDENT
15	PF22	36	STATUS ON/OFF
16	PF23	37	REFRESH
17	PF24	38	SUSPEND DISPLAY
18	PA1	39	ENABLE DISPLAY
19	PA2	3A	SUSPEND PRINTER
1A	PA3	3B	ENABLE PRINTER
1B	ATTN	3C	ENABLE FILE TRANSFER
1C	SYS REQ	3D	DISABLE FILE TRANSFER
1D	RESET	3F	FTTERM COMPRESS
1E	DEV CNCL	40	2/4 COLOR TOGGLE
1F	ENTER	41	TLIS REFRESH
20	CLEAR	7F	EXTENDED TERMINAL TABLE

For example, for most terminals, pressing the backspace (BS) key causes X'08' to be sent from the device. If the backspace key is to be used for the CURSOR LEFT function, then address X'0E' in the terminal table should contain the function number for CURSOR LEFT, which is X'24'. (The address is calculated by adding the X'08' to the address of the beginning of this part of the table, which is X'06'.)

As an example of entries in the second part of this section, suppose the sequence ESC P is to be used for the 3270 PRINT function. P is represented in ASCII as X'50' so, at offset X'50', the function number for PRINT is entered. It is entered at address X'76', since this part of the table (an ESC followed by a character) begins at address X'26' (X'26' + X'50' = X'76').

All addresses must contain a function number, but function numbers need not be unique; two or more sequences can perform the same function. For example, any of the entries that correspond to undefined characters should contain the function number for the BEL function (X'33'), causing the terminal to beep when the key is pressed.

Special Considerations for the Keyboard Mapping Definition Section

Special considerations for the keyboard mapping definition section are:

- For ANSI-compatible terminals, an ESC sequence often has a left bracket character inserted after the ESC character. This character should be ignored when defining the terminal table. The 3708 accounts for the possibility of receiving the left bracket based on the setting of the ANSI flag in terminal table byte 2.
- If the terminal generates a trailing character (for example, a carriage return) in the ESC sequence, add X'80' to the function number and delete the carriage return from the key sequence. For example, the 3101 generates ESC H CR when its PF8 key is pressed. To use the 3101 function PF8 for the 3270 function PF8, you must add X'80' to the PF8 function number X'07', resulting in X'87'.
- Whatever is specified as a function number for ESC is ignored. Also, if an alternate control sequence character is defined, the function number for this character, or ESC plus this character, is ignored.
- Control code X'7F' is not definable in the keyboard map definition section. This value is hardcoded in the 3708 and always represents the Delete function. Other keystrokes may be defined to perform Delete but any key that transmits X'7F' always performs the Delete function.

Terminal Control Section

The terminal control section contains the ASCII characters that the 3708 sends to the terminal to control the screen (such as cursor positioning and highlighting). There are 19 control functions with a 6-byte entry for each function. Table 15-8 describes the 19 functions.

Table 15-8. Terminal Control Functions

Function	Description
ERASE EOL	Erases the remainder of the line beginning with the current position of the cursor
CLEAR SCREEN	Clears the entire screen
CURSOR UP	Moves the cursor up one line
CURSOR DOWN	Moves the cursor down one line
CURSOR LEFT	Moves the cursor one position to the left
CURSOR RIGHT	Moves the cursor one position to the right
SET CURSOR ADDRESS	Positions the cursor at a specified line and column
HIGHLIGHT ON *	Causes subsequent characters received by the terminal to be highlighted
HIGHLIGHT OFF *	Causes subsequent characters received by the terminal not to be highlighted
BEL	Causes the terminal alarm (a beep) to sound
SET COLOR 1 *	Causes subsequent characters received by the terminal to be displayed in color 1
SET COLOR 2 *	Causes subsequent characters received by the terminal to be displayed in color 2
SET COLOR 3 *	Causes subsequent characters received by the terminal to be displayed in color 3
SET COLOR 4 *	Causes subsequent characters received by the terminal to be displayed in color 4
STATUS LINE ON	Causes the terminal to display subsequent characters on the addressable status line
STATUS LINE OFF	Tells the terminal that all status line characters have been sent
ACTIVATE STATUS LINE	Tells the terminal to expect the addressable status line to be used
START PRINTER	Enables the auxiliary port for print output; subsequent characters are sent to the printer
STOP PRINTER	Disables the auxiliary port; subsequent characters are sent to the printer

* Refer to *IBM 3708 Network Conversion Unit Description* for information on how highlighting and color are determined from the 3270 data stream.

Byte 1 is a count of the number of characters in the desired outbound control sequence. If the count is 0, the function is undefined for this terminal type. (Highlighting and colors, for example, are not provided by all terminals.)

Subsequent bytes contain the characters to be sent to the terminals for the desired function. For example, to cause the 3101 screen to be cleared, the sequence ESC L must be sent to the device. Therefore, the entry in the table for the CLEAR SCREEN function is 02 1B 4C 00 00 00 (since the count is 2, the last 3 bytes of this entry are unused).

Special Considerations for the Terminal Control Section

Special considerations for the terminal control section are the following:

- SET CURSOR ADDRESS is unique in that it contains variable fields. The usual sequence for this function is ESC *X R C*, where *X* is some fixed character, and *R* and *C* are the line and column at which the cursor is to be positioned. This is represented in the terminal table as a 2-byte sequence, ESC *X*. The 3708 supplies the line and column values.
- ACTIVATE STATUS LINE is provided for a terminal that has an addressable status line, but which requires a special sequence that tells the terminal to expect the 3708 to send START STATUS and STOP STATUS. However, ACTIVATE STATUS LINE, if defined in the table, is sent to the terminal by the 3708 when beginning a protocol conversion session, regardless of the setting of the addressable line flag in byte 2 of the terminal table. (This is the only time that ACTIVATE STATUS LINE is sent.) This allows ACTIVATE STATUS LINE to contain any terminal initialization sequence that may be useful.
- The 3708 does not support reverse video or underlined fields explicitly, although you may define these attributes in your UDTs. Because of the way screen updates are done, blanks and nulls may not be rewritten when fields change. This may prevent reverse video and underlined data from appearing as it would on a 3270 device.
- The format of the two highlight sequences and of the four color sequences must all be the same relative to the Terminal Field Attribute Byte or Non-Field Attribute Byte. Consult the reference manual for the terminal to determine which, if any, of the terminal visual attributes use a Field Attribute Byte.
- To match the basic four-color support of the 3270 data stream, colors 1, 2, 3, and 4 should be green, red, blue, and white, respectively. However, for a user-defined terminal, you can use any four colors that you prefer. All four colors must be filled in with correct sequences. Colors can be duplicated.
- If you are using highlighting, you must define both the highlight ON and highlight OFF sequences.

- ANSI visual attribute support, other than highlighting on/off, can require control sequences longer that the 5-character maximum provided by the 3708. This function should be applied only to the highlighting on/off and color 1, 2, 3, and 4 fields of the TUT definition.

  For ANSI-compatible devices, the sequences in this part of the table can be entered in two different formats:

  1. If the entire sequence is 5 characters or less, enter the exact sequence, including the ESC left bracket that normally introduces an ANSI sequence. However, for SET CURSOR ADDRESS, the 3708 inserts a semicolon (;) between the row and column values. Therefore, a semicolon should not be included in the table entry.
  2. If the sequence is more than 5 characters long and is in the format for ANSI visual attributes, enter the sequence as follows:
     - Set the count field to the length of the entire sequence, minus the CSI (ESC [) and the separators (X'3B').
     - Turn on the leftmost bit of the count field. This tells the 3708 to provide the CSI and the separators.
     - Define only the parameters specifying the visual attributes.
     - Define the terminating character.

     Example

     To define a field with high intensity (1), blinking (5), and reverse video (7), the sequence in the UDT is X'85303135376D'. The 3708 sends this sequence to the terminal:

     ```
     X'1B5B303B313B353B376D'  (ESC [ 0 ; 1 ; 5 ; 7 m)
     ```

     Notes:

     a. This example assumes that reset, 0 (X'30'—all attributes off), must also be sent.

     b. The numbers in parentheses specify the characters understood by the terminal for a particular visual attribute.

Customization Section

The customization section is found only in enhanced tables. It allows you to specify larger screen sizes, user-defined UDT names, and user-defined terminal initialization sequences.

For the larger screen sizes function to work, the terminal must have the capability to support large screen sizes. The terminal installer must set up the terminal to be able to operate at the larger screen sizes. Consult the reference manual for the terminal you are using to determine what sizes can be used and the values to code in for the set screen size sequences.

The customization section contains the following fields:

Set 24 x 80 mode sequence (model 2)
This is a 16-byte field used to define the ASCII sequence that should be sent to the terminal for a screen size of 24 x 80. The first byte of the field should contain the count (in hexadecimal) of the number of characters in the sequence. The remaining bytes of the field contain the actual sequence to be sent and should be entered as the hexadecimal representation of ASCII characters. If the count is 0, the 3708 does not accept a BIND from a host application specifying a screen size of 24 x 80.

Set 32 x 80 mode sequence (model 3)
This is a 16-byte field used to define the ASCII sequence that should be sent to the terminal for a screen size of 32 x 80. The first byte of the field should contain the count (in hexadecimal) of the number of characters in the sequence. The remaining bytes of the field contain the actual sequence to be sent and should be entered as the hexadecimal representation of ASCII characters. If the count is 0, the 3708 does not accept a BIND from a host application specifying a screen size of 32 x 80.

Set 43 x 80 mode sequence (model 4)
This is a 16-byte field used to define the ASCII sequence that should be sent to the terminal for a screen size of 43 x 80. The first byte of the field should contain the count (in hexadecimal) of the number of characters in the sequence. The remaining bytes of the field contain the actual sequence to be sent and should be entered as the hexadecimal representation of ASCII characters. If the count is 0, the 3708 does not accept a BIND from a host application specifying a screen size of 43 x 80.

Set 27 x 132 mode sequence (model 5)
This is a 16-byte field used to define the ASCII sequence that should be sent to the terminal for a screen size of 27 x 132. The first byte of the field should contain the count (in hexadecimal) of the number of characters in the sequence. The remaining bytes of the field contain the actual sequence to be sent and should be entered as the hexadecimal representation of ASCII characters. If the count is 0, the 3708 does not accept a BIND from a host application specifying a screen size of 27 x 132.

User-defined UDT name

This is a 9-byte field used to define the name for the UDT. This name is displayed on the 3708 terminal selection screen (C2). This first byte of the field should contain the count (in hexadecimal) of the number of characters in the name, which should be entered as EBCDIC characters. If the count is not a number from 1 to 8, the default UDT name is used ("UDT01" - "UDT04").

User-Defined Terminal Logon Initialization Sequence (TLIS)

The 3708 allows you to send a hard-coded terminal initialization sequence, a user-defined sequence (TLIS), both, or neither.

This is a 61-byte field used to define a sequence to be sent to the terminal at the beginning of the protocol conversion session. The first byte of the field should contain the count (in hexadecimal) of the number of characters in the sequence. The remaining 60 bytes of the field contain the actual sequence to be sent, and should be entered as ASCII characters. If the count is not a number from 1 to 60, no user-defined TLIS is sent.

This field is used along with bit 6 of the flags field as follows:

Bit 6	TLIS Count	Meaning
0	= 0	Send only the 3708 initialization sequence
0	> 0	Send the 3708 initialization sequence followed by the user-defined sequence
1	= 0	Send no initialization sequence
1	> 0	Send only the user-defined sequence

Changing an Existing Table

You can create a new user-defined terminal table by changing an existing table, such as one of the default tables. The procedure is to display the existing table, to assign an unused user-defined terminal ID number to the new table, and to change the data as needed. The original table is not changed.

This section provides two examples that show how an existing table can be used to create a new table. Use the default table under "IBM 3151, 3161, 3162, and 3163 ASCII Display Stations" on page G-71 to follow these examples.

Example 1

This example shows how to change the default terminal table for a 3161/62/63 as follows:

Change IDENT from CTRL-Z to ESC-Z.

To change this key function, do the following:

1. Log on to a 3708 control terminal and enter a 5 (for USER-DEFINED TERMINAL TABLE) on the Configuration and Password Menu (M120.0). The following screen is then displayed:

```
C125.0
                3708 USER DEFINED TERMINAL TABLE

TYPE THE TERMINAL ID TO USE AS A BASE FOR THE TABLE YOU WISH TO DEFINE :

   00

TYPE THE TERMINAL ID FOR THE NEW TABLE (20 - 25):

   00









  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

  4BMYJOB                                                    P 00
```

2. Type the terminal ID of the terminal table that is to be used as the base table. The terminal IDs are listed on the 3708 logon screen. See page 12-6.

   In this example, the user-defined terminal table is based on the 3161/62/63 default terminal. The terminal ID for the 3161/62/63 is 02.

3. Type the terminal ID of one of the available user-defined terminals. Up to six can be defined. The choices are 20 through 25. The selected number is displayed on the 3708 logon screen along with the default terminal types.

4. Press the ENTER key. The following screen is then displayed:

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

   TYPE ADDRESS AND PRESS "ENTER" :   000


   CURRENT DATA DISPLAY :
   0210 0200 2100 331B 3333 2D2E 2C33 2426


   TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":
   0210 0200 2100 331B 3333 2D2E 2C33 2426









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

5. Enter the table address of the key sequence that is to be changed and press the ENTER key. For the 3161/62/63, CTRL-Z is at address X'20' and is assigned to the IDENT function (function number X'35').

   The screen then displays the contents of 16 addresses, beginning at the selected address (address X'20'). The displayed data is the hexadecimal function numbers that are assigned to the key sequences for the 16 addresses. In this example, the function number for address X'20' (CTRL-Z) is the first number displayed. It is X'35' (IDENT).

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

   TYPE ADDRESS AND PRESS "ENTER" :  020


   CURRENT DATA DISPLAY :
   3533 3333 3333 3333 3333 3333 3333 3327


   TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
   3533 3333 3333 3333 3333 3333 3333 3327









 PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

 PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


 4BMYJOB                                                    P 00
```

6. Disable the CTRL-Z key sequence by changing it from the IDENT function to the BEL function (function number X'33'). BEL disables the key sequence because it produces only a beep when the key sequence is pressed.

   To disable CTRL-Z, change address X'20' from X'35' (IDENT) to X'33' (BEL) and press the ENTER key:

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

   TYPE ADDRESS AND PRESS "ENTER" :  020


   CURRENT DATA DISPLAY :
   3533 3333 3333 3333 3333 3333 3333 3327


   TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
   3333 3333 3333 3333 3333 3333 3333 3327









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

7. Enter the address for the next key sequence to be changed, which is ESC-Z. For the 3161/62/63, ESC-Z is at address X'80'. The first number is X'33', which shows that ESC-Z is currently assigned to the BEL function.
8. Change the function number of ESC-Z from X'33' (BEL) to X'35' (IDENT) and press the ENTER key.
9. Press PF6 to add the new user-defined terminal table to the 3708.

   The new table takes effect when the 3708 is restarted, or when it is turned off and back on again.
10. To use the new user-defined terminal table, select the assigned terminal ID (see step 3) when logging on to the 3708.

Example 2

This example shows how to change the default terminal table for a 3161/62/63 as follows:

- Change the ENTER function from the return key to the send key.
- Assign the NEWLINE function to the return key.

The send key on the 3161/62/63 sends the following characters: ESC ! 8 LTA. The ASCII ! character (X'21') must be defined as the intermediate control sequence character. (See the address X'04' description on page 15-10.)

Since the default terminal tables for the 3161/62/63 contain the ASCII ! character as the intermediate control sequence character, this character need not be changed for the user-defined terminal table.

The LTA (line turnaround) character is set from the 3161/62/63 setup menu. Since LTA is sent after the character sequence, an X'80' must be added to the function number to tells the 3708 to ignore the LTA character. (See the special considerations for the keyboard mapping section on page 15-12.)

To change the key functions described for this example, do the following:

1. Use default terminal ID 02 (3161/62/63).
2. Type the terminal ID of one of the available user-defined terminals. Up to six can be defined. The choices are 20 through 25. The selected number is displayed on the 3708 logon screen along with the default terminal types.
3. Display address X'5E', which is the send key sequence. The data is displayed as follows:

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

    TYPE ADDRESS AND PRESS "ENTER" :  05E


    CURRENT DATA DISPLAY :
    0708 3333 330B 3333 0D22 2325 2433 3333


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
    0708 3333 330B 3333 0D22 2325 2433 3333









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

4. Change the function number at address X'5E' from X'07' (PF8) to X'9F' and press the ENTER key. X'9F' is the sum of X'1F' (ENTER) and X'80' to make the 3708 ignore the LTA character.

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

   TYPE ADDRESS AND PRESS "ENTER" :  05E


   CURRENT DATA DISPLAY :
   0708 3333 330B 3333 0D22 2325 2433 3333


   TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
   9F08 3333 330B 3333 0D22 2325 2433 3333









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

5. Display address X'13', which is the return key sequence. The data is displayed as follows:

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

    TYPE ADDRESS AND PRESS "ENTER" :  013


    CURRENT DATA DISPLAY :
    1F33 3334 331D 3338 3333 361E 3935 3333


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
    1F33 3334 331D 3338 3333 361E 3935 3333









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

6. Change the function number at address X'13' from X'1F' (ENTER) to X'28' (NEWLINE) and press the ENTER key:

```
C125.1
              3708 USER DEFINED TERMINAL 02 TABLE

    TYPE ADDRESS AND PRESS "ENTER" :  013


    CURRENT DATA DISPLAY :
    1F33 3334 331D 3338 3333 361E 3935 3333


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER" :
    2833 3334 331D 3338 3333 361E 3935 3333









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


  4BMYJOB                                                    P 00
```

7. Press PF6 to add the new table to the 3708.
8. The new table takes effect when the 3708 is restarted, or when it is turned off and back on again.
9. To use the new user-defined table, select the assigned terminal ID that you defined in Step 2 (see page 15-19) when you log onto the 3708.

Modifying Extended Function Keys

The IBM 3708 can recognize long character sequences (more than 3) generated by terminal keys on certain attached terminals. The Extended Key Sequence bit in the Flags field enables this function. Refer to "General Description Section" on page 15-5.

The character sequences which are recognized by the 3708 are hard-coded in the 3708. That is, you cannot define new keys with long sequences to the 3708. You can, however, change those which are defined.

Long sequence keys are defined to the 3708 in the extended function key area, addresses 118 to 12B, in the keyboard maps. For example, the following DEC® Model VT220 keys (see page G-30) are recognized by the 3708 and can be changed.

F6	F11	F16	Find
F7	F12	F17	Remove
F8	F13	F18	Select
F9	F14	F19	Prev Screen
F10	F15	F20	Next Screen

To change a key's function, change that key's hex function number (see page 15-11) in the extended function key area of the UDT.

For example, if you want the DEC® Model VT220 F6 to perform the PF1 function instead of the PF13 function, change the hex function number from X'0C' (hex function number for PF13) to X'00' (hex function number for PF1) in the UDT at address 118.

Notes:

1. Keys that are not extended function keys can all be changed in the normal way.
2. The Insert key for the IBM 3151, 3161, 3162, 3163, and 3164, which transmits a long sequence, is hard-coded in the 3708 and cannot be changed.

Using Predefined Terminal Tables

You can create a user-defined terminal table by using one of the predefined tables provided in Appendix H, "Predefined User-Defined Terminal Tables and Keyboard Mappings."

To use a predefined terminal table, do the following:

1. Make a copy of the desired user definition in Appendix H, "Predefined User-Defined Terminal Tables and Keyboard Mappings."
2. Assign a user-defined terminal ID (20-25) to the table and write the terminal ID next to address 000000 on the copy.
3. Enter the table data using the procedure described under "Changing an Existing Table" on page 15-18.
4. Complete the *IBM 3708 Network Conversion Unit Reference Card for the User-Defined Terminal,* SX27-3654.

Chapter 16. Converting Between Standard and Enhanced UDTs

This chapter explains how to convert between standard and enhanced user-defined terminals (UDTs).

You can convert between UDT types by selecting option 8 from the M120.0 screen:

```
M120.0
                        3708 CONFIGURATION & PASSWORD MENU


         COMMAND        DESCRIPTION

            1           CHANGE PASSWORD
            2           HOST DEFINITION
            3           PORT DEFINITION
            4           PRINTER AUTHORIZATION MATRIX
            5           USER DEFINED TERMINAL TABLES
            6           USER DEFINED TRANSLATION TABLE
            7           GENERAL DEFINITION
            8           CONVERSION BETWEEN STANDARD & ENHANCED UDTS




PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT
==>


4BMYJOB                                                    P 00
```

Figure 16-1. 3708 M120 screen

After entering option 8, CONVERSION BETWEEN STANDARD & ENHANCED UDTS, you see the following screen:

```
M128.0
                    CONVERSION BETWEEN STANDARD & ENHANCED UDTS

TYPE ANY DESIRED CHANGES:

         N     CONVERT FROM STANDARD TO ENHANCED UDTS

               IF YOU ANSWERED "Y", TYPE THE STANDARD UDT IDS
               (20 - 25) YOU WISH TO CONVERT:

               __     WILL BE ENHANCED UDT ID 20
               __     WILL BE ENHANCED UDT ID 21
               __     WILL BE EHHANCED UDT ID 22
               __     WILL BE ENHANCED UDT ID 23

         N     CONVERT FROM ENHANCED TO STANDARD UDTS



PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT
==>


4BMYJOB                                                    P 00
```

Figure 16-2. UDT Conversion Screen (M128.0)

Select the type of conversion by changing N to Y on the appropriate line.

Converting Standard to Enhanced

To convert standard tables to enhanced, enter the ID of the table that you want to convert on the appropriate line. You can enter the IDs in any order, and an ID can be used more than once. If you leave any lines blank, the 3708 enters the default ID of 20 and ask you to verify the entries. You can change any ID before you press ENTER. Press PF6 if you want to save the converted table.

Restrictions: Certain restrictions apply to the use of enhanced tables. They are as follows:

- Only four enhanced tables can be used. At least two of your standard tables are lost.
- If the TERMINAL ID field for any port specifies a value of 24 or 25, the control terminal prevents you from converting standard UDTs to enhanced. You must change the TERMINAL ID for those ports to specify values other than 24 or 25.
- If you use a cartridge that does not support enhanced UDTs, you must first convert from enhanced to standard UDTs.

Converting Enhanced to Standard

If you convert enhanced tables to standard, the tables are converted in order (UDT01 to UDT04), and the last two tables (UDT05 and UDT06) are initialized to zero. The last 152 bytes of each enhanced table are lost.

The 3708 tells you to press PF6 if you want to save the converted table.

Chapter 17. Creating a User-Defined Translate Table

This chapter describes the format of the translate tables and explains how to create a user-defined translate table.

Looking at the Translate Table Format

The 3708 provides two standard translate tables—a default table and an alternate table. Each of these tables is described in Appendix L, "IBM-Supplied Translate Tables." A user-defined translate table can be created from the default translate table, the alternate translate table or another translate table that the user has previously defined. You can have only one user-defined translate table at a time. If you create a user-defined table from another user-defined table, the old table is erased.

The 3708 translate tables are divided into two parts:

- EBCDIC to ASCII translation
- ASCII to EBCDIC translation.

Addresses X'000' through X'0FF' in the translate table define the EBCDIC to ASCII translation, and addresses X'100' through X'1FF' define the ASCII to EBCDIC translation.

Addressing in the translate table is based on the hexadecimal representation of the EBCDIC or ASCII character. For example, to see what an EBCDIC & character (X'50') is translated to in the default table, display the translate table beginning at address X'50'. You can do this by typing 050 into the address field of the User-Defined Translate Table screen (C126.1). The 3708 displays the default table beginning at address X'050'. The display shows that the EBCDIC code X'50' is translated into the ASCII X'26' (an ASCII $ character).

The ASCII to EBCDIC part of the table begins at address X'100'. For example, to see what the ASCII ! character (X'21') is translated to in the default table, display the translate table beginning at address X'121'. The table shows that the ASCII ! character is translated into the EBCDIC; character (X'4F').

Defining a New Translate Table

The following example shows how to define a new translate table that translates an EBCDIC ! character (X'5A') to the ASCII ! character (X'21') and vice versa:

1. Display the User Defined Translate Table Selection screen (C126.0):

```
C126.0
              3708 USER DEFINED TRANSLATE TABLE SELECTION

TYPE THE ID TO USE AS A BASE FOR THE TABLE YOU WISH TO DEFINE:  1


     VALID IDS ARE:

         1 - 3708 DEFAULT TRANSLATE TABLE
         2 - USER DEFINED TRANSLATE TABLE
         3 - 3708 ALTERNATE TRANSLATE TABLE









  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

Message Area (3 Lines)
          "
          "                                          P 00
```

2. Select the translate table you wish to use as the base for your new table. You may use any of the following as the base:
   - 3708 default translate table
   - 3708 alternate translate table
   - Another translate table that the user has previously defined.

3. Enter 1 to display the Translate Table screen (C126.1):

```
C126.1
                3708 USER DEFINED TRANSLATE TABLE

    TYPE ADDRESS AND PRESS "ENTER":

    CURRENT DATA DISPLAY:


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE

  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT

4BMYJOB                                                    P 00
```

4. Type 05A for address X'5A' (the EBCDIC ! character) in the address field. The following screen is displayed:

```
C126.1
              3708 USER DEFINED TRANSLATE TABLE

    TYPE ADDRESS AND PRESS "ENTER":  05A


    CURRENT DATA DISPLAY:
    5D24 2A29 3B5E 2D2F 3A3A 3A3A 3A3A 3A3A


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":
    5D24 2A29 3B5E 2D2F 3A3A 3A3A 3A3A 3A3A









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE


  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

This screen displays the contents of 16 addresses, beginning at the selected address (address X'5A'). For this example, the data displayed are the hexadecimal representations of the ASCII characters assigned to the 16 EBCDIC characters from X'5A' to X'69'.

5. Change the 2-byte entry associated with address X'5A' (X'5D') to X'21' (the ASCII ! character).

```
C126.1
                3708 USER DEFINED TRANSLATE TABLE

    TYPE ADDRESS AND PRESS "ENTER":  05A


    CURRENT DATA DISPLAY:
    5D24 2A29 3B5E 2D2F 3A3A 3A3A 3A3A 3A3A


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":
    2124 2A29 3B5E 2D2F 3A3A 3A3A 3A3A 3A3A









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE


  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

6. Press the ENTER key and type 121 for address X'121'. (ASCII to EBCDIC translation begins at address X'100') The following screen is then displayed:

```
C126.1
                3708 USER DEFINED TRANSLATE TABLE

    TYPE ADDRESS AND PRESS "ENTER":  121


    CURRENT DATA DISPLAY:
    4F7F 7B5B 6C50 7D4D 5D5C 4E6B 604B 61F0


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":
    4F7F 7B5B 6C50 7D4D 5D5C 4E6B 604B 61F0









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE


  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

7. Change the 2-byte entry associated with address X'121' (X'4F') to X'5A' (the EBCDIC ! character).

```
C126.1
                3708 USER DEFINED TRANSLATE TABLE

    TYPE ADDRESS AND PRESS "ENTER":  121


    CURRENT DATA DISPLAY:
    4F7F 7B5B 6C50 7D4D 5D5C 4E6B 604B 61F0


    TYPE ANY DESIRED CHANGES TO DATA BELOW AND THEN PRESS "ENTER":
    5A7F 7B5B 6C50 7D4D 5D5C 4E6B 604B 61F0









  PRESS "PF6" TO UPDATE MASTER COPY OF TABLE


  PRESS "ENTER" TO CONTINUE OR "PF2" TO QUIT


4BMYJOB                                                    P 00
```

8. Press the PF6 to update the configuration. Any user-defined translate table that you have previously defined is destroyed and replaced with the new table.
9. Verify the changes by displaying the addresses X'5A' and X'121'.

The new translate table takes effect when the 3708 is restarted or when it is turned off and back on again.

Appendixes

This part contains the following appendixes:

Appendix A. IBM-Supplied Configuration

This appendix provides the IBM-supplied configuration for the 3708. This configuration is not designed to provide a working configuration, but to provide a variety of connection possibilities that maximize the options (such as parity and speed) for connecting a control terminal for initial configuration.

PORTS 1 through 5

Option	Field Length	Port 1	Port 2	Port 3	Port 4	Port 5
Port Excluded	(1)	N	N	N	N	N
Logon Screens Excluded	(1)	Y	N	N	N	N
Terminal Type ID	(2)	01 (3101)	01 (3101)	01 (3101)	01 (3101)	01 (3101)
Port Password Screen (C1)	(1)	NA	Y	Y	Y	Y
Terminal Type Screen (C2)	(1)	NA	Y	Y	Y	Y
Host Selection Screen (C3)	(1)	NA	Y	Y	Y	Y
Logon Indication Screen (C4)	(1)	NA	Y	Y	Y	Y
Short Logon Screens	(1)	NA	N	N	N	N
Control Terminal Access	(1)	NA	Y	Y	Y	Y
Language Code	(1)	NA	0 (English)	0 (English)	0 (English)	0 (English)
Device Name	(8)	CU01NAME	CU02NAME	CU03NAME	CU04NAME	CU05NAME
Device Line Name	(8)	LN01NAME	LN02NAME	LN03NAME	LN04NAME	LN05NAME
SNA LU Network Name Keyboard Host A	(8)	LU1ANAME	LU2ANAME	LU3ANAME	LU4ANAME	LU5ANAME
SNA LU Device Number Keyboard Host A	(2)	00	01	02	03	04
SNA LU Network Name Keyboard Host B	(8)	LU1BNAME	LU2BNAME	LU3BNAME	LU4BNAME	LU5BNAME
SNA LU Device Number Keyboard Host B	(2)	00	01	02	03	04
SNA LU Network Name (Printer)	(8)	LU1PNAME	LU2PNAME	LU3PNAME	LU4PNAME	LU5PNAME
SNA LU Device Number (Printer)	(2)	10	11	12	13	14
Password	(8)	–	Password	Password	Password	Password
Receive XON/XOFF	(1)	1 (Yes)	0 (No)	1 (Yes)	0 (No)	0 (No)
Password Retry Limit	(1)	0	7	7	7	7
Transmit XON/XOFF	(1)	1 (Yes)	0 (No)	1 (Yes)	0 (No)	0 (No)
Line Speed	(2)	12 (9600)	19 (Auto)	19 (Auto)	06 (1200)	08 (2400)
Device Class	(1)	3 (Printer)	1 (Display)	1 (Display)	1 (Display)	1 (Display)
Line Type	(1)	L	S	S	L	L
Operating Mode	(1)	1 (Conversion)	2 (Dynamic)	2 (Dynamic)	2 (Dynamic)	2 (Dynamic)
Disconnect	(1)	2	2	2	2	2
Interface Type	(1)	0 (232C)	0 (232C)	0 (232C)	0 (232C)	0 (232C)
Translate Option	(6)	111111	111111	111111	111111	111111
Parity	(1)	2 (Odd)	6 (Auto)	6 (Auto)	3 (Even)	2 (Odd)
Receive Queue Size	(1)	S (79-byte)	S (79-byte)	M (519-byte)	S (79-byte)	S (79-byte)
3270 Model Emulation	(1)	2	2	2	2	2
Receive Queue Pacing Threshold	(1)	NA	0 (No)	0 (No)	0 (No)	0 (No)
Bits/Character	(1)	7	7	7	7	7
Number of Stop Bits	(1)	2	2	2	2	2
Inactivity Time Out	(5)	00000	00000	00000	00000	00000
Transmit Data Threshold	(5)	00000	00000	00000	00000	00000
Auto On-Hook	(1)	0 (Off)	1 (On)	1 (On)	0 (Off)	0 (Off)
Transmit Error Threshold	(5)	00000	00000	00000	00000	00000
CDSTL	(1)	0 (No)	0 (No)	0 (No)	0 (No)	0 (No)
Receive Data Threshold	(5)	00000	00000	00000	00000	00000
Send Answertone	(1)	0 (No)	0 (No)	0 (No)	0 (No)	0 (No)

Option	Field Length	Port 1	Port 2	Port 3	Port 4	Port 5
Receive Error Threshold	(5)	00000	00000	00000	00000	00000
Delay After Form Feed	(3)	000	000	000	000	000
Delay After Carriage Return	(3)	000	000	000	000	000
Maximum Platen Length	(3)	132	000	000	000	000
Full Duplex Line	(1)	NA	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Full Duplex Control Unit	(1)	NA	0 (No)	0 (No)	0 (No)	0 (No)
Ignore Parity	(1)	NA	0 (No)	0 (No)	0 (No)	0 (No)
Parity Error Subs. Char.	(2)	NA	6F	6F	6F	6F
Echoplex	(1)	NA	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Attention Key Subs. Char.	(2)	NA	4F	4F	4F	4F
Delay After Receipt of CR	(1)	NA	0 (No)	0 (No)	0 (No)	0 (No)
Recognize Term. Attention	(1)	NA	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Allow Terminal Break	(1)	NA	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Delete Rubout Character	(1)	NA	0 (No)	0 (No)	0 (No)	0 (No)
Line Quiet Time	(3)	NA	000	000	000	000
Recognize System Request Simulation	(1)	NA	3	3	3	3
Text Time Out	(3)	NA	000	000	000	000
Permanent Request To Send	(1)	NA	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Turnaround Characters	(10)	NA	0D25	0D25	0D25	0D25
Send Read Prompt	(50)	NA	yes	yes	yes	yes
Printer Mode	(1)	3 (Shared)	NA	NA	NA	NA
Print Class	(16)	1-1	NA	NA	NA	NA
Source Device List	(10)	1-1	NA	NA	NA	NA
Default Printer Page Length	(2)	66	NA	NA	NA	NA
Perform Form Feed After Local Copy	(1)	N	NA	NA	NA	NA
3708 May Transmit Form Feed (LU_1 SCS)	(1)	Y	NA	NA	NA	NA
Perform Form Feed At Begin Bracket (LU_1 SCS)	(1)	Y	NA	NA	NA	NA
Perform Newline At Begin Bracket (LU_3)	(1)	Y	NA	NA	NA	NA

PORTS 6 through 9

Option	Field Length	Port 6	Port 7	Port 8	Port 9
Port Excluded	(1)	N	N	N	N
Logon Screens Excluded	(1)	N	N	N	N
Terminal Type ID	(2)	01 (3101)	01 (3101)	01 (3101)	01 (3101)
Port Password Screen (C1)	(1)	Y	Y	Y	Y
Terminal Type Screen (C2)	(1)	Y	Y	Y	Y
Host Selection Screen (C3)	(1)	Y	Y	Y	Y
Logon Indication Screen (C4)	(1)	Y	Y	Y	Y
Short Logon Screens	(1)	N	N	N	N
Control Terminal Access	(1)	Y	Y	Y	Y
Language Code	(1)	0 (English)	0 (English)	0 (English)	0 (English)
Device Name	(8)	CU06NAME	CU07NAME	CU08NAME	CU09NAME
Device Line Name	(8)	LN06NAME	LN07NAME	LN08NAME	LN09NAME
SNA LU Network Name Keyboard Host A	(8)	LU6ANAME	LU7ANAME	LU8ANAME	LU9ANAME
SNA LU Device Number Keyboard Host A	(2)	05	06	07	08
SNA LU Network Name Keyboard Host B	(8)	LU6BNAME	LU7BNAME	LU8BNAME	LU9BNAME
SNA LU Device Number Keyboard Host B	(2)	05	06	07	08
SNA LU Network Name (Printer)	(8)	LU6PNAME	LU7PNAME	LU8PNAME	LU9PNAME
SNA LU Device Number (Printer)	(2)	15	16	17	18
Password	(8)	Password	Password	Password	Password
Receive XON/XOFF	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Password Retry Limit	(1)	7	7	7	7
Transmit XON/XOFF	(1)	0 (No)	1 (Yes)	0 (No)	0 (No)
Line Speed	(2)	10 (4800)	12 (9600)	12 (9600)	12 (9600)
Device Class	(1)	1 (Display)	1 (Display)	1 (Display)	1 (Display)
Line Type	(1)	L	L	L	L
Operating Mode	(1)	2 (Dynamic)	2 (Dynamic)	2 (Dynamic)	2 (Dynamic)
Disconnect	(1)	2	2	2	2
Interface Type	(1)	0 (232C)	0 (232C)	1 (422A)	1 (422A)
Translate Option	(6)	111111	111111	111111	111111
Parity	(1)	3 (Even)	2 (Odd)	3 (Even)	2 (Odd)
Receive Queue Size	(1)	S (79-byte)	M (519-byte)	S (79-byte)	S (79-byte)
3270 Model Emulation	(1)	2	2	2	2
Receive Queue Pacing Threshold	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Bits/Character	(1)	7	7	7	7
Number of Stop Bits	(1)	2	2	2	2
Inactivity Time Out	(5)	00000	00000	00000	00000
Transmit Data Threshold	(5)	00000	00000	00000	00000
Auto On-Hook	(1)	0 (Off)	0 (Off)	0 (Off)	0 (Off)
Transmit Error Threshold	(5)	00000	00000	00000	00000
CDSTL	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Receive Data Threshold	(5)	00000	00000	00000	00000
Send Answertone	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Receive Error Threshold	(5)	00000	00000	00000	00000
Delay After Form Feed	(3)	000	000	000	000
Delay After Carriage Return	(3)	000	000	000	000
Maximum Platen Length	(3)	000	000	000	000
Full Duplex Line	(1)	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Full Duplex Control Unit	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Ignore Parity	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Parity Error Subs. Char.	(2)	6F	6F	6F	6F
Echoplex	(1)	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Attention Key Subs. Char.	(2)	4F	4F	4F	4F
Delay After Receipt of CR	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Recognize Term. Attention	(1)	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Allow Terminal Break	(1)	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Delete Rubout Character	(1)	0 (No)	0 (No)	0 (No)	0 (No)
Line Quiet Time	(3)	000	000	000	000
Recognize System Request Simulation	(1)	3	3	3	3
Text Time Out	(3)	000	000	000	0
Permanent Request To Send	(1)	1 (Yes)	1 (Yes)	1 (Yes)	1 (Yes)
Turnaround Characters	(10)	0D25	0D25	0D25	0D25
Send Read Prompt	(50)	yes	yes	yes	yes
Printer Mode	(1)	NA	NA	NA	NA

Option	Field Length	Port 6	Port 7	Port 8	Port 9
Print Class	(16)	NA	NA	NA	NA
Source Device List	(10)	NA	NA	NA	NA
Default Printer Page Length	(2)	NA	NA	NA	NA
Perform Form Feed After Local Copy	(1)	NA	NA	NA	NA
3708 May Transmit Form Feed (LU_1 SCS)	(1)	NA	NA	NA	NA
Perform Form Feed At Begin Bracket (LU_1 SCS)	(1)	NA	NA	NA	NA
Perform Newline At Begin Bracket (LU_3)	(1)	NA	NA	NA	NA

PORT 10

Option	Field Length	Port 10
Port Excluded*	(1)	Y
Host A Port	(2)	10
Host B Port	(2)	00
Port	(2)	10
Host Name	(8)	IBMHOSTA
Host Keyboard Source Field	(10)	0111111110
Host Printer Source Field	(10)	1000000000
SNA PU Network Name	(8)	PU_NAME
SNA PU Line Network Name	(8)	IN10NAME
Station Address	(2)	08
NRZI Data Encoding	(1)	1 (Yes)
Permanent RTS	(1)	0 (No)
Line Speed	(2)	00 (External)
Line Type	(1)	L (Leased)
Transmit Unbind or Term-Self For Session Security	(1)	U (UNBIND)
SDLC Inactivity Time Out	(5)	00000
Set Host Termination Sequence	(1)	NA
Host Termination Sequence (in ASCII)	(6)	NA

* For CSC cartridges, port 10 is included (Port Excluded = N) to allow users to configure new 3708s from a host site over the SDLC link.

