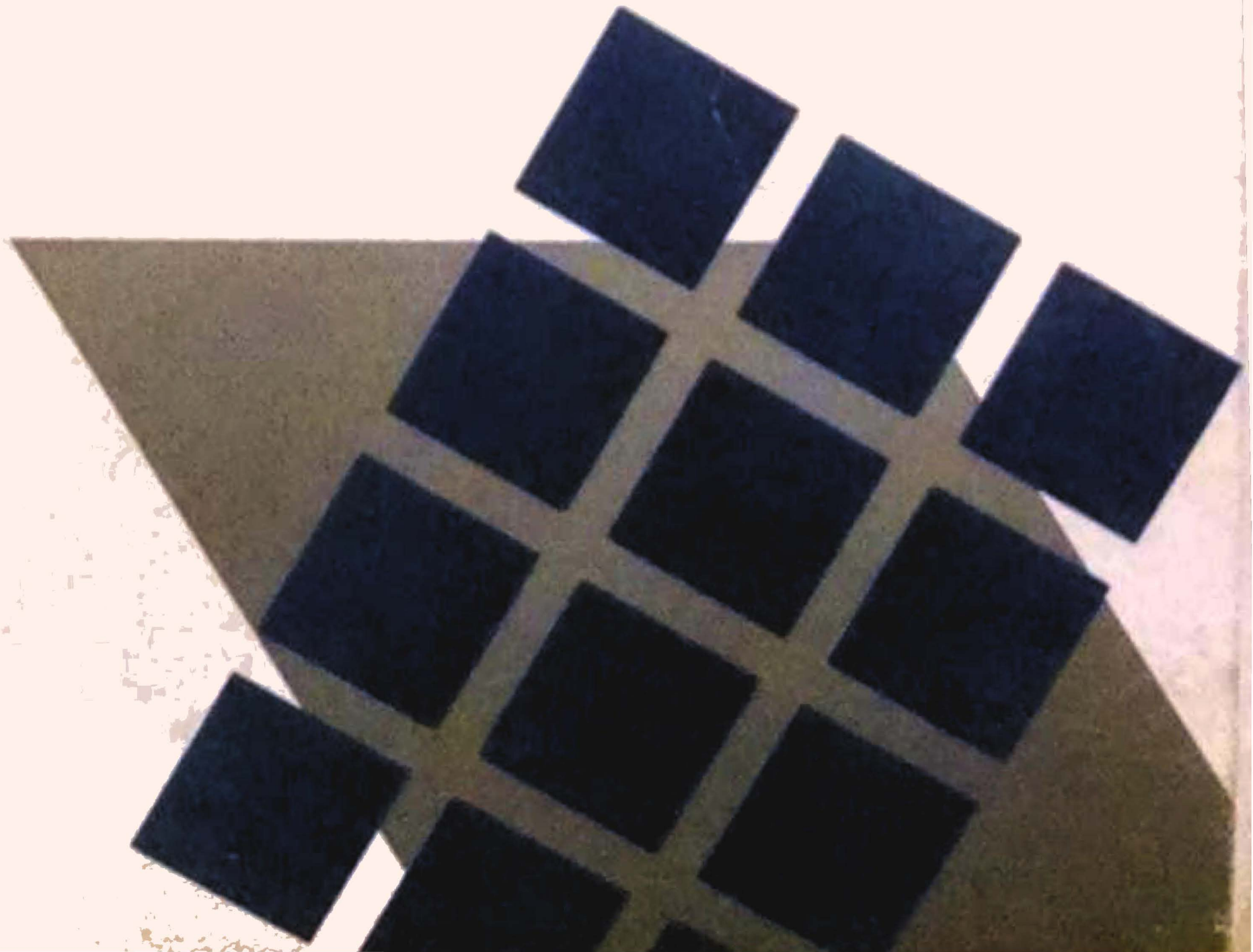
INFORMER

Computer Terminals, Inc.