Appendix B. 3708 Configuration Example

This appendix provides a sample 3708 configuration for the network that is described in Chapter 4, "Planning Checklist" (see Figure 4-2 on page 4-5).

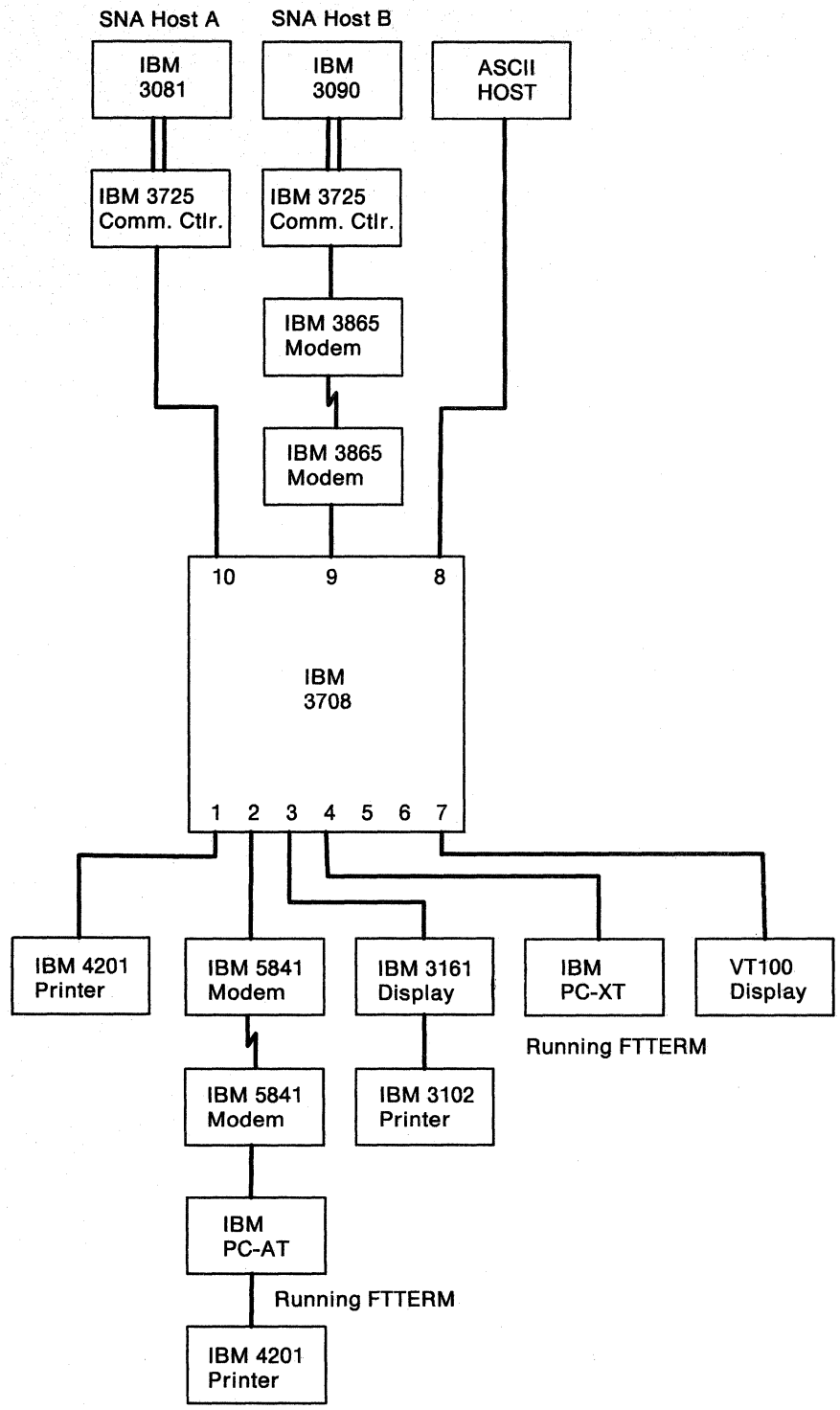


Figure B-1. Sample 3708 Configuration

The 3708 is configured to support two upstream SNA hosts and one ASCII host. The downstream links are a printer, two displays with attached printers (MLU), a Personal Computer XT emulating a 3101 (running FTTERM), and a VT100 display.

Ports Configured for Hosts

The following tables contain the configuration data for the two SNA hosts and the two ASCII hosts.

SNA Host Definitions

Note: Where two entries are defined, the first is for SNA host A.

Table B-1. SNA Host Definitions

Option	Data	Comments
Port excluded	N	Do not exclude port
Host-A port	10	SNA host on port 10
Host-B port	09	SNA host on port 09
Port	10 09	Port 10 for SNA host A Port 09 for SNA host B
Host name	IBM3081A IBM3090B	Label for host logon screen
Host keyboard source field	0111001000 0101000000	Displays on ports 02, 03, 04, and 07 can access SNA host A. Displays on ports 02 and 04 can access SNA host B.
Host printer source field	1010000000 0000000000	The printer on port 01 and 03 are assigned to SNA host A. No printers are assigned to SNA host B.
SNA PU network name	P13007A P13009B	Name of the NCP PU macro for host A Name of the NCP PU macro for host B
SNA PU line network name	L13007 L13009	Name of the NCP line macro for host A Name of the NCP line macro for host B
Station address	C1 C2	Address on NCP PU macro for host A Address on NCP PU macro for host B
NRZI data encoding	1	NRZI used
Permanent RTS	1	Full duplex facility
Line Speed	14 00	The 3708 provides 19200 bps clocking. The 3708 expects clocking from upstream host or modem.
Line Type	L	Upstream connection is leased.
Transmit UNBIND or TERM-SELF for Session Security	U	The 3708 transmits an UNBIND (cleanup) when the downstream device is disconnected in the middle of a session.
SDLC Inactivity Time Out	00000	The 3708 does not terminate sessions when the SNA host becomes inactive.

ASCII Host Definition

Table B-2. ASCII Host Definition

Option	Data	Comments
Port excluded	N	Do not exclude port
Host-A port	10	SNA host on port 10
Host-B port	09	SNA host on port 09
Port	08	Port 08 for ASCII host
Host name	ASCHOST	Label for host logon screen
Host keyboard source field	0001001000	Displays on ports 04 and 07 can access the ASCII host.
Host printer source field	0000000000	ASCII hosts cannot be accessed by printers.
Set host termination sequence	1	The host termination sequence is recognized.
Host termination sequence (in ASCII)	232323	The host termination sequence is ####.
Line Speed	12	The 3708 provides 9600 bps clocking.

Ports Configured for Terminals Only

The following tables contain the 3708 configuration data for the IBM PC XT on port 04 and the VT100 on port 07. Both devices are defined to operate in either protocol conversion mode (LU type 2) or protocol enveloping mode (LU type 1 NTO).

IBM PC XT Definition (Port 04)

Table B-3 (Page 1 of 2). IBM PC-XT Definition (Port 04)

Option	Data	Comments
Port excluded	N	Enable port
Logon screens excluded	N	Enable the 3708 logon screens.
Terminal Type ID	01	This field is ignored if the 3708 logon screens are enabled.
Control terminal function excluded	Y	Access to control terminal functions is not possible from port 04.
Port Password screen (C1) enabled	Y	The 3708 Port Password screen is displayed.
Terminal Type screen (C2) enabled	Y	The 3708 Terminal Type screen is displayed.
Host Selection screen (C3) enabled	Y	The 3708 Host Selection screen is displayed.
Logon Indication screen (C4) enabled	Y	The 3708 Logon Indication screen is displayed.
Short Logon screens	N	No short logon screens are displayed.
Control Terminal Access	N	Access to control terminal functions are not possible for port 04.
Language Code Selection	0	English
Port number	04	Port 04
Device name	DEVPCXT	Device name
Device line name	LINKPCXT	Downstream line name
SNA LU network name: Keyboard host A Keyboard host B Printer on preassigned host	 T13007A4 T13009B4 xxxxxxxx	 LU name on NCP macro in host A LU name on NCP macro in host B No printer defined on this port
SNA LU device number: Keyboard host A Keyboard host B Printer on preassigned host	 03 03 00	 Corresponds with the LU defined in the NCP LU macro in SNA host A with LOCADDR=05 Corresponds with the LU defined in the NCP LU macro in SNA host B with LOCADDR=05 No printer defined on this port
Password	(all blanks)	No 3708 port password is required for port 04.
Receive XON/XOFF	1	The 3708 treats XON/XOFF as pacing.
Password retry limit	0	No port password retry limit
Transmit XON/XOFF	1	The 3708 transmits XON/XOFF to pace the IBM PC-XT.
Line Speed	12	9600 bps
Device class	1	Keyboard display
Line type	L	For direct attached lines
Operating mode	2	Dynamic mode
Disconnect	2	Disconnect after UNBIND (except types 02 and 03)
Interface type	0	EIA 232C/V.24 interface
Translate option	111111	Use the default translate table
Parity	2	Odd parity
Receive queue length	S	79-byte receive queue
3270 Model Emulation	2	This port supports terminals emulating the 3270 Model 2 displays (screen size 24 x 80).

Table B-3 (Page 2 of 2). IBM PC-XT Definition (Port 04)		
Option	**Data**	**Comments**
Receive Queue Pacing Threshold	0	The 3708 does not pace based on its receive queue.
Bits/character	7	7 bits per character
Number of stop bits	1	1 stop bit
Inactivity Time Out	00000	No inactivity time out
Transmit data threshold	00000	No transmit data threshold
Auto on-hook	0	For direct attach lines
Transmit error threshold	00000	No transmit error threshold
CSDTL	0	Raise data terminal ready after port enabled
Receive data threshold	00000	No receive data threshold
Send answertone	0	Modem provides answertone (switched lines only)
Receive error threshold	00000	No receive error threshold
Delay after form feed	000	Not required for display
Delay after carriage return	000	Not required for display
Maximum platen length	000	Not required for display
Full duplex line	1	Full duplex facility
Full duplex control unit	0	Half duplex control unit
Ignore parity	0	Recognize parity
Parity error sub. char.	6F	Use ? as parity error substitution character
Echoplex	1	Echo characters back to the device
Attention key sub. char.	4F	Use ; as attention key substitution character
Delay after receipt of CR	0	No delay after carriage return
Recognize term. Attention	1	Recognize break signal as ATTEN
Allow terminal break	1	The 3708 can transmit the BREAK signal to the display.
Delete rubout character	0	Do not delete rubout characters
Line quiet time	000	No line quiet time
Recognize system request simulation	3	Recognize default string (99999) as system request
Text Time Out	000	No text time out
Permanent request to send	1	For full duplex facility
Turnaround characters		0D25000000 (Carriage Return, Line Feed)
Send read prompt		0D25C5D5E3C5D940C4C1E3C17A0D2500 (CrLfE N T E R D A T A : CrLf)

VT100 Definition (Port 7)

Table B-4 (Page 1 of 2). VT100 Definition (Port 07)

Option	Data	Comments
Port excluded	N	Enable port
Logon screens excluded	N	Enable 3708 logon screens
Terminal type ID	01	This field is ignored if 3708 logon screens are enabled.
Port Password screen (C1) enabled	Y	The 3708 Port Password screen is displayed.
Terminal Type screen (C2) enabled	Y	The 3708 Terminal Type screen is displayed.
Host Selection screen (C3) enabled	Y	The 3708 Host Selection screen is displayed.
Logon Indication screen (C4) enabled	Y	The 3708 Logon Indication screen is displayed.
Short Logon screens	N	No short logon screens are displayed.
Control Terminal Access	Y	Access to control terminal functions is allowed for port 07.
Language Code Selection	0	English
Port number	07	Port 07
Device name	DEVVT100	Device name
Device line name	LINKVT	Downstream line name
SNA LU network name: Keyboard host A Keyboard host B Printer on preassigned host	 T13007A7 xxxxxxxx xxxxxxxx	 LU name on NCP macro in SNA host A The port 07 display does not have access to SNA Host B. No printer defined on this port
SNA LU device number: Keyboard host A Keyboard host B Printer on preassigned host	 06 00 00	 Corresponds with the LU defined in the NCP LU macro in SNA host A with LOCADDR=08. Host B is not accessible from this port. No printer defined on this port
Password	TNN16	The 3708 port password is TNN16.
Receive XON/XOFF	1	The 3708 treats XON/XOFF as pacing.
Password retry limit	3	The port password retry limit is 3.
Transmit XON/XOFF	1	The 3708 transmits XON/XOFF to pace the VT100.
Line Speed	12	9600 bps
Device class	1	Keyboard display
Line type	L	For direct attached lines
Operating mode	2	Dynamic mode
Disconnect	2	Disconnect after UNBIND (except types 02 and 03)
Interface type	0	EIA 232C/V.24 interface
Translate option	111111	Use the default translate table
Parity	2	Odd parity
Receive Queue Size	5	79-byte receive queue
3270 Model Emulation	2	This port supports terminals emulating the 3270 Model 2 displays (screen size 24 x 80).
Receive Queue Pacing Threshold	0	The 3708 does not pace based on its receive queue.
Bits/character	7	7 bits per character
Number of stop bits	1	1 stop bit
Inactivity Time Out	00000	No inactivity time out
Transmit data threshold	00000	No transmit data threshold
Auto on-hook	0	For direct attach lines
Transmit error threshold	00000	No transmit error threshold
CSDTL	0	Raise data terminal ready after port enabled

Table B-4 (Page 2 of 2). VT100 Definition (Port 07)

Option	Data	Comments
Receive data threshold	00000	No receive data threshold
Send answertone	0	Modem provides answertone (switched lines only)
Receive error threshold	00000	No receive error threshold
Delay after form feed	000	Not required for display
Delay after carriage return	000	Not required for display
Maximum platen length	000	Not required for display
Full duplex line	1	Full duplex facility
Full duplex control unit	0	Half duplex control unit
Ignore parity	0	Recognize parity
Parity error sub. char.	6F	Use ? as parity error substitution character
Echoplex	1	Echo characters back to the device
Attention key sub. char.	4F	Use ; as attention key substitution character
Delay after receipt of CR	0	No delay after carriage return
Recognize term. Attention	1	Recognize break signal as ATTEN
Allow terminal break	1	The 3708 can transmit the BREAK signal to the display.
Delete rubout character	0	Do not delete rubout characters
Line quiet time	000	No line quiet time
Recognize system request simulation	3	Recognize default string (99999) as system request
Text Time Out	000	No text time out
Permanent request to send	1	For full duplex facility
Turnaround characters		0D25000000 (Carriage Return, Line Feed)
Send read prompt		0D25C5D5E3C5D940C4C1E3C17A0D2500 (CrLfE N T E R D A T A : CrLf)

Ports Configured for Multiple LUs

The following tables contain the 3708 configuration data for the IBM 3161/3102 MLU on port 03 and the IBM PC AT/4201 MLU on port 02.

3161/3102 MLU Definition (Port 03)

The following table contains the configuration data for defining for the 3102 Proprinter that is attached to the 3161 on port 03. The first table contains the port definition for the 3161/3102 MLU Configuration, and the second table contains the printer authorization matrix for the 3102.

Table B-5 (Page 1 of 2). 3161 Port Definition for the 3161/3102 MLU Configuration

Options	Data	Comments
Port excluded	N	Enable port
Logon screens excluded	N	Enable 3708 logon screen
Terminal type ID	01	Field ignored when 3708 logon screens are enabled
Port Password screen (C1) enabled	Y	The 3708 Port Password screen is displayed.
Terminal Type screen (C2) enabled	Y	The 3708 Terminal Type screen is displayed.
Host Selection screen (C3) enabled	Y	The 3708 Host Selection screen is displayed.
Logon Indication screen (C4) enabled	Y	The 3708 Logon Indication screen is displayed.
Short Logon screens	N	No short logon screens are displayed.
Control Terminal Access	Y	Access to control terminal functions is allowed for port 03.
Language Code Selection	0	English
Port number	03	Port 03
Device name	DEV3161	Device name for 3161
Device line name	LINK3161	Downstream link name for 3161
SNA LU network name: Keyboard host A Keyboard host B Printer on assigned host	 T13007A3 xxxxxxxx T13009A3	 LU name on NCP LU macro on SNA host A for the 3161 SNA host B is not accessible for the display on port 03 LU name on NCP LU macro on SNA host A for the 3102
SNA LU device number: Keyboard host A Keyboard host B Printer on preassigned host	 02 00 12	 Corresponds with the LU definition in the NCP LU macro in SNA host A with LOCADDR=04 Displays on port 03 cannot access SNA host B Corresponds with the LU definition in the NCP LU macro in SNA host A with LOCADDR=14
Password	(all blanks)	No port password required for port 03
Receive XON/XOFF	1	3708 treats XON/XOFF as pacing
Password retry limit	0	No port password retry limit
Transmit XON/XOFF	1	The 3708 transmits XON/XOFF to pace the IBM 3161.
Line speed	12	9600 bps. Must match display speed.
Device class	4	Multiple LU port
Line type	L	Direct attach
Operating mode	1	Protocol conversion mode only
Disconnect	2	Disconnect after UNBIND (except types 02 and 03)
Interface type	0	EIA 232C/V.24 interface
Translate option	111111	Use default translate table
Parity	2	Odd parity
Receive queue length	S	79-byte receive queue

Table B-5 (Page 2 of 2). 3161 Port Definition for the 3161/3102 MLU Configuration		
Options	**Data**	**Comments**
3270 Model Emulation	2	This port supports terminals emulating the 3270 Model 2 displays (screen size 24 x 80).
Receive Queue Pacing Threshold	0	The 3708 does not pace based on its receive queue.
Bits/character	7	7 bits per character
Number of stop bits	1	1 stop bit
Inactivity Time Out	00000	No activity time out
Transmit data threshold	00000	No transmit data threshold
Auto on-hook	0	Required for autoanswer modems only
Transmit error threshold	00000	No transmit error threshold
CDSTL	0	Raise data terminal ready after port enabled
Receive data threshold	00000	No receive data threshold
Send answertone	0	Not required for direct attach
Receive error threshold	00000	No receive error threshold
Delay after form feed	000	No delay
Delay after carriage return	000	No delay
Maximum platen length	132	Characters per line
Auto on-hook	0	Required for autoanswer modems only
CDSTL	0	Raise data terminal ready after port enabled

Table B-6. Printer Authorization Matrix for the IBM 3102 on Port 03		
Option	**Data**	**Comments**
Printer port address	03	Port 03
Printer mode	3	Shared mode
Print class	111111111111111	The printer belongs to all classes (70 to 85)
Source device list	0010000000	The 3161 (port 03) may access this printer in local mode.
Default printer page length	66	Default printer page length = 66 lines
Perform Form Feed After Local Copy	N	The 3708 does not transmit a form feed after each local copy.
Transmit Form Feed (LU_1 SCS)	Y	The 3708 may transmit a form feed to the printer.
Perform Form Feed at Begin Bracket (LU_1 SCS)	Y	The 3708 performs a form feed at begin brackets.
Perform Newline at Begin Bracket (LU_3)	Y	The 3708 performs a newline at begin brackets.

IBM PC AT/4201 MLU Definition (Port 02)

The following table contains the configuration data for defining for the IBM 4201 that is attached to the IBM PC AT running FTTERM (emulating an IBM 3101) on port 02. The first table contains the port definition for the IBM PC AT/4201 MLU configuration, and the second table contains the printer authorization matrix for the 4201.

Table B-7 (Page 1 of 2). Port Definition for the IBM PC AT/4201 MLU Configuration

Options	Data	Comments
Port excluded	N	Enable port
Logon screens excluded	N	Enable 3708 logon screens
Terminal type ID	01	This field is ignored when 3708 logon screens are enabled.
Control terminal function excluded	Y	Access to control terminal functions are not allowed from port 02.
Port Password screen (C1) enabled	Y	The 3708 Port Password screen is displayed.
Terminal Type screen (C2) enabled	Y	The 3708 Terminal Type screen is displayed.
Host Selection screen (C3) enabled	Y	The 3708 Host Selection screen is displayed.
Logon Indication screen (C4) enabled	Y	The 3708 Logon Indication screen is displayed.
Short Logon screens	N	No short logon screens are displayed.
Control Terminal Access	N	Access to control terminal functions are not possible for port 02.
Language Code Selection	0	English
Port number	02	Port 02
Device name	DEVPCAT	Device name for IBM Personal Computer AT
Device line name	LINKPCAT	Downstream link name for IBM Personal Computer AT
SNA LU network name: Keyboard host A Keyboard host B Printer on assigned host	 T13007A2 T13009B2 xxxxxxxx	 LU name on NCP LU macro on SNA host A for IBM Personal Computer AT LU name on NCP LU macro on SNA host B for IBM Personal Computer AT The 4201 is not accessible by either of the SNA hosts.
SNA LU device number: Keyboard host A Keyboard host B Printer on preassigned host	 01 01 00	 Corresponds with the LU definition in the NCP LU macro in SNA host A with LOCADDR=03 Corresponds with the LU definition in the NCP LU macro in SNA host B with LOCADDR=03 The IBM 4201 is not accessible by either of the SNA hosts.
Password	ACC01	The 3708 password is ACC01.
Receive XON/XOFF	1	The 3708 treats XON/XOFF as pacing.
Password retry limit	3	The port password retry limit is 3.
Transmit XON/XOFF	1	The 3708 transmits XON/XOFF to pace the IBM Personal Computer AT.
Line speed	06	1200 bps. Must match display speed.
Device class	4	Multiple LU port
Line type	S	Switched connection
Operating mode	1	Protocol conversion mode only
Disconnect	2	Disconnect after UNBIND (except types 02 and 03)
Interface type	0	EIA 232C/V.24 interface
Translate option	111111	Use default translate table
Parity	2	Odd parity
Receive queue length	S	79-byte receive queue

Table B-7 (Page 2 of 2). Port Definition for the IBM PC AT/4201 MLU Configuration		
Options	**Data**	**Comments**
3270 Model Emulation	2	This port supports terminals emulating the 3270 Model 2 displays (screen size 24 x 80).
Receive Queue Pacing Threshold	0	The 3708 does not pace based on its receive queue.
Bits/character	7	7 bits per character
Number of stop bits	1	1 stop bit
Inactivity Time Out	00000	No activity Time Out
Transmit data threshold	00000	No transmit data threshold
Auto on-hook	1	The 3708 drops connection when carrier detect is lost.
Transmit error threshold	00000	No transmit error threshold
CDSTL	0	The 3708 raises data terminal ready after the port is enabled.
Receive data threshold	00000	No receive data threshold
Send answertone	0	Modem provides answer tone
Receive error threshold	00000	No receive error threshold
Delay after form feed	000	No delay
Delay after carriage return	000	No delay
Maximum platen length	132	Characters per line

Table B-8. Printer Authorization Matrix for the IBM 4201 on Port 02		
Option	**Data**	**Comments**
Printer port address	02	Port 02
Printer mode	2	Local mode only
Print class	1111111111111111	The printer belongs to all classes (70 to 85)
Source device list	0111001000	Displays on ports 02, 03, 04, and 07 can access the 4201 in the local mode.
Default printer page length	66	The default printer page length is 66 lines.
Perform Form Feed After Local Copy	N	The 3708 does not transmit a form feed after each local copy.
Transmit Form Feed (LU_1 SCS)	N	The 3708 may transmit a form feed to the printer.
Perform Form Feed at Begin Brackets (LU_1 SCS)	Y	The 3708 performs a form feed at begin brackets.
Perform Newline at Begin Brackets (LU_3)	Y	The 3708 performs a newline at begin brackets.

Ports Configured for Printers Only

The following tables contain the configuration data for the 4201 Proprinter that is attached directly to port 01. The printer is a system printer accessible by SNA host A and is available for LU type 1 SCS and LU type 3 DSC print jobs.

Table B-9 (Page 1 of 2). Port Definition for the 4201 Printer Attached Directly to Port 01

Option	Data	Comments
Port excluded	N	Enable port
Logon screens excluded	Y	Disable 3708 logon screens
Terminal type ID	01	This field is ignored for printers.
Port Password screen (C1) enabled	Y	The 3708 Port Password screen is displayed.
Terminal Type screen (C2) enabled	Y	The 3708 Terminal Type screen is displayed.
Host Selection screen (C3) enabled	Y	The 3708 Host Selection screen is displayed.
Logon Indication screen (C4) enabled	Y	The 3708 Logon Indication screen is displayed.
Short Logon screens	N	No short logon screens is displayed.
Control Terminal Access	N	This field is ignored if all 3708 logon screens are excluded.
Language Code Selection	0	English
Port number	01	Port 01
Device name	DEV4201	Device name for the 4201
Device line name	LINK4201	Downstream line name for the 4201
SNA LU network name: Keyboard host A Keyboard host B Printer on preassigned host	 xxxxxxx xxxxxxx T13007A1	 No keyboard display is defined on this port. No keyboard display is defined on this port. LU name on NCP LU macro on SNA host A for 4201.
SNA LU device number: Keyboard host A Keyboard host B Printer on preassigned host	 00 00 10	 No keyboard display defined on this port No keyboard display defined on this port Corresponds with the LU definition in the NCP LU macro for SNA host A with LOCADDR = 12.
Password	(all blanks)	This field is ignored if the 3708 logon screens are excluded.
Receive XON/XOFF	1	Use XON/XOFF protocol for pacing
Password retry limit	0	No port password retry limit
Transmit XON/XOFF	0	The 3708 does not use XON/XOFF to pace the downstream device.
Line speed	12	9600 bps. Must match printer speed.
Device class	3	Printer
Line type	L	Direct attach
Operating mode	1	Protocol conversion mode only
Disconnect	2	Disconnect after UNBIND (except types 02 and 03)
Interface type	0	EIA 232C/V.24 interface
Translate option	111111	Use default translate table
Parity	2	Odd parity
Receive queue length	S	79-byte receive queue
3270 Model Emulation	2	Printer supports local copies from Model 2 (24 x 80 devices).
Receive Queue Pacing Threshold	0	The 3708 does not pace based on its receive queue.
Bits/character	7	7 bits per character
Number of stop bits	1	1 stop bit
Inactivity Time Out	00000	No activity time out
Transmit data threshold	00000	No transmit data threshold

Table B-9 (Page 2 of 2). Port Definition for the 4201 Printer Attached Directly to Port 01		
Option	**Data**	**Comments**
Transmit error threshold	00000	No transmit error threshold
CDSTL	0	Raise data terminal ready after port enabled
Receive data threshold	00000	No receive data threshold
Send answertone	0	Not required for direct attach
Receive error threshold	00000	No receive error threshold
Delay after form feed	000	No delay
Delay after carriage return	000	No delay
Maximum platen length	132	Characters per line
Auto on-hook	0	Required for autoanswer modems only

Table B-10. Printer Authorization Matrix for the IBM 4201 on Port 01		
Option	**Data**	**Comments**
Printer port address	01	Port 01
Printer mode	1	System mode only
Print class	0000000000000000	The printer does not belong to any print classes.
Source device list	0000000000	No port can access this printer in the local mode.
Perform Form Feed After Local Copy	N	The 3708 does not transmit a form feed after each local copy.
Transmit Form Feed (LU_1 SCS)	N	The 3708 may transmit a form feed to the printer.
Perform Form Feed at Begin Brackets (LU_1 SCS)	Y	The 3708 performs a form feed at begin brackets.
Perform Newline at Begin Brackets (LU_3)	Y	The 3708 performs a newline at begin brackets.

Appendix C. 3708 Configuration Forms

This appendix provides forms for recording the 3708 configurations. Please photocopy the forms in order to retain clear originals.

On the forms, PC means protocol conversion and PE means protocol enveloping. Dashes (---) mean that no entry is required.

In addition, n/a means that the parameter does not apply to the given situation and is not displayed during configuration.

For displays with attached printers, the printer is not used by the 3708 unless the display is operating in protocol conversion mode. As a result, the operating mode should be either 1 (PC only) or 2 (dynamic). If dynamic is chosen, the parameters marked with an asterisk (*) are displayed for configuration, since these are protocol enveloping values.

End-User Device Definitions

Port Number _ _

Option	Field Length	Display That Will Do Both PC and PE	Display That Will Do PE Only	Display That Will Do PC Only	Printer	Display with Printer
Port excluded	1	N	N	N	N	N
Logon screens excluded	1				--------	
Terminal Type ID	2		--------		--------	
Port Password screen (C1)	1				--------	
Terminal Type screen (C2)	1				--------	
Host Selection screen (C3)	1				--------	
Logon Indication screen (C4)	1				--------	
Short Logon screen	1				--------	
Control terminal access	1		--------		--------	
Language code	1				--------	
Device name	8					
Device line name	8					
SNA LU network name (Keyboard A)	8				--------	
SNA LU device number (Keyboard A)	2				--------	
SNA LU network name (Keyboard B)	8				--------	
SNA LU device number (Keyboard B)	2				--------	
SNA LU network name (Printer)	8	--------	--------	--------		
SNA LU device number (Printer)	2	--------	--------	--------		
Password	8				--------	
Receive XON/XOFF	1					
Password retry limit	1				--------	
Transmit XON/XOFF	1					
Line speed	2					
Device class	1	1	1 or 2	1	3	4
Line type	1					
Operating mode	1	2	0	1	--------	1 or 2
Disconnect	1					
Interface type	1					
Translate option	6					
Parity	1					
Receive queue size	1					
3270 Model Emulation	1		2		n/a	
Receive Queue Pacing Threshold	1					
Bits/character	1					
Number of stop bits	1					
Inactivity Time Out	5				--------	
Transmit data threshold	5					
Auto on-hook	1					
Transmit error threshold	5					

Option	Field Length	Display That Will Do Both PC and PE	Display That Will Do PE Only	Display That Will Do PC Only	Printer	Display with Printer
Connect data set to line	1					
Receive data threshold	5					
Send answertone	1					
Receive error threshold	5					
Delay after Form Feed	3			--------		
Delay after carriage return	3			--------		
Maximum platen length	3	--------	--------	--------		
Full duplex line	1			n/a	n/a	*
Full duplex control unit	1			n/a	n/a	*
Ignore parity	1			n/a	n/a	*
Parity error sub. char.	2			n/a	n/a	*
Echoplex	1			n/a	n/a	*
Attention key sub. char.	2			n/a	n/a	*
Delay after receipt of CR	1			n/a	n/a	*
Recognize term. attention	1			n/a	n/a	*
Allow terminal break	1			n/a	n/a	*
Delete rubout character	1			n/a	n/a	*
Line quiet time	3			n/a	n/a	*
Recognize system request simulation	1			n/a	n/a	*
Text Time Out	3			n/a	n/a	*
Permanent RTS	1			n/a	n/a	*
Turnaround characters	10			n/a	n/a	*
Send read prompt	50			n/a	n/a	*
Printer mode	1	n/a	n/a	n/a		
Print class	16	n/a	n/a	n/a		
Source device list	10	n/a	n/a	n/a		
Default printer page length	2	n/a	n/a	n/a		
Perform Form Feed after local copy	1	n/a	n/a	n/a		
3708 may transmit Form Feed (LU_1 SCS)	1	n/a	n/a	n/a		
Perform Form Feed at Begin Bracket (LU_1 SCS)	1	n/a	n/a	n/a		
Perform Newline at Begin Bracket (LU_3)	1	n/a	n/a	n/a		

Host Definitions

Option	Field Length	SNA Host	ASCII Host
Port excluded	1	N	N
Host-A port	2		
Host-B port	2		
Port	2		
Host name	8		
Host keyboard source field	10		
Host printer source field	10		--------
SNA PU network name	8		n/a
SNA PU line network name	8		n/a
Station address	2		n/a
NRZI data encoding	1		n/a
Permanent RTS	1		n/a
Line speed	2		
Line type	1		n/a
Transmit UNBIND in TERM-SELF for session security	1		n/a
SDLC Inactivity Time Out	5		n/a
Set host termination sequence	1	n/a	
Host termination sequence	6	n/a	

Appendix D. Cable Requirements

This appendix consists of the following sections:

Section 1. 3708 EIA 232C Interface Cables from IBM
Section 2. Minimum Connections Required for IBM 3708 EIA 232C Cable
Section 3. IBM 3708 EIA 422A Interface Cables
Section 4. IBM 3708 EIA 422A Interface to IBM Cabling System.

Section 1. 3708 EIA 232C Interface Cables from IBM

This section describes the EIA 232C cables available from IBM. EIA 232C is the communications interface standard used only in the USA and Canada. CCITT V.24/V.28 is the recommended interface for use in countries other than the U.S.A. and Canada. Both communication interfaces use the same electrical characteristics for the drivers and receivers.

EIA 232C Cable Types

The 3708 cable types are:

- 3708 EIA 232C Interface to DTE (Data Terminal Equipment) with M/F (Male-Female) Connections
- 3708 EIA 232C Interface to DTE (Data Terminal Equipment) with M/M (Male-Male) Connections
- 3708 EIA 232C Interface to DCE (Data Communications Equipment).

Three cable lengths are available in the U.S.A. and Canada. The part numbers for these cables are provided in the following table.

Length	DTE M/F	DTE M/M	DCE
3 m (10 ft)	PN 6405393	PN 6405421	PN 6405390
8 m (25 ft)	PN 6405394	PN 6405422	PN 6405391
15 m (50 ft)	PN 6405395	PN 6405423	PN 6405392

The cable length must not exceed 15 meters (50 feet).

Bulk Cable Requirements

Overall Shield	Shield must be polyester-backed aluminum foil with continuous drain wire. Conductive surface and drain wire out. 100% coverage with minimum 50% overlap.
Outside Jacket	PVC
Capacitance	Total capacitance as measured from any lead to all other leads and shields tied together must not exceed 40 PF/Ft maximum.
Dielectric Strength	Wire in the finished cable must withstand, without breakdown at room ambient temperature, a minimum test voltage of 300 V 50/60 Hz rms for 1 minute between individual conductors and between individual conductors and shields.

Conductor Requirements

Material	#24 AWG 7/32 stranded, tinned copper
Individual Conductor Shield	Polyester-backed aluminum foil outside to ensure contact with central drain wire
Number of Individual Shielded Conductors	4
Insulation	Solid polypropylene
Voltage Rating	30 V at 60 degrees C
Drain Wires	Both central and outside, #24 AWG, 7x32 stranded

Connector Requirements for 3708 End

Connector Housing	25-pin D connector having tin-plated metal housing with grounding indents
Contacts	Male pins
Shell	Metal with captivated retainer screws long enough to be grasped and turned with the fingers
Ferrule	Split ring, aluminum

Connector Requirements for Remote End (SNA Host or ASCII Device)

Connector Housing	25-pin D connector having tin-plated metal housing with grounding indents
Contacts	Male or female pins depending on the cable type
Shell	Metal with captivated retainer screws long enough to be grasped and turned with the fingers
Ferrule	Split ring, aluminum

Cable Marking Requirements

All cables should be labeled on each end. (For DTE cables, DTE should be substituted for DCE.) The labels should be located 1 foot from the connectors.

One label should contain the following:

```
FROM END - 3708
EIA 232C DCE
CABLE LENGTH___FT
VENDOR UL CODE
```

The other label should contain the following:

```
TO END - REMOTE
EIA 232C DCE
CABLE LENGTH___FT
VENDOR UL CODE
```

DCE – PIN Assignments and Connections (EIA 232C)

Signal Name		3708 25 Pin Male Connector Pin		Remote 25 Pin Male Connector Pin
Frame Ground		*	outer shield	*
Xmit Data	S	2		2
Receive Data	S	3		3
RTS		4		4
CTS		5		5
DSR		6		6
Signal Ground		7	inner shields	7
DCD		8		8
Transmit Clock	S	15		15
Receive Clock	S	17		17
		18		18
DTR		20		20
Ring Indicate		22		22
		23		23
DTE Transmit Clock		24		24

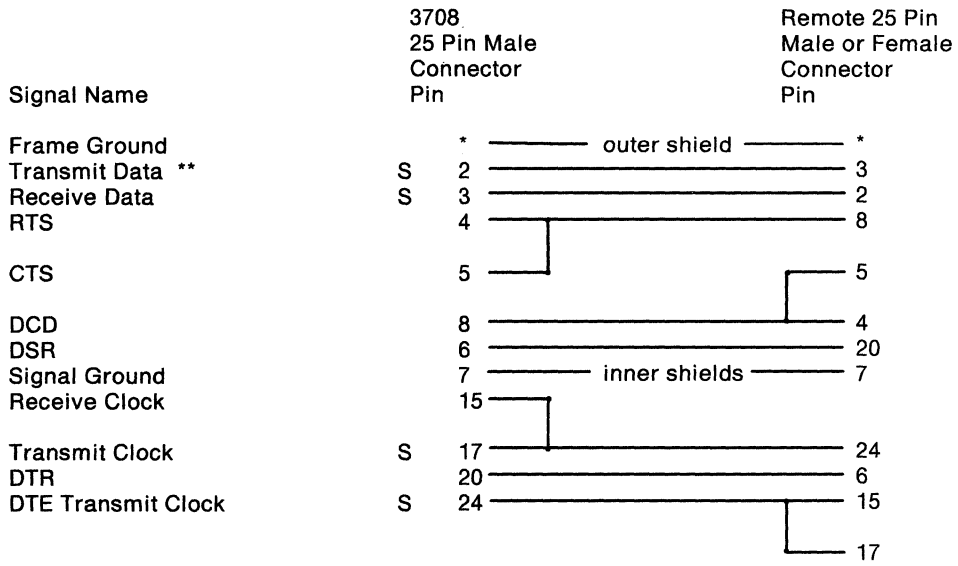
* Outer shield clamped to connector shell.
S Shielded conductor leads. Each lead is individually shielded. All shields are connected to pin 7.

Notes:

1. PIN positions that are not specified must not be wired.
2. All the wires should be enclosed within a shield, and this shield should be connected to the connector housing.
3. PIN 13 must not be connected.
4. At the 3708, PINs 2, 4, 12, 14, 18, 20, 21, 23, and 24 must not be driven by the connected equipment (modem, modem eliminator, or host).
5. PINs 18 and 23 are in IBM cables but currently are not used.

DTE – PIN Assignments and Connections (EIA 232C)

The following diagram should be used for Male/Male or Male/Female PIN assignments and connections.



* Outer shield clamped to connector shell.
S Shielded conductor leads. Each lead is individually shielded. All shields are connected to pin 7.

Notes:

1. PIN positions that are not specified must not be wired.
2. All the wires should be enclosed within a shield, and this shield should be connected to the connector housing.
3. PIN 13 must not be connected.
4. At the 3708, PINs 2, 4, 12, 14, 18, 20, 21, 23, and 24 must not be driven by the connected equipment (modem, modem eliminator, or host).
5. PINs 18 and 23 are in IBM cables but currently are not used.

Section 2. Minimum Connections Required for IBM 3708 EIA 232C Cable

The following minimum requirements for IBM 3708 EIA 232C cables are described in this section:

- Minimum connections required for SNA host DCE cables
- Minimum connections required for SNA host DTE cables, modem eliminators, or null modems
- Minimum connections required for asynchronous ASCII DCE cables
- Minimum connections required for ASCII DTE cables, modem eliminators, or null modems.

Minimum Connections Required for SNA Host DCE Cables

The following chart shows the minimum electrical connections required.

The IBM 3708 has been extensively tested with the IBM cables described in the preceding sections. Cables built without the same bulk cable or without the same shielding connections may result in noise or operational problems.

Do not use 25-pin conductor cables.

SNA Host DCE Cable

Signal Name	3708 25 Pin Male Connector Pin		Remote Connector Pin
Frame Ground	*	outer shield	*
not used	1		
Transmit Data **	2		2
Receive Data	3		3
RTS **	4		4
CTS	5		5
DSR	6		6
Signal Ground	7	inner shields	7
DCD	8		8
not used	9		
not used	10		
not used	11		
not used **	12		
must not be connected	13		
not used **	14		
Transmit Clock	15		15
not used	16		
Receive Clock	17		17
not used **	18		
not used	19		
DTR **	20		20
not used **	21		
not used	22		
not used **	23		
DTE Transmit Clock **	24		24
not used	25		

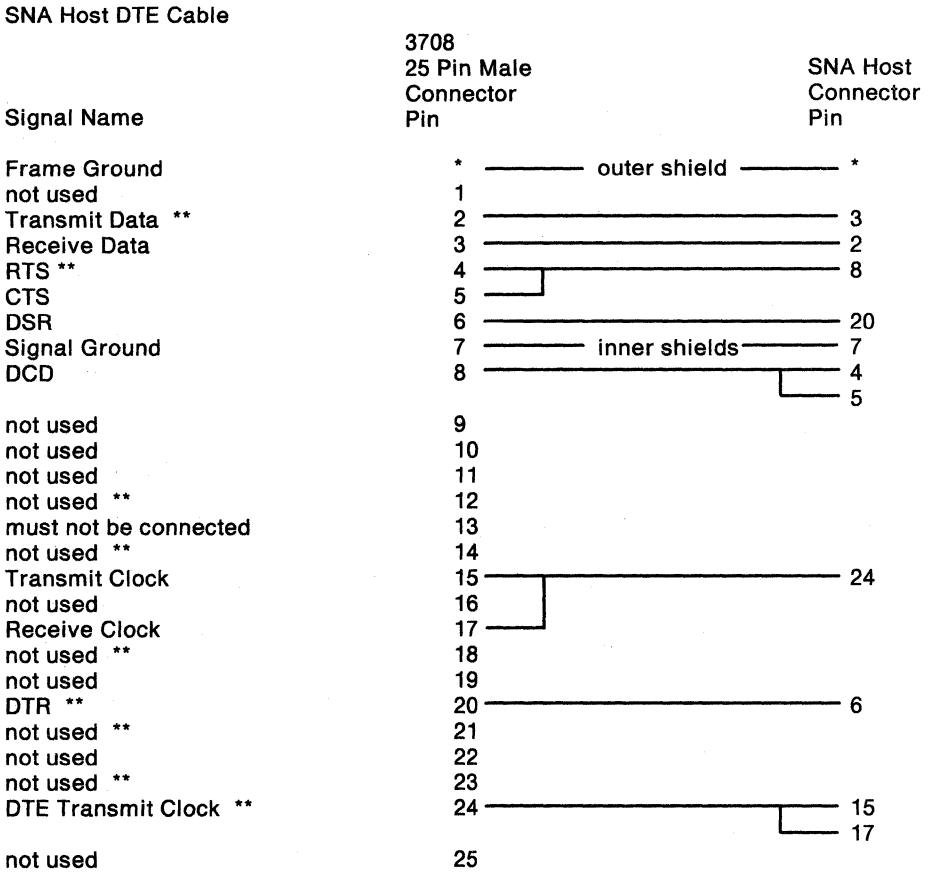
* Outer shield clamped to connector shell.
** These pins must not be driven via the attaching equipment (modem, modem eliminator, or host). See Chapter 9, section "3708 Problems Related to Cables or Equipment".
Pin 13 must not be connected.
Pin 24 is only required if the 3708 is providing transmit and receive clocking.

Minimum Connections Required for SNA Host DTE Cables, Modem Eliminators, or Null Modems

The following chart shows the minimum electrical connections required. A null modem's or modem eliminator's internal wiring or design should match a DTE cable.

The IBM 3708 has been extensively tested with the IBM cables described in the preceding sections. Cables built without the same bulk cable or without the same shielding connections may result in noise or operational problems.

Do not use 25-pin conductor cables.



* Outer shield clamped to connector shell.

** These pins must not be driven via the attaching equipment (modem, modem eliminator, or host). See Chapter 9, section "3708 Problems Related to Cables or Equipment".

Pin 13 must not be connected.

Minimum Connections Required for Asynchronous ASCII DCE Cables

The following chart shows the minimum electrical connections required.

The IBM 3708 has been extensively tested with the IBM cables described in the preceding sections. Cables built without the same bulk cable or without the same shielding connections may result in noise or operational problems.

Do not use 25-pin conductor cables.

ASCII DCE Cable

Signal Name	3708 25 Pin Male Connector Pin		Remote Connector Pin
Frame Ground	*	outer shield	*
not used	1		
Transmit Data **	2		2
Receive Data	3		3
RTS **	4		4
CTS	5		5
DSR	6		6
Signal Ground	7	inner shields	7
DCD	8		8
not used	9		
not used	10		
not used	11		
not used **	12		
must not be connected	13		
not used **	14		
not used **	15		
not used	16		
not used **	17		
not used **	18		
not used	19		
DTR **	20		20
not used **	21		
Ring Indicate	22		22
not used **	23		
not used **	24		
not used	25		

* Outer shield clamped to connector shell.
** These pins must not be driven via the attaching equipment (modem, modem eliminator, or host). See Chapter 9, section "3708 Problems Related to Cables or Equipment".
Pin 13 must not be connected.
Pin 22 "Ring Indicate" is only required if used with a switched connection.

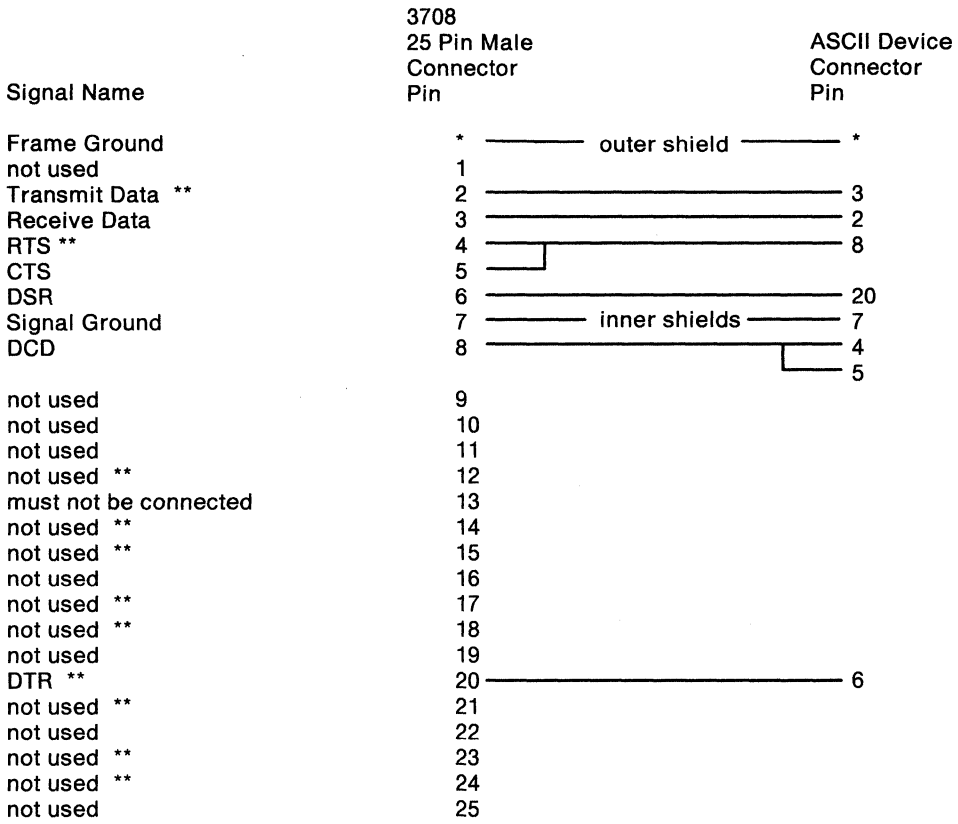
Minimum Connections Required for Asynchronous ASCII DTE Cables, Modem Eliminators, or Null Modems

The following chart shows the minimum electrical connections required. A null modem's or modem eliminator's internal wiring or design should match a DTE cable.

The IBM 3708 has been extensively tested with the IBM cables described in the preceding sections. Cables built without the same bulk cable or without the same shielding connections may result in noise or operational problems.

Do not use 25-pin conductor cables.

ASCII DTE Cable



* Outer shield clamped to connector shell.
** These pins must not be driven via the attaching equipment (modem, modem eliminator, or host). See Chapter 9, section "3708 Problems Related to Cables or Equipment".
Pin 13 must not be connected.

Section 3. IBM 3708 EIA 422A Interface Cables

The following sections describe the EIA 422A cables available form IBM.

Cable Types

The cables used for 3708 EIA 422A interface to DTE come in three lengths. This section describes the cable requirements. The part numbers for these cables are provided in the following table.

Length	DTE M/M
Up to 122 m (400 ft)	PN 6405396
From 122 m (400 ft) to 1219 m (4000 ft)	PN 6405397
38 m (125 ft)	PN 6405398

The cable length should not exceed 1219 meters (4000 feet). Surge suppressor attachments are recommended on cable lengths that exceed 120 meters (400 feet).

Bulk Cable Requirements

Overall Shield	Shield must be #36 tinned copper braid with a minimum coverage of 85%.
Outside Jacket	PVC

Conductor Requirements

Conductors	Two twisted pairs (four conductors). The lay of the individual pairs is not to exceed one inch. The two twisted pairs may be twisted together. If they are twisted together, the lay must be greater than the lay of the individual twisted pairs.
Material	#22 AWG, 7x30 stranded, tinned copper
Insulation	SRPVC
Voltage Rating	UL Rating of 300 V at 80 degrees C

Connector Requirements for 3708 End

Connector Housing	25-pin D connector having tin-plated metal housing with grounding indents
Contacts	Male pins
Shell	Metal with captivated retainer screws long enough to be grasped and turned with the fingers
Ferrule	Split ring, aluminum
Surge suppressor attachment (as required)	Diode type: two, BZW06-8V5, unidirectional Diode type: two, BZW06-8V5B, bidirectional Wire: #22 AWG Connector: 25-position, male, D connector Connector: 25-position, female, D connector Contacts: six male pins Contacts: four female sockets Attachment housing: metal

Connector Requirements for Remote EIA 422A Terminal End

Connector Housing	25-pin D connector having tin-plated metal housing with grounding indents
Contacts	Male pins
Shell	Metal with captivated retainer screws long enough to be grasped and turned with the fingers
Ferrule	Split ring, aluminum

Cable Marking

All cables should be labeled on each end. The labels should be located 1 foot from the connectors.

One label should contain the following:

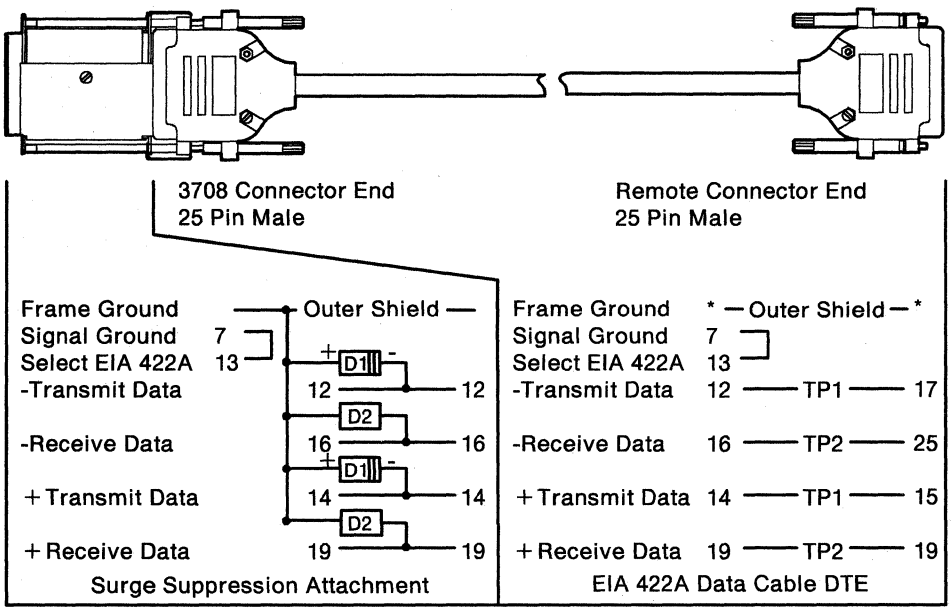
```
FROM END - 3708
EIA 422A DTE CABLE
LENGTH___FT VENDOR
UL CODE
```

The other label should contain the following:

```
TO END - REMOTE
EIA 422A DTE CABLE
LENGTH___FT VENDOR
UI CODE
```

Surge Suppression Attachment — Pin Assignments and Connections

For EIA 422A Cables Over 122 Meters (400 feet)



* = Outer shield clamped to connector shell.
D1 = Diode Type BZW06-8V5
D2 = Diode Type BZW06-8V5B
TP = Twisted Pair; Like numbers indicate matched pair.

Notes:

1. PIN positions that are not specified must not be wired.
2. PIN 13 must be connected to PIN 7 to activate the EIA 422A interface.
3. At the 3708, PINs 2, 4, 12, 18, 20, 21, 23, and 24 must not be driven by the connected equipment or through the attaching cable.
4. PINs 17, 25, 15, and 19 are assigned to each signal on the IBM 3101, 3151, 3161, 3162, 3163, and 3164. Non-IBM terminals may have different PIN configurations, so you should wire your cables accordingly.
5. The surge suppression attachment is only required for distances that exceed 122 meters (400 feet).

Section 4. IBM 3708 EIA 422A Interface to IBM Cabling System

Cable Type

This section provides planning for the 3708 EIA 422A interface cable to the IBM Cabling System (this cable assembly is not available from IBM).

The cable length must not exceed 2.46 meters (8.1 feet). Measured distance is from connector strain relief to strain relief.

Bulk Cable Requirements

All bulk cable requirements are listed in IBM specification 4716743. This information is contained in *IBM Cabling System Technical Interface Specification*, GA27-3773.

Connector Requirements for 3708 End

Connector Housing	25-pin D connector having tin-plated metal housing with grounding indents
Contacts	Male pins
Shell	Metal with captivated retainer screws long enough to be grasped and turned with the fingers
Ferrule	Split ring, aluminum
Surge suppressor attachment (as required)	Diode type: two, BZW06-8V5, unidirectional Diode type: two, BZW06-8V5B, bidirectional Wire: #22 AWG Connector: 25-position, male, D connector Connector: 25-position, female, D connector Contacts: six male pins Contacts: four female sockets Attachment housing: metal

Connector Requirements for IBM Cabling System End

(Four Position Data Connector Requirements)

All data connector requirements are contained in *IBM Cabling System Technical Interface Specification*, GA27-3773, form number GA27-3773.

Cable Marking

The cable should be labeled on the IBM Cabling System end of the cable, and the label should be located 1 foot from the connector strain relief.

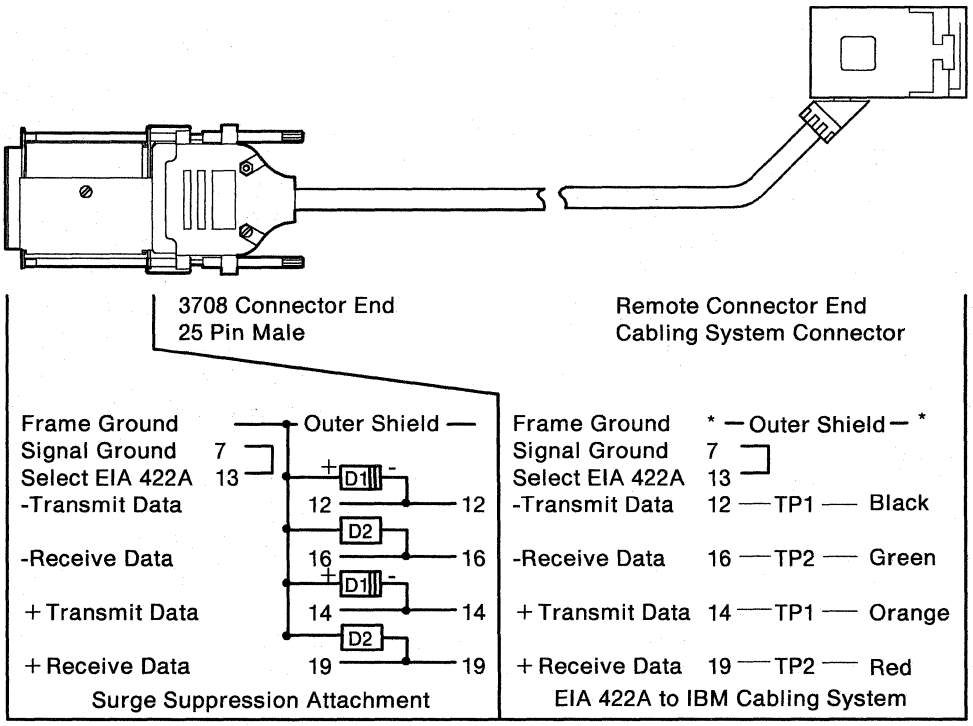
The label should contain the following:

```
FROM 3708 to IBM CABLING SYSTEM
VIA EIA 422A
CABLE LENGTH 8.0 FT
DATE OF MANUFACTURE _/_ (see Note)
```

Note: Date of Manufacture should be *week/year*.

Surge Suppression Attachment — Pin Assignments and Connections

For EIA 422A Cable Attachment to IBM Cabling System



* = Outer shield clamped to connector shell.
D1 = Diode Type BZW06-8V5
D2 = Diode Type BZW06-8V5B
TP = Twisted Pair; Like numbers indicate matched pair.

Note: PIN positions that are not specified must not be wired or populated with pins.

Appendix E. Screen Sequences

This appendix shows the sequence of screens for configuring the following:

- SNA hosts
- ASCII hosts
- Printers
- Displays, protocol conversion only
- Displays, protocol enveloping only, or dynamic
- Display with printer, protocol conversion only
- Display with printer, dynamic.

SNA Hosts

Select the following screens to define an SNA host.

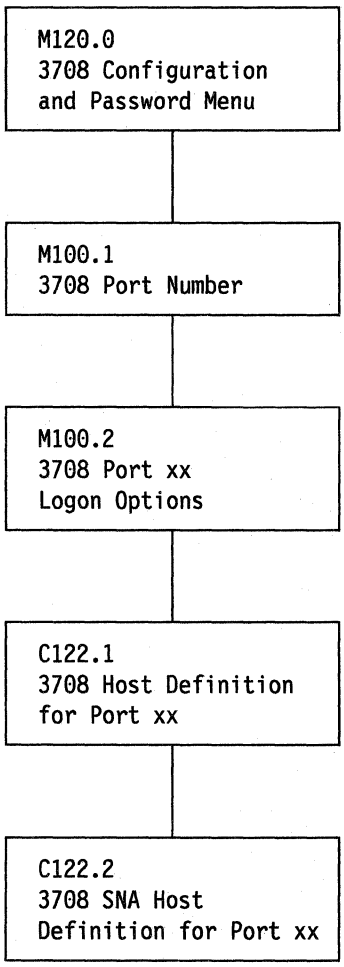


Figure E-1. SNA Hosts

ASCII Hosts

Select the following screens to define an ASCII host.

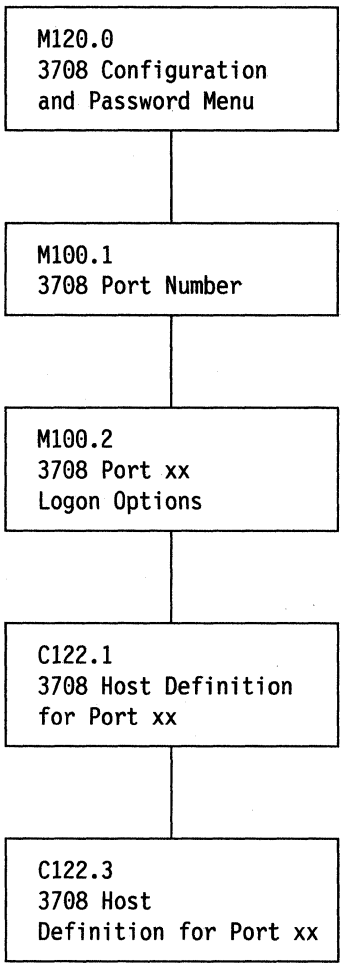


Figure E-2. ASCII Hosts

Printers

Select the following screens to define printers.

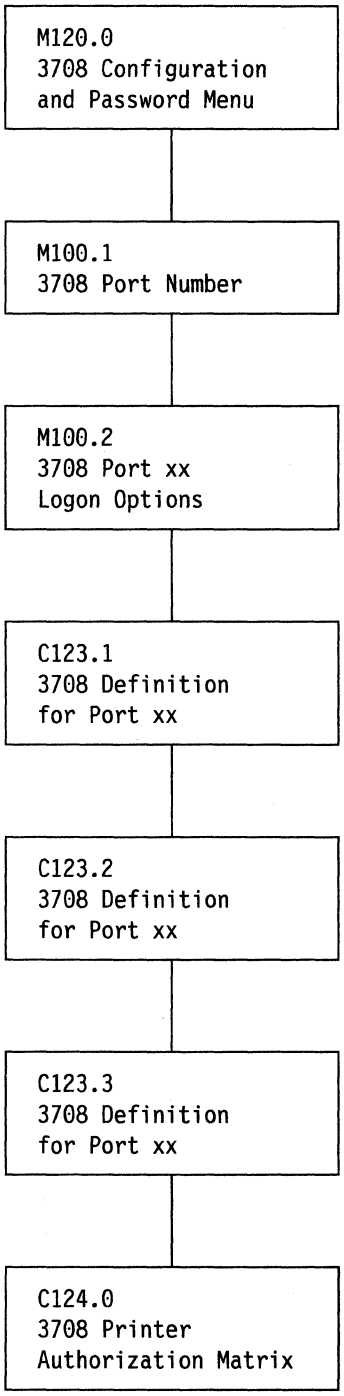


Figure E-3. Printers

Displays, Protocol Conversion Only

Select the following screens to define displays for protocol conversion only.

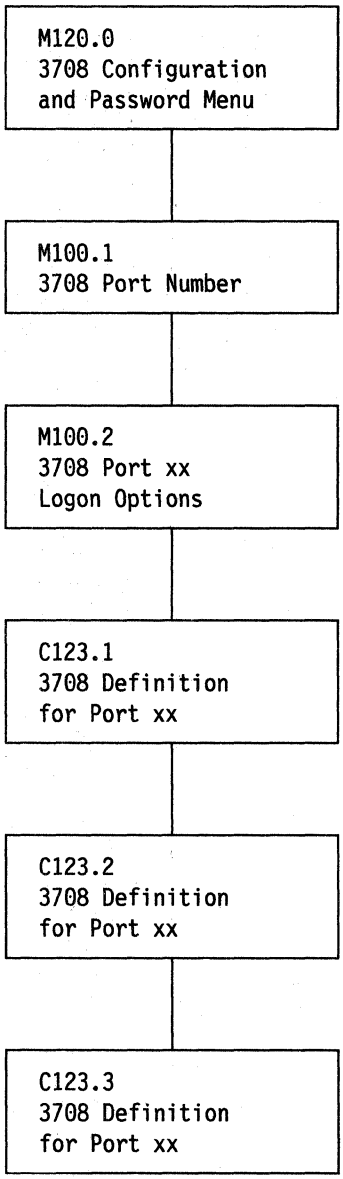


Figure E-4. Displays, Protocol Conversion Only

Displays, Protocol Enveloping Only or Dynamic

Select the following screens to define displays for protocol enveloping.

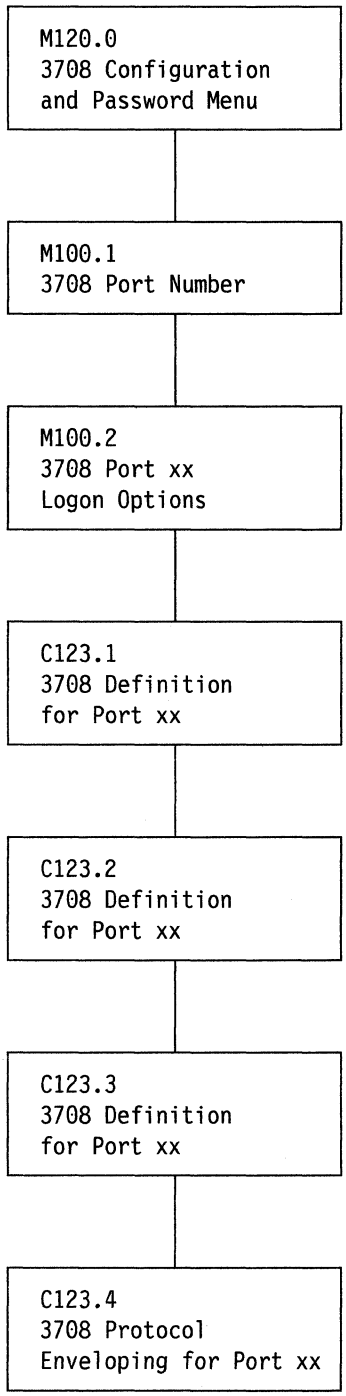


Figure E-5. Displays, Protocol Enveloping Only, or Dynamic

Displays with Printers, Protocol Conversion Only

Select the following screens to define displays with printers for protocol conversion only.

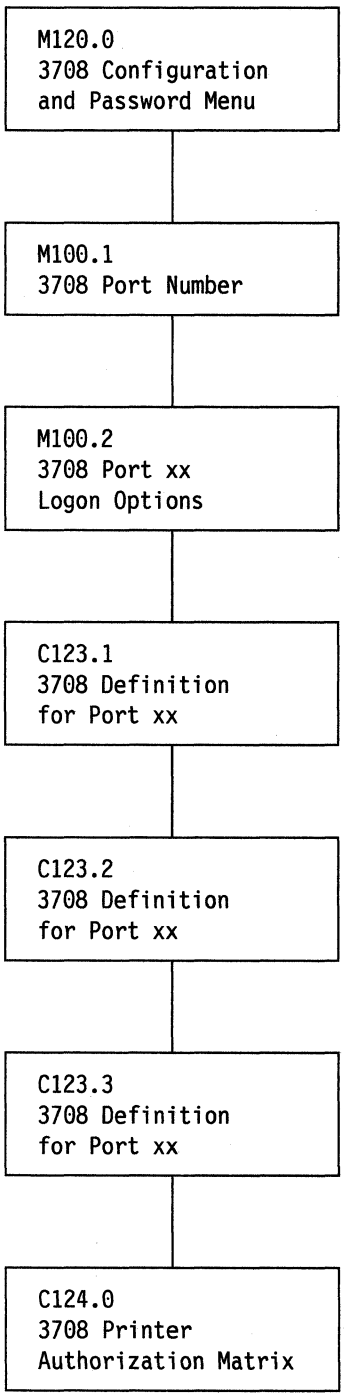


Figure E-6. Displays with Printer, Protocol Conversion Only

Display with Printer, Dynamic

Select the following screens to define displays with printers.

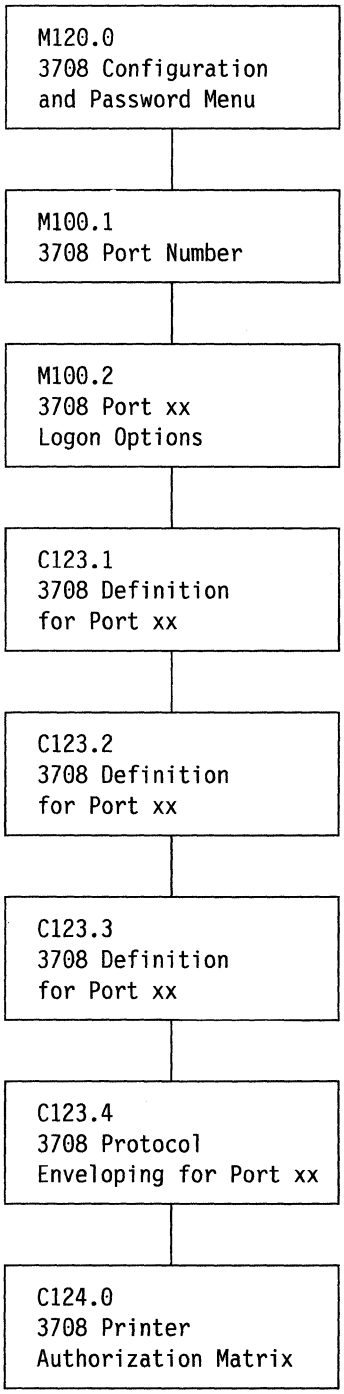


Figure E-7. Display with Printer, Dynamic

Appendix F. 3708 Control Terminal Messages

This appendix describes the 3708 control terminal messages. It includes an explanation and a recommended action for each message.

Unnumbered Messages

---- **CONFIGURATION COMPLETE - PRESS PF6 TO UPDATE MASTER COPY OR PRESS PF2 TO QUIT**

Meaning: The configuration data you entered has been accepted but has not yet been used to update the current configuration in nonvolatile storage (EEPROM).

Action: Press PF6 to apply the configuration data you entered to the current configuration in nonvolatile storage. The new configuration goes into effect the next time the 3708 is turned off and back on again or is restarted from the control terminal. Press PF2 to cancel the configuration data you entered.

---- **CONTROL TERMINAL ALREADY ACTIVE**

Meaning: Another control terminal session is currently in effect at another terminal. Only one control terminal session can be active at a time.

Action: Try again later.

---- **BASIC CONFIGURATION IN USE, CALL SUPERVISOR**

Meaning: This message appears under six circumstances:

1. The first time the 3708 is turned on during setup and before the user configuration is defined to the 3708.
2. When you press the Test/Normal switch to invoke the IBM-supplied configuration immediately after you turn on the 3708.
3. When you permanently invoke the IBM-supplied configuration by placing "REPLWIBM" in the Name field and "CONFIG.." in the Version field of the 3708's General Definition screen (C127.1).
4. When you reconfigure the 3708 without obeying the 3708's storage algorithm for the number of medium and large sized receive queues.
5. When an error exists in the data in the 3708 MCF/patch area.

The IBM-supplied configuration definition was invoked; the user-defined configuration definition, if any, was not affected. The IBM-supplied configuration is usually requested when the configuration prevents you from using the 3708 or the control terminal.

Action: If the message appears before the user-defined configuration has been defined to the 3708, ignore the message. Otherwise, notify the system administrator that the IBM-supplied configuration is in effect. With the IBM-supplied configuration in effect, you can use the control terminal to make corrections to the user-defined configuration.

---- **INCORRECT PASSWORD**

Meaning: The password you entered did not match the password recorded in the 3708.

A port password or a control terminal password is up to 8 characters in length and must not include a period (.) or four # symbols. Neither the control terminal password nor the port password can contain imbedded blanks. The password is assigned by the planner or system administrator.

Action: Check the password that you entered and try again. If the IBM-supplied configuration is in effect, the port password is PASSWORD and the control terminal password is CONTROL.

Meaning: The display configuration and the 3708 configuration do not match.

1. Parity for the display and the 3708 do not match.
2. One of the configurations is defined for XON/XOFF pacing and the other is not.
3. The line turnaround characters that are used at the display do not match those defined for the 3708.

Action: Verify that these configuration parameters match.

---- **INCORRECT RESPONSE**

Meaning: You did not type the data requested in the format required.

Action: Try again.

---- **To disconnect from the 3708, type "####."**

Meaning: The four # symbols log off the control terminal from the 3708.

Action: To log off, type four # symbols and press the Period key, Carriage Return key, or a defined line turnaround character as the ENTER key.

---- **DATA BEING DOWNLOADED FROM HOST, RETRY LATER**

Meaning: You have tried to access the control terminal function while the host is downloading configuration data to the 3708.

Action: Try again later. After the download is complete, you are allowed access to the control terminal.

Numbered Messages

C1 Type port password

Meaning: The port to which the display terminal is connected has a password defined for it in the configuration definition.

Action: Type the password for this port, and press the ENTER key. In this mode, use the period, the carriage return, or a defined line turnaround character as the ENTER key.

C2 Type the number of the terminal:

Meaning: The port you are logging on to was defined for protocol conversion. To communicate correctly with your terminal, the 3708 must know the terminal type.

Action: Find the name of the terminal in the list on the screen. The number next to that name identifies the terminal to the 3708. Type the number that identifies the terminal, and press the ENTER key. In this mode, use the period, carriage return, or a defined line turnaround character as the ENTER key.

If the name of the terminal is not on the list, the terminal may be user-defined. Check with the planner or check the configuration forms to find which number to enter.

C3 Type the number of the desired connection:

Meaning: The terminal is now connected to the 3708, and you can connect to a host application or operate the terminal as the control terminal.

Action: Type the letter **C**, and press the ENTER key to operate the terminal as the control terminal or type the number that corresponds to the host to which you want to log on, then press the ENTER key. In this mode, use the period, carriage return, or a defined line turnaround character as the ENTER key.

C4 You can now type your system logon

Meaning: You are now connected to the host system.

Action: Type in the required host logon sequence to gain access to the host application.

C5 Type control terminal password

Meaning: You must enter a password that is assigned by the planner or system administrator to begin a control terminal session. A control terminal password is up to eight characters in length and must not include spaces, a period (.), or four # symbols.

Action: Type the control terminal password and press the ENTER key. In this mode, use the period, carriage return, or a defined line turnaround character as the ENTER key.

C100 PORT DATA MONITOR FAILED

Meaning: The device being monitored was disconnected on command from the host or because of a line drop condition, such as the device being turned off. The control terminal does not display any more data.

Action: Follow the instructions shown on the screen. You can try this function again after determining the cause of the problem.

C101 CONTROL TERMINAL PASSWORD VERIFICATION FAILED. UPDATE NOT DONE

Meaning: You tried to change the control terminal password but did not type the same characters for verification that you typed for the new password. The control terminal password was not changed.

Action: Try the task again.

C102 A PASSWORD IS REQUIRED FOR CONTROL TERMINAL ACCESS

Meaning: You tried to change the control terminal password but entered blanks in the new password field. The control terminal password cannot be all blanks.

Action: Try the task again. Enter a password that does not contain blanks, that does not begin with a blank, and that does not contain imbedded blanks. The password also must not contain a period (.) or four # symbols.

C103 UPDATE FAILED

Meaning: You entered some data that was accepted, but the 3708 could not write the data to nonvolatile storage (EEPROM). The update is not in effect.

Action: Display the alert log. Write down the alert ID (Axxx) and the failure codes from the alert screen. Keep the error information available for future service needs. See *IBM 3708 Network Conversion Unit Problem Determination* for descriptions of the display alerts.

C104 DATA MONITOR NOT ALLOWED ON CONTROL TERMINAL PORT

Meaning: You tried to use the port data monitoring function for the port to which the control terminal is connected. This function is not allowed on the control terminal port.

Action: If you must monitor that port:

1. Terminate the control terminal session.
2. Go to another terminal and begin a control terminal session on that terminal
3. Select the port data monitor function for the original port; otherwise, specify a different port.

C105 PORT NOT ACTIVE

Meaning: The port that you want to monitor is not available for one of the following reasons:

- The port has been excluded in the configuration.
- The device connected to the port is not turned on.
- The port is connected to a switched line modem, and no incoming call has occurred.
- Microcode controlling the port failed. To determine whether this occurred, display the Alert Log screen and look for alerts containing the port number in question.

Action: If you must use that port, remove the exclusion by reconfiguring the port or determine why the port is not active.

C106 INVALID INPUT

Meaning: You entered data or pressed a function key that was incorrect for the current screen.

Action: Correct the data or press another function key and try the task again.

C107 CURRENT PASSWORD INVALID. FUNCTION TERMINATED

Meaning: You entered the current password incorrectly while trying to change the control terminal password. Enter the current password correctly to change the control terminal password.

Action: Try the task again. If you cannot log on to any port, you may need to reinstate the IBM-supplied configuration to examine or correct the configuration definition. Refer to *IBM 3708 Network Conversion Unit Problem Determination* for more information on reinstating the IBM-supplied configuration.

C108 END OF DATA RANGE

Meaning: The upper boundary of the storage area that you are displaying was reached. The data displayed on the screen for the count specified includes all data up through the last byte in that storage area.

Action: Type another data address or count, and then press the ENTER key.

C109 INVALID CHECKSUM

Meaning: The checksum value that you entered as the first 4 bytes of the patch data does not match the checksum value calculated from the entered data and address.

Action: Make sure you typed all the data correctly. If the problem recurs, contact the service representative.

C110 ACTIVATION OF ANOTHER CONTROL TERMINAL SESSION REJECTED

Meaning: Someone at another terminal that is connected to this 3708 is trying to log on that terminal as the control terminal. Only one control terminal session can be active at a time for each 3708.

Action: None. If the message is displayed again, prevent further logon attempts from that port.

C111 EEPROM IN USE. TRY AGAIN LATER

Meaning: You tried to access the nonvolatile storage (EEPROM) in the 3708 while the storage was being read from or written to.

Action: Try the task again later.

C112 EEPROM READ FAILED

Meaning: The 3708 could not read data from nonvolatile storage (EEPROM).

Action: Refer to ALERT A041 in *IBM 3708 Network Conversion Unit Problem Determination* for the proper action.

C113 DATA MONITOR NOT ALLOWED ON SDLC PORT

Meaning: You tried to use the port data monitor function for an SDLC port. This function is not allowed on an SDLC port.

Action: Specify a different port.

C114 MCF/PATCHES NOT APPLIED; EEPROM CHECKSUM ERROR

Meaning: The patches that reside in the 3708 for the current cartridge were not installed because they could not be read correctly from EEPROM or because there is an error in the MCF/Patch data itself.

Action: Call for service. For information on how to call for service, refer to *IBM 3708 Network Conversion Unit Problem Determination.*

C115 PORT NOT DEFINED AS A PRINTER

Meaning: You tried to display the printer authorization matrix for a port, but that port is not defined for use as a printer.

Action: Select a port that has been defined for a printer or reconfigure the original port and define it as a printer.

C116 BUFFER CONSTRAINT EXCEEDED

Meaning: The customer configuration requires too much storage. There is not enough storage left for normal 3708 operation. This warning message is displayed when the control terminal session is first activated. It indicates that the IBM-supplied configuration has been invoked.

The condition occurs when the following formula is not satisfied:

$P_m + 2(P_l) + 2(P_4) + 2(P_{ls}) < 40 - 2(P_{ne})$ where:

- P_m = The number of ports set for a medium (519-byte) receive queue
- P_l = The number of ports set for a large (1079-byte) receive queue
- P_4 = The number of ports operating as Device_Class_4
- P_{ls} = The number of ports configured to support Model 3, 4, or 5 emulation
- P_{ne} = The number of ASCII ports not excluded.

Action: Satisfy the preceding formula for receive queue size by doing any of the following actions:

- Reduce the size of the receive queue buffers if the large or medium buffers are not really needed.
- Eliminate some of the Device_Class_4 ports by using other types of devices.
- Reduce the number of ports that support Model 3, 4, or 5 emulation.
- Exclude all unused ports from the configuration. Refer to "Installing the 3708" on page 11-5 for more information.

Proceed with normal control terminal activity.

C117 BUFFER CONSTRAINT EXCEEDED; $P_m + 2(P_l) + 2(P_4) + 2(P_{ls})$ Not LT $40 - 2(P_{ne})$

Meaning: Same as C116.

Action: See action described for C116.