USER'S GUIDE

213AE
Portable Workstation



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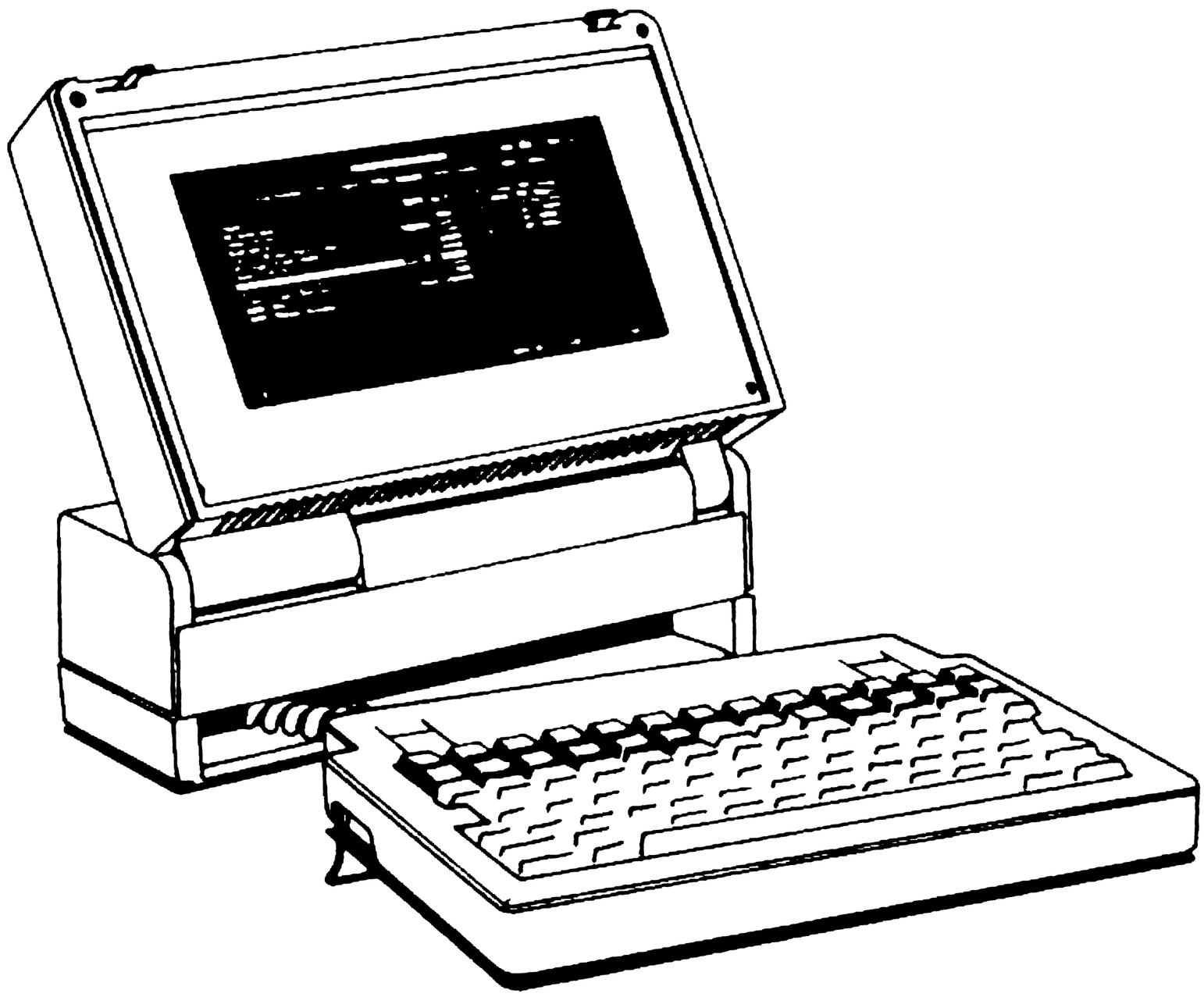

Part No. 65063-001 10/90

Copyright

INFORMER Computer Terminals, Inc.
12781 Pala Drive
Garden Grove, CA 92641

IBM is a trademark or equipment designation of the International Business Machines Corporation, Armonk, New York.
DEC VT100 is a trademark of Digital Equipment Corporation.

USA - FCC Rules and Regulations, Part 68

Modems used in workstations manufactured by Informer Computer Workstations, Inc are registered with the Federal Communications Commission (FCC), for direct connection to the general switched telephone network. The following rules apply.