C118 PATCH AREA EXTENSION UPDATE NOT DONE DUE TO PREVIOUS ERROR

Meaning: The primary patch area in the EEPROM has failed. You should also have received the C103 message. The patch is not in effect.

Action: Display the alert log. Write down the alert ID (Axxx) and the failure codes for the alert screen. Keep the error information available for future service needs. (See *IBM 3708 Network Conversion Unit Problem Determination* for descriptions of the display alerts.) Try to install the patch again.

C119 INVALID INPUT. YOU MUST ENTER AN EVEN NUMBER OF CHARACTERS

Meaning: You entered an odd number of characters into the data input field, and an even number of characters is required.

Action: Verify your input and type in the correct data with the appropriate number of characters.

C122 THE UDT TYPE BIT CANNOT BE CHANGED USING THIS PROCEDURE.

Meaning: You have tried to modify the bit that distinguishes enhanced from standard UDTs with the UDT definition procedure.

Action: To convert between standard and enhanced UDTs, you must use option 8, Conversion Between Standard and Enhanced UDTs, from the 3708 Configuration and Password Menu (M120.0). The 3708 automatically changes the UDT type bit when this procedure is successfully completed.

C123 TERMINAL ID xx ON PORT yy WILL NOT BE VALID AFTER CONVERSION. ID MUST BE CHANGED BEFORE CONVERSION WILL TAKE PLACE.

Meaning: You are trying to convert from standard to enhanced UDTs but you have TERMINAL TYPE ID = 24 or 25 defined for at least one port.

Action: Terminal type IDs of 24 and 25 are not valid for enhanced UDTs. You can only have four enhanced UDTs with IDs in the range of 20 to 23. If you want to keep the UDT 24 or 25 mapping, redefine them with IDs between 20 and 23 before converting from standard to enhanced UDTs.

C124 BASE TERMINAL TYPE REQUIRES ENHANCED UDTS

Meaning: You have tried to define a standard UDT from a terminal type that requires an enhanced UDT.

Action: Perform the conversion between standard and enhanced UDTs before attempting to define your UDT.

C200 NO MESSAGE TO DISPLAY

Meaning: You pressed PF5 to display any waiting messages, but no messages were queued.

Action: None.

C201 MESSAGE WAITING - PRESS PF5

Meaning: One or more messages were received and queued for display.

Action: Press PF5 to see the messages. If message C201 reappears, more messages are waiting; press PF5 again.

C202 UPDATE TO BE APPLIED UPON EXIT OF PASSWORD CHANGE MENU

Meaning: You entered a port password change. The change was accepted and is applied to the configuration definition after you finish the password-change procedure. The new port password is not effective until the next time the 3708 is turned off and back on again or is restarted from the control terminal.

Action: Follow any instructions on the screen.

C203 UPDATE IN PROCESS. PLEASE WAIT

Meaning: The changes you entered are being applied to the configuration definition in non-volatile storage (EEPROM). The changes are not effective until the next time the 3708 is turned off and back on again or is restarted from the control terminal.

Action: Wait until the update is completed.

C204 UPDATE SUCCESSFUL

Meaning: The changes that you entered were applied to the configuration definition. The changes are not effective until the next time the 3708 is turned off and back on again or is restarted from the control terminal.

Action: Follow the instructions on the screen.

C205 HOLDING DISPLAY

Meaning: While using the port data monitor function, you pressed the ENTER key, which suspended the display of information.

Action: Press the ENTER key again to continue the display of data monitor information.

C206 SNAPSHOT DUMP REQUEST ABORTED

Meaning: While the snapshot dump request was in process, you pressed PF2, which canceled the snapshot dump function.

Action: Follow the instructions on the screen.

C207 MESSAGE LOST

Meaning: The message queue for control terminal messages overflowed and some messages were lost.

Action: Empty the message queue by viewing the messages. Press PF5 until message C201 disappears from the control terminal screen.

C208 WAITING FOR REQUESTED FUNCTION TO OCCUR

Meaning: You requested the snapshot dump function, and the request is in process.

Action: Wait for the request to be completed, or cancel the request by pressing PF2.

C209 WAITING FOR RESPONSE FROM PORT

Meaning: The 3708 is waiting for the requested port function to occur.

Action: Wait for the response to occur or press PF2 to cancel the request.

C210 EEPROM DISPLAY - SEE MANUAL

Meaning: While using the display storage function, you entered an address that is within the range of the EEPROM.

Each line of data on the Display Storage Data screen shows, in hexadecimal, up to 16 bytes of data beginning at the address shown at the left of the screen. In the EEPROM, every *other* byte contains data; only the *data* bytes are shown on the screen. In this display, therefore, the addresses at the left are incremented by 32 bytes instead of by the usual 16. Each byte of data occupies an odd-numbered address.

If you enter an even-numbered address that is within the EEPROM, the display begins with the next odd-numbered address.

Action: None.

C211 EXTENDED ERROR DATA LOGGED; CALL FOR ASSISTANCE

Meaning: Extended error information about an error in the 3708 was captured because the 3708 was set to STOP ON ERROR.

Action: Write down the message ID (C211). Do not do any control terminal functions that update the EEPROM. Refer to *IBM 3708 Network Conversion Unit Problem Determination* for information on setting the 3708 for STOP ON ERROR. When this message appears on the 3708 Alert Display Screen, you may press the ENTER key to display the current alerts.

C212 RESERVED OPTION

Meaning: Option 7, CENTRAL SITE CONFIGURATION, was selected from the control terminal's main menu (M100.0), and the cartridge installed in the 3708 does not contain the supporting microcode. To select Option 7, you must have the cartridge with central site configuration microcode (3708 Feature 3525) installed in the 3708.

Action: If central site configuration is desired, obtain the correct cartridge. Refer to, Chapter 8, "Planning for Central Site Configuration" for details.

C213 HOST DOWNLOAD ATTEMPTED. PLEASE LOGOFF CONTROL TERMINAL.

Meaning: You are on the control terminal and someone is trying to download a configuration to the 3708 over the SNA link.

Action: Log off the control terminal to permit the configuration download.

C214 WARNING: CONVERTING TO ENHANCED UDTS WILL REDUCE THE NUMBER OF UDTS FROM SIX TO FOUR. THE FOLLOWING UDTS WILL BE CONVERTED: x1, x2, x3, and x4.

Meaning: You are performing a conversion from standard to enhanced UDTs. Terminal types x1, x2, x3, and x4 will be converted from standard to enhanced UDTs.

Action: Press PF6 to update the master copy of this configuration, or press PF2 to stop this function.

C215 ENHANCED UDTS ARE CURRENTLY DEFINED - NO ACTION HAS BEEN TAKEN.

Meaning: You are attempting to convert standard UDTs to enhanced UDTs. However, enhanced UDTs are already defined.

Action: None

C216 WARNING: CONVERTING TO STANDARD UDTS WILL PREVENT YOU FROM DEFINING TERMINAL INITIALIZATION SEQUENCES, UDT NAMES, AND EMULATING 3270 MODELS 3, 4, AND 5.

Meaning: You are converting enhanced UDTs to standard UDTs. Any defined terminal initialization sequences, UDT names, or Model 3, 4, or 5 sequences are lost in the conversion.

Action: Press PF6 to update the master copy of this configuration, or press PF2 to stop this function.

C217 STANDARD UDTS ARE CURRENTLY DEFINED - NO ACTION TAKEN

Meaning: You are attempting to convert enhanced UDTs to standard UDTs. However, standard UDTs are already defined.

Action: None

C218 UNSPECIFIED UDT IDS HAVE BEEN DEFAULTED TO 20, VERIFY FOR CORRECTNESS.

Meaning: You can convert up to four different UDTs. If you do not specify the ID of the standard UDTs you want to convert, the default value 20 is used.

Action: If the values are correct, press ENTER. Otherwise, specify the UDT IDs to be converted.

Appendix G. Default Terminal Tables

This appendix lists the default terminal tables. Each section of the terminal tables is described in Chapter 13, "Configuration Procedures."

ADDS (Applied Digital Data Systems) Viewpoint®

Address	Hex Code	Description
000000	08	Term Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	29	Home	(01)	CTRL-A or HOME
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	25	Cursor Right	(06)	CTRL-F or →
00000D	33	Bel	(07)	CTRL-G
00000E	33	--	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or Return
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	24	Cursor Left	(15)	CTRL-U or ←
00001C	33	--	(16)	CTRL-V
00001D	33	--	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00001F	39	Resume Display	(19)	CTRL-Y
000020	22	Cursor Up	(1A)	CTRL-Z or ↑
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	1B	Attention	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	2C	Field Mark	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	(1C)	Sys Req	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	36	Status On/Off	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	ERASE EOL
0000AC	010C00000000	FF	Clear Screen
0000B2	011A00000000	SUB	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	011500000000	NAK	Cursor Left
0000C4	010600000000	ACK	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	010F00000000	SI	Highlight On
0000D6	010E00000000	SO	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Qff
000106	031B30410000	ESC 0 A	Activate Status
00010C	021B33000000	ESC 3	Start Printer
000112	021B34000000	ESC 4	Stop Printer

Beehive™ ATL-078

Address	Hex Code	Description
000000	10	Term Identification Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	Alt-A
000008	33	--	(02)	Alt-B
000009	20	Clear	(03)	Alt-C
00000A	38	Suspend Display	(04)	Alt-D
00000B	33	--	(05)	Alt-E
00000C	39	Resume Display	(06)	Alt-F
00000D	33	Bel	(07)	Alt-G
00000E	24	Cursor Left	(08)	Alt-H or ←
00000F	26	Tab	(09)	Alt-I or →|
000010	33	--	(0A)	Alt-J
000011	3A	Suspend Printer	(0B)	Alt-K
000012	3B	Resume Printer	(0C)	Alt-L
000013	28	Newline	(0D)	Alt-M or ↵
000014	33	--	(0E)	Alt-N
000015	33	--	(0F)	Alt-O
000016	34	Print	(10)	Alt-P
000017	33	--	(11)	Alt-Q
000018	33	--	(12)	Alt-R
000019	33	--	(13)	Alt-S
00001A	33	--	(14)	Alt-T
00001B	37	Refresh	(15)	Alt-U
00001C	33	--	(16)	Alt-V
00001D	1F	Enter	(17)	Alt-W or ENTER
00001E	33	--	(18)	Alt-X
00001F	30	Insert	(19)	Alt-Y or ↑
000020	33	--	(1A)	Alt-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC (SOH)
000028	33	--	(02)	ESC Alt-B
000029	33	--	(03)	ESC Alt-C
00002A	33	--	(04)	ESC Alt-D
00002B	33	--	(05)	ESC Alt-E
00002C	33	--	(06)	ESC Alt-D
00002D	33	--	(07)	ESC Alt-G
00002E	33	--	(08)	ESC Alt-H
00002F	33	--	(09)	ESC Alt-I
000030	33	--	(0A)	ESC Alt-J
000031	33	--	(0B)	ESC Alt-K
000032	33	--	(0C)	ESC Alt-L
000033	33	--	(0D)	ESC Alt-M
000034	33	--	(0E)	ESC Alt-N
000035	33	--	(0F)	ESC Alt-O
000036	33	--	(10)	ESC Alt-P
000037	33	--	(11)	ESC Alt-Q
000038	33	--	(12)	ESC Alt-R
000039	33	--	(13)	ESC Alt-S
00003A	33	--	(14)	ESC Alt-T
00003B	33	--	(15)	ESC Alt-U
00003C	33	--	(16)	ESC Alt-V
00003D	33	--	(17)	ESC Alt-W
00003E	33	--	(18)	ESC Alt-X
00003F	33	--	(19)	ESC Alt-Y
000040	33	--	(1A)	ESC Alt-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	18	PA1	(20)	ESC b or PA1
000047	19	PA2	(21)	ESC ! or PA2
000048	1A	PA3	(22)	ESC " or PA3
000049	33	--	(23)	ESC #
00004A	21	Cursor Select	(24)	ESC $ or CURSOR SEL
00004B	2D	DUP	(25)	ESC % or DUP
00004C	16	PF23	(26)	ESC & or PF23
00004D	2C	Field Mark	(27)	ESC ' or FIELD MARK
00004E	2F	Erase Input	(28)	ESC (or ERASE INPUT
00004F	1E	Dev Cancel	(29)	ESC) or DEV CNCL
000050	33	--	(2A)	ESC *
000051	(1C)	Sys Req	(2B)	ESC + or SYS REQ
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	33	--	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	35	Ident	(2F)	ESC / or IDENT
000056	17	PF24	(30)	ESC 0 or PF24
000057	33	--	(31)	ESC 1
000058	33	--	(32)	ESC 2
000059	33	--	(33)	ESC 3
00005A	12	PF19	(34)	ESC 4 or PF19
00005B	13	PF20	(35)	ESC 5 or PF20
00005C	14	PF21	(36)	ESC 6 or PF21
00005D	15	PF22	(37)	ESC 7 or PF22
00005E	33	--	(38)	ESC 8
00005F	33	--	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	11	PF18	(3D)	ESC = or PF18
000064	27	Backtab	(3E)	ESC > or |←
000065	33	--	(3F)	ESC ?
000066	33	--	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	20	Clear	(45)	ESC E or CLEAR
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or ↖
00006F	33	--	(49)	ESC I
000070	2E	Erase EOF	(4A)	ESC J or ERASE EOF
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	31	Delete	(50)	ESC P or ⸗
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	1D	Reset	(56)	ESC V or RESET
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	33	--	(5E)	ESC ^
000085	33	--	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	10	PF17	(67)	ESC g or PF17
00008E	33	--	(68)	ESC h
00008F	33	--	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	33	--	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	00	PF01	01	ESC p or PF01
000097	01	PF02	(71)	ESC q or PF02
000098	02	PF03	(72)	ESC r or PF03
000099	03	PF04	(73)	ESC s or PF04
00009A	04	PF05	(74)	ESC t or PF05
00009B	05	PF06	(75)	ESC u or PF06
00009C	06	PF07	(76)	ESC v or PF07
00009D	07	PF08	(77)	ESC w or PF08
00009E	08	PF09	(78)	ESC x or PF09
00009F	09	PF10	(79)	ESC y or PF10
0000A0	0A	PF11	(7A)	ESC z or PF11
0000A1	0B	PF12	(7B)	ESC { or PF12
0000A2	0C	PF13	(7C)	ESC ¦ or PF13
0000A3	0D	PF14	(7D)	ESC } or PF14
0000A4	0E	PF15	(7E)	ESC ~ or PF15
0000A5	0F	PF16	(7F)	ESC DEL or PF16

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	Erase EOL
0000AC	021B45000000	ESC E	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B46000000	ESC F row col	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	021B3B000000	ESC ;	Status Line On
000100	011D00000000	GS	Status Line Off
000106	021B31000000	ESC 1	Activate Status
00010C	011200000000	DC 2	Start Printer
000112	011400000000	DC 4	Stop Printer

Data General Dasher® D210 Display Terminal

Address	Hex Code	Description
000000	0E	Term Identification Number
000001	20	Term Attributes
000002	03	Cursor Class
000003	1E	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	33	--	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	29	Home	(08)	CTRL-H or HOME
00000F	26	Tab	(09)	CTRL-I or TAB
000010	1F	Enter	(0A)	CTRL-J or NEWLINE
000011	33	--	(0B)	CTRL-K
000012	20	Clear screen	(0C)	CTRL-L or ERASE PAGE
000013	33	--	(0D)	CTRL-M
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	22	Cursor Up	(17)	CTRL-W or ↑
00001E	25	Cursor Right	(18)	CTRL-X or →
00001F	24	Cursor Left	(19)	CTRL-Y or ←
000020	23	Cursor Down	(1A)	CTRL-Z or ↓
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	28	Newline	(0A)	ESC CTRL-J or ESC NEWLINE
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	2A	Type-ahead	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	35	Ident	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	2F	Erase Input	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	37	Refresh	(52)	ESC R
000079	(1C)	Sys Req	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	36	Status On/Off	(57)	ESC W
00007E	1E	Dev Cancel	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	18	PA1	(5C)	ESC \ or C1
000083	19	PA2	(5D)	ESC] or C2
000084	11	PF18	(5E)	ESC ^ or C3
000085	16	PF23	(5F)	ESC _ or C4
000086	33	--	(60)	ESC `
000087	0F	PF16	(61)	ESC a or SHIFT-F1
000088	10	PF17	(62)	ESC b or SHIFT-F2
000089	11	PF18	(63)	ESC c or SHIFT-F3
00008A	12	PF19	(64)	ESC d or SHIFT-F4
00008B	13	PF20	(65)	ESC e or SHIFT-F5
00008C	14	PF21	(66)	ESC f or SHIFT-F6
00008D	15	PF22	(67)	ESC g or SHIFT-F7
00008E	16	PF23	(68)	ESC h or SHIFT-F8
00008F	17	PF24	(69)	ESC i or SHIFT-F9
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	33	--	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	0E	PF15	(70)	ESC p or F15
000097	00	PF01	(71)	ESC q or F1
000098	01	PF02	(72)	ESC r or F2
000099	02	PF03	(73)	ESC s or F3
00009A	03	PF04	(74)	ESC t or F4
00009B	04	PF05	(75)	ESC u or F5
00009C	05	PF06	(76)	ESC v or F6
00009D	06	PF07	(77)	ESC w or F7
00009E	07	PF08	(78)	ESC x or F8
00009F	08	PF09	(79)	ESC y or F9
0000A0	09	PF10	(7A)	ESC z or F10
0000A1	0A	PF11	(7B)	ESC { or F11
0000A2	0B	PF12	(7C)	ESC ¦ or F12
0000A3	0C	PF13	(7D)	ESC } or F13
0000A4	OD	PF14	(7E)	ESC ~ or F14
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	010B00000000	CTRL K	Erase EOL
0000AC	010C00000000	FF	Clear Screen
0000B2	011700000000	ETB	Cursor Up
0000B8	011A00000000	SUB	Cursor Down
0000BE	011900000000	EM	Cursor Left
0000C4	011800000000	CAN	Cursor Right
0000CA	011000000000	DLE col row	Set Cursor Address
0000D0	011D00000000	GS	Highlight On
0000D6	011C00000000	FS	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

DEC® Model VT52

Address	Hex Code	Description
000000	03	Term Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	3F	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	27	Backtab	(08)	CTRL-H or BACKSPACE
00000F	26	Tab	(09)	CTRL-I or TAB
000010	28	Newline	(0A)	CTRL-J or LINE FEED
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	37	Refresh	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	33	--	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	1F	Enter	(4D)	ESC M or Numeric Enter
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	09	PF10	(50)	ESC P or Numeric Blue
000077	0A	PF11	(51)	ESC Q or Numeric Red
000078	0B	PF12	(52)	ESC R or Numeric Grey
000079	(1C)	Sys Req	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p
000097	00	PF01	(71)	ESC q or Numeric 1
000098	01	PF02	(72)	ESC r or Numeric 2
000099	02	PF03	(73)	ESC s or Numeric 3
00009A	03	PF04	(74)	ESC t or Numeric 4
00009B	04	PF05	(75)	ESC u or Numeric 5
00009C	05	PF06	(76)	ESC v or Numeric 6
00009D	06	PF07	(77)	ESC w or Numeric 7
00009E	07	PF08	(78)	ESC x or Numeric 8
00009F	08	PF09	(79)	ESC y or Numeric 9
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

DEC® Models VT100 (or VT220 Emulating a VT100)

Address	Hex Code	Description
000000	04	Term Identification Number
000001	80	Term Attributes
000002	01	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	4F	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	27	Backtab	(08)	CTRL-H or BACKSPACE
00000F	26	Tab	(09)	CTRL-I or TAB
000010	28	Newline	(0A)	CTRL-J or LINE FEED
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	37	Refresh	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	1F	Enter	(4D)	ESC M or Numeric Enter
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	09	PF10	(50)	ESC P or PF1
000077	0A	PF11	(51)	ESC Q or PF2
000078	0B	PF12	(52)	ESC R or PF3
000079	(1C)	Sys Req	(53)	ESC S or PF 4
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	2F	Erase Input	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	32	Echo Print Screen	(69)	ESC i or PRINT SCREEN (VT220 only)
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l or Numeric ,
000093	33	--	(6D)	ESC m or Numeric —
000094	2B	Null/Blank	(6E)	ESC n or Numeric .
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p or Numeric 0
000097	00	PF01	(71)	ESC q or Numeric 1
000098	01	PF02	(72)	ESC r or Numeric 2
000099	02	PF03	(73)	ESC s or Numeric 3
00009A	03	PF04	(74)	ESC t or Numeric 4
00009B	04	PF05	(75)	ESC u or Numeric 5
00009C	05	PF06	(76)	ESC v or Numeric 6
00009D	06	PF07	(77)	ESC w or Numeric 7
00009E	07	PF08	(78)	ESC x or Numeric 8
00009F	08	PF09	(79)	ESC y or Numeric 9
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	031B5B4B0000	ESC [K	Erase EOL
0000AC	031B5B4A0000	ESC [J	Clear Screen
0000B2	031B5B410000	ESC [A	Cursor Up
0000B8	031B5B420000	ESC [B	Cursor Down
0000BE	031B5B440000	ESC [D	Cursor Left
0000C4	031B5B430000	ESC [C	Cursor Right
0000CA	041B5B3B4800	ESC [row;col H	Set Cursor Address
0000D0	041B5B316D00	ESC [1 m	Highlight On
0000D6	041B5B306D00	ESC [0 m	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	041B5B356900	ESC [5 i	Start Printer
000112	041B5B346900	ESC [4 i	Stop Printer

DEC® Model VT220

Address	Hex Code	Description
000000	21	Term Identification Number
000001	90	Term Attributes
000002	01	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	4F	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	27	Backtab	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	38	Suspend Display	(07)	CTRL-G
00000E	29	Home	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or TAB
000010	33	--	(0A)	CTRL-J
000011	21	Cursor Select	(0B)	CTRL-K
000012	2B	Null/Blank	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	2A	Type Ahead	(14)	CTRL-T
00001B	3A	Suspend Printer	(15)	CTRL-U
00001C	3B	Resume Printer	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	35	Ident	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	33	--	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	33	--	(23)	ESC #
00004A	33	--	(24)	ESC $
00004B	33	--	(25)	ESC %
00004C	33	--	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	33	--	(28)	ESC (
00004F	33	--	(29)	ESC)
000050	33	--	(2A)	ESC *
000051	33	--	(2B)	ESC +
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	33	--	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	33	--	(30)	ESC 0
000057	7F	Ext Function Key	(31)	ESC 1 or F6-F8 or Find
000058	7F	Ext Function Key	(32)	ESC 2 or F9-F16 or Insert Here
000059	7F	Ext Function Key	(33)	ESC 3 or F17-F20 or Remove
00005A	7F	Ext Function Key	(34)	ESC 4 or Select
00005B	7F	Ext Function Key	(35)	ESC 5 or Prev Screen
00005C	7F	Ext Function Key	(36)	ESC 6 or Next Screen
00005D	33	--	(37)	ESC 7
00005E	33	--	(38)	ESC 8
00005F	33	--	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	33	--	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	33	--	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or Cursor Up
000068	23	Cursor Down	(42)	ESC B or Cursor Down
000069	25	Cursor Right	(43)	ESC C or Cursor Right
00006A	24	Cursor Left	(44)	ESC D or Cursor Left
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	1F	Enter	(4D)	ESC M or Numeric Enter
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	09	PF10	(50)	ESC P or PF01
000077	0A	PF11	(51)	ESC Q or PF02
000078	0B	PF12	(52)	ESC R or PF03
000079	34	Print	(53)	ESC S or PF04
00007A	41	TLIS Refresh	(54)	ESC T

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	33	--	(5E)	ESC ^
000085	33	--	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	33	--	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	32	Echo Print Screen	(69)	ESC i or PRINT SCREEN
000090	33	--	(6A)	ESC j
000091	33	--	(6B)	ESC k
000092	33	--	(6C)	ESC l or Numeric ,
000093	33	--	(6D)	ESC m or Numeric —
000094	33	--	(6E)	ESC n or Numeric .
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p or Numeric 0
000097	00	PF01	(71)	ESC q or Numeric 1
000098	01	PF02	(72)	ESC r or Numeric 2
000099	02	PF03	(73)	ESC s or Numeric 3
00009A	03	PF04	(74)	ESC t or Numeric 4
00009B	04	PF05	(75)	ESC u or Numeric 5
00009C	05	PF06	(76)	ESC v or Numeric 6
00009D	06	PF07	(77)	ESC w or Numeric 7
00009E	07	PF08	(78)	ESC x or Numeric 8
00009F	08	PF09	(79)	ESC y or Numeric 9
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	33	--	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	031B5B4B0000	ESC [K	Erase EOL
0000AC	031B5B4A0000	ESC [J	Clear Screen
0000B2	031B5B410000	ESC [A	Cursor Up
0000B8	031B5B420000	ESC [B	Cursor Down
0000BE	031B5B440000	ESC [D	Cursor Left
0000C4	031B5B430000	ESC [C	Cursor Right
0000CA	041B5B3B4800	ESC [row;col H	Set Cursor Address
0000D0	041B5B316D00	ESC [1 m	Highlight On
0000D6	041B5B306D00	ESC [0 m	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	041B5B356900	ESC [5 i	Start Printer
000112	041B5B346900	ESC [4 i	Stop Printer

Address	Hex Function Number	Function Description	Extended Function Key
000118	0C	PF13	F6
000119	0D	PF14	F7
00011A	0E	PF15	F8
00011B	0F	PF16	F9
00011C	10	PF17	F10
00011D	11	PF18	F11
00011E	12	PF19	F12
00011F	13	PF20	F13
000120	14	PF21	F14
000121	15	PF22	F15
000122	16	PF23	F16
000123	17	PF24	F17
000124	18	PA1	F18
000125	19	PA2	F19
000126	1A	PA3	F20
000127	27	Backtab	Find
000128	2F	Erase Input	Remove
000129	28	Newline	Select
00012A	37	Refresh	Prev Screen
00012B	1C	Sys Request	Next Screen

FALCO 500® (Emulating a DEC® Model VT220)

Note: Three keys on the FALCO terminal have fixed definitions and cannot be changed. They are Insert, Clr Scrn (Clear), and Delete (⌫).

Address	Hex Code	Description
000000	22	Term Identification Number
000001	D0	Term Attributes
000002	01	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	4F	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	--	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or Backspace
00000F	26	Tab	(09)	CTRL-I or TAB
000010	28	Newline	(0A)	CTRL-J or LINEFEED
000011	21	Cursor Select	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	2A	Type Ahead	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	33	--	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Enable Display	(19)	CTRL-Y
000020	35	Ident	(1A)	CTRL-Z
000021	33	(Lead-In char)	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	(Lead-In char)	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	33	--	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	33	--	(30)	ESC 0
000057	7F	Ext Funct Key	(31)	ESC 1 or F6-F8 or Insert Line
000058	7F	Ext Funct Key	(32)	ESC 2 or F9-F16 or Insert Here
000059	7F	Ext Funct Key	(33)	ESC 3 or F1-F5 or Clear Screen
00005A	7F	Ext Funct Key	(34)	ESC 4 or Delete Line
00005B	7F	Ext Funct Key	(35)	ESC 5 or Prev Screen
00005C	7F	Ext Funct Key	(36)	ESC 6 or Next Screen
00005D	33	--	(37)	ESC 7
00005E	33	--	(38)	ESC 8
00005F	33	--	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	33	--	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or Home
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	1F	Enter	(4D)	ESC M or Numeric Enter
000074	33	--	(4E)	ESC N
000075	33	(Lead-In char)	(4F)	ESC O
000076	18	PA1	(50)	ESC P or PF01
000077	19	PA2	(51)	ESC Q or PF02
000078	1A	PA3	(52)	ESC R or PF03
000079	34	Print	(53)	ESC S or PF04
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	(ANSI sequence)	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	33	--	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	38	Suspend Display	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	29	Home	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	33	--	(6B)	ESC k
000092	33	--	(6C)	ESC l or Numeric ,
000093	33	--	(6D)	ESC m or Numeric —
000094	2B	Null/Blank	(6E)	ESC n or Numeric .
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p or Numeric 0
000097	0F	PF16	(71)	ESC q or Numeric 1
000098	10	PF17	(72)	ESC r or Numeric 2
000099	11	PF18	(73)	ESC s or Numeric 3
00009A	12	PF19	(74)	ESC t or Numeric 4
00009B	13	PF20	(75)	ESC u or Numeric 5
00009C	14	PF21	(76)	ESC v or Numeric 6
00009D	15	PF22	(77)	ESC w or Numeric 7
00009E	16	PF23	(78)	ESC x or Numeric 8
00009F	17	PF24	(79)	ESC y or Numeric 9
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	031B5B4B0000	ESC [K	Erase EOL
0000AC	031B5B4A0000	ESC [J	Clear Screen
0000B2	031B5B410000	ESC [A	Cursor Up
0000B8	031B5B420000	ESC [B	Cursor Down
0000BE	031B5B440000	ESC [D	Cursor Left
0000C4	031B5B430000	ESC [C	Cursor Right
0000CA	041B5B3B4800	ESC [row;col H	Set Cursor Address
0000D0	041B5B316D00	ESC [1 m	Highlight On
0000D6	041B5B306D00	ESC [0 m	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	(hardcoded)	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	041B5B356900	ESC [5 i	Start Printer
000112	041B5B346900	ESC [4 i	Stop Printer

Address	Hex Function Number	Function Description	Extended Function Key
000118	00	PF01	F1
000119	01	PF02	F2
00011A	02	PF03	F3
00011B	03	PF04	F4
00011C	04	PF05	F5
00011D	05	PF06	F6
00011E	06	PF07	F7
00011F	07	PF08	F8
000120	08	PF09	F9
000121	09	PF10	F10
000122	0A	PF11	F11
000123	0B	PF12	F12
000124	0C	PF13	F13
000125	0D	PF14	F14
000126	0E	PF15	F15
000127	0F	PF16	F16
000128	27	Backtab	Ins Line
000129	28	Newline	Del Line
00012A	37	Refresh	Prev Screen
00012B	1C	Sys Request	Next Screen

Hazeltine Esprit I™ and Esprit II™

Address	Hex Code	Description
000000	0A	Term Identification Number
000001	00	Term Attributes
000002	03	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	3F	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	28	Newline	(0A)	CTRL-J or LINE FEED
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	25	Cursor Right	(10)	CTRL-P or →
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	33	--	(09)	ESC CTRL-I
000030	33	--	(0A)	ESC CTRL-J
000031	23	Cursor Down	(0B)	ESC CTRL-K or ↓
000032	22	Cursor Up	(0C)	ESC CTRL-L or ↑
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	29	Home	(12)	ESC CTRL-R or HOME
000039	33	--	(13)	ESC CTRL-S
00003A	27	Backtab	(14)	ESC CTRL-T or Shift TAB
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	20	Clear Screen	(1C)	ESC (FS) or Shift CLEAR
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	33	--	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	2F	Erase Input	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	1F	Enter	(4D)	ESC M or Numeric Enter
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	34	Print	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	37	Refresh	(52)	ESC R
000079	1C	Sys Req	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	33	--	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	00	PF01	(71)	ESC q or Numeric 1
000098	01	PF02	(72)	ESC r or Numeric 2
000099	02	PF03	(73)	ESC s or Numeric 3
00009A	03	PF04	(74)	ESC t or Numeric 4
00009B	04	PF05	(75)	ESC u or Numeric 5
00009C	05	PF06	(76)	ESC v or Numeric 6
00009D	06	PF07	(77)	ESC w or Numeric 7
00009E	07	PF08	(78)	ESC x or Numeric 8
00009F	08	PF09	(79)	ESC y or Numeric 9
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL or ESC RUBOUT

Address	Hex Code	Characters Generated	Function Name
0000A6	021B0F000000	ESC SI	Erase EOL
0000AC	021B17000000	ESC ETB	Clear Screen
0000B2	021B0C000000	ESC FF	Cursor Up
0000B8	021B0B000000	ESC VT	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	011000000000	DLE	Cursor Right
0000CA	021B11000000	ESC DC1 col row	Set Cursor Address
0000D0	021B1F000000	ESC US	Highlight On
0000D6	021B19000000	ESC EM	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	031B2A000000	ESC * NUL	Start Printer
000112	031B3F000000	ESC ? NUL	Stop Printer

Hazeltine 1500

Address	Hex Code	Description
000000	09	Term Identification Number
000001	20	Term Attributes
000002	03	Cursor Class
000003	7E	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J
000011	22	Cursor Up	(0B)	CTRL-K
000012	25	Cursor Right	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	33	--	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	17	PF24	(0A)	ESC CTRL-J or ESC Line Feed
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC Return
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	29	Home	(12)	ESC CTRL-R or HOME
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	20	Clear screen	(1C)	ESC (FS) or CLEAR
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	0D	PF14	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	11	PF18	(26)	ESC &
00004D	12	PF19	(27)	ESC '
00004E	13	PF20	(28)	ESC (
00004F	14	PF21	(29)	ESC)
000050	33	--	(2A)	ESC *
000051	33	--	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	16	PF23	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	33	--	(40)	ESC @
000067	33	--	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	2F	Erase Input	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	34	Print	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	0B	PF12	(5E)	ESC ^
000085	33	--	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	33	--	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	15	PF22	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	027E0F000000	~ SI	Erase EOL
0000AC	027E17000000	~ ETB	Clear Screen
0000B2	027E0C000000	~ FF	Cursor Up
0000B8	027E0B000000	~ VT	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	011000000000	DLE	Cursor Right
0000CA	027E11000000	~ DC1 col row	Set Cursor Address
0000D0	027E1F000000	~ US	Highlight On
0000D6	027E19000000	~ EM	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

Hewlett-Packard 2621B Interactive Terminal

Address	Hex Code	Description
000000	0D	Term Identification Number
000001	00	Term Attributes
000002	00	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB ►
000010	23	Cursor Down	(0A)	CTRL-J or ∨
000011	22	Cursor Up	(0B)	CTRL-K or ∧
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	33	--	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	33	--	(09)	ESC CTRL-I
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN or ESC ENTER
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ∧
000068	23	Cursor Down	(42)	ESC B or ∨
000069	25	Cursor Right	(43)	ESC C or ≻
00006A	24	Cursor Left	(44)	ESC D or ≺
00006B	2F	Erase Input	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or ↖
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	37	Refresh	(52)	ESC R
000079	1C	Sys Req	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	27	Backtab	(69)	ESC i or TAB ◄
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	00	PF01	01	ESC p or F1
000097	01	PF02	(71)	ESC q or F2
000098	02	PF03	(72)	ESC r or F3
000099	03	PF04	(73)	ESC s or F4
00009A	04	PF05	(74)	ESC t or F5
00009B	05	PF06	(75)	ESC u or F6
00009C	06	PF07	(76)	ESC v or F7
00009D	07	PF08	(77)	ESC w or F8
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	051B26617943	ESC & a row y col C	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

IBM PC/FTTERM Color

Note: In the following table, fields that are marked with an asterisk (*) must not be redefined if you are using the PC/HOST File Transfer and Terminal Emulator program.

Address	Hex Code	Description
000000	1E	Term Identification Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	27	Backtab	(02)	CTRL-B
000009	20	Clear Screen*	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	33	--	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	33	--	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or →|
000010	28	Newline	(0A)	CTRL-J or CTRL ↵
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off*	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC →|
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	27	Backtab	(0F)	ESC CTRL-O or |←
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01*	(31)	ESC 1
000058	01	PF02*	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	3D	File transfer disable*	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	3C	File transfer enable*	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or CTRL PGUP
00006F	2E	Erase EOF	(49)	ESC I or END
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or CTRL HOME
000072	20	Clear Screen	(4C)	ESC L or HOME
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	30	Insert	(52)	ESC R or INS
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	40	2/4 Color Toggle	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	08	PF09	(69)	ESC i or F9
000090	09	PF10	(6A)	ESC j or F10
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer*	(6F)	ESC o
000096	3B	Resume Printer*	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead*	(74)	ESC t
00009B	18	PA1	(75)	ESC u or CTRL F1
00009C	19	PA2	(76)	ESC v or CTRL F2
00009D	1A	PA3	(77)	ESC w or CTRL F3
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	3F	FTTERM COMPRESS	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4C000000	ESC L	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	051B5B33376D88	ESC [37 m	Highlight On (Color 4)
0000D6	051B5B32326D	ESC [22 m	Highlight Off (Color 1)
0000DC	010700000000	BEL	BEL
0000E2	051B5B32326D	ESC [22 m	Set Color 1†
0000E8	051B5B32316D	ESC [21 m	Set Color 2†
0000EE	051B5B33346D	ESC [34 m	Set Color 3†
0000F4	051B5B33376D	ESC [37 m	Set Color 4†
0000FA	041B59382000	ESC Y row 25 col 1	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2*	Start Printer
000112	021014000000	DLE DC4*	Stop Printer

† Highlight On has the same sequence as Set Color 4 (white), and Highlight Off has the same sequence as Set Color 1 (green).

IBM PC/FTTERM Monochrome

Note: In the following table, fields that are marked with an asterisk (*) must not be redefined if you are using the PC/HOST File Transfer and Terminal Emulator program.

Address	Hex Code	Description
000000	1F	Term Identification Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	27	Backtab	(02)	CTRL-B
000009	20	Clear Screen*	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	33	--	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	33	--	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or →|
000010	28	Newline	(0A)	CTRL-J or CTRL ↵
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	33	--	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC →|
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	27	Backtab	(0F)	ESC CTRL-O or |←
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01*	(31)	ESC 1
000058	01	PF02*	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	3D	File transfer disable*	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	3C	File transfer enable*	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or CTRL PGUP
00006F	2E	Erase EOF	(49)	ESC I or END
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or CTRL HOME
000072	20	Clear Screen	(4C)	ESC L or HOME
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	30	Insert	(52)	ESC R or INS
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	08	PF09	(69)	ESC i or F9
000090	09	PF10	(6A)	ESC j or F10
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer*	(6F)	ESC o
000096	3B	Resume Printer*	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead*	(74)	ESC t
00009B	18	PA1	(75)	ESC u or CTRL F1
00009C	19	PA2	(76)	ESC v or CTRL F2
00009D	1A	PA3	(77)	ESC w or CTRL F3
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC |
0000A3	33	--	(7D)	ESC }
0000A4	3F	FTTERM COMPRESS	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4C000000	ESC L	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	041B5B316D00	ESC [1 m	Highlight On*
0000D6	041B5B306D00	ESC [0 m	Highlight Off*
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	041B59382000	ESC Y row 25 col 1	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2*	Start Printer
000112	021014000000	DLE DC4*	Stop Printer

IBM 3101 and IBM PC in 3101 Emulation Mode

Notes:

1. The ALT key on the IBM 3101 is equivalent to the CTRL key on the IBM PC.
2. In the following table, fields that are marked with an asterisk (*) must not be redefined if you are using the PC/HOST File Transfer and Terminal Emulator program.

Address	Hex Code	Description
000000	01	Term Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	27	Backtab	(02)	CTRL-B
000009	20	Clear Screen*	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	33	--	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	33	--	(08)	CTRL-H
00000F	26	Tab	(09)	CTRL-I or →|
000010	28	Newline	(0A)	CTRL-J or CTRL ↵ (PC only)
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off*	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC →|
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	27	Backtab	(0F)	ESC CTRL-O or |← (PC only)
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01*	(31)	ESC 1
000058	01	PF02*	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	3D	File transfer disable*	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	3C	File transfer enable*	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	50	Echo start of message	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or CTRL PGUP (PC only) or HOME (3101 only)
00006F	2E	Erase EOF	(49)	ESC I or END (PC only) or ERASE EOL (3101 only)
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or CTRL HOME (PC only) or ERASE INPUT (3101 only)
000072	20	Clear Screen	(4C)	ESC L or HOME (PC only) or CLEAR (3101 only)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	30	Insert	(52)	ESC R or INS (PC only)
000079	32	Echo Cancel Print	(53)	ESC S or CANCEL (3101 Model 2X only)
00007A	33	--	(54)	ESC T
00007B	32	Echo Print Line	(55)	ESC U or PRINT LINE (3101 Model 2X only)
00007C	32	Echo Print Msg	(56)	ESC V or PRINT MSG (3101 Model 2X only)
00007D	32	Echo Print Page	(57)	ESC W or PRINT PAGE (3101 Model 2X only)
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or PF1 (3101) or F1 (PC)
000088	81	PF02	(62)	ESC b CR or PF2 (3101) or F2 (PC)
000089	82	PF03	(63)	ESC c CR or PF3 (3101) or F3 (PC)
00008A	83	PF04	(64)	ESC d CR or PF4 (3101) or F4 (PC)
00008B	84	PF05	(65)	ESC e CR or PF5 (3101) or F5 (PC)
00008C	85	PF06	(66)	ESC f CR or PF6 (3101) or F6 (PC)
00008D	86	PF07	(67)	ESC g CR or PF7 (3101) or F7 (PC)
00008E	87	PF08	(68)	ESC h CR or PF8 (3101) or F8 (PC)
00008F	08	PF09	(69)	ESC i or F9 (PC only)
000090	09	PF10	(6A)	ESC j or F10 (PC only)
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer*	(6F)	ESC o
000096	3B	Resume Printer*	(70)	ESC p

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead*	(74)	ESC t
00009B	18	PA1	(75)	ESC u or CTRL F1 (PC only)
00009C	19	PA2	(76)	ESC v or CTRL F2 (PC only)
00009D	1A	PA3	(77)	ESC w or CTRL F3 (PC only)
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	Reserved*	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4C000000	ESC L	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

IBM 3151/62 (Model 5 Emulation)

Address	Hex Code	Description
000000	24	Term Identification Number
000001	41	Term Attributes
000002	06	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	21	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-a
000008	33	--	(02)	CTRL-b
000009	33	--	(03)	CTRL-c
00000A	2D	Dup	(04)	CTRL-d
00000B	2E	Erase EOF	(05)	CTRL-e
00000C	2C	Field Mark	(06)	CTRL-f
00000D	33	Bel	(07)	CTRL-g
00000E	24	Cursor Left	(08)	CTRL-h or BACKSPACE
00000F	26	Tab	(09)	CTRL-i or TAB
000010	28	Newline	(0A)	CTRL-j
000011	21	Cursor Select	(0B)	CTRL-k
000012	33	--	(0C)	CTRL-l
000013	1F	Enter	(0D)	CTRL-m or RETURN
000014	33	--	(0E)	CTRL-n
000015	33	--	(0F)	CTRL-o
000016	34	Print	(10)	CTRL-p
000017	33	--	(11)	CTRL-q
000018	1D	Reset	(12)	CTRL-r
000019	33	--	(13)	CTRL-s
00001A	38	Suspend Display	(14)	CTRL-t
00001B	33	--	(15)	CTRL-u
00001C	33	--	(16)	CTRL-v
00001D	33	--	(17)	CTRL-w
00001E	1E	Dev Cancel	(18)	CTRL-x
00001F	39	Resume Display	(19)	CTRL-y
000020	35	Ident	(1A)	CTRL-z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-a
000028	33	--	(02)	ESC CTRL-b
000029	33	--	(03)	ESC CTRL-c
00002A	33	--	(04)	ESC CTRL-d
00002B	33	--	(05)	ESC CTRL-e
00002C	33	--	(06)	ESC CTRL-f
00002D	33	--	(07)	ESC CTRL-g
00002E	33	--	(08)	ESC CTRL-h
00002F	27	Backtab	(09)	ESC CTRL-i or ESC TAB
000030	33	--	(0A)	ESC CTRL-j
000031	33	--	(0B)	ESC CTRL-k
000032	33	--	(0C)	ESC CTRL-l
000033	33	--	(0D)	ESC CTRL-m
000034	33	--	(0E)	ESC CTRL-n
000035	33	--	(0F)	ESC CTRL-o
000036	33	--	(10)	ESC CTRL-p
000037	33	--	(11)	ESC CTRL-q
000038	33	--	(12)	ESC CTRL-r
000039	33	--	(13)	ESC CTRL-s
00003A	33	--	(14)	ESC CTRL-t
00003B	33	--	(15)	ESC CTRL-u
00003C	33	--	(16)	ESC CTRL-v
00003D	33	--	(17)	ESC CTRL-w
00003E	33	--	(18)	ESC CTRL-x
00003F	33	--	(19)	ESC CTRL-y
000040	33	--	(1A)	ESC CTRL-z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	33	--	(21)	ESC !
000048	33	--	(22)	ESC "
000049	8E	PF15	(23)	ESC # CR
00004A	8F	PF16	(24)	ESC $ CR
00004B	90	PF17	(25)	ESC % CR
00004C	92	PF19	(26)	ESC & CR
00004D	33	--	(27)	ESC '
00004E	94	PF21	(28)	ESC (CR
00004F	95	PF22	(29)	ESC) CR
000050	93	PF20	(2A)	ESC * CR
000051	97	PF24	(2B)	ESC + CR
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	8D	PF14	(40)	ESC @ CR
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	2E	Erase EOF	(49)	ESC I or ERASE EOF
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ER INP
000072	A0	Clear screen	(4C)	ESC L CR or CLEAR
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	3A	Suspend Printer	(4F)	ESC O
000076	3B	Resume Printer	(50)	ESC P
000077	31	Delete	(51)	ESC Q or DELETE
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	91	PF18	(5E)	ESC ^ CR
000085	96	PF23	(5F)	ESC _ CR
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	88	PF09	(69)	ESC i CR or F9
000090	89	PF10	(6A)	ESC j CR or F10
000091	8A	PF11	(6B)	ESC k CR or F11
000092	8B	PF12	(6C)	ESC l CR or F12
000093	98	PA1	(6D)	ESC m CR or PA1
000094	99	PA2	(6E)	ESC n CR or PA2
000095	9A	PA3	(6F)	ESC o CR or PA3
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	A1	Cursor Select	(75)	ESC u CR
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	8C	PF13	(7E)	ESC ~ CR
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B79000000	ESC y row col	Set Cursor Address
0000D0	031B34480000	ESC 4 H	Highlight On
0000D6	031B34400000	ESC 4 @	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1 (green)
0000E8	000000000000	--	Set Color 2 (red)
0000EE	000000000000	--	Set Color 3 (blue)
0000F4	000000000000	--	Set Color 4 (white)
0000FA	031B233D0000	ESC # =	Status Line On
000100	021B3D000000	ESC =	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2	Start Printer
000112	021014000000	DLE DC4	Stop Printer

Address	Hex Code	Characters Generated	Function Name
00012C	091B207E21212038 2250000000000000	ESC b ~ ! ! b 8 " P	Set screen to Model 2 mode
00013C	0000000000000000 0000000000000000	--	Set screen to Model 3 mode
00014C	0000000000000000 0000000000000000	--	Set screen to Model 4 mode
00015C	091B20722121203C 2444000000000000	ESC b r ! ! b < $ D	Set screen to Model 5 mode
00016C	0000000000000000	--	UDT name
175	0000000000000000 0000000000000000	--	User TLIS
1B2	0000000000000000 0000000000000000	--	Reserved

Notes:

1. Only 3162s with the 3708 Support Function (Feature No. 8232) are supported by this map. Native 3162 users must define a UDT to suppress the addressable status line.
2. If you want to make a UDT from this map, you must convert to enhanced UDTs.
3. For large screen support (27 x 132), the 3151 requires the Expansion Feature Cartridge (Feature No. 8535).

IBM 3151, 3161, 3162, and 3163 ASCII Display Stations

Address	Hex Code	Description
000000	20	Term Identification Number
000001	10	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	21	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-a
000008	33	--	(02)	CTRL-b
000009	33	--	(03)	CTRL-c
00000A	2D	Dup	(04)	CTRL-d
00000B	2E	Erase EOF	(05)	CTRL-e
00000C	2C	Field Mark	(06)	CTRL-f
00000D	33	Bel	(07)	CTRL-g
00000E	24	Cursor Left	(08)	CTRL-h or BACKSPACE
00000F	26	Tab	(09)	CTRL-i or TAB
000010	28	Newline	(0A)	CTRL-j
000011	21	Cursor Select	(0B)	CTRL-k
000012	33	--	(0C)	CTRL-l
000013	1F	Enter	(0D)	CTRL-m or RETURN
000014	33	--	(0E)	CTRL-n
000015	33	--	(0F)	CTRL-o
000016	34	Print	(10)	CTRL-p
000017	33	--	(11)	CTRL-q
000018	1D	Reset	(12)	CTRL-r
000019	33	--	(13)	CTRL-s
00001A	38	Suspend Display	(14)	CTRL-t
00001B	33	--	(15)	CTRL-u
00001C	33	--	(16)	CTRL-v
00001D	36	Status On/Off	(17)	CTRL-w
00001E	1E	Dev Cancel	(18)	CTRL-x
00001F	39	Resume Display	(19)	CTRL-y
000020	35	Ident	(1A)	CTRL-z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-a
000028	33	--	(02)	ESC CTRL-b
000029	33	--	(03)	ESC CTRL-c
00002A	33	--	(04)	ESC CTRL-d
00002B	33	--	(05)	ESC CTRL-e
00002C	33	--	(06)	ESC CTRL-f
00002D	33	--	(07)	ESC CTRL-g
00002E	33	--	(08)	ESC CTRL-h
00002F	27	Backtab	(09)	ESC CTRL-i or ESC TAB
000030	33	--	(0A)	ESC CTRL-j
000031	33	--	(0B)	ESC CTRL-k
000032	33	--	(0C)	ESC CTRL-l
000033	33	--	(0D)	ESC CTRL-m
000034	33	--	(0E)	ESC CTRL-n
000035	33	--	(0F)	ESC CTRL-o
000036	33	--	(10)	ESC CTRL-p
000037	33	--	(11)	ESC CTRL-q
000038	33	--	(12)	ESC CTRL-r
000039	33	--	(13)	ESC CTRL-s
00003A	33	--	(14)	ESC CTRL-t
00003B	33	--	(15)	ESC CTRL-u
00003C	33	--	(16)	ESC CTRL-v
00003D	33	--	(17)	ESC CTRL-w
00003E	33	--	(18)	ESC CTRL-x
00003F	33	--	(19)	ESC CTRL-y
000040	33	--	(1A)	ESC CTRL-z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	90	Reset	(21)	ESC ! CR
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	2E	Erase EOF	(49)	ESC I or ERASE EOF
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ER INP
000072	A0	Clear screen	(4C)	ESC L CR or CLEAR
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	3A	Suspend Printer	(4F)	ESC O
000076	7F	Ext Function Key	(50)	ESC P
000077	31	Delete	(51)	ESC Q or DELETE
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	B4	Print	(57)	ESC W CR

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	80	PF01 or PF13	(61)	ESC a or F1
000088	81	PF02 or PF14	(62)	ESC b CR or F2
000089	82	PF03 or PF15	(63)	ESC c CR or F3
00008A	83	PF04 or PF16	(64)	ESC d CR or F4
00008B	84	PF05 or PF17	(65)	ESC e CR or F5
00008C	85	PF06 or PF18	(66)	ESC f CR or F6
00008D	86	PF07 or PF19	(67)	ESC g CR or F7
00008E	87	PF08 or PF20	(68)	ESC h CR or F8
00008F	88	PF09 or PF21	(69)	ESC i CR or F9
000090	89	PF10 or PF22	(6A)	ESC j CR or F10
000091	8A	PF11 or PF23	(6B)	ESC k CR or F11
000092	8B	PF12 or PF24	(6C)	ESC l CR or F12
000093	98	PA1	(6D)	ESC m CR or PA1
000094	99	PA2	(6E)	ESC n CR or PA2
000095	9A	PA3	(6F)	ESC o CR or PA3
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	A1	Cursor Select	(75)	ESC u CR
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	90	Reset	(7A)	ESC z CR
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	0C	PF13	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B79000000	ESC y row col	Set Cursor Address
0000D0	031B34480000	ESC 4 H	Highlight On
0000D6	031B34400000	ESC 4 @	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2	Start Printer
000112	021014000000	DLE DC4	Stop Printer

Note: The Insert key is hardcoded in the 3708 and requires that ESC P be defined as an extended function key (X'7F'). You cannot change this value.

IBM 3151/61/62/63 with 3708 Feature

Address	Hex Code	Description
000000	02	Term Identification Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	21	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-a
000008	33	--	(02)	CTRL-b
000009	33	--	(03)	CTRL-c
00000A	2D	Dup	(04)	CTRL-d
00000B	2E	Erase EOF	(05)	CTRL-e
00000C	2C	Field Mark	(06)	CTRL-f
00000D	33	Bel	(07)	CTRL-g
00000E	24	Cursor Left	(08)	CTRL-h or BACKSPACE
00000F	26	Tab	(09)	CTRL-i or TAB
000010	28	Newline	(0A)	CTRL-j
000011	21	Cursor Select	(0B)	CTRL-k
000012	33	--	(0C)	CTRL-l
000013	1F	Enter	(0D)	CTRL-m or RETURN
000014	33	--	(0E)	CTRL-n
000015	33	--	(0F)	CTRL-o
000016	34	Print	(10)	CTRL-p
000017	33	--	(11)	CTRL-q
000018	1D	Reset	(12)	CTRL-r
000019	33	--	(13)	CTRL-s
00001A	38	Suspend Display	(14)	CTRL-t
00001B	33	--	(15)	CTRL-u
00001C	33	--	(16)	CTRL-v
00001D	33	--	(17)	CTRL-w
00001E	1E	Dev Cancel	(18)	CTRL-x
00001F	39	Resume Display	(19)	CTRL-y
000020	35	Ident	(1A)	CTRL-z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-a
000028	33	--	(02)	ESC CTRL-b
000029	33	--	(03)	ESC CTRL-c
00002A	33	--	(04)	ESC CTRL-d
00002B	33	--	(05)	ESC CTRL-e
00002C	33	--	(06)	ESC CTRL-f
00002D	33	--	(07)	ESC CTRL-g
00002E	33	--	(08)	ESC CTRL-h
00002F	27	Backtab	(09)	ESC CTRL-i or ESC TAB
000030	33	--	(0A)	ESC CTRL-j
000031	33	--	(0B)	ESC CTRL-k
000032	33	--	(0C)	ESC CTRL-l
000033	33	--	(0D)	ESC CTRL-m
000034	33	--	(0E)	ESC CTRL-n
000035	33	--	(0F)	ESC CTRL-o
000036	33	--	(10)	ESC CTRL-p
000037	33	--	(11)	ESC CTRL-q
000038	33	--	(12)	ESC CTRL-r
000039	33	--	(13)	ESC CTRL-s
00003A	33	--	(14)	ESC CTRL-t
00003B	33	--	(15)	ESC CTRL-u
00003C	33	--	(16)	ESC CTRL-v
00003D	33	--	(17)	ESC CTRL-w
00003E	33	--	(18)	ESC CTRL-x
00003F	33	--	(19)	ESC CTRL-y
000040	33	--	(1A)	ESC CTRL-z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	33	--	(21)	ESC !
000048	33	--	(22)	ESC "
000049	8E	PF15	(23)	ESC # CR
00004A	8F	PF16	(24)	ESC $ CR
00004B	90	PF17	(25)	ESC % CR
00004C	92	PF19	(26)	ESC & CR
00004D	33	--	(27)	ESC '
00004E	94	PF21	(28)	ESC (CR
00004F	95	PF22	(29)	ESC) CR
000050	93	PF20	(2A)	ESC * CR
000051	97	PF24	(2B)	ESC + CR
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	8D	PF14	(40)	ESC @ CR
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	2E	Erase EOF	(49)	ESC I or ERASE EOF
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ER INP
000072	A0	Clear screen	(4C)	ESC L CR or CLEAR
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	3A	Suspend Printer	(4F)	ESC O
000076	3B	Resume Printer	(50)	ESC P
000077	31	Delete	(51)	ESC Q or DELETE
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	91	PF18	(5E)	ESC ^ CR
000085	96	PF23	(5F)	ESC _ CR
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	88	PF09	(69)	ESC i CR or F9
000090	89	PF10	(6A)	ESC j CR or F10
000091	8A	PF11	(6B)	ESC k CR or F11
000092	8B	PF12	(6C)	ESC l CR or F12
000093	98	PA1	(6D)	ESC m CR or PA1
000094	99	PA2	(6E)	ESC n CR or PA2
000095	9A	PA3	(6F)	ESC o CR or PA3
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	A1	Cursor Select	(75)	ESC u CR
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	8C	PF13	(7E)	ESC ~ CR
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B79000000	ESC y row col	Set Cursor Address
0000D0	031B34480000	ESC 4 H	Highlight On
0000D6	031B34400000	ESC 4 @	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1 (green)
0000E8	000000000000	--	Set Color 2 (red)
0000EE	000000000000	--	Set Color 3 (blue)
0000F4	000000000000	--	Set Color 4 (white)
0000FA	031B233D0000	ESC # =	Status Line On
000100	021B3D000000	ESC =	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2	Start Printer
000112	021014000000	DLE DC4	Stop Printer

The following cartridges are supported by this map:

IBM 3151 Cartridge to Emulate IBM and DEC® Terminals (Feature No. 8235)
IBM 3151 Connectivity Feature Cartridge (Feature No. 8525)
IBM 3161 with Enhanced 3708 Attachment (Feature No. 8371)
IBM 3162 with 3708 Support Functions (Feature No. 8232)
IBM 3163/3164 VT100/3708 Emulation Cartridge (Feature No. 8313).

Note: The above cartridges also support pacing for a printer that is attached to the AUX port.

IBM 3164 ASCII Display Station

Address	Hex Code	Description
000000	24	Term Identification Number
000001	10	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	21	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-a
000008	33	--	(02)	CTRL-b
000009	33	--	(03)	CTRL-c
00000A	2D	Dup	(04)	CTRL-d
00000B	2E	Erase EOF	(05)	CTRL-e
00000C	2C	Field Mark	(06)	CTRL-f
00000D	33	Bel	(07)	CTRL-g
00000E	24	Cursor Left	(08)	CTRL-h or BACKSPACE
00000F	26	Tab	(09)	CTRL-i or TAB
000010	28	Newline	(0A)	CTRL-j
000011	21	Cursor Select	(0B)	CTRL-k
000012	33	--	(0C)	CTRL-l
000013	1F	Enter	(0D)	CTRL-m or RETURN
000014	33	--	(0E)	CTRL-n
000015	33	--	(0F)	CTRL-o
000016	34	Print	(10)	CTRL-p
000017	33	--	(11)	CTRL-q
000018	1D	Reset	(12)	CTRL-r
000019	33	--	(13)	CTRL-s
00001A	38	Suspend Display	(14)	CTRL-t
00001B	33	--	(15)	CTRL-u
00001C	33	--	(16)	CTRL-v
00001D	36	Status On/Off	(17)	CTRL-w
00001E	1E	Dev Cancel	(18)	CTRL-x
00001F	39	Resume Display	(19)	CTRL-y
000020	35	Ident	(1A)	CTRL-z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-a
000028	33	--	(02)	ESC CTRL-b
000029	33	--	(03)	ESC CTRL-c
00002A	33	--	(04)	ESC CTRL-d
00002B	33	--	(05)	ESC CTRL-e
00002C	33	--	(06)	ESC CTRL-f
00002D	33	--	(07)	ESC CTRL-g
00002E	33	--	(08)	ESC CTRL-h
00002F	27	Backtab	(09)	ESC CTRL-i or ESC TAB
000030	33	--	(0A)	ESC CTRL-j
000031	33	--	(0B)	ESC CTRL-k
000032	33	--	(0C)	ESC CTRL-l
000033	33	--	(0D)	ESC CTRL-m
000034	33	--	(0E)	ESC CTRL-n
000035	33	--	(0F)	ESC CTRL-o
000036	33	--	(10)	ESC CTRL-p
000037	33	--	(11)	ESC CTRL-q
000038	33	--	(12)	ESC CTRL-r
000039	33	--	(13)	ESC CTRL-s
00003A	33	--	(14)	ESC CTRL-t
00003B	33	--	(15)	ESC CTRL-u
00003C	33	--	(16)	ESC CTRL-v
00003D	33	--	(17)	ESC CTRL-w
00003E	33	--	(18)	ESC CTRL-x
00003F	33	--	(19)	ESC CTRL-y
000040	33	--	(1A)	ESC CTRL-z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	33	--	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	2E	Erase EOF	(49)	ESC I or ERASE EOF
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ER INP
000072	A0	Clear screen	(4C)	ESC L CR or CLEAR
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	3A	Suspend Printer	(4F)	ESC O
000076	7F	Extended Function Key	(50)	ESC P
000077	31	Delete	(51)	ESC Q or DELETE
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	40	2/4 Color Toggle	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	88	PF09	(69)	ESC i CR or F9
000090	89	PF10	(6A)	ESC j CR or F10
000091	8A	PF11	(6B)	ESC k CR or F11
000092	8B	PF12	(6C)	ESC l CR or F12
000093	98	PA1	(6D)	ESC m CR or PA1
000094	99	PA2	(6E)	ESC n CR or PA2
000095	9A	PA3	(6F)	ESC o CR or PA3
000096	38	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	0C	PF13	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B79000000	ESC y row col	Set Cursor Address
0000D0	051B34202740	ESC 4b'@	Highlight On (Color 4)
0000D6	051B34202240	ESC 4b"@	Highlight Off (Color 1)
0000DC	010700000000	BEL	BEL
0000E2	051B34202240	ESC 4b"@	Set Color 1 (green)
0000E8	051B34202440	ESC 4b$@	Set Color 2 (red)
0000EE	051B34202140	ESC 4b!@	Set Color 3 (blue)
0000F4	051B34202740	ESC 4b'@	Set Color 4 (white)
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2	Start Printer
000112	021014000000	DLE DC4	Stop Printer

Notes:

1. The Insert key is hardcoded in the 3708 and requires that ESC P be defined as an extended function key (X'7F'). You cannot change this value.
2. Highlight On has the same sequence as Set Color 4 (white), and Highlight Off has the same sequence as Set Color 1 (green).

IBM 3164 with 3708 Feature

Address	Hex Code	Description
000000	26	Term Identification Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	21	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-a
000008	33	--	(02)	CTRL-b
000009	33	--	(03)	CTRL-c
00000A	2D	Dup	(04)	CTRL-d
00000B	2E	Erase EOF	(05)	CTRL-e
00000C	2C	Field Mark	(06)	CTRL-f
00000D	33	Bel	(07)	CTRL-g
00000E	24	Cursor Left	(08)	CTRL-h or BACKSPACE
00000F	26	Tab	(09)	CTRL-i or TAB
000010	28	Newline	(0A)	CTRL-j
000011	21	Cursor Select	(0B)	CTRL-k
000012	33	--	(0C)	CTRL-l
000013	1F	Enter	(0D)	CTRL-m or RETURN
000014	33	--	(0E)	CTRL-n
000015	33	--	(0F)	CTRL-o
000016	34	Print	(10)	CTRL-p
000017	33	--	(11)	CTRL-q
000018	1D	Reset	(12)	CTRL-r
000019	33	--	(13)	CTRL-s
00001A	38	Suspend Display	(14)	CTRL-t
00001B	33	--	(15)	CTRL-u
00001C	33	--	(16)	CTRL-v
00001D	33	--	(17)	CTRL-w
00001E	1E	Dev Cancel	(18)	CTRL-x
00001F	39	Resume Display	(19)	CTRL-y
000020	35	Ident	(1A)	CTRL-z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-a
000028	33	--	(02)	ESC CTRL-b
000029	33	--	(03)	ESC CTRL-c
00002A	33	--	(04)	ESC CTRL-d
00002B	33	--	(05)	ESC CTRL-e
00002C	33	--	(06)	ESC CTRL-f
00002D	33	--	(07)	ESC CTRL-g
00002E	33	--	(08)	ESC CTRL-h
00002F	27	Backtab	(09)	ESC CTRL-i or ESC TAB
000030	33	--	(0A)	ESC CTRL-j
000031	33	--	(0B)	ESC CTRL-k
000032	33	--	(0C)	ESC CTRL-l
000033	33	--	(0D)	ESC CTRL-m
000034	33	--	(0E)	ESC CTRL-n
000035	33	--	(0F)	ESC CTRL-o
000036	33	--	(10)	ESC CTRL-p
000037	33	--	(11)	ESC CTRL-q
000038	33	--	(12)	ESC CTRL-r
000039	33	--	(13)	ESC CTRL-s
00003A	33	--	(14)	ESC CTRL-t
00003B	33	--	(15)	ESC CTRL-u
00003C	33	--	(16)	ESC CTRL-v
00003D	33	--	(17)	ESC CTRL-w
00003E	33	--	(18)	ESC CTRL-x
00003F	33	--	(19)	ESC CTRL-y
000040	33	--	(1A)	ESC CTRL-z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	33	--	(21)	ESC !
000048	33	--	(22)	ESC "
000049	8E	PF15	(23)	ESC # CR
00004A	8F	PF16	(24)	ESC $ CR
00004B	90	PF17	(25)	ESC % CR
00004C	92	PF19	(26)	ESC & CR
00004D	33	--	(27)	ESC '
00004E	94	PF21	(28)	ESC (CR
00004F	95	PF22	(29)	ESC) CR
000050	93	PF20	(2A)	ESC * CR
000051	97	PF24	(2B)	ESC + CR
000052	33	--	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0A	PF11	(2D)	ESC -
000054	33	--	(2E)	ESC .
000055	33	--	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	8D	PF14	(40)	ESC @ CR
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or HOME
00006F	2E	Erase EOF	(49)	ESC I or ERASE EOF
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ER INP
000072	A0	Clear screen	(4C)	ESC L CR or CLEAR
000073	33	--	(4D)	ESC M
000074	2B	Null/Blank	(4E)	ESC N
000075	3A	Suspend Printer	(4F)	ESC O
000076	3B	Resume Printer	(50)	ESC P
000077	31	Delete	(51)	ESC Q or DELETE
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	40	2/4 Color Toggle	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	91	PF18	(5E)	ESC ^ CR
000085	96	PF23	(5F)	ESC _ CR
000086	33	--	(60)	ESC `
000087	80	PF01	(61)	ESC a CR or F1
000088	81	PF02	(62)	ESC b CR or F2
000089	82	PF03	(63)	ESC c CR or F3
00008A	83	PF04	(64)	ESC d CR or F4
00008B	84	PF05	(65)	ESC e CR or F5
00008C	85	PF06	(66)	ESC f CR or F6
00008D	86	PF07	(67)	ESC g CR or F7
00008E	87	PF08	(68)	ESC h CR or F8
00008F	88	PF09	(69)	ESC i CR or F9
000090	89	PF10	(6A)	ESC j CR or F10
000091	8A	PF11	(6B)	ESC k CR or F11
000092	8B	PF12	(6C)	ESC l CR or F12
000093	98	PA1	(6D)	ESC m CR or PA1
000094	99	PA2	(6E)	ESC n CR or PA2
000095	9A	PA3	(6F)	ESC o CR or PA3
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	A1	Cursor Select	(75)	ESC u CR
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	8C	PF13	(7E)	ESC ~ CR
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B49000000	ESC I	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B79000000	ESC y row col	Set Cursor Address
0000D0	051B34202740	ESC 4 b′ @	Highlight On (Color 4)
0000D6	051B34202240	ESC 4 b″ @	Highlight Off (Color 1)
0000DC	010700000000	BEL	BEL
0000E2	051B34202240	ESC 4 b″ @	Set Color 1 (green)
0000E8	051B34202440	ESC 4 b$ @	Set Color 2 (red)
0000EE	051B34202140	ESC 4 b! @	Set Color 3 (blue)
0000F4	051B34202740	ESC 4 b′ @	Set Color 4 (white)
0000FA	031B233D0000	ESC # =	Status Line On
000100	021B3D000000	ESC =	Status Line Off
000106	000000000000	--	Activate Status
00010C	021012000000	DLE DC2	Start Printer
000112	021014000000	DLE DC4	Stop Printer

Notes:

1. This map supports the 3163/3164 VT100/3708 Emulation Cartridge (Feature No. 8313). This cartridge also support pacing for a printer that is attached to the AUX port.
2. Highlight On has the same sequence as Set Color 4 (white). Highlight Off has the same sequence as Set Color 1 (green).

Lear Siegler ADM 3A Dumb Terminal®

Address	Hex Code	Description
000000	07	Term Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	20	Clear screen	(1A)	CTRL-Z or SHIFT CLEAR
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	Home	(1E)	(RS) or HOME
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	27	Backtab	(08)	ESC CTRL-H or ESC ←
00002F	27	Backtab	(09)	ESC CTRL-I
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	26	Tab	(0C)	ESC CTRL-L or ESC →
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	0D	PF14	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	11	PF18	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	13	PF20	(28)	ESC (
00004F	14	PF21	(29)	ESC)
000050	16	PF23	(2A)	ESC *
000051	33	--	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000053	0B	PF12	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	0A	PF11	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	17	PF24	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	33	--	(40)	ESC @
000067	33	--	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007F	2E	Erase EOF	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	33	--	(5E)	ESC ^
000085	33	--	(5F)	ESC _
000086	12	PF19	(60)	ESC ` or ESC SHIFT @
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	--	(7A)	ESC z
0000A1	15	PF22	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL or ESC RUB

Address	Hex Code	Characters Generated	Function Name
0000A6	000000000000	--	Reserved
0000AC	021B1A000000	ESC SUB	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	021B28000000	ESC (	Highlight On
0000D6	021B29000000	ESC)	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	010E00000000	SO	Start Printer
000112	010F00000000	SI	Stop Printer

Northern Telecom Displayphone™

Address	Hex Code	Description
000000	0B	Term Identification Number
000001	80	Term Attributes
000002	01	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	25	Cursor Right	(09)	CTRL-I or →
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or Return
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	33	--	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	27	Backtab	(08)	ESC CTRL-H or ESCAPE ←
00002F	26	Tab	(09)	ESC CTRL-I or ESCAPE →
000030	28	Newline	(0A)	ESC CTRL-J or ESCAPE ↓
000031	29	Home	(0B)	ESC CTRL-K or ESCAPE ↑
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESCAPE RETURN
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	33	--	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	27	Backtab	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	26	Tab	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC |
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL or ESC DELETE

Address	Hex Code	Characters Generated	Function Name
0000A6	031B5B4B0000	ESC [K	Erase EOL
0000AC	031B5B4A0000	ESC [J	Clear Screen
0000B2	031B5B410000	ESC [A	Cursor Up
0000B8	031B5B420000	ESC [B	Cursor Down
0000BE	031B5B440000	ESC [D	Cursor Left
0000C4	031B5B430000	ESC [C	Cursor Right
0000CA	041B5B3B4800	ESC [row ; col H	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

ROLM Cypress, Cedar, and Juniper

Address	Hex Code	Description
000000	0F	Terminal Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	36	Status On/Off	(01)	(SOH) CTRL-S
000008	27	Backtab	(02)	(STX) or CTRL-TAB (Cypr) or Shift-TAB (Cedar, Juniper)
000009	2E	Erase EOF	(03)	(ETX) or DELETE FIELD (Cypr) or ERASE EOF (Cedar) or CTRL-END (Juniper)
00000A	31	Delete	(04)	(EOT) or DELETE CHAR (Cypr) or DEL (Cedar, Juniper)
00000B	2D	Dup	(05)	(ENQ) or CTRL-D
00000C	30	Insert	(06)	(ACK) or INSERT (Cypr) or INS (Cedar, Juniper)
00000D	28	Newline	(07)	(BEL) or RETURN (Cypr, Cedar) or SHIFT ↵ (Juniper)
00000E	24	Cursor Left	(08)	(BS) or ←
00000F	26	Tab	(09)	(HT) or TAB
000010	23	Cursor Down	(0A)	(LF) or ↓
000011	22	Cursor Up	(0B)	(VT) or ↑
000012	25	Cursor Right	(0C)	(FF) or →
000013	1F	Enter	(0D)	(CR) or ENTER (Cypr, Cedar) or (Junipe
000014	29	Home	(0E)	(SO) or CTRL-H (Cypr) or HOME (Cedar, Juniper)
000015	33	--	(0F)	(SI)
000016	33	Bel	(10)	(DLE) or CTRL-G
000017	33	--	(11)	(DC1)
000018	1D	Reset	(12)	(DC2) or RESET (Cypr) or END (Cedar) or Shift-F2 (Juniper)
000019	33	--	(13)	(DC3)
00001A	18	PA1	(14)	(DC4) or CTRL-J
00001B	1A	PA3	(15)	(NAK) or CTRL-L
00001C	33	--	(16)	(SYN)
00001D	2C	Field Mark	(17)	(ETB) or CTRL-F
00001E	2F	Erase Input	(18)	(CAN) or CTRL-X
00001F	19	PA2	(19)	(EM) or CTRL-K
000020	20	Clear Screen	(1A)	(SUB) or CLEAR (Cypr) or Scroll Lock (Cedar) or Shift-F1 (Juniper)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC (SOH)
000028	33	--	(02)	ESC (STX)
000029	33	--	(03)	ESC (ETX)
00002A	33	--	(04)	ESC (EOT)
00002B	33	--	(05)	ESC (ENQ)
00002C	33	--	(06)	ESC (ACK)
00002D	33	--	(07)	ESC (BEL)
00002E	33	--	(08)	ESC (BS)
00002F	27	Backtab	(09)	ESC (HT) or ESC TAB
000030	33	--	(0A)	ESC (LF)
000031	33	--	(0B)	ESC (VT)
000032	33	--	(0C)	ESC (FF)
000033	1C	Sys Req	(0D)	ESC- ENTER or CTRL ↵ (Juniper only)
000034	33	--	(0E)	ESC (SO)
000035	33	--	(0F)	ESC (SI)
000036	33	--	(10)	ESC (DLE)
000037	33	--	(11)	ESC (DCI)
000038	33	--	(12)	ESC (DC2)
000039	33	--	(13)	ESC (DC3)
00003A	33	--	(14)	ESC (DC4)
00003B	33	--	(15)	ESC (NAK)
00003C	33	--	(16)	ESC (SYN)
00003D	33	--	(17)	ESC (ETB)
00003E	33	--	(18)	ESC (CAN)
00003F	33	--	(19)	ESC (EM)
000040	33	--	(1A)	ESC (SUB)
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00004C	12	PF19	(26)	ESC &
00004D	1E	Dev cancel	(27)	ESC ' or CTRL '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0 or CTRL-0 or F10 (Juniper only)
000057	00	PF01	(31)	ESC 1 or CTRL-1 or F1 (Juniper only)
000058	01	PF02	(32)	ESC 2 or CTRL-2 or F2 (Juniper only)
000059	02	PF03	(33)	ESC 3 or CTRL-3 or F3 (Juniper only)
00005A	03	PF04	(34)	ESC 4 or CTRL-4 or F4 (Juniper only)
00005B	04	PF05	(35)	ESC 5 or CTRL-5 or F5 (Juniper only)
00005C	05	PF06	(36)	ESC 6 or CTRL-6 or F6 (Juniper only)
00005D	06	PF07	(37)	ESC 7 or CTRL-7 or F7 (Juniper only)
00005E	07	PF08	(38)	ESC 8 or CTRL-8 or F8 (Juniper only)
00005F	08	PF09	(39)	ESC 9 or CTRL-9 or F9 (Juniper only)
000060	33	--	(3A)	ESC :
000061	35	Ident	(3B)	ESC ; or CTRL-;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	14	PF21	(41)	ESC A or CTRL-O
000068	33	--	(42)	ESC B
000069	39	Resume Display	(43)	ESC C or CTRL-B
00006A	16	PF23	(44)	ESC D or CTRL-[
00006B	0C	PF13	(45)	ESC E or CTRL-Q
00006C	17	PF24	(46)	ESC F or CTRL-]
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H or CTRL-C
00006F	11	PF18	(49)	ESC I or CTRL-Y
000070	33	--	(4A)	ESC J

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	12	PF19	(4F)	ESC O or CTRL-U
000076	13	PF20	(50)	ESC P or CTRL-I
000077	0A	PF11	(51)	ESC Q or CTRL--
000078	0D	PF14	(52)	ESC R or CTRL-W
000079	15	PF22	(53)	ESC S or CTRL-P
00007A	0E	PF15	(54)	ESC T or CTRL-E
00007B	10	PF17	(55)	ESC U or CTRL-T
00007C	3B	Enable Printer	(56)	ESC V or CTRL-N
00007D	0B	PF12	(57)	ESC W or CTRL-=
00007E	33	--	(58)	ESC X
00007F	0F	PF16	(59)	ESC Y or CTRL-R
000080	1B	Attention	(5A)	ESC Z or CTRL-A
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	29	Home	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	34	Print	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Enable Printer	01	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	38	Suspend Display	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	39	Resume Display	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	33	--	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	Erase EOL
0000AC	021B4A000000	ESC J	Clear Screen
0000B2	021B41000000	ESC A	Cursor Up
0000B8	021B42000000	ESC B	Cursor Down
0000BE	021B44000000	ESC D	Cursor Left
0000C4	021B43000000	ESC C	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	021B36000000	ESC 6	Highlight On
0000D6	021B35000000	ESC 5	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	021B57000000	ESC W	Start Printer
000112	021B58000000	ESC X	Stop Printer

Teletype 5410 Asynchronous Display Terminal and 5420 Buffered Display

Address	Hex Code	Description
000000	0C	Term Identification Number
000001	80	Term Attributes
000002	01	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	27	Backtab	(08)	CTRL-H or BACKSPACE or Shift TAB (5420 only)
00000F	26	Tab	(09)	CTRL-I or TAB
000010	28	Newline	(0A)	CTRL-J or LINEFEED (5410 only)
000011	33	--	(0B)	CTRL-K
000012	33	--	(0C)	CTRL-L
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	22	Cursor Up	(41)	ESC A or ↑
000068	23	Cursor Down	(42)	ESC B or ↓
000069	25	Cursor Right	(43)	ESC C or →
00006A	24	Cursor Left	(44)	ESC D or ←
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	29	Home	(48)	ESC H or ↖
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	31	Delete	(50)	ESC P or DEL CHAR
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	27	Backtab	(5A)	ESC Z or Shift-TAB
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	29	Home	(78)	ESC x or ↖
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	031B5B4B0000	ESC [K	Erase EOL
0000AC	031B5B4A0000	ESC [J	Clear Screen
0000B2	031B5B410000	ESC [A	Cursor Up
0000B8	031B5B420000	ESC [B	Cursor Down
0000BE	031B5B440000	ESC [D	Cursor Left
0000C4	031B5B430000	ESC [C	Cursor Right
0000CA	041B5B3B4800	ESC [row; col H	Set Cursor Address
0000D0	041B5B306D00	ESC [0 m	Highlight On
0000D6	041B5B326D00	ESC [2 m	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	041B5B356900	ESC [5 i	Start Printer
000112	041B5B346900	ESC [4 i	Stop Printer

TeleVideo® 910

Address	Hex Code	Description
000000	05	Term Identification Number
000001	00	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	1B	Attention	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	1B	Attention	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	Home	(1E)	(RS) or HOME
000025	33	--	(1F)	(US)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	2F	Erase Input	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN or ESC ENTER
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	32	Echo	(40)	ESC @ or PRINT
000067	32	Echo	(41)	ESC A or PRINT
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	0D	PF14	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B54000000	ESC T	Erase EOL
0000AC	021B2B000000	ESC +	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	021B28000000	ESC (	Highlight On
0000D6	021B29000000	ESC)	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	031B40120000	ESC @ DC2	Start Printer
000112	03141B410000	DC4 ESC A	Stop Printer

TeleVideo® 950

Address	Hex Code	Description
000000	06	Term Identification Number
000001	60	Term Attributes
000002	02	Cursor Class
000003	01	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	23	Cursor Down	(16)	CTRL-V or ↓
00001D	33	--	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	1B	Attention	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	Home	(1E)	(RS) or HOME
000025	33	--	(1F)	(US)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	2F	Erase Input	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN or ESC ENTER
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	81	PF2	(41)	ESC A or F2
000068	82	PF3	(42)	ESC B or F3
000069	83	PF4	(43)	ESC C or F4
00006A	84	PF5	(44)	ESC D or F5
00006B	85	PF6	(45)	ESC E or F6
00006C	86	PF7	(46)	ESC F or F7
00006D	87	PF8	(47)	ESC G or F8
00006E	88	PF9	(48)	ESC H or F9
00006F	89	PF10	(49)	ESC I or F10
000070	8A	PF11	(4A)	ESC J or F11
000071	80	PF01	(4B)	ESC K or F1
000072	32	Echo	(4C)	ESC L or Shift PRINT
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	32	Echo	(50)	ESC P or PRINT
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	8B	PF12	(60)	ESC ` CR or Shift F1
000087	8C	PF13	(61)	ESC a CR or Shift F2
000088	8D	PF14	(62)	ESC b CR or Shift F3
000089	8E	PF15	(63)	ESC c CR or Shift F4
00008A	8F	PF16	(64)	ESC d CR or Shift F5
00008B	90	PF17	(65)	ESC e CR or Shift F6
00008C	91	PF18	(66)	ESC f CR or Shift F7
00008D	92	PF19	(67)	ESC g CR or Shift F8
00008E	93	PF20	(68)	ESC h CR or Shift F9
00008F	94	PF21	(69)	ESC i CR or Shift F10
000090	95	PF22	(6A)	ESC j CR or Shift F11
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B54000000	ESC T	Erase EOL
0000AC	021B3A000000	ESC :	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	021B28000000	ESC (	Highlight On
0000D6	021B29000000	ESC)	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	021B66000000	ESC f	Status Line On
000100	010D00000000	CR	Status Line Off
000106	021B67000000	ESC g	Activate Status
00010C	041B401B6000	ESC @ ESC `	Start Printer
000112	041B611B4100	ESC a ESC A	Stop Printer

WY-50®

Address	Hex Code	Description
000000	23	Term Identification Number
000001	08	Term Attributes
000002	02	Cursor Class
000003	01	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or BACKSPACE or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	2F	Erase Input	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	33	--	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Enable Display	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	(Lead-In char)	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	HOME	(1E)	CTRL -^ or HOME
000025	33	--	(1F)	(US)

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	33	--	(0D)	ESC CTRL-M
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	(Lead-In char)	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	80	PF01	(40)	ESC @ CR, SOH @ CR, or F1
000067	81	PF02	(41)	ESC A CR, SOH A CR, or F2
000068	82	PF03	(42)	ESC B CR, SOH B CR, or F3
000069	83	PF04	(43)	ESC C CR, SOH C CR, or F4
00006A	84	PF05	(44)	ESC D CR, SOH D CR, or F5
00006B	85	PF06	(45)	ESC E CR, SOH E CR, or F6
00006C	86	PF07	(46)	ESC F CR, SOH F CR, or F7
00006D	87	PF08	(47)	ESC G CR, SOH G CR, or F8
00006E	88	PF09	(48)	ESC H CR, SOH H CR, or F9
00006F	89	PF10	(49)	ESC I CR, SOH I CR, or F10
000070	8A	PF11	(4A)	ESC J CR, SOH J CR, or F11
000071	8B	PF12	(4B)	ESC K CR, SOH K CR, or F12
000072	8C	PF13	(4C)	ESC L CR, SOH L CR, or F13
000073	8D	PF14	(4D)	ESC M CR, SOH M CR, or F14
000074	8E	PF15	(4E)	ESC N CR, SOH N CR, or F15
000075	8F	PF16	(4F)	ESC O CR, SOH O CR, or F16
000076	34	OILC	(50)	ESC P or PRINT
000077	30	Insert	(51)	ESC Q or INS CHAR
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	41	TLIS Refresh	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	
00007D	31	Delete	(57)	ESC W or DEL CHAR

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00007E	33	--	(58)	ESC X
00007F	20	Clear Screen	(59)	ESC Y or CLR SCRN
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	1B	Attention	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	90	PF17	(66)	ESC f CR, SOH f CR, or uppercase F7
00008D	91	PF18	(67)	ESC g CR, SOH g CR, or uppercase F8
00008E	92	PF19	(68)	ESC h CR, SOH h CR, or uppercase F9
00008F	93	PF20	(69)	ESC i CR, SOH i CR or uppercase F10
000090	94	PF21	(6A)	ESC j CR, SOH j CR, or uppercase F11
000091	95	PF22	(6B)	ESC k CR, SOH k CR, or uppercase F12
000092	96	PF23	(6C)	ESC l CR, SOH l CR, or uppercase F13
000093	97	PF24	(6D)	ESC m CR, SOH m CR, or uppercase F14
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Enable Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type ahead	(74)	ESC t
00009B	18	PA1	(75)	ESC u
00009C	19	PA2	(76)	ESC v
00009D	1A	PA3	(77)	ESC w
00009E	21	Cursor Select	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B74000000	ESC t	Erase EOL
0000AC	021B2A000000	ESC *	Clear Screen
0000B2	010B00000000	CTRL-k	Cursor Up
0000B8	010A00000000	CTRL-j	Cursor Down
0000BE	010800000000	CTRL-h	Cursor Left
0000C4	010C00000000	CTRL-l	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	031B47300000	ESC G 0	Highlight On (normal)
0000D6	031B47700000	ESC G p	Highlight Off (dim)
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	011800000000	CAN	Start Printer
000112	011400000000	DC4	Stop Printer

Appendix H. Predefined User-Defined Terminal Tables and Keyboard Mappings

This appendix provides the predefined terminal tables and keyboard mappings for the following terminals:

ADDS (Applied Digital Data Systems) Viewpoint®/78
Lear Siegler ADM 24E Video Display Terminal
Lear Siegler ADM 31 Intermediate Terminal™
TeleVideo®912C.

ADDS (Applied Digital Data Systems) Viewpoint®/78

UDT Definition

```
000000 _
000001 4002 0000 0033 3333 3333 3333 3333 3333
000011 3333 1F33 3333 3337 3333 3333 331E 3333
000021 3333 3333 3333 3333 3333 3333 3333 3333
000031 3333 3333 3333 3333 3333 3333 3333 3333
000041 3333 3333 3300 0102 0304 0506 0708 090A
000051 0B0C 0D0E 0F10 1112 1314 1516 1724 3326
000061 3327 2928 331D 1E33 331B 1C21 2033 3333
000071 2F33 332E 3334 3533 332D 182C 1930 1A31
000081 3322 3323 3324 2A25 3333 3333 3333 3333
000091 3333 332B 3333 3333 3333 3333 3333 3333
0000A1 3333 3333 3302 1B4B 0000 0001 0C00 0000
0000B1 0001 1A00 0000 0001 0A00 0000 0001 1500
0000C1 0000 0001 0600 0000 0002 1B59 0000 0000
0000D1 0000 0000 0000 0000 0000 0001 0700 0000
0000E1 0000 0000 0000 0000 0000 0000 0000 0000
0000F1 0000 0000 0000 0000 0004 1B59 3820 0001
000101 0600 0000 0002 1B62 0000 0000 0000 0000
000111 0000 0000 0000 00
```

Keyboard Mapping

Address	Hex Code	Description
000000	XX	UDT Terminal ID Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	00	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	ALT-A
000008	33	--	(02)	ALT-B
000009	33	--	(03)	ALT-C
00000A	33	--	(04)	ALT-D
00000B	33	--	(05)	ALT-E
00000C	33	--	(06)	ALT-F
00000D	33	Bel	(07)	ALT-G
00000E	33	--	(08)	ALT-H
00000F	33	--	(09)	ALT-I
000010	33	--	(0A)	ALT-J
000011	33	--	(0B)	ALT-K
000012	33	--	(0C)	ALT-L
000013	1F	Enter	(0D)	Alt-M or ENTER
000014	33	--	(0E)	ALT-N
000015	33	--	(0F)	ALT-O
000016	33	--	(10)	ALT-P
000017	33	--	(11)	ALT-Q
000018	37	Refresh	(12)	Alt-R
000019	33	--	(13)	ALT-S
00001A	33	--	(14)	ALT-T
00001B	33	--	(15)	ALT-U
00001C	33	--	(16)	ALT-V
00001D	33	--	(17)	ALT-W
00001E	1E	Dev Cancel	(18)	ALT-X
00001F	33	--	(19)	ALT-Y
000020	33	--	(1A)	Alt-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC ALT-A

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000028	33	--	(02)	ESC ALT-B
000029	33	--	(03)	ESC ALT-C
00002A	33	--	(04)	ESC ALT-D
00002B	33	--	(05)	ESC ALT-E
00002C	33	--	(06)	ESC ALT-F
00002D	33	--	(07)	ESC ALT-G
00002E	33	--	(08)	ESC ALT-H
00002F	33	--	(09)	ESC ALT-I
000030	33	--	(0A)	ESC ALT-J
000031	33	--	(0B)	ESC ALT-K
000032	33	--	(0C)	ESC ALT-L
000033	33	--	(0D)	ESC ALT-M or ESC RETURN
000034	33	--	(0E)	ESC ALT-N
000035	33	--	(0F)	ESC ALT-O
000036	33	--	(10)	ESC ALT-P
000037	33	--	(11)	ESC ALT-Q
000038	33	--	(12)	ESC ALT-R
000039	33	--	(13)	ESC ALT-S
00003A	33	--	(14)	ESC ALT-T
00003B	33	--	(15)	ESC ALT-U
00003C	33	--	(16)	ESC ALT-V
00003D	33	--	(17)	ESC ALT-W
00003E	33	--	(18)	ESC ALT-X
00003F	33	--	(19)	ESC ALT-Y
000040	33	--	(1A)	ESC ALT-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	00	PF1	(20)	ESC bor PF1
000047	01	PF2	(21)	ESC ! or PF2
000048	02	PF3	(22)	ESC " or PF3
000049	03	PF4	(23)	ESC # or PF4
00004A	04	PF5	(24)	ESC $ or PF5
00004B	05	PF6	(25)	ESC % or PF6
00004C	06	PF7	(26)	ESC & or PF7
00004D	07	PF8	(27)	ESC ' or PF8
00004E	08	PF9	(28)	ESC (or PF9
00004F	09	PF10	(29)	ESC) or PF10
000050	0A	PF11	(2A)	ESC * or PF11
000051	0B	PF12	(2B)	ESC + or PF12
000052	0C	PF13	(2C)	ESC , or PF13
000053	0D	PF14	(2D)	ESC - or PF14

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000054	0E	PF15	(2E)	ESC . or PF15
000055	0F	PF16	(2F)	ESC / or PF16
000056	10	PF17	(30)	ESC 0 or PF17
000057	11	PF18	(31)	ESC 1 or PF18
000058	12	PF19	(32)	ESC 2 or PF19
000059	13	PF20	(33)	ESC 3 or PF20
00005A	14	PF21	(34)	ESC 4 or PF21
00005B	15	PF22	(35)	ESC 5 or PF22
00005C	16	PF23	(36)	ESC 6 or PF23
00005D	17	PF24	(37)	ESC 7 or PF24
00005E	24	Cursor Left	(38)	ESC 8 or ←
00005F	33	--	(39)	ESC 9
000060	26	Tab	(3A)	ESC : or →|
000061	33	--	(3B)	ESC ;
000062	27	Backtab	(3C)	ESC < or |←
000063	29	Home	(3D)	ESC = or ↖
000064	28	Newline	(3E)	ESC > or ↵
000065	33	--	(3F)	ESC ?
000066	1D	Reset	(40)	ESC @ or RESET
000067	1E	Dev Cancel	(41)	ESC A or DEV CNCL
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	1B	Attention	(44)	ESC D or ATTN
00006B	1C	Sys Req	(45)	ESC E or SYS REQ
00006C	21	Cursor Select	(46)	ESC F or CURSOR SEL
00006D	20	Clear Screen	(47)	ESC G or CLEAR
00006E	33	--	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	2F	Erase Input	(4B)	ESC K or ERASE INPUT
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	2E	Erase EOF	(4E)	ESC N or ERASE EOF
000075	33	--	(4F)	ESC O
000076	34	Print	(50)	ESC P or □→▱
000077	35	Ident	(51)	ESC Q or IDENT
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	2D	Dup	(54)	ESC T or DUP
00007B	18	PA1	(55)	ESC U or PA1
00007C	2C	Field Mark	(56)	ESC V or FIELD MARK
00007D	19	PA2	(57)	ESC W or PA2
00007E	30	Insert	(58)	ESC X or ⇞
00007F	1A	PA3	(59)	ESC Y or PA3

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000080	31	Delete	(5A)	ESC Z or ⸗
000081	33	--	(5B)	ESC [
000082	22	Cursor Up	(5C)	ESC \ or ↑
000083	33	--	(5D)	ESC]
000084	23	Cursor Down	(5E)	ESC ^ or ↓
000085	33	--	(5F)	ESC _
000086	24	Cursor Left	(60)	ESC ` or ←
000087	2A	Type-ahead	(61)	ESC a
000088	25	Cursor Right	(62)	ESC b or →
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	33		(69)	ESC i
000090	33	--	(6A)	ESC j
000091	33	--	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	33	--	(72)	ESC r
000099	33	--	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	33	--	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B4B000000	ESC K	Erase EOL
0000AC	010C00000000	FF	Clear Screen
0000B2	011A00000000	SUB	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	011500000000	NAK	Cursor Left
0000C4	010600000000	ACK	Cursor Right
0000CA	021B59000000	ESC Y row col	Set Cursor Address
0000D0	010F00000000	SI	Highlight On
0000D6	010E00000000	SO	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	041B59382000	ESC Y 8 b	Status Line On
000100	010600000000	ACK	Status Line Off
000106	021B62000000	ESC b	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

Lear Siegler ADM 24E Video Display Terminal

UDT Definition

```
000000 _
000001 4002 0100 0033 3333 202D 2E2C 3324 2623
000011 2225 1F33 3334 331D 3338 3333 331E 391B
000021 3333 3329 3333 3333 3333 3333 3333 3333
000031 3333 2833 3333 3333 3333 3333 3333 3333
000041 3333 3333 3333 0C33 0E0F 1012 3314 1513
000051 1718 0A19 1A09 0001 0203 0405 0607 0833
000061 3333 0B33 330D 8182 8384 8586 8788 278A
000071 8B8C 8D8E 8F32 3089 802E 3333 3133 3333
000081 3333 3311 1633 2A33 3335 3333 3333 2F33
000091 2132 332B 3A3B 3337 1C33 3333 3333 3333
0000A1 3333 3333 3302 1B54 0000 0002 1B2B 0000
0000B1 0001 0B00 0000 0001 0A00 0000 0001 0800
0000C1 0000 0001 0C00 0000 0002 1B3D 0000 0003
0000D1 1B47 3000 0003 1B47 4000 0001 0700 0000
0000E1 0000 0000 0000 0000 0000 0000 0000 0000
0000F1 0000 0000 0000 0000 0002 1B46 0000 0001
000101 0D00 0000 0003 1B5E 3300 0002 1B56 0000
000111 0002 1B25 0000 00
```

Keyboard Mapping

Note: This terminal mapping requires that F1 and F10 be reprogrammed as follows:

- F1 – SOH S
- F10 – SOH R

Address	Hex Code	Description
000000	XX	UDT Terminal ID Number
000001	40	Term Attributes
000002	02	Cursor Class
000003	01	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	38	Suspend Display	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	33	--	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	39	Resume Display	(19)	CTRL-Y
000020	1B	Attention	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	Home	(1E)	(RS) or HOME
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H or ESCAPE ←
00002F	33	--	(09)	ESC CTRL-I or ESCAPE →
000030	33	--	(0A)	ESC CTRL-J or ESCAPE ↓
000031	33	--	(0B)	ESC CTRL-K or ESCAPE ↑
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN or ESC ENTER
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC < or &
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	33	--	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000067	81	PF2	(41)	ESC A or F2
000068	82	PF3	(42)	ESC B or F3
000069	83	PF4	(43)	ESC C or F4
00006A	84	PF5	(44)	ESC D or F5
00006B	85	PF6	(45)	ESC E or F6
00006C	86	PF7	(46)	ESC F or F7
00006D	87	PF8	(47)	ESC G or F8
00006E	88	PF9	(48)	ESC H or F9
00006F	27	Backtab	(49)	ESC I or Shift TAB
000070	8A	PF11	(4A)	ESC J or F11
000071	8B	PF12	(4B)	ESC K or F12
000072	8C	PF13	(4C)	ESC L or F13
000073	8D	PF14	(4D)	ESC M or F14
000074	8E	PF15	(4E)	ESC N or F15
000075	8F	PF16	(4F)	ESC O or F16
000076	32	Echo	(50)	ESC P
000077	30	Insert	(51)	ESC Q or LINE INSERT CHARACTER
000078	89	PF10	(52)	ESC R or F10
000079	80	PF1	(53)	ESC S or F1
00007A	2E	Erase EOF	(54)	ESC T or PAGE ERASE LINE
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	31	Delete	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000092	32	Echo	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	3A	Suspend Printer	(6F)	ESC o
000096	3B	Resume Printer	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	33	--	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	33	--	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B54000000	ESC T	Erase EOL
0000AC	021B2B000000	ESC +	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC =	Set Cursor Address
0000D0	031B47300000	ESC G 0	Highlight On
0000D6	031B47400000	ESC G @	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	021B46000000	ESC F	Status Line On
000100	010D00000000	CR	Status Line Off
000106	031B5E330000	ESC ^ 3	Activate Status
00010C	021B56000000	ESC V	Start Printer
000112	021B25000000	ESC %	Stop Printer

Lear Siegler ADM 31 Intermediate Terminal™ Video Display Unit

UDT Definition

```
000000 __
000001 2002 0100 0033 3333 202D 332C 3324 2623
000011 2225 1F33 3334 331D 3333 3333 361E 3333
000021 3333 3329 3333 3333 3333 3333 3333 3333
000031 3333 2833 3333 3333 3333 3333 3333 3333
000041 3333 3333 3333 0C0D 0E0F 1011 3313 1433
000051 3318 0A19 1A09 0001 0203 0405 0607 0833
000061 3333 1633 3680 8182 8384 8586 8788 2733
000071 3333 3333 3333 3333 3333 3333 3333 2E33
000081 3333 330B 1533 2A33 3335 3333 3333 2F33
000091 2133 332B 3333 3337 1C1B 3333 3333 3333
0000A1 3312 3317 3002 1B54 0000 0002 1B2A 0000
0000B1 0001 0B00 0000 0001 0A00 0000 0001 0800
0000C1 0000 0001 0C00 0000 0002 1B3D 0000 0000
0000D1 0000 0000 0000 0000 0000 0001 0700 0000
0000E1 0000 0000 0000 0000 0000 0000 0000 0000
0000F1 0000 0000 0000 0000 0000 0000 0000 0000
000101 0000 0000 0000 0000 0000 0000 0000 0000
000111 0000 0000 0000 00
```

Keyboard Mapping

Note: Using the numeric pad for PF keys requires that the keyboard be se so that numeric keys transmit three character function codes.

Address	Hex Code	Description
000000	XX	UDT Terminal ID Number
000001	20	Term Attributes
000002	02	Cursor Class
000003	01	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	33	--	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J or ↓

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	33	--	(19)	CTRL-Y
000020	33	--	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	33	--	(1E)	(RS)
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	33	--	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H or ESC Backtab
00002F	33	--	(09)	ESC CTRL-I
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L or ESC TAB
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	0D	PF14	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	11	PF18	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	13	PF20	(28)	ESC (
00004F	14	PF21	(29)	ESC)
000050	33	--	(2A)	ESC *
000051	33	--	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	16	PF23	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	80	PF1	(40)	ESC @ or Numeric 1
000067	81	PF2	(41)	ESC A or Numeric 2
000068	82	PF3	(42)	ESC B or Numeric 3

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000069	83	PF4	(43)	ESC C or Numeric 4
00006A	84	PF5	(44)	ESC D or Numeric 5
00006B	85	PF6	(45)	ESC E or Numeric 6
00006C	86	PF7	(46)	ESC F or Numeric 7
00006D	87	PF8	(47)	ESC G or Numeric 8
00006E	88	PF9	(48)	ESC H or Numeric 9
00006F	27	Backtab	(49)	ESC I or BACK TAB
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	2E	Erase EOF	(59)	ESC Y or PAGE ERASE
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	0B	PF12	(5E)	ESC ^
000085	15	PF22	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	2A	Type-ahead	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	35	Ident	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	33	--	(68)	ESC h
00008F	2F	Erase Input	(69)	ESC i
000090	33	--	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	1B	Attention	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	33	--	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	12	PF19	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	17	PF24	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL or ESC RUB

Address	Hex Code	Characters Generated	Function Name
0000A6	021B54000000	ESC T	Erase EOL
0000AC	021B2A000000	ESC *	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	000000000000	--	Highlight On
0000D6	000000000000	--	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

TeleVideo® 912C

UDT Definition

```
000000 _
000001 2002 0100 0033 3333 202D 2E2C 3324 2623
000011 2225 1F33 3334 331D 3333 3333 361E 331B
000021 3333 3329 3333 3333 3333 2F33 3333 2733
000031 3333 2833 3333 3333 3333 3333 3333 3333
000041 3333 3333 3333 0C33 0E0F 1012 3314 1513
000051 1718 0A19 1A09 0001 0203 0405 0607 0833
000061 3333 0B33 360D 3333 3333 3333 3333 3333
000071 3333 3333 3333 3333 3333 3333 3333 3333
000081 3333 3311 1633 3333 3333 3333 3329 3333
000091 2133 332B 3333 3337 1C2A 3333 3333 3335
0000A1 3333 3333 3002 1B54 0000 0002 1B2A 0000
0000B1 0001 0B00 0000 0001 0A00 0000 0001 0800
0000C1 0000 0001 0C00 0000 0002 1B3D 0000 0002
0000D1 1B28 0000 0002 1B29 0000 0001 0700 0000
0000E1 0000 0000 0000 0000 0000 0000 0000 0000
0000F1 0000 0000 0000 0000 0000 0000 0000 0000
000101 0000 0000 0000 0000 0000 0000 0000 0000
000111 0000 0000 0000 00
```

Keyboard Mapping

Address	Hex Code	Description
000000	XX	UDT Terminal ID Number
000001	20	Term Attributes
000002	02	Cursor Class
000003	01	Alternate Control Sequence Introducer
000004	00	Internal Control Sequence Character
000005	00	Reserved

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000006	33	--	(00)	(NUL)
000007	33	--	(01)	CTRL-A
000008	33	--	(02)	CTRL-B
000009	20	Clear Screen	(03)	CTRL-C
00000A	2D	Dup	(04)	CTRL-D
00000B	2E	Erase EOF	(05)	CTRL-E
00000C	2C	Field Mark	(06)	CTRL-F
00000D	33	Bel	(07)	CTRL-G
00000E	24	Cursor Left	(08)	CTRL-H or ←
00000F	26	Tab	(09)	CTRL-I or TAB
000010	23	Cursor Down	(0A)	CTRL-J or ↓
000011	22	Cursor Up	(0B)	CTRL-K or ↑
000012	25	Cursor Right	(0C)	CTRL-L or →
000013	1F	Enter	(0D)	CTRL-M or RETURN or ENTER

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000014	33	--	(0E)	CTRL-N
000015	33	--	(0F)	CTRL-O
000016	34	Print	(10)	CTRL-P
000017	33	--	(11)	CTRL-Q
000018	1D	Reset	(12)	CTRL-R
000019	33	--	(13)	CTRL-S
00001A	33	--	(14)	CTRL-T
00001B	33	--	(15)	CTRL-U
00001C	33	--	(16)	CTRL-V
00001D	36	Status On/Off	(17)	CTRL-W
00001E	1E	Dev Cancel	(18)	CTRL-X
00001F	33	--	(19)	CTRL-Y
000020	1B	Attention	(1A)	CTRL-Z
000021	33	--	(1B)	ESC
000022	33	--	(1C)	(FS)
000023	33	--	(1D)	(GS)
000024	29	Home	(1E)	(RS) or HOME
000025	33	--	(1F)	(US)
000026	33	--	(00)	ESC (NUL)
000027	33	--	(01)	ESC CTRL-A
000028	33	--	(02)	ESC CTRL-B
000029	33	--	(03)	ESC CTRL-C
00002A	33	--	(04)	ESC CTRL-D
00002B	2F	Erase Input	(05)	ESC CTRL-E
00002C	33	--	(06)	ESC CTRL-F
00002D	33	--	(07)	ESC CTRL-G
00002E	33	--	(08)	ESC CTRL-H
00002F	27	Backtab	(09)	ESC CTRL-I or ESC TAB
000030	33	--	(0A)	ESC CTRL-J
000031	33	--	(0B)	ESC CTRL-K
000032	33	--	(0C)	ESC CTRL-L
000033	28	Newline	(0D)	ESC CTRL-M or ESC RETURN or ESC ENTER
000034	33	--	(0E)	ESC CTRL-N
000035	33	--	(0F)	ESC CTRL-O
000036	33	--	(10)	ESC CTRL-P
000037	33	--	(11)	ESC CTRL-Q
000038	33	--	(12)	ESC CTRL-R
000039	33	--	(13)	ESC CTRL-S
00003A	33	--	(14)	ESC CTRL-T
00003B	33	--	(15)	ESC CTRL-U
00003C	33	--	(16)	ESC CTRL-V
00003D	33	--	(17)	ESC CTRL-W
00003E	33	--	(18)	ESC CTRL-X

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00003F	33	--	(19)	ESC CTRL-Y
000040	33	--	(1A)	ESC CTRL-Z
000041	33	--	(1B)	ESC ESC
000042	33	--	(1C)	ESC (FS)
000043	33	--	(1D)	ESC (GS)
000044	33	--	(1E)	ESC (RS)
000045	33	--	(1F)	ESC (US)
000046	33	--	(20)	ESC b
000047	0C	PF13	(21)	ESC !
000048	33	--	(22)	ESC "
000049	0E	PF15	(23)	ESC #
00004A	0F	PF16	(24)	ESC $
00004B	10	PF17	(25)	ESC %
00004C	12	PF19	(26)	ESC &
00004D	33	--	(27)	ESC '
00004E	14	PF21	(28)	ESC (
00004F	15	PF22	(29)	ESC)
000050	13	PF20	(2A)	ESC *
000051	17	PF24	(2B)	ESC +
000052	18	PA1	(2C)	ESC ,
000053	0A	PF11	(2D)	ESC -
000054	19	PA2	(2E)	ESC .
000055	1A	PA3	(2F)	ESC /
000056	09	PF10	(30)	ESC 0
000057	00	PF01	(31)	ESC 1
000058	01	PF02	(32)	ESC 2
000059	02	PF03	(33)	ESC 3
00005A	03	PF04	(34)	ESC 4
00005B	04	PF05	(35)	ESC 5
00005C	05	PF06	(36)	ESC 6
00005D	06	PF07	(37)	ESC 7
00005E	07	PF08	(38)	ESC 8
00005F	08	PF09	(39)	ESC 9
000060	33	--	(3A)	ESC :
000061	33	--	(3B)	ESC ;
000062	33	--	(3C)	ESC <
000063	0B	PF12	(3D)	ESC =
000064	33	--	(3E)	ESC >
000065	36	Status On/Off	(3F)	ESC ?
000066	0D	PF14	(40)	ESC @
000067	33	--	(41)	ESC A
000068	33	--	(42)	ESC B
000069	33	--	(43)	ESC C
00006A	33	--	(44)	ESC D

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
00006B	33	--	(45)	ESC E
00006C	33	--	(46)	ESC F
00006D	33	--	(47)	ESC G
00006E	33	--	(48)	ESC H
00006F	33	--	(49)	ESC I
000070	33	--	(4A)	ESC J
000071	33	--	(4B)	ESC K
000072	33	--	(4C)	ESC L
000073	33	--	(4D)	ESC M
000074	33	--	(4E)	ESC N
000075	33	--	(4F)	ESC O
000076	33	--	(50)	ESC P
000077	33	--	(51)	ESC Q
000078	33	--	(52)	ESC R
000079	33	--	(53)	ESC S
00007A	33	--	(54)	ESC T
00007B	33	--	(55)	ESC U
00007C	33	--	(56)	ESC V
00007D	33	--	(57)	ESC W
00007E	33	--	(58)	ESC X
00007F	33	--	(59)	ESC Y
000080	33	--	(5A)	ESC Z
000081	33	--	(5B)	ESC [
000082	33	--	(5C)	ESC \
000083	33	--	(5D)	ESC]
000084	11	PF18	(5E)	ESC ^
000085	16	PF23	(5F)	ESC _
000086	33	--	(60)	ESC `
000087	33	--	(61)	ESC a
000088	33	--	(62)	ESC b
000089	33	--	(63)	ESC c
00008A	33	--	(64)	ESC d
00008B	33	--	(65)	ESC e
00008C	33	--	(66)	ESC f
00008D	33	--	(67)	ESC g
00008E	29	HOME	(68)	ESC h
00008F	33	PF21	(69)	ESC i
000090	33	PF22	(6A)	ESC j
000091	21	Cursor Select	(6B)	ESC k
000092	33	--	(6C)	ESC l
000093	33	--	(6D)	ESC m
000094	2B	Null/Blank	(6E)	ESC n
000095	33	--	(6F)	ESC o
000096	33	--	(70)	ESC p

Address	Hex Function Number	Function Description	ASCII Hex Code	Key Sequence
000097	33	--	(71)	ESC q
000098	37	Refresh	(72)	ESC r
000099	1C	Sys Req	(73)	ESC s
00009A	2A	Type-ahead	(74)	ESC t
00009B	33	--	(75)	ESC u
00009C	33	--	(76)	ESC v
00009D	33	--	(77)	ESC w
00009E	33	--	(78)	ESC x
00009F	33	--	(79)	ESC y
0000A0	35	Ident	(7A)	ESC z
0000A1	33	--	(7B)	ESC {
0000A2	33	--	(7C)	ESC ¦
0000A3	33	--	(7D)	ESC }
0000A4	33	--	(7E)	ESC ~
0000A5	30	Insert	(7F)	ESC DEL

Address	Hex Code	Characters Generated	Function Name
0000A6	021B54000000	ESC T	Erase EOL
0000AC	021B2A000000	ESC *	Clear Screen
0000B2	010B00000000	VT	Cursor Up
0000B8	010A00000000	LF	Cursor Down
0000BE	010800000000	BS	Cursor Left
0000C4	010C00000000	FF	Cursor Right
0000CA	021B3D000000	ESC = row col	Set Cursor Address
0000D0	021B28000000	ESC (	Highlight On
0000D6	021B29000000	ESC)	Highlight Off
0000DC	010700000000	BEL	BEL
0000E2	000000000000	--	Set Color 1
0000E8	000000000000	--	Set Color 2
0000EE	000000000000	--	Set Color 3
0000F4	000000000000	--	Set Color 4
0000FA	000000000000	--	Status Line On
000100	000000000000	--	Status Line Off
000106	000000000000	--	Activate Status
00010C	000000000000	--	Start Printer
000112	000000000000	--	Stop Printer

Appendix I. Terminal Switch Settings

This appendix provides the default terminal switch settings for the following terminals:[1]

ADDS Viewpoint®
ADDS Viewpoint®/78
Beehive™ ATL-078
Data General® D210 Display Terminal
DEC® VT100 and VT52
DEC® VT220 (Emulating a VT100)
DEC® VT220
FALCO 500®
Hazeltine ESPRIT I™
Hazeltine ESPRIT II™
Hazeltine 1500
Hewlett-Packard 2621B Interactive Terminal
IBM PC/FTTERM (Color and Monochrome)
IBM PC in 3101 Emulation Mode
IBM 3101 Models 10, 12, 13, 20, 22, 23
IBM 3151 ASCII Display Station
IBM 3161 ASCII Display Station
IBM 3162 ASCII Display Station
IBM 3163 ASCII Display Station
IBM 3164 ASCII Display Station
Lear Siegler ADM 24E Video Display Terminal
Lear Siegler ADM 3A Dumb Terminal®
Lear Siegler ADM 31 Intermediate Terminal™ Video Display Unit
Northern Telecom Displayphone™
ROLM® Cypress™, Cedar™, and Juniper™
Teletype 5410 Asynchronous Display Terminal
Teletype 5420 Buffered Display
TeleVideo® 910
TeleVideo® 912C
TeleVideo® 950
WY-50®.

[1] The list of displays contains several trademarks and registered trademarks. Viewpoint is a registered trademark of Applied Digital Data Systems, Inc. Beehive is a trademark of Beehive International. Dasher is a registered trademark of the Data General Corporation. DEC is a registered trademark of the Digital Equipment Corporation. ESPRIT I and ESPRIT II are trademarks of Esprit Systems, Inc. FALCO 500 is a registered trademark of Falco Data Products, Inc. Dumb Terminal is a registered trademark of Lear Siegler, Inc. Displayphone is a trademark of Northern Telecom, Inc. TeleVideo is a registered trademark of TeleVideo Systems, Inc. WY-50 is a registered trademark of Wyse Technology.

ADDS Viewpoint®

Switch	Setting	Note
BAUD RATE	---	1
AUTO SCROLL	DISABLED	
AUTO LINEFEED	DISABLED	
LINE MODE	FULL DUPLEX	
PARITY	---	1
CHARACTER DISPLAY	---	2
DISPLAY PARITY ERROR	---	1
SCREEN REFRESH RATE	---	3
CHARACTER SET	---	4
CURSOR DISPLAY	---	2
CURSOR FORMAT	---	2

Notes:

1. This setting must match the configuration of the 3708.
2. The function described by this switch has no effect on the 3708.
3. This selection must match the power line frequency. In the USA, this is set to 60 Hz.
4. The character set must match the translate table used on the 3708.

ADDS Viewpoint®/78

Switch	Setting	Note
BAUD RATE	---	1
VIDEO HIGHLIGHT	FULL	
AUTO SCROLL	DISABLE	
AUTO LINEFEED	DISABLE	
DISPLAY PARITY ERROR	ENABLE	
PARITY	---	1
SCREEN REFRESH RATE	---	2
CURSOR SUPPRESS	---	3
CURSOR FORMAT	---	3
CHARACTER CASE	UPPER/LOWER	
CURSOR HOME	---	3
KEY CLICK	---	3

Notes:

1. This setting must match the configuration of the 3708.
2. This selection must match the power line frequency. In the USA, this is set to 60 Hz.
3. The function designated by this switch has no effect on 3708 operation.

Beehive™ ATL-078

Option	Selection	Note
TRANSMIT BAUD RATE	---	1,2
RECEIVE BAUD RATE	---	1,2
WORD LENGTH	7 BITS	
PARITY	---	1
STOP BITS	---	1
RECEIVED DATA ERROR CHECK	NO	
INTERFACE	EIA 232C	1,3
DUPLEX	FULL	
AUTO-ECHO	NO	
XON/XOFF	---	1
TRANSPARENT PRINTING	YES	
GO ONLINE AFTER BLOCK TRANSMIT	NO	
SLOW TRANSMIT	NO	

Notes:

1. This configuration must match the configuration of the 3708.
2. The transmit baud rate must equal the receive baud rate.
3. EIA 422A can also be chosen.
4. Auxiliary port options must match the attached printer.

Data General® D210 Display Terminal

Switch	Position	Note
BAUD RATE	---	1
PARITY	---	1
50/60 HZ	---	2
TERMINAL MODE	DG	

Notes:

1. This setting must match the configuration of the 3708.
2. This setting must match the power line frequency. In the USA, this is set to 60 Hz.

DEC® VT100 and VT52

Switch	Setting	Note
SCROLL	---	1
AUTOREPEAT	---	1
SCREEN	---	1
CURSOR	---	1
MARGIN BELL	---	1
KEYCLICK	---	1
ANSI/VT52	ANSI	6
AUTO XON/XOFF	---	2
#E/3	---	3
WRAPAROUND	OFF	
NEWLINE	OFF	
INTERLACE	---	3
PARITY SENSE	---	2
PARITY	---	2
BITS PER CHAR	7	
POWER	---	4
T SPEED	---	2,5
R SPEED	---	2,5

Notes:

1. User preference; this is a VT 100 local option.
2. This setting must match the configuration of the 3708.
3. The function designated by this switch has no effect on 3708 operation.
4. This selection must match the power line frequency. In the USA, this is set to 60 Hz.
5. The transmit speed and the receive speed must be the same.
6. Not an option on the VT52.

DEC® VT220 (Emulating a VT100)

Setup Item	Selection	Note
ON LINE/LOCAL	ON LINE	
KEYBOARD LANGUAGE	---	1
80/132 COLUMNS	80	
CONTROL REPRESENTATION	INTERPRET	
AUTO WRAP	NO AUTO WRAP	
TERMINAL MODE	VT-100 MODE	
CURSOR KEYS	NORMAL CURSOR KEYS	
TRANSMIT SPEED	---	2
RECEIVE SPEED	---	2
DATA-BITS/PARITY	---	2
STOP BITS	---	2
LOCAL ECHO	NO LOCAL ECHO	
HOST PORT SELECTION	---	3

Notes:

1. Select the correct terminal operation for the national keyboard being used.
2. This setting must match the configuration of the 3708.
3. DATA LEADS ONLY should be used for a direct-connect line and MODEM CONTROL should be used for a line using an external modem.
4. All other items are determined by user preference or have no effect on 3708 operation.

Setup Item	Selection	Note
ON LINE/LOCAL	ON LINE	
KEYBOARD LANGUAGE	---	1
80/132 COLUMNS	80	
CONTROL REPRESENTATION	INTERPRET	
AUTO WRAP	NO AUTO WRAP	
TERMINAL MODE	VT-220 MODE	
CURSOR KEYS	NORMAL CURSOR KEYS	
TRANSMIT SPEED	---	2
RECEIVE SPEED	---	2
DATA-BITS/PARITY	---	2
STOP BITS	---	2
LOCAL ECHO	NO LOCAL ECHO	
HOST PORT SELECTION	---	3

Notes:

1. Select the correct terminal operation for the national keyboard being used.
2. This setting must match the configuration of the 3708.
3. DATA LEADS ONLY should be used for a direct-connect line and MODEM CONTROL should be used for a line using an external modem.
4. All other items are determined by user preference or have no effect on 3708 operation.

FALCO 500®

Switch	Position	Note
WINDOW BEGIN	1	
WINDOW SIZE	39	
SCREEN SIZE	26	
PAGE SIZE	40	
PAGE NUMBER	1	
TERMINAL MODE	VT200 7-bit	
WRAP	NO WRAP	
NEW LINE	NO NEW LINE	
USER KEYS	USER KEYS UNLOCK	
COLUMN	80	
LINES	25	
SCROLL	JUMP or SMOOTH	
DIM PORT	--	3
SCR SAVER	--	3
KEY CLICK	--	3
AUTO REPEAT	--	4
SPEED		1
PARITY		1
BITS	7	
STOP BITS	--	1
MODEM		2
XMIT XOFF		
BUFFERS	--	3
COMM. MODE	ONLINE	
MODE	FDX	
VIDEO	--	3
MARGIN BELL	--	3
STATUS	No Status	

Notes:

1. This setting must match the configuration of the 3708.
2. This option does not affect the 3708.
3. User preference; this is a FALCO 500® local option.

Hazeltine ESPRIT I™

Switch	Position	Note
HI-INTENSITY	ENABLE	
REVERSE VIDEO	---	1
INTERFACE	EIA	
LEAD IN	ESC	
EMULATE	HAZELTINE	
END OF MESSAGE	CR	
BAUD RATE	---	2
PARITY	---	2
ANL TRUNCATE	OFF	
HALF/FULL DUPLEX	FULL DUPLEX	
AUTO LF/CR	CR	

Notes:

1. User preference; this is an ESPRIT I local option.
2. This setting must match the configuration of the 3708.

Hazeltine ESPRIT II™

Switch	Position	Note
INTERFACE	EIA	
BAUD RATE	---	1
LEAD IN	ESC	
COMMUNICATION	FULL DUPLEX	
EMULATION	HAZELTINE	
WRAPAROUND	NO	
LINE FREQUENCY	---	2
PARITY	---	1
AUTO LINE FEED	OFF	
UNDERLINE	OFF	
HIGH INTENSITY	ON	
REVERSE VIDEO	---	3

Notes:

1. This setting must match the configuration of the 3708.
2. This selection must match the power line frequency. In the USA, this is 60 Hz.
3. User preference; this is an ESPRIT II local option.

Hazeltine 1500

Switch	Position	Note
BAUD RATE	---	1
PARITY	---	1
HALF/FULL DUPLEX	FULL DUPLEX	
AUTO LF/CR	CR	
U/L CASE	---	2
STD/REV VIDEO	---	2
INTERFACE	EIA	

Notes:

1. This setting must match the configuration of the 3708.
2. User preference; this is a Hazeltine 1500 local option.

Hewlett-Packard 2621B Interactive Terminal

Switch	Position	Note
BAUD RATE	---	1
ECHO	REMOTE	
KEYBOARD	---	2
PARITY	---	1
XON/XOFF	---	1
ENQ/ACK	DISABLED	
AUTO LINE FEED	DISABLED	
LINE/CHARACTER MODE	CHARACTER	
RETURN/ENTER KEY STRING	CR	
ESCAPE SEQUENCE TRANSMISSION	ENABLED	
SPACE OVERWRITE LATCH	DISABLED	
WRAPAROUND CURSOR	DISABLED	
SHORT TRANSFER TRIGGER	DISABLED	
LONG TRANSFER WARNING	DISABLED	
DATA SPEED SELECT	---	3

Notes:

1. This setting must match the configuration of the 3708.
2. This setting must match the keyboard attached to the 2621B.
3. This allows the operation of modems that support dual speed data transmission.

IBM PC/FTTERM (Color and Monochrome)

Switch	Setting	Note
LINE SPEED	---	1
HALF-DUPLEX	N	
PARITY	---	1
STOP BITS	---	1
AUTOMATIC LINE FEED	N	
CARRIAGE RETURN	Y	
CHARACTER SENT AT END OF MESSAGE	2	1
SCROLLING	N	
PROMPT CHARACTER FROM HOST	0	
START/STOP ENABLED	Y	1
COMMUNICATION PORT	---	2
HOST SYSTEM	---	3
INACTIVITY TIME OUT IN MINUTES	---	4
EXTENDED CODES	---	5
NAME OF HOST FILE TRANSFER COMMAND		3

Notes:

1. This setting must match the configuration of the 3708.
2. Choose the communication port that is connected to the 3708.
3. These are necessary for file transfer operations to function correctly.
4. This pertains to file transfer and may need to be modified for your system.
5. User preference; this is a FTTERM local option.

IBM PC in 3101 Emulation Mode

Switch	Position	Note
LINE SPEED	---	1
BLOCK MODE	N	
HALF-DUPLEX	N	
PARITY	---	1
STOP BITS	---	1
AUTOMATIC NEW LINE	N	
AUTOMATIC LINE FEED	N	
CARRIAGE RETURN	Y	
CHARACTER SENT AT END OF MESSAGE	2	1
SCROLLING	N	
PROMPT CHARACTER FROM HOST	0	
START/STOP ENABLED	Y	1

Note: This setting must match the configuration of the 3708.

IBM 3101 Models 10, 12, 13, 20, 22, 23

Switch	Position	Note
CHAR/BLOCK	CHAR	
HDX/FDX	FDX	
232C/422	232C	1,2
PRTS/CRTS	PRTS	
REVCH	OFF	
TURN AROUND	CR	
DUAL/MONO	DUAL	
STOP1/STOP2	---	2
PARITY	---	2
SEND LINE	---	3
NULL SUPP	---	3
TIME FILL	---	3
AUTO NL	OFF	
AUTO LF	OFF	
CR/CR.LF	CR	
SCROLL	OFF	
REV VIDEO	---	4
BLINK CURSOR	---	4
I/O RATE/MAIN	---	2
I/O RATE AUX	---	5

Notes:

1. EIA 422A can also be chosen for 3101-13 or 3101-23.
2. This setting must match the configuration of the 3708.
3. The function designated by this switch has no effect on 3708 operation.
4. User preference; this is a 3101 local option.
5. When a printer is connected to the auxiliary port, the baud rate configured on the printer must match the baud rate on the 3101.

IBM 3151 ASCII Display Station

Setup Item	Selection	Note
General		
MACHINE MODE	IBM 3151	
SCREEN	--	3
ROW AND COLUMN	24 x 80	6
SCROLL	---	5
AUTO LF	OFF	
CRT SAVER	---	
LINE WRAP	OFF	
FORCING INSERT	---	
TAB	---	
TERMINAL ID	---	
PRINT	N/A	
Communication		
OPERATING MODE	ECHO	
LINE SPEED (bps)	---	2,4
WORD LENGTH (bits)	7	
PARITY	---	2,4
STOP BIT	---	2,4
TURNAROUND CHARACTER	CR	
INTERFACE	EIA-232C	1
LINE CONTROL	PRTS	
BREAK SIGNAL (ms)	500	
SEND NULL SUPPRESS	---	
PACING	N/A	
Keyboard/Printer — Keyboard		
ENTER	RETURN	
RETURN	NEW LINE	
NEW LINE	CR	
SEND	---	
INSERT CHARACTER	SPACE	

Keyboard/Printer — Printer		
LINE SPEED (bps)	---	4
WORD LENGTH (bits)	7	
PARITY	---	4
STOP BIT	---	4
CHARACTERS	---	3

The following feature cartridges are available for the 3151. These cartridges enhance the usability and functional characteristics of the terminals connected to the 3708:

- IBM 3151 Cartridge to Emulate IBM and DEC® Terminals (Feature No. 8235)
- IBM 3151 Connectivity Feature Cartridge (Feature No. 8525)
- IBM 3151 Expansion Feature Cartridge (Feature No. 8535)

The setup for these feature cartridges is as described above with the following exceptions:

Setup Item	Selection	Note
MACHINE MODE	SYSTEM ATTACH	
ROW AND COLUMN	25 x 80 or 28 x 132	6
NUMBER OF VIEWPORTS	1	
NUMBER OF PAGES	1	
PRINT	HOST	
PACING	ON	2
RETURN	SEND	
SEND	CR	

Notes:

1. EIA-422A can be supported for 3151 models 310 and 410.
2. This setting must match the configuration of the 3708.
3. The function designated by this item has no effect on 3708 operation.
4. The selections for the auxiliary port must match the configuration of the connected printer.
5. SCROLL must be set to either Jump or Smooth.
6. The 3151 Model 310 or 410 with the Expansion Feature Cartridge supports Model 5 Emulation (28 x 132).

IBM 3161 ASCII Display Station

Setup Item	Selection		Note
MACHINE MODE	IBM 3161		
OPERATING MODE	ECHO		
	Main Port	**Auxiliary Port**	
INTERFACE	RS-232C	N/A	1,2
LINE CONTROL	PRTS	N/A	
LINE SPEED	---	---	2,4
PARITY	---	---	2,4
TURNAROUND CHARACTER	CR	N/A	
STOP BIT	---	---	2,4
WORD LENGTH	7	7	
RESPONSE DELAY	100	N/A	
BREAK SIGNAL	500	N/A	
TERMINAL ID	---	---	3

Select Item	Selection	Note
ENTER	RETURN	
RETURN	NEWLINE	
RETURN (2)	CR	
TAB	---	3
LINE WRAP	OFF	
AUTO LF	OFF	
SEND	---	3
SEND NULL	---	3
INSERT	SPACE	
TRACE	---	3
CRT SAVER	---	3
SCROLL	---	5
PRINT	---	3
PRINT NULL	---	3
PRINT EOL	---	3
LINE END	---	3

An **IBM 3161 with Enhanced 3708 Attachment (Feature No. 8371)** is also available. It enhances the usability and functional characteristics of the terminal attached to the 3708. The setup for this cartridge is described above with the following exceptions:

Setup Item	Selection	Note
OPERATING MODE	ECHO*	
ENTER	SEND	
SEND	CR	
PRINT	HOST	

Notes:

1. RS-422A can also be chosen for the 3161 Model 12.
2. This setting must match the configuration of the 3708.
3. The function designated by this item has no effect on 3708 operation.
4. The selections for the auxiliary port must match the configuration of the display.
5. SCROLL must be set to either Jump or Smooth.

IBM 3162 ASCII Display Station

Setup Menu	Selection	Note
General		
MACHINE MODE	IBM 3162	
SCREEN	--	3
ROW AND COLUMN	24 x 80	6
SCROLL	---	5
AUTO LF	OFF	
FORCING INSERT	---	3
CRT SAVER	---	3
LINE WRAP	OFF	
TAB	---	3
TERMINAL ID	---	3
PRINT	N/A	
Communication		
OPERATING MODE	ECHO	
LINE SPEED (bps)	---	2,4
WORD LENGTH (bits)	7	
PARITY	---	2,4
STOP BIT	---	2,4
TURNAROUND CHARACTER	CR	
INTERFACE	RS-232C	1,2
LINE CONTROL	PRTS	
BREAK SIGNAL (ms)	500	
SEND NULL SUPPRESS	---	3
Keyboard/Printer — Keyboard		
ENTER	RETURN	
RETURN	NEW LINE	
NEW LINE	CR	
SEND	---	3
INSERT CHARACTER	SPACE	

Keyboard/Printer — Printer		
LINE SPEED (bps)	---	4
WORD LENGTH (bits)	7	4
PARITY	---	4
STOP BIT	---	4
CHARACTERS	---	3

An **IBM 3162 with 3708/3710 Support Functions (Feature No. 8232)** is also available. This cartridge enhances the usability and functional characteristics of the terminal connected to the 3708. The setup for this cartridge is as described above with the following exceptions:

Setup Menu	Selection	Note
ROW AND COLUMN	25 x 80 or 28 x 132	6
PRINT	HOST	
OPERATING MODE	ECHO - 3708/10	
ENTER	SEND	
SEND	CR	

Notes:

1. RS-422A can be supported for the 3162 Model 12/32.
2. This setting must match the configuration of the 3708.
3. The function designated by this item has no effect on 3708 operation.
4. The selections for the auxiliary port must match the configuration of the display.
5. SCROLL must be set to either Jump or Smooth.
6. If `IBM 3151/62 (MODEL 5 EMULATION)` is chosen as the terminal ID, the screen size 28 x 132 is supported on the feature cartridge.

IBM 3163 ASCII Display Station

Setup Item	Selection		Note
MACHINE MODE	IBM 3163		
OPERATING MODE	ECHO		
	Main Port	**Auxiliary Port**	
INTERFACE	RS-232C	N/A	1,2
LINE CONTROL	PRTS	N/A	
LINE SPEED	---	---	2,4
PARITY	---	---	2,4
TURNAROUND CHARACTER	CR	N/A	
STOP BIT	---	---	2,4
WORD LENGTH	7	7	
RESPONSE DELAY	100	N/A	
BREAK SIGNAL	500	N/A	
TERMINAL ID	---	---	3

Select Item	Selection	Note
ENTER	RETURN	
RETURN	NEWLINE	
NEWLINE	CR	
TAB	---	3
LINE WRAP	OFF	
AUTO LF	OFF	
SEND	---	3
SEND NULL	---	3
INSERT	SPACE	
TRACE	---	3
CRT SAVER	---	3
SCROLL	---	5
PRINT	---	3
PRINT NULL	---	3
PRINT EOL	---	3
LINE END	---	3

An **IBM 3163/3164 VT100/3708 Emulation Cartridge (Feature No. 8313)** is also available. It enhances the usability and functional characteristics of the terminal attached to the 3708. The setup for this cartridge is described above with the following exceptions:

Setup Item	Selection	Note
OPERATING MODE	SYSTEM ATTACH	
ENTER	SEND	
SEND	CR	
PRINT	HOST	

Notes:

1. RS-422A can also be chosen for the 3163 Model 12.
2. This setting must match the configuration of the 3708.
3. The function designated by this item has no effect on 3708 operation.
4. The selections for the auxiliary port must match the configuration of the display.
5. SCROLL must be set to either Jump or Smooth.

IBM 3164 ASCII Display Station

Setup Item	Selection		Note
MACHINE MODE	IBM 3164		
OPERATING MODE	ECHO		
	Main Port	**Auxiliary Port**	
INTERFACE	RS-232C	N/A	1,2
LINE CONTROL	PRTS	N/A	
LINE SPEED	---	---	2,4
PARITY	---	---	2,4
TURNAROUND CHARACTER	CR	N/A	
STOP BIT	---	---	2,4
WORD LENGTH	7	7	
RESPONSE DELAY	100	N/A	
BREAK SIGNAL	500	N/A	
TERMINAL ID	---	---	3

Select Item	Selection	Note
ENTER	RETURN	
RETURN	NEWLINE	
NEWLINE	CR	
TAB	---	3
LINE WRAP	OFF	
AUTO LF	OFF	
SEND	---	3
SEND NULL	---	3
INSERT	SPACE	
TRACE	---	3
CRT SAVER	---	3
SCROLL	---	5
PRINT	---	3
PRINT NULL	---	3
PRINT EOL	---	3
LINE END	---	3

An **IBM 3163/3164 VT100/3708 Emulation Cartridge (Feature No. 8313)** is also available. It enhances the usability and functional characteristics of the terminal attached to the 3708. The setup for this cartridge is described above with the following exceptions:

Setup Item	Selection	Note
OPERATING MODE	SYSTEM ATTACH	
ENTER	SEND	
SEND	CR	
PRINT	HOST	

Notes:

1. RS-422A can also be chosen for the 3164 Model 12.
2. This setting must match the configuration of the 3708.
3. The function designated by this item has no effect on 3708 operation.
4. The selections for the auxiliary port must match the configuration of the display.
5. SCROLL must be set to Jump.

Lear Siegler ADM 24E Video Display Terminal

Feature	Selection	Note
SCROLL METHOD	---	1
FULL SCREEN BACKGROUND	---	2
KEY CLICK	---	2
RETURN KEY CONFIGURATION	CR	
SCROLL MODE	NON-SCROLL	
AUTO NEW LINE	OFF	
KEYBOARD CONFIGURATION	---	1
PRIMARY LANGUAGE GROUP	---	3
LINE 25 DEFINITION	HOST MESSAGES	
LINE 25 DISPLAY	---	1
AUDIBLE BELL	ON	
CURSOR DEFINITION	---	2
FILL 1 SUPPRESSION	OFF	
NUMBER OF LINES FOR PAGE 1	24	
NUMBER OF LINES FOR PAGE 2	---	1
FUNCTION KEY LEGEND NO.	---	1
TYPEWRITER TABS	NONE	
TABBING MODE	---	1
INTERNATIONAL LANGUAGE	---	3
ATTRIBUTES	NON-EMBEDDED	
SEND/PRINT: ATTRIBUTE + LANGUAGE CHANGES IN TEXT	NON-EMBEDDED	
EDIT KEY SEQUENCE TRANSMISSION	ON	
NULL SUPPRESSION	ON	
DEL(ETE) SUPPRESSION	OFF	
FILL CHARACTER #1	SPACE	
FILL CHARACTER #2	NULL	
FILL CHARACTER #3	---	1
FILL CHARACTER #4	---	1
FILL CHARACTER #5	---	1
FILL CHARACTER #6	---	1
FILL CHARACTER #7	---	1
FILL CHARACTER #8	---	1
DUPLEX	FULL	
PARITY (HOST)	---	4

Feature	Selection	Note
BUSY/READY INDICATION (HOST)	XON/XOFF	
BAUD RATE (HOST)	---	4
X-ON CHARACTER (HOST)	DC1	
X-OFF CHARACTER (HOST)	DC3	
PARITY (PRINTER)	---	5
BUSY/READY INDICATION (PRINTER)	---	5
PRINTER BUSY	---	5
BAUD RATE (PRINTER)	---	5
PRINT BUFFER SIZE (NUMBER OF K-BYTES)	---	5
X-ON CHARACTER (PRINTER)	---	5
X-OFF CHARACTER (PRINTER)	---	5
USER PROGRAM PRESENT (P1)	OFF	
USER PROGRAM PRESENT (P2)	OFF	
LINE FREQUENCY	---	6
DATA TRANSMISSION MODE	CONVERSATION	
ANSWERBACK	OFF	
ANSWERBACK MESSAGE	---	1
SCREEN SAVE	---	1
LIGHT PEN (OPTIONAL)	OFF	
MODEM CONTROL (OPTIONAL)	OFF	
FILL 5 PLACEMENT	---	1

Notes:

1. The function designated by this option has no effect on 3708 operation.
2. User preference; this is an ADM 24E local option.
3. The character set must match the translate table used by the 3708.
4. This selection must match the configuration of the 3708.
5. This selection must match the setup of the connected printer.
6. This selection must match the power line frequency. In the USA, this is set to 60 Hz.
7. Function key F1 must be redefined to generate SOH S (X'0153'), and function key F10 must be redefined to generate SOH R (X'0152') instead of the default values to use the ADM 24E terminal.

Lear Siegler ADM 3A Dumb Terminal®

Switch	Setting	Note
BAUD RATE	---	1
HDX-FDX	FDX	
EIA 232CL	EIA 232C	
AUTO NL-OFF	DISABLED	
LC EN-UC	LC EN	
PARITY ODD-EVEN	---	1
DATA 7-8	7 BIT	
STOP 1-2	---	1
PARITY-INH	---	1
BIT 8 0-1	---	2
12 LINE-24 LINE	24 LINE	
50 HZ.-60 HZ.	---	3
DISABLE-CLR SCRN	CLR SCRN	
DISABLE-KB LOCK	DISABLE	
UC DISP-U/L DISP	U/L DISP	
SPACE-ADV	SPACE	
EOT-OFF	OFF	---
ETX-OFF	OFF	---
CODE-SEC	OFF	---
202-OFF	OFF	
103-OFF	103	
LOCAL-OFF	OFF	
CUR CTL-OFF	CUR CTL	
NORM-FILL	NORM	
BEEP ON-OFF	---	2
GT-LK	GT	

Notes:

1. This setting must match the configuration of the 3708.
2. The function designated by this switch has no effect on 3708 operation.
3. This selection must match the power line frequency. In the USA, this is set to 60 Hz.

Lear Siegler ADM 31 Intermediate Terminal™ Video Display Unit

Switch	Setting	Note
BAUD RATE(MODEM)	---	1
BAUD RATE (PRINTER)	---	2
PRINTER BUSY CONTROL	---	2
EIA 232C/DIRECT CONNECT/CURRENT LOOP	EIA 232C	
PRINTER BUSY ACTIVE	---	2
CURSOR	---	3
ATTRIBUTE CHARACTER DISPLAYED	OFF	
DOT STRETCHING MODE	DISABLED	
BLANKING/UNDERLINE	---	4
NULLS	ON	
BREAK KEY	OFF	
REFRESH RATE	---	5
DATA BITS	7 DATA BITS	
PARITY	---	1
STOP BITS	---	1
BIT 8 1/0	---	4
BLOCK/CONVERSATION MODE	CONVERSATION	
FULL/HALF DUPLEX	FULL DUPLEX	
PRINTER PORT SELECTIONS	---	2
POLLING ADDRESS	---	4

Notes:

1. This setting must match the configuration of the 3708.
2. This setting must match the configuration of the connected printer.
3. User preference; this is an ADM 31 local option.
4. The function designated by this switch has no effect on 3708 operation.
5. This selection must match the power line frequency. In the USA, this is set to 60 Hz.

Northern Telecom Displayphone™

Option	Selection	Note
PROTOCOL STANDARD	ANSI	
SCREEN WIDTH	80	
DISPLAY MODE	---	1
DUPLEX	FULL DUPLEX	
PARITY	---	2
BAUD RATE	---	2
TERMINAL ID	---	1

Notes:

1. The function designated by this switch has no effect on 3708 operation.
2. This selection must match the configuration of the 3708.

ROLM® Cypress™, Cedar™, and Juniper™

Option	Selection	Note
TERMINAL TYPE	IBM 3270	
BAUD RATE	---	1
PARITY	---	1
ECHOPLEX	YES	
ENTER-KEY VALUE	CR	

Note: This selection must match the configuration of the 3708.

Teletype 5410 Asynchronous Display Terminal

Option	Selection	Note
SPEED	---	1
PARITY	---	1
DUPLEX	FULL	
SCREEN	80	
RETURN KEY	CR	
RECEIVED LF	INDEX	
LABELS	---	2
MONITOR MODE	OFF	
KEY CLICK	---	2
AUTOWRAP	OFF	
CURSOR	---	2
BUILT-IN MODEM	NO	3

Notes:

1. This selection must match the configuration of the 3708.
2. User preference; this is a Teletype 5410 local option.
3. If the Teletype 5410 internal modem is used, this selection should be YES.

Teletype 5420 Buffered Display

Option	Selection	Note
SPEED	---	1
DUPLEX	FULL	
SEND PARITY	---	1
CHECK PARITY	YES	
132 COLUMNS	OFF	
MEMORY ACCESS	SCROLL	
CLOCK	ASYNC	
RETURN KEY	CR	
NEWLINE ON LF	NO	
AUTOWRAP	OFF	
CURSOR	---	2
KEYCLICK	---	2
MARGIN BELL	---	2
KEYBOARD MODEL	5420	
TRANSMISSION	CHAR	
LINE SEND	---	3
BLOCK SEND	---	3
SEND FROM	---	3
SEND EDIT SEQ	YES	
SEND GRAPHICS	NO	
ENTER KEY	CR	
FIELD SEPARATOR	---	3
BLOCK TERMINATOR	---	3
ANSWER BACK	---	3
LINES PER PAGE	---	3
PAGINATION	OFF	
PRINTER MODEL	---	4
PRINTER SPEED	---	4
FLOW CONTROL	---	4
ALARM	---	4

Notes:

1. This selection must match the configuration of the 3708.
2. User preference; this is a Teletype 5420 local option.
3. The function designated by this switch has no effect on 3708 operation.
4. When a printer is connected to the auxiliary port, the setting for the 5420 must match the settings on the printer.

Switch	Position	Note
BAUD RATE	---	1
WORD STRUCTURE	7-BIT WORD STRUCTURE	
PARITY	---	1
EVEN/ODD PARITY	---	1
STOP BITS	---	1
AUTOWRAP	NO WRAPAROUND	
CR/CRLF	CR	
TERMINAL SELECTION	STANDARD 910	
60 HZ/50 HZ	---	2
CURSOR	---	3
HALF/FULL DUPLEX	FULL DUPLEX	
SCREEN	---	3
DSR	CONNECTED	
CARRIER DETECT	CONNECTED	
DTR	CONNECTED	

Notes:

1. This function must match the configuration of the 3708.
2. Must be set to the power line frequency. In the USA, this is set to 60 Hz.
3. User preference; this is a TV 910 local option.

TeleVideo® 912C

Switch	Setting	Note
BAUD RATE	---	1
CHARACTER SET	---	2
HALF/FULL DUPLEX	FULL	
REFRESH	---	3
PARITY	---	
STOP BITS	---	
DATA BITS	7 BITS	
PARITY SELECT	---	1
CURSOR	---	4
DSR	DSR ON P3-6	
DCD	DCD ON P3-8	
DTR	DTR ON WHEN TERMINAL ON	
INTERFACE	EIA 232C INPUT	
AUTO LINE FEED AT CR	JUMPER NOT INSTALLED	
EOT AT END OF SEND	JUMPER NOT INSTALLED	
AUTO LINE FEED IN COL 80	JUMPER INSTALLED	
PAGE/EXTENSION	---	5

Notes:

1. This setting must match the configuration of the 3708.
2. The character set must match the translate table used on the 3708.
3. This selection must match the power line frequency. In the USA, this is set to 60 Hz.
4. User preference; this is a TV912 local option.
5. The function designated by this switch has no effect on 3708 operation.

TeleVideo® 950

Switch	Position	Note
BAUD RATE	---	1
WORD STRUCTURE	7 BIT	
STOP BITS	---	1
PRINTER BAUD RATE	---	2
EDIT MODE	DUPLEX EDIT	
CURSOR	---	3
PARITY	---	1
DISPLAY PRESENTATION	---	3
COMMUNICATION MODE	FULL DUPLEX	
POWER	---	4
KEY CLICK	---	3

Notes:

1. This setting must match the configuration of the 3708.
2. When a printer is attached to the auxiliary port, the baud rate configured on the printer must match the baud rate configured on the TV 950.
3. User preference; this is a TV 950 local option.
4. This selection must match the power line frequency. In the USA, this is set to 60 Hz.

Switch	Position	Note
HANDSHAKE	XON XOFF NONE	
SCREEN	80	
CURSOR	--	3
MODE	FDX	
KEYS?	US/UK	
RET/ENTER	CR/CR	
COMPATIBLE MODE	WY50	
ENHANCED		
SCRL	--	3
STATUS		
SCREEN SAVER	--	3
PROT		
TEXT	OFF	
BLK-END		
AUTO-NL	OFF	
CR	CR	
AUX AUTO-SCROLL	--	2
DATA BIT	7	
STOP BIT	--	1
PARITY BIT	--	1
MODEM PORT BAUD RATE	--	1

Notes:

1. This setting must match the configuration of the 3708.
2. When a printer is attached to the auxiliary port, the baud rate configured on the printer must match the baud rate configured on the WY-50.
3. User preference; this is a WY-50 local option.
4. This function does not affect the 3708.

Appendix J. Terminal XON/XOFF Pacing Support

Terminal Name	Transmit XON/XOFF (3708 to device)	Receive XON/XOFF (device to 3708)	Notes
ADDS Viewpoint®	No	Yes	
ADDS Viewpoint® /78	No	Yes	
Beehive™ ATL-078	Yes/No	Yes/No	1
Data General Dasher® D210	Yes	Yes	
DEC® VT100	Yes/No	Yes/No	1
DEC® VT220	Yes/No	Yes/No	1
DEC® VT52	No	Yes	
FALCO 500®	Yes/No	Yes/No	1
Hazeltine ESPRIT I™	No	No	
Hazeltine ESPRIT II™	No	No	
Hazeltine 1500	No	No	
Hewlett-Packard 2621B	No	Yes/No	1
IBM PC in 3101 Emulation Mode	Yes/No	Yes/No	1
IBM PC running FTTERM	Yes/No	Yes/No	1
IBM 3101	No	No	
IBM 3151/3161/3162/3163	Yes/No	Yes/No	1
IBM 3151/3161/3162/3163 (3708 Feature)	Yes/No	Yes/No	1
IBM 3151/62 (Model 5 Emulation)	Yes/No	Yes/No	1
IBM 3164	Yes/No	Yes/No	1
IBM 3164 (3708 Feature)	Yes/No	Yes/No	1
Lear Siegler ADM 24E	No	Yes/No	1
Lear Siegler ADM 3A (ADM 5)	No	No	
Lear Siegler ADM 31™	No	No	
Northern Telecom Displayphone™	Yes	Yes	
ROLM® Cedar™	Yes	Yes/No	2
ROLM® Cypress™	Yes	No	
ROLM® Juniper™	Yes	Yes/No	2
Teletype 5410	No	No	
Teletype 5420	No	No	
TeleVideo® 910	No	Yes	
TeleVideo® 912C/920	No	No	
TeleVideo® 950	No	Yes	
WY-50®	Yes/No	Yes/No	1

Notes:

1. An entry with a Yes/No indicates that XON/XOFF pacing support is determined by the switch settings at the terminal. This setting must match the configuration in the 3708.
2. ROLM® Cedar™ and Juniper™ support XON/XOFF only in file-transfer mode.

Appendix K. Manuals for Default Protocol Conversion Displays

This appendix lists vendor manuals that describe the displays for protocol conversion for which the 3708 provides keyboard mappings.

ADDS Viewpoint®:

Applied Digital Data Systems, Inc. *ADDS Viewpoint User's Manual.* Document 518-30000. January 19, 1981, Revised May 1981.

Beehive™ ATL-078:

Beehive™ International. *ATL-078 Technical User's Manual.* Document M0184-0006-1. Version 1.1. April 1984, Revised July 1984.

Data General Dasher® D210 Display Terminal:

Data General Corporation. *Dasher D210/211 Display Terminal User's Manual.* Document 014-000746-01. Revision 1. February 1984.

DEC® VT52 and VT100:

Digital Equipment Corporation. *User Guide VT100.* Document EK-VT100-UG-003. Third edition. June 1981.

DEC® VT220:

Digital Equipment Corporation. *VT220 Owner's Manual.* Document EK-VT220-UG-001. First edition. September 1983.

FALCO 500®:

FALCO Data Products. *FALCO 500 Technical Manual.* Document 210027-010. Revision A. 1986.

Hazeltine 1500:

Hazeltine Corporation. *Hazeltine 1500 Video Display Terminal Reference Manual.* Document HI-1056A. July 1977.

Hazeltine ESPRIT I™:

Hazeltine Corporation. *ESPRIT I Video Display Terminal Reference Manual.* Document HI-1094. Revision B. June 1983.

Hazeltine ESPRIT II™:

Hazeltine Corporation. *Hazeltine ESPRIT II Video Display Terminal Reference Manual.* Document HI-1109. Revision A. September 1982.

Hewlett-Packard 2621B Interactive Terminal:

Hewlett-Packard Company. *Hewlett-Packard Interactive Terminal 2621B Owner's Manual.* Document 02620-90062U1282. Revision 1. December 1982.

Lear Siegler ADM 3A Dumb Terminal®:

Lear Siegler, Inc. *ADM 3A Dumb Terminal Video Display Unit User's Reference Manual.* Document DP2190683F. June 1983.

Northern Telecom Displayphone™:

Northern Telecom. *Displayphone Telephone and Data Terminal Reference Manual.* Document P5849. Revision A. February 1984.

Northern Telecom. *Displayphone Telephone and Data Terminal User Guide.* Document P5840. Revision F. 1983.

Teletype 5410 Asynchronous Display Terminal:

AT&T Teletype Corporation. *5410 Asynchronous Display Terminal User's Guide.* Manual 605. Issue 2. May 1984.

Teletype 5420 Buffered Display:

AT&T Teletype Corporation. *5420 Buffered Display General Technical Reference.* Document SD5420-401. March 1984.

TeleVideo® 910:

TeleVideo Systems, Inc. *TeleVideo Model 910 CRT Terminal Installation and User's Guide.* Document B2002500. Revision D. April 1983.

TeleVideo® 950:

TeleVideo Systems, Inc. *TeleVideo Model 950 CRT Terminal Installation and User's Guide.* Document B300002-001. Revision B. April 1982.

WY-50®:

WYSE Technology. *WY-50® Display Terminal Reference Manual.* Document 88-011-01. 1984.

Appendix L. IBM-Supplied Translate Tables

This appendix shows the standard 3708 translate tables for EBCDIC and ASCII characters.

The 3708 provides two standard translate tables—a default table and an alternate table. The two tables are identical except for the characters listed below.

Standard Translate Table

EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
AD	[	3A	:
BD	]	3A	:
5A	!	5D	]
4F	|	21	!
4A	¢	5B	[

Alternate Translate Table

EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
AD	[	5B	[
BD	]	5D	]
5A	!	21	!
4F	|	7C	¦
4A	¢	5C	\

Note: When using the alternate translate table, two sets of EBCDIC characters map into the same ASCII character. Both an EBCDIC \ (X'E0') and ¢ (X'5C') map into an ASCII \ (X'5C') and an EBCDIC | (X'4F') and ¦ (X'6A') map into an ASCII ¦ (X'7C'). The ASCII \ (X'5C') and ¦ (X'7C') are mapped into the EBCDIC characters ¢ (X'5C') and | (X'4F') respectively.

Standard Default EBCDIC to ASCII Translate Table

The following table shows the EBCDIC code and character and the corresponding ASCII code and character for each address in the default translate table. Any characters that are not defined in ASCII are translated to X'3A' ASCII (:).

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
000000	00	NUL	00	NUL
000001	01	SOH	01	SOH
000002	02	STX	02	STX
000003	03	ETX	03	ETX
000004	04	N/A	3A	:
000005	05	HT	09	HT
000006	06	N/A	3A	:
000007	07	DEL	7F	DEL
000008	08	N/A	3A	:
000009	09	N/A	3A	:
00000A	0A	N/A	3A	:
00000B	0B	VT	OB	VT
00000C	0C	FF	OC	FF
00000D	0D	CR	OD	CR
00000E	0E	SO	OE	SO
00000F	0F	SI	0F	SI
000010	10	DLE	10	DLE
000011	11	DC1(XON)	11	DC1(XON)
000012	12	DC2	12	DC2
000013	13	DC3(XOFF)	13	DC3(XOFF)
000014	14	N/A	3A	:
000015	15	NL	0A	LF
000016	16	BS	08	BS
000017	17	IL	7F	DEL
000018	18	CAN	18	CAN
000019	19	EM	19	EM
00001A	1A	N/A	3A	:
00001B	1B	N/A	3A	:
00001C	1C	FS	1C	FS
00001D	1D	GS	1D	GS
00001E	1E	RS	1E	RS
00001F	1F	US	1F	US
000020	20	N/A	3A	:
000021	21	N/A	3A	:
000022	22	N/A	3A	:
000023	23	N/A	3A	:
000024	24	N/A	3A	:
000025	25	LF	0A	LF
000026	26	ETB	17	ETB

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
000027	27	ESC	1B	ESC
000028	28	N/A	3A	:
000029	29	N/A	3A	:
00002A	2A	N/A	3A	:
00002B	2B	N/A	3A	:
00002C	2C	N/A	3A	:
00002D	2D	ENQ	05	ENQ
00002E	2E	ACK	06	ACK
00002F	2F	BEL	07	BEL
000030	30	N/A	3A	:
000031	31	N/A	3A	:
000032	32	SYN	16	SYN
000033	33	N/A	3A	:
000034	34	N/A	3A	:
000035	35	N/A	3A	:
000036	36	N/A	3A	:
000037	37	EOT	04	EOT
000038	38	N/A	3A	:
000039	39	N/A	3A	:
00003A	3A	N/A	3A	:
00003B	3B	N/A	3A	:
00003C	3C	DC4	14	DC4
00003D	3D	NAK	15	NAK
00003E	3E	N/A	3A	:
00003F	3F	SUB	1A	SUB
000040	40	ƀ	20	ƀ
000041	41	N/A	3A	:
000042	42	N/A	3A	:
000043	43	N/A	3A	:
000044	44	N/A	3A	:
000045	45	N/A	3A	:
000046	46	N/A	3A	:
000047	47	N/A	3A	:
000048	48	N/A	3A	:
000049	49	N/A	3A	:
00004A	4A	¢	5B	[
00004B	4B	.	2E	.
00004C	4C	<	3C	<
00004D	4D	(	28	(
00004E	4E	+	2B	+
00004F	4F	|	21	!
000050	50	&	26	&
000051	51	N/A	3A	:
000052	52	N/A	3A	:

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
000053	53	N/A	3A	:
000054	54	N/A	3A	:
000055	55	N/A	3A	:
000056	56	N/A	3A	:
000057	57	N/A	3A	:
000058	58	N/A	3A	:
000059	59	N/A	3A	:
00005A	5A	!	5D	]
00005B	5B	$	24	$
00005C	5C	*	2A	*
00005D	5D	)	29	)
00005E	5E	;	3B	;
00005F	5F	¬	5E	^
000060	60	-	2D	-
000061	61	/	2F	/
000062	62	N/A	3A	:
000063	63	N/A	3A	:
000064	64	N/A	3A	:
000065	65	N/A	3A	:
000066	66	N/A	3A	:
000067	67	N/A	3A	:
000068	68	N/A	3A	:
000069	69	N/A	3A	:
00006A	6A	¦	7C	¦
00006B	6B	,	2C	,
00006C	6C	%	25	%
00006D	6D	_	5F	_
00006E	6E	>	3E	>
00006F	6F	?	3F	?
000070	70	N/A	3A	:
000071	71	N/A	3A	:
000072	72	N/A	3A	:
000073	73	N/A	3A	:
000074	74	N/A	3A	:
000075	75	N/A	3A	:
000076	76	N/A	3A	:
000077	77	N/A	3A	:
000078	78	N/A	3A	:
000079	79	`	60	`
00007A	7A	:	3A	:
00007B	7B	#	23	#
00007C	7C	@	40	@
00007D	7D	'	27	'
00007E	7E	=	3D	=

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
00007F	7F	"	22	"
000080	80	N/A	3A	:
000081	81	a	61	a
000082	82	b	62	b
000083	83	c	63	c
000084	84	d	64	d
000085	85	e	65	e
000086	86	f	66	f
000087	87	g	67	g
000088	88	h	68	h
000089	89	i	69	i
00008A	8A	N/A	3A	:
00008B	8B	N/A	3A	:
00008C	8C	N/A	3A	:
00008D	8D	N/A	3A	:
00008E	8E	N/A	3A	:
00008F	8F	N/A	3A	:
000090	90	N/A	3A	:
000091	91	j	6A	j
000092	92	k	6B	k
000093	93	l	6C	l
000094	94	m	6D	m
000095	95	n	6E	n
000096	96	o	6F	o
000097	97	p	70	p
000098	98	q	71	q
000099	99	r	72	r
00009A	9A	N/A	3A	:
00009B	9B	N/A	3A	:
00009C	9C	N/A	3A	:
00009D	9D	N/A	3A	:
00009E	9E	N/A	3A	:
00009F	9F	N/A	3A	:
0000A0	A0	N/A	3A	:
0000A1	A1	~	7E	~
0000A2	A2	s	73	s
0000A3	A3	t	74	t
0000A4	A4	u	75	u
0000A5	A5	v	76	v
0000A6	A6	w	77	w
0000A7	A7	x	78	x
0000A8	A8	y	79	y
0000A9	A9	z	7A	z
0000AA	AA	N/A	3A	:

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
0000AB	AB	N/A	3A	:
0000AC	AC	N/A	3A	:
0000AD	AD	[	3A	:
0000AE	AE	N/A	3A	:
0000AF	AF	N/A	3A	:
0000B0	B0	N/A	3A	:
0000B1	B1	N/A	3A	:
0000B2	B2	N/A	3A	:
0000B3	B3	N/A	3A	:
0000B4	B4	N/A	3A	:
0000B5	B5	N/A	3A	:
0000B6	B6	N/A	3A	:
0000B7	B7	N/A	3A	:
0000B8	B8	N/A	3A	:
0000B9	B9	N/A	3A	:
0000BA	BA	N/A	3A	:
0000BB	BB	N/A	3A	:
0000BC	BC	N/A	3A	:
0000BD	BD	]	3A	:
0000BE	BE	N/A	3A	:
0000BF	BF	N/A	3A	:
0000C0	C0	{	7B	{
0000C1	C1	A	41	A
0000C2	C2	B	42	B
0000C3	C3	C	43	C
0000C4	C4	D	55	D
0000C5	C5	E	45	E
0000C6	C6	F	46	F
0000C7	C7	G	47	G
0000C8	C8	H	48	H
0000C9	C9	I	49	I
0000CA	CA	N/A	3A	:
0000CB	CB	N/A	3A	:
0000CC	CC	N/A	3A	:
0000CD	CD	N/A	3A	:
0000CE	CE	N/A	3A	:
0000CF	CF	N/A	3A	:
0000D0	D0	}	7D	}
0000D1	D1	J	4A	J
0000D2	D2	K	4B	K
0000D3	D3	L	4C	L
0000D4	D4	M	4D	M
0000D5	D5	N	4E	N
0000D6	D6	O	4F	O
0000D7	D7	P	50	P

Address	EBCDIC Code	EBCDIC Character	ASCII Code	ASCII Character
0000D8	D8	Q	51	Q
0000D9	D9	R	52	R
0000DA	DA	N/A	3A	:
0000DB	DB	N/A	3A	:
0000DC	DC	N/A	3A	:
0000DD	DD	N/A	3A	:
0000DE	DE	N/A	3A	:
0000DF	DF	N/A	3A	:
0000E0	E0	\	5C	\
0000E1	E1	N/A	3A	:
0000E2	E2	S	53	S
0000E3	E3	T	54	T
0000E4	E4	U	55	U
0000E5	E5	V	56	V
0000E6	E6	W	57	W
0000E7	E7	X	58	X
0000E8	E8	Y	59	Y
0000E9	E9	Z	5A	Z
0000EA	EA	N/A	3A	:
0000EB	EB	N/A	3A	:
0000EC	EC	N/A	3A	:
0000ED	ED	N/A	3A	:
0000EE	EE	N/A	3A	:
0000EF	EF	N/A	3A	:
0000F0	F0	0	30	0
0000F1	F1	1	31	1
0000F2	F2	2	32	2
0000F3	F3	3	33	3
0000F4	F4	4	34	4
0000F5	F5	5	35	5
0000F6	F6	6	36	6
0000F7	F7	7	37	7
0000F8	F8	8	38	8
0000F9	F9	9	39	9
0000FA	FA	N/A	3A	:
0000FB	FB	N/A	3A	:
0000FC	FC	N/A	3A	:
0000FD	FD	N/A	3A	:
0000FE	FE	N/A	3A	:
0000FF	FF	N/A	3A	:

Standard Default ASCII to EBCDIC Translate Table

The following table shows the ASCII code and character and the corresponding EBCDIC code and character for each address in the default translate table. Any characters that are not defined in ASCII are translated to X'3A' ASCII (:).

Address	ASCII Code	ASCII Character	EBCDIC Code	EBCDIC Character
000100	00	NUL	00	NUL
000101	01	SOH	01	SOH
000102	02	STX	02	STX
000103	03	ETX	03	ETX
000104	04	EOT	37	EOT
000105	05	ENQ	2D	HT
000106	06	ACK	2E	ACK
000107	07	BEL	2F	DEL
000108	08	BS	16	BS
000109	09	HT	05	HT
00010A	0A	LF	25	LF
00010B	0B	VT	OB	VT
00010C	0C	FF	OC	FF
00010D	0D	CR	OD	CR
00010E	0E	SO	OE	SO
00010F	0F	SI	0F	SI
000110	10	DLE	10	DLE
000111	11	DC1(XON)	11	DC1(XON)
000112	12	DC2	12	DC2
000113	13	DC3(XOFF)	13	DC3(XOFF)
000114	14	DC4	3C	DC4
000115	15	NAK	3D	NAK
000116	16	SYN	32	SYN
000117	17	ETB	26	ETB
000118	18	CAN	18	CAN
000119	19	EM	19	EM
00011A	1A	SUB	3F	SUB
00011B	1B	ESC	27	ESC
00011C	1C	FS	1C	FS
00011D	1D	GS	1D	GS
00011E	1E	RS	1E	RS
00011F	1F	US	1F	US
000120	20	b	40	b
000121	21	!	4F	|
000122	22	"	7F	"
000123	23	#	7B	#
000124	24	$	5B	$
000125	25	%	6C	%
000126	26	&	50	&

Address	ASCII Code	ASCII Character	EBCDIC Code	EBCDIC Character
000127	27	'	7D	'
000128	28	(	4D	(
000129	29	)	5D	)
00012A	2A	*	5C	*
00012B	2B	+	4E	+
00012C	2C	,	6B	,
00012D	2D	-	60	-
00012E	2E	.	4B	.
00012F	2F	/	61	/
000130	30	0	F0	0
000131	31	1	F1	1
000132	32	2	F2	2
000133	33	3	F3	3
000134	34	4	F4	4
000135	35	5	F5	5
000136	36	6	F6	6
000137	37	7	F7	7
000138	38	8	F8	8
000139	39	9	F9	9
00013A	3A	:	7A	:
00013B	3B	;	5E	;
00013C	3C	<	4C	<
00013D	3D	=	7E	=
00013E	3E	>	6E	>
00013F	3F	?	6F	?
000140	40	@	7C	@
000141	41	A	C1	A
000142	42	B	C2	B
000143	43	C	C3	C
000144	44	D	C4	D
000145	45	E	C5	E
000146	46	F	C6	F
000147	47	G	C7	G
000148	48	H	C8	H
000149	49	I	C9	I
00014A	4A	J	D1	J
00014B	4B	K	D2	K
00014C	4C	L	D3	L
00014D	4D	M	D4	M
00014E	4E	N	D5	N
00014F	4F	O	D6	O
000150	50	P	D7	P
000151	51	Q	D8	Q
000152	52	R	D9	R

Address	ASCII Code	ASCII Character	EBCDIC Code	EBCDIC Character
000153	53	S	E2	S
000154	54	T	E3	T
000155	55	U	E4	U
000156	56	V	E5	V
000157	57	W	E6	W
000158	58	X	E7	X
000159	59	Y	E8	Y
00015A	5A	Z	E9	Z
00015B	5B	[	4A	¢
00015C	5C	\	E0	\
00015D	5D	]	5A	!
00015E	5E	^	5F	¬
00015F	5F	_	6D	_
000160	60	`	79	`
000161	61	a	81	a
000162	62	b	82	b
000163	63	c	83	c
000164	64	d	84	d
000165	65	e	85	e
000166	66	f	86	f
000167	67	g	87	g
000168	68	h	88	h
000169	69	i	89	i
00016A	6A	j	91	j
00016B	6B	k	92	k
00016C	6C	l	93	l
00016D	6D	m	94	m
00016E	6E	n	95	n
00016F	6F	o	96	o
000170	70	p	97	p
000171	71	q	98	q
000172	72	r	99	r
000173	73	s	A2	s
000174	74	t	A3	t
000175	75	u	A4	u
000176	76	v	A5	v
000177	77	w	A6	w
000178	78	x	A7	x
000179	79	y	A8	y
00017A	7A	z	A9	z
00017B	7B	{	C0	{
00017C	7C	¦	6A	¦
00017D	7D	}	D0	}
00017E	7E	~	A1	~

Address	ASCII Code	ASCII Character	EBCDIC Code	EBCDIC Character
00017F	7F	DEL	07	DEL

Appendix M. End-User-Device Reference Cards Order Form

The following table lists the end-user devices and the corresponding IBM 3708 network conversion unit reference card order number.

End-User Device	Form No.	Quantity
IBM Personal Computer (PC) in 3101 Emulation Mode with standard 3101 keyboard functions	SX27-3635	
IBM 3101 Display Terminal Models 10, 12, 13, 20, 22, and 23	SX27-3633	
IBM 3151, 3161, 3162, 3163, and 3164	SX27-3862	
IBM 3151, 3161, 3162, 3163, and 3164 (3708 Feature)	SX27-3867	
ADDS Viewpoint® Display Station	SX27-3636	
ADDS Viewpoint®/78	SX27-3706	
Beehive™ ATL-078	SX27-3645	
Data General Dasher® D210 Display Terminal	SX27-3652	
DEC® Model VT100	SX27-3638	
DEC® Model VT220 (Emulating a VT100)	SX27-3790	
DEC® Model VT220	SX27-3639	
DEC® Model VT52	SX27-3637	
FALCO 500®	SX27-3864	
Hazeltine Esprit I™ and II™	SX27-3640	
Hazeltine 1500	SX27-3641	
Hewlett-Packard 2621B Interactive Terminal	SX27-3651	
Lear Siegler ADM 24E	SX27-3703	
Lear Siegler ADM 3A Dumb Terminal®	SX27-3642	
Lear Siegler ADM 31™	SX27-3704	
Northern Telecom Displayphone™	SX27-3653	
ROLM Cedar	SX27-3649	
ROLM Cypress	SX27-3648	
ROLM Juniper	SX27-3650	
Teletype 5410 Async. Display Terminal	SX27-3646	
Teletype 5420	SX27-3647	
TeleVideo® 910	SX27-3643	
TeleVideo® 912C	SX27-3705	
TeleVideo® 950	SX27-3644	
User-Defined Terminal	SX27-3654	
WY-50®	SX27-3865	

Appendix N. Binary to Hexadecimal Conversion Table

This appendix lists the binary values and their hexadecimal equivalents for the possible bit combinations for the Flag field in the terminal tables.

An asterisk (*) indicates an invalid bit combination, but these values are included here to make the table complete.

Bit Combination	Hex Equivalent	Bit Combination	Hex Equivalent	Bit Combination	Hex Equivalent
00000000	00	00111000	38	01110000	70
00000001	01	00111001	39	01110001	71
00000010*	02	00111010*	3A	01110010*	72
00000011*	03	00111011*	3B	01110011*	73
00000100	04	00111100	3C	01110100	74
00000101	05	00111101	3D	01110101	75
00000110*	06	00111110*	3E	01110110*	76
00000111*	07	00111111*	3F	01110111*	77
00001000	08	01000000	40	01111000	78
00001001	09	01000001	41	01111001	79
00001010*	0A	01000010*	42	01111010*	7A
00001011*	0B	01000011*	43	01111011*	7B
00001100	0C	01000100	44	01111100	7C
00001101	0D	01000101	45	01111101	7D
00001110*	0E	01000110*	46	01111110*	7E
00001111*	0F	01000111*	47	01111111*	7F
00010000	10	01001000	48	10000000	80
00010001	11	01001001	49	10000001	81
00010010*	12	01001010*	4A	10000010*	82
00010011*	13	01001011*	4B	10000011*	83
00010100	14	01001100	4C	10000100	84
00010101	15	01001101	4D	10000101	85
00010110*	16	01001110*	4E	10000110*	86
00010111*	17	01001111*	4F	10000111*	87
00011000	18	01010000	50	10001000	88
00011001	19	01010001	51	10001001	89
00011010*	1A	01010010*	52	10001010*	8A
00011011*	1B	01010011*	53	10001011*	8B
00011100	1C	01010100	54	10001100	8C
00011101	1D	01010101	55	10001101	8D
00011110*	1E	01010110*	56	10001110*	8E
00011111*	1F	01010111*	57	10001111*	8F
00100000	20	01011000	58	10010000	90
00100001	21	01011001	59	10010001	91
00100010*	22	01011010*	5A	10010010*	92
00100011*	23	01011011*	5B	10010011*	93
00100100	24	01011100	5C	10010100	94
00100101	25	01011101	5D	10010101	95
00100110*	26	01011110*	5E	10010110*	96
00100111*	27	01011111*	5F	10010111*	97
00101000	28	01100000	60	10011000	98
00101001	29	01100001	61	10011001	99
00101010*	2A	01100010*	62	10011010*	9A
00101011*	2B	01100011*	63	10011011*	9B
00101100	2C	01100100	64	10011100	9C
00101101	2D	01100101	65	10011101	9D
00101110*	2E	01100110*	66	10011110*	9E
00101111*	2F	01100111*	67	10011111*	9F
00110000	30	01101000	68	10100000	A0
00110001	31	01101001	69	10100001	A1
00110010*	32	01101010*	6A	10100010*	A2
00110011*	33	01101011*	6B	10100011*	A3
00110100	34	01101100	6C	10100100	A4
00110101	35	01101101	6D	10100101	A5
00110110*	36	01101110*	6E	10100110*	A6
00110111*	37	01101111*	6F	10100111*	A7

Bit Combination	Hex Equivalent
10101000	A8
10101001	A9
10101010*	AA
10101011*	AB
10101100	AC
10101101	AD
10101110*	AE
10101111*	AF
10110000	B0
10110001	B1
10110010*	B2
10110011*	B3
10110100	B4
10110101	B5
10110110*	B6
10110111*	B7
10111000	B8
10111001	B9
10111010*	BA
10111011*	BB
10111100	BC
10111101	BD
10111110*	BE
10111111*	BF
11000000	C0
11000001	C1
11000010*	C2
11000011*	C3
11000100	C4
11000101	C5
11000110*	C6
11000111*	C7
11001000	C8
11001001	C9
11001010*	CA
11001011*	CB
11001100	CC
11001101	CD
11001110*	CE
11001111*	CF
11010000	D0
11010001	D1
11010010*	D2
11010011*	D3
11010100	D4
11010101	D5
11010110*	D6
11010111*	D7
11011000	D8
11011001	D9
11011010*	DA
11011011*	DB
11011100	DC
11011101	DD
11011110*	DE
11011111*	DF
11100000	E0
11100001	E1
11100010*	E2
11100011*	E3
11100100	E4
11100101	E5
11100110*	E6
11100111*	E7
11101000	E8
11101001	E9
11101010*	EA
11101011*	EB
11101100	EC
11101101	ED
11101110*	EE
11101111*	EF
11110000	F0
11110001	F1
11110010*	F2
11110011*	F3
11110100	F4
11110101	F5
11110110*	F6
11110111*	F7
11111000	F8
11111001	F9
11111010*	FA
11111011*	FB
11111100	FC
11111101	FD
11111110*	FE
11111111*	FF

List of Abbreviations

ACTLU	activated logical unit
ACTPU	activated physical unit
ADDS	applied digital data systems
AID	attention identification
ANSI	American National Standards Institute
APF	Application Productivity Facility
ASCII	American National Standard Code for Information Interchange
BB	begin bracket
BC	begin chain
BEL	bell function
BETB	between bracket state
BIU	basic information unit
BM	bottom margin
BS	back space
CBA	current buffer address
CD	change direction
CICS/VS	Customer Information Control System/virtual storage
CNM	communication network management
CNMI	Communication Network Management Initialization
CR	carriage return
CR	command reject
CR/LF	command reject/line feed
CSU	customer setup unit
CTLADR	control unit address
CTS	clear to send
CUD	control unit description
CURSR SEL	cursor select
DACTLU	deactivate logical unit
DACTPU	deactivate physical unit
DAF	destination address field
DAF'	destination address field prime (local address of SLU)
DCD	data carrier detect
DEC	Digital Equipment Corporation
DEV CNCL	device cancel
DEVADR	device address
DEVD	device description
DEVTYPE	device type
DFC	data flow control
DISC	disconnect
DM	disconnect mode
DR	definite response
DRS	data rate select
DSC	data stream compatibility
DSR	data set ready
DTE	data terminal equipment
DTR	data terminal ready
DUP	duplicate
EAU	erase all unprotected
EB	end brackets
EBCDIC	extended binary coded decimal interface character
EC	end chain, also engineering change
EEIF	extended error information field
EEPROM	electrically erasable programmable read only memory
EFI	expedited flow indicator
EM	end of message
EMPL	Emulation Protocol Layer
ENP	enable presentation
EOF	end of file
EOL	end of line
ERI	exception response indicator
ERP	error recovery procedure
ESC	escape
EUA	erase unprotected to address
EWA	erase/write alternate
EW	erase/write
EX	exception response
FCS	frame check sequence
FDX	full duplex data flow
FF	form feed
FIC	first in chain
FID	format identification
FIS	first in segment

FM	function management
FMD	function management data
FR	frame reject
FRMR	frame reject
FTTERM	IBM PC/HOST File Transfer and Terminal Emulator Program
GE	graphics escape
HDX	half-duplex data flow
HT	horizontal tab
IC	insert cursor
IML	initial microprogram load
IMS/VS	Information Management System/Virtual Storage
INB	in bracket
INP	inhibit presentation
IRS	interchange record separator
IRS	inter-record separator
LED	light emitting diode
LF	line feed
LIC	last in chain
LIS	last in segment
LM	left margin
LTA	line turnaround
LU	logical unit
LUSTAT	logical unit status
MDT	modified data tag
MIC	middle in chain
MIS	middle in segment
MLU	multiple logical unit
MPF	mapping field
MPL	maximum presentation line
MPP	maximum presentation position
msec	milliseconds
NC	network control
NCCF	Network Communication Control Facility
NCP	Network Control Program
NDAP	Network Determination Aid Processor
NDM	normal disconnect mode
NL	new line
NLDM	Network Logical Data Manager
NMVT	network management vector transport
NPDA	Network Problem Determination Application
NRM	normal response mode
NRZI	non-return to zero inverted
NS	network services
NTO	Network Terminal Option
OAF'	origin address field
OC	operations check
OIC	only in chain
OIS	only in segment
PA	program access
PC	protocol conversion or personal computer
PEND.BB	pending beginning bracket
PI	pacing indicator
PIU	path information unit
PLU	primary logical unit
PRID	procedure-related identifier
PRNT	printer printing
PRTS	permanent request to send
PT	program tab
PU	physical unit
QRI	queued response indicator
RA	repeat to address
RAM	random access memory
RAS	reliability, availability, and serviceability
RB	read buffer
RCV	receive
RECFMS	record formatted maintenance statistics
REQMS	request maintenance statistics
RH	request/response header
RI	ring indicate
RM	read modified
RMA	read modified all
RNR	receive not ready
RR	received ready
RSP	response
RTM	response time monitoring
RTR	ready to receive
RTS	request to send
RU	request/response unit

RxC	receive clock
RxD	receive data
SA	set attribute
SBA	set buffer address
SC	session control
SCS	SNA character string
SDLC	synchronous data link control
SDT	start data traffic
SF	start field
SHF	set horizontal format
SHUTC	shutdown complete
SHUTD	shutdown
SLD	set line density
SLU	secondary logical unit
SNA	systems network architecture
SNF	sequence number field
SNRM	set normal response mode
SNRT	set normal response time
SOH	start of heading
SSCP	system services control point
SVF	set vertical format
SYS REQ	system request
TAF	target address field
TC	test control
TCAM	telecommunication access method
TH	transmission header
TM	top margin
TRN	transparent
TS	transmission services
TSO	time sharing option
TSO/VTAM	time sharing option for the Virtual Telecommunication Access Method
TxC	transmit clock
TxD	transmit data
UA	unnumbered acknowledgment
UDT	user-defined terminal
VCS	vertical channel select
VT	vertical tab
VTAM	virtual telecommunication access method
W	write
WCC	write control character
X OP X	input inhibited operator unauthorized
X PRTBSY	input inhibited printer busy
X PRTNW	input inhibited printer not working
XID	exchange identification

Glossary

This glossary contains terms and abbreviations that are used in this manual. It includes terms and definitions from *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699. Symbols used in this glossary are as follows:

- An asterisk (*) identifies definitions from the *American National Dictionary for Information Processing*, published by the Computer and Business Equipment Manufacturers Association.
- The symbol **(CCITT/ITU)** identifies definitions from the *CCITT Sixth Plenary Assembly Orange Book, Terms and Definitions* and working documents published by the International Telecommunication Union, Geneva, 1978.
- The symbol **(ISO)** identifies definitions from published sections of the *ISO Vocabulary of Data Processing*, developed by the International Standards Organization, Technical Committee 97, Subcommittee 1.
- The symbol **(TC97)** identifies definitions from drafts and working papers under development by the International Standards Organization, Technical Committee 97, Subcommittee 1.

access method. A technique for moving data between main storage and input/output devices.

Advanced Communications Function for the Network Control Program (ACF/NCP). An IBM program product that provides communication controller support for single-domain and multiple-domain networks.

alert. In NPDA, a notification about a high priority event that warrants immediate attention. This data base record is generated for certain event types that are defined by user-constructed filters.

alphanumeric field. A field that may contain any alphabetic, numeric, or special characters.

alternate character set. A character set, located in the terminal, from which characters are obtained for display and printing by using the graphic escape character in the data stream.

alternate cursor. An image reversal of each dot in the character cell at the cursor position.

ANSI X3.64. American National Standard Additional Controls for Use with American National Standard Code for Information Interchange (ASCII). A standard that defines a set of control functions that augments ASCII control functions as described in ANSI X3.4 and that controls input and output for two-dimensional character-imaging devices, such as displays or printers.

*** 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.

ASCII pass-through. For the 3708, the transmission of unmodified data between an ASCII device and an ASCII host.

ASCII pass-through mode. For an ASCII device attached to a 3708, a mode of operation in which the device communicates with an ASCII host.

asynchronous. Without regular time relationship; unexpected or unpredictable with respect to the execution of a program's instructions.

attention. An I/O interruption generated asynchronously by a display station, usually as a result of an action taken by the operator of the device.

attention identification (AID). A code that the terminal sends in the inbound data stream to identify the operator action or structured field function that caused the data stream to be sent to the application program. An AID is always sent as the first byte of the inbound data stream. Structured fields in the data stream may also contain an AID.

attribute. A characteristic.

attribute select keyboard. A keyboard that enables the operator, when permitted by the program, to change the character attributes of the keyed-in character.

attribute type. A code that identifies the characteristics from which the associated set of attribute values can be selected. See also *extended highlighting*, and *character set*.

attribute value. A code immediately following the attribute type in the data stream that specifies a particular characteristic from the set defined by the attribute type.

audible alarm. A special feature that sounds a short, audible tone automatically when a character is entered from the keyboard into the next-to-last character position on the screen. The tone can also be sounded under program control.

automatic polling. (1) A hardware feature of a telecommunications unit that processes a polling list, polling the terminals in order and handling negative responses to polling without interrupting the central processing unit. At the end of the list, polling is automatically begun again at the beginning of the list. Synonymous with *autopoll*. (2) See also *polling*.

automatic skip. After entry of a character into the last character position of an unprotected display field, automatic repositioning of the cursor from a protected and numeric field to the first character position of the next unprotected display field.

autopoll. Same as *automatic polling*.

auto-skip. Same as *automatic skip*.

base color. The capability to display or print all characters in a field, in one of four colors, on a color terminal by using combinations of the field protection and the field intensify bits of the field attribute.

Binary Synchronous Communications (BSC). Data transmission in which character synchronism is controlled by timing signals generated at the sending and receiving stations.

blink. An extended highlighting attribute value (for emphasis) of a field or character.

block matrix. The total array of dots that can be used to describe a graphic character for a 3270 display or printer.

bracket. In VTAM, an exchange of data between an application program and a logical unit which accomplishes some task.

break. (1) To interrupt the sending end and take control of the circuit at the receiving end. (2) A separation of continuous paper forms, usually at the perforation.

buffer address. The address of a location in the buffer at which one character can be stored.

CCC. See *copy control character*

character attribute. The properties of a character with respect to its color, highlighting, and character set. See also *extended field attribute*.

character buffer. The read/write storage used by a partition for storing character or graphic data for display or printing on a terminal.

character position. A location on 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. (1) A defined collection of characters in a loadable or nonloadable set selected by means of a local character set identifier. (2) An attribute type in the extended field and character attributes. (3) An attribute passed between session partners in the Start Field Extended, Modify Field, and Set Field, and Set Attribute orders.

clear indicator. In VTAM, a SESSIONC indicator sent by one node to another that prevents the exchange of messages and responses.

cluster control unit. (1) A device that can control the input/output operations of more than one device. A remote cluster control unit can be attached to a host CPU only via a communications controller. A cluster control unit may be controlled by a program stored and executed in the unit, or it may be controlled entirely by hardware. (2) See also *communications controller*.

command. An instruction that directs a control unit or device to perform an operation or a set of operations.

communications 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. (2) See also *cluster control unit*.

configuration. (1) (TC97) The arrangement of a computer system or network as defined by the nature, number, and the chief characteristics of its functional units. More specifically, the term configuration may refer to a hardware configuration or a software configuration. (2) The devices and programs that make up a system, subsystem, or network.

control character. A character used in conjunction with a Write command to specify that a control unit is to perform a particular operation.

control codes. The hexadecimal values X'00' through X'3F', and X'FF' in the 3270 data stream.

control terminal. For the 3708, a display attached to a 3708 that enables an operator to communicate with the 3708 in order to control and monitor the 3708 and to define the 3708 configuration.

control terminal mode. For an ASCII device attached to a 3708, a mode of operation in which the device functions as the control terminal for the 3708.

copy control character (CCC). A character used in conjunction with the Copy command to specify the type of data to be copied.

copy operation. An operation that copies the contents of the buffer from one display station or printer to another display station or printer attached to the same control unit.

cursor. A unique symbol that identifies a character position in a screen display, usually the character position at which the next character to be entered from the keyboard is to be displayed.

data link. (1) * The physical means of connecting one location to another for the purpose of transmitting and receiving data. (2) (TC97) The assembly of parts of two data terminal equipments (DTEs) that are controlled by a link protocol, and that, together with the interconnecting data circuit, enables data to be transferred from a data source to a data sink. (3) The interconnecting data circuit between two or more equipments operating in accordance with a link protocol; it does not include the data source and the data sink. (4) In SNA, synonym for link(3).

data link escape character (DLE). (ISO) A transmission control character that changes the meaning of a limited number of contiguously following characters or coded representations and that is used exclusively to provide supplementary transmission control characters.

data stream. (1) All data transmitted through a data channel in a single read or write operation. (2) A continuous stream of data elements being transmitted, or intended for transmission, in character or binary-digit form, using a defined format.

data transfer. In telecommunications, the sending of data from one node to another.

data transfer mode. A set of facilities (including the macro instructions needed to use them) that enable the application program to communicate with terminals.

DCE. Data circuit-terminating equipment.

decode. (1) (ISO) To convert data by reversing the effect of some previous encoding. (2) To interpret a code. (3) Contrast with encode.

detectable. An attribute of a display field; determines whether the field can be sensed by the selector pen.

display. (1) * (ISO) A visual presentation of data. (2) (TC95) In word processing, a device for visual presentation of information on any temporary character imaging device. (3) (TC97) To present data visually.

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 alphanumeric characters. The field continues to, but does not include, the next attribute character.

DTE. Data terminal equipment.

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

*** EBCDIC**. Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

echo. A feature that makes a receiving device send back the characters it receives. Echo is controlled at three points within the data communications system:

- The user's terminal
- The dataline ECHO parameter
- The answering data resource.

If all three settings do not complement each other, the result is either a blank screen or double images when the user types at the terminal.

EEPROM. * Electrically erasable programmable read-only memory located in the base unit of the 3708.

EIA 232C. The EIA standard describing the electrical, mechanical, and functional interface between data terminal equipment and data communication equipment using serial binary data. The EIA 232C interface is the most common interface for attaching data communications devices. Cable length cannot exceed 50 feet.

EIA 422A. The EIA standard for serial data transmission. EIA 422A interface allows devices to be direct attached at greater distances, up to 4000 feet. The EIA 422A interface is only supported for asynchronous device attachment.

emulate. (1) To imitate one system with another, primarily by hardware, so that the imitating system accepts the same data, executes the same computer programs, and achieves the same results as the imitated computer system. (2) The use of programming techniques and special machine features to permit a computing system to execute programs written for another system.

encode. (1) * (ISO) To convert data by the use of a code or a coded character set in such a manner that reconversion to the original form is possible. Encode is sometimes loosely used when complete reconversion is not possible. (2) * (ISO) Contrast with decode.

EPROM. * Erasable programmable read-only memory located in the cartridge of the 3708.

Erase All Unprotected (EAU) command. A command that clears all unprotected fields to nulls, resets modified data tags in all unprotected fields, unlocks the keyboard, resets the attention identifier, and repositions the cursor to the first character of the first unprotected field.

Erase Unprotected to Address (EUA) order. An order that erases all unprotected positions (inserts nulls) from the current buffer address up to, but not including, the specified stop address.

ESC character. See data link escape character.

Extended Attribute Buffer (EAB). A buffer for storing extended field attributes and character attributes.

extended color. (1) A capability that allows color terminals to display or print fields or characters in colors using extended field and character attributes. (2) An attribute type in the extended field attribute and character attribute.

extended field attribute. Additional field definition to the field attribute that controls defining additional properties such as color, highlighting, character set, and field validation. The extended field attribute is altered by information passed in the Start Field Extended and Modify Field orders.

extended highlighting. (1) A function that provides blink, reverse video, and underscore for emphasizing fields or characters on devices supporting extended field attributes and character attributes. (2) An attribute type in the extended field attribute and character attribute. (3) An attribute passed between session partners in the Start Field Extended, Modify Field, and Set Attribute orders.

field. See *display field.*

field attribute. A control character stored in the character buffer in the first character position of a field. For those devices supporting the 3270 data stream, a field attribute defines protected/unprotected, alphanumeric/numeric, detectable/nondetectable, display/nondisplay, intensity, and modified data tag (MDT).

field inherit. A bit setting the character attribute which defaults the character properties to the extended field attributes or device default if the buffer is unformatted.

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. See duplex.

general polling. (1) An input technique for remote 3270 devices in which special invitation characters are sent to a device control unit instructing that control unit to begin transmission from all devices ready to enter data. (2) See also *polling* and *specific polling*.

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

host. (TC97) A processor that controls all or part of a user application network.

inactivity timer. This timer may be configured on switched connection or EIA 422A connections. It is used to force disconnection of a device after the specified length of time has passed with no input from a downstream device. This timer is often used to prevent excessive telephone charges when a user forgets to disconnect.

Insert Cursor (IC) order. An order that displays the cursor at the current buffer address.

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

keyboard mapping. For an ASCII device attached to the 3708 in protocol conversion mode, a table that defines which ASCII keyboard sequences are equivalent to 3270 functions.

leased line. See *nonswitched line.*

line control characters. Characters that regulate the transmission of data over a line; for example, delimiting messages, checking for transmission errors, and indicating whether a station has data to send or is ready to receive data.

Line Quiet Time. Specifies the number of DEL characters (X'7F'), the 3708 should transmit before transmitting host data after line turnaround. This ensures that the line has quiesced before host data is transmitted.

local. Pertaining to the direct attachment of devices by channels to a host CPU. Contrast with *remote.*

logical unit (LU). In SNA, a port through which an end user accesses the SNA network in order to communicate with another end user and through which the end user accesses the functions provided by system services control points (SSCPs).

MDT. See *modified data tag.*

modem eliminator. For leased lines only, a device that replaces a pair of modems and communication lines between two local terminals. Some modem eliminators provide clocking for synchronous attachment and some redrive signals. A modem eliminator is a active device used to connect two DTEs together for communication purposes. A modem eliminator typically provides cross-over of required signals as well as redrive capability of the signals. In many cases, RTS and CTS delays can be provided by modem eliminators as with modems. A modem eliminator replaces a pair of modems and a phone line. Modem eliminators can be configured to provide clocking also.

modified data tag (MDT). A bit in the attribute character of a display field, which, when set, causes that field to be transferred to the channel during a read-modified operation. The modified data tag may be

set by a keyboard input to the field, a selector-pen detection in the field, a card read-in operation, or program control. The modified data tag may be reset by a selector-pen detection in the field, program control, or ERASE INPUT key.

Modify Field (MF) order. An order that allows specified field attributes to be modified.

Network Communication Control Facility (NCCF).. An IBM licensed program that is a base for command processors that can monitor, control, automate, and improve the operations of a network. Its function is included in Netview's command facility.

NetView. An IBM program product used to monitor a network, manage it, and diagnose its problems.

Network Logical Data Manager (NLDM). An IBM program product that collects and correlates LU-LU session-related data and provides the user with online access to the data. It runs as a Network Communications Control Facility (NCCF) communication network management application program.

Network Problem Determination Application (NPDA). An IBM program product that helps the user identify network problems from a central control point using interactive display techniques.

Network Terminal Option (NTO). An IBM program product that extends the capabilities of the ACF/NCP to support a select group of non-SNA devices.

Non-Return-to-Zero-Inverted (NRZI). The recording of binary digits so the ones are represented by a change in the condition of magnetization and the zeros are represented by the absence of a change.

nonswitched line. A telecommunication line on which connections do not have to be established by dialing. Contrast with switched line.

null modem. A type of modem eliminator that wraps signals but does not provide redrive or clocking of signals. A passive, device used to connect two DTEs together for communication purposes. A null modem typically provides cross-over only for the required signals (e.g. Transmit Data and Receive Data) with no redrive. A null modem replaces a pair of modems on a phone line. Null modems do not provide clocking.

order code. A code that may be included in the write data stream transmitted for a display station or printer; provides additional formatting or definition of the write data.

order sequence. A sequence in the data stream that starts with an order code and includes a character address and/or data characters related to the order code.

outgoing group. In systems with TCAM, that section of a message handler that manipulates outgoing messages after they have been removed from their destination queues.

pacing. (1) A technique by which a receiving station controls the rate of transmission of a sending station to prevent overrun. (2) In SNA, a technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion.

physical unit (PU). In SNA, the component that manages and monitors the resources (such as attached links and adjacent link stations) of a node, as requested by an SSCP via an SSCP-SSCP session.

platen. (TC95) The part of a document copying machine, usually in the form of a glass plate that can be curved, upon which the original is placed for copying. A backing, usually cylindrical, against which printing mechanisms strike or otherwise deposit ink to produce an image.

point-to-point connection. A connection established between two data stations for data transmission. The connection may include switching facilities.

polling. A technique by which each of the terminals sharing a communications line is periodically interrogated to determine whether it requires servicing.

primary logical unit (PLU). In SNA, the logical unit (LU) that contains the primary half-session for a particular LU-LU session. Contrast with secondary logical unit.

printer authorization matrix. A matrix stored in the 3274 control unit that establishes printer assignment and classification.

program attention key. On a display device keyboard, a key that produces an interruption to solicit program action.

program function key. (1) (TC95) On a typewriter, a control by means of which a specified machine function is set, released or performed. (2) (TC97) In computer graphics, a button or switch that may be operated to send a signal to the computer program controlling the display. (3) On a terminal, a key, such as an ATTENTION or an ENTER key, that causes the transmission of a signal not associated with a printable or displayable character. Detection of the signal usually causes the system to perform some predefined function for the operator.

Program Tab (PT) order. An order that advances the current buffer address to the address of the first character location of the next unprotected field.

protected field. A display field for which the display operator cannot use the keyboard or operator

identification card reader to enter, modify, or erase data.

protocol. (1) (CCITT/ITU) A specification for the format and relative timing of information exchanged between communicating parties. (2) In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchronizing the states of network components.

protocol conversion. For the 3708, the changing of start-stop data sent from an ASCII device to an SNA host into 3270 data, or the changing of a 3270 data sent from an SNA host to an ASCII device into ASCII start-stop data.

protocol conversion mode. For an ASCII device attached to a 3708, a mode of operation in which the device communicates with an SNA host as though it is a 3270 device.

protocol enveloping. For the 3708, the adding of SNA headers to data sent from an ASCII device to an SNA host, or the removing of SNA headers from data sent from an SNA host to an ASCII device.

protocol enveloping mode. For an ASCII device attached to a 3708, a mode of operation in which the device communicates with an SNA host as though it were an NTO device.

remote. Pertaining to the attachment of devices to a central computer through a communication control unit. Contrast with *local*.

routing. (1) The assignment of the path by which a message reaches its destination. (2) In SNA, the forwarding of a message unit along a particular path through a network, as determined by parameters carried in the message unit, such as the destination network address in a transmission header.

secondary logical unit (SLU). In SNA, the logical unit (LU) that contains the secondary half-session for a particular LU-LU session. Contrast with primary logical unit.

selector pen. A pen-like instrument that may be attached to the display station as a special feature. When pointed at a detectable portion of an image and then activated, the selector pen senses the presence of a light at a display field and produces a selector-pen detect.

selector-pen detect. The sensing by the selector pen of the presence of light from data in a display field that has the detectable attribute. Depending on the designator character of that display field, the detection and location information is identified on the screen (and stored in the buffer) or may produce an interrupt that is transmitted to the CPU.

SESSIONC indicators. In VTAM, indicators that can be sent from one node to another without using SEND or RECEIVE macro instructions. SDT, clear, and STSN are SESSIONC indicators. All SESSIONC indicators are sent with a SESSIONC macro instruction.

Set Attribute (SA) order. An order that associates attributes in the EAB with individual characters.

Set Buffer Address (SBA) order. An order that sets the buffer address to a specified location.

SNA character string (SCS). A character string composed of EBCDIC controls, optionally intermixed with end-user data, that is carried within a request/response unit.

specific polling. (1) A polling technique that sends invitation characters to a device to find out whether the device is ready to enter data. (2) See also *general polling* and *polling*.

Start Field (SF) order. An order that indicates a specified location which contains an attribute byte and not a text character.

Start Field Extended (SFE) order. An order that generates an extended field attribute in the EAB and at the current buffer location.

Structured Field. A data stream format that permits variable-length data and controls to be parsed into its components without having to scan every byte.

Suppress Index (SI) order. An order that generates the suppress index character, valid only for the 3288-2 printer. This character inhibits a lines index to allow overprinting.

switched line. A telecommunication line in which the connection is established by dialing. Contrast with nonswitched line.

SNA character string (SCS). A character string composed of EBCDIC controls, optionally intermixed with end-user data, that is carried within a request/response unit.

Synchronous Data Link Control (SDLC). A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. SDLC conforms to subsets of the Advanced Data Communication Control Procedures of the American Standards Institute and High-Level Data Link Control (HDLC) of the International Standards Organization.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

telecommunications network. In a telecommunication system, the combination of all terminals and other telecommunication devices and the lines that connect them.

terminal. (1) A point in a system or communication network at which data can either enter or leave. (2) Any device capable of sending and receiving information over a communication channel.

terminal-initiated logon. A logon request that originates from the terminal.

translate table. For the 3708, a table that defines the translation of ASCII to EBCDIC and EBCDIC to ASCII and that allows the use of special characters and nonstandard codes.

turnaround character. A character that uniquely designates the end of a line of data, such as carriage return (CR) or line feed (LF). The default for the 3708 is two characters.

unformatted display. A screen display in which no attribute character (and, therefore, no display field) has been defined.

unprotected field. A display field for which the display station operator can manually enter, modify, or erase data.

user-defined terminal. An ASCII display that is attached to the 3708 and that operates in protocol conversion mode using a keyboard mapping defined by the user.

user-defined terminal table. A table that a customer creates in storage, which contains information for a keyboard mapping used to define a terminal.

wraparound. (1) (TC97) In computer graphics, the display at some point on the display space of the display elements whose coordinates lie outside of the display space. (2) (TC95) In display-based word processing equipment, the automatic disposition of a printable line of text onto two or more display lines necessitated by the horizontal limits of the display. (3) The continuation of an operation from the maximum addressable location in storage to the first addressable location. (4) The continuation of register addresses from the highest register address to the lowest.

write control character (WCC). A character used in conjunction with a Write command to specify that a particular operation, or combination of operations, is to be performed at a display station or printer.

Write Structured Field (WSF) command. A command used for processing structured fields.

3270 data stream. Data being transferred from or to an allocated primary or tertiary device, or to the host system, as a continuous stream of data and 3270 Information Display System control elements in character form.

3270 data-stream compatibility (DSC). The facility that provides access to System/370 applications that communicate with 3270 Information Display System terminals.

3708 Network Conversion Unit. A device that allows ASCII devices to communicate with an SNA host by providing protocol conversion and protocol enveloping and that allows ASCII devices to communicate with an ASCII host by providing ASCII pass-through.

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