1. All direct connections to the telephone network are to be made with standard plugs and jacks

2. Connection to pay phones or party lines is prohibited.

3. You are required to notify the local telephone company prior to the connection and upon the final disconnection of the modem. You must also supply the telephone company with the make, model number, FCC registration number, ringer equivalence and particular line to which the connection is to be made. See Important Notice below for this information.

4. You must disconnect the modem from the telephone line if it appears to be malfunctioning. Reconnect it only when it can be determined that the modem is not the cause of trouble. If the modem requires service, return it to Informer Computer Terminals, Inc.

5. The modem contains protective circuitry to prevent harmful voltages from being transmitted to the telephone network. If however, such harmful voltages do occur, the telephone company may temporarily discontinue service to you. In this case, the telephone company should:
   - Promptly notify you of the discontinuance.
   - Afford you the opportunity to correct the situation which causes the discontinuance.
   - Inform you of your rights to bring a complaint to the FCC concerning the discontinuance

The telephone company may make changes in its facilities and services which may affect the operation of your equipment. However, you are to be given adequate notice in writing by the telephone company to allow you to maintain uninterrupted service.

Important Notice: Notify your local telephone company with the following:
FCC Registration Number: GAV4FG-10384-DT-E
Ringer Equivalence: 0.2A

British Telecommunications Statutory Information

The Informer Workstations contain a built in modem which is approved for the use with Telecommunications Systems run by British Telecommunications in accordance with the conditions in the instructions for use. The following section provides the statutory information that relates to this approval.

Modem Model Number
The unit referred to in this guide as the modem is the Informer computer workstation. See your User's Guide for modem model numbers.

Type of Circuits
The modem is approved for connection to telecommunications systems specified in the instructions for use subject to the conditions set out in them. It can be used on Direct Exchange Lines or Direct Exchange Lines via a PBX but is not approved for use on shared service, 1 + 1 carrier systems, or as an extension to a pay phone.

Dialing
The modem may be used with either pulse (LD), or tone (MF) signalling BT lines.

Bell Tinkle
During dialing, this modem may tinkle the bells of other telephones using the same line. This is not a fault: you are advised not to call the fault repair service.

Mark of Origin
The modem is manufactured in the USA by Informer Computer Terminals, Inc., Garden Grove, CA.

Functions
The modem is an autodialing (tone and pulse), modem conforming to CCITT standards. It supports V25 autodialing and autoanswering recommendations.

Echo Suppressor
The modem is equipped with echo-suppressor tone (V.25) when autoanswering.

REN:

The modem has a REN of TBD.

Explanation of REN:

Equipment for attachment to the Public network is assessed to determine its "ringer equivalence" number (REN). The REN relates to the performance of the apparatus when used in combination with other apparatus. The REN is a customer guide indicating approximately the maximum number of items that should be connected simultaneously to the line.

To determine the maximum number of items of apparatus that should be connected simultaneously to an exclusive line, the total REN obtained by summing the REN values of each of the items of apparatus connected to the exclusive line should not exceed the maximum REN value of 4. This value includes any BT approved instrument each of which is assumed to have a REN value of 1.0 unless otherwise marked.

The Informer workstation modem has a REN of TBD and care must be taken not to use it with other telephone equipment that would result in the maximum figure of 4 REN being exceeded.

Because of the wide spread of ringing detector characteristics, a guarantee of successful operation of mixed types of ringing detectors may not be given by the supplier.

PBX Use

This apparatus has been approved for use with the following facilities.

- o Automatic dialing facilities.
- o Automatic call initiation.
- o Multi-frequency (tone) dialing and looo disconnect (pulse) dialing.
- o Operation in absence of proceed indication.
- o Automatic storage of last number dialed.
- o Storage of Telephone numbers for retrieval by a pre-determined code.
- o Detection of V.25 answer tone.
- o No recall.

Any other usage will invalidate the approval of the apparatus if as a result, it then ceases to conform to the standard against which the approval was granted.

The modem is only approved for use on compatible PBX's. It cannot be guaranteed that the modem will operate correctly under all possible conditions to compatible PBX's Any case of difficulty should be referred in the first instance to the PBX supplier. The connection of the modem to an exchange line or PBX extension is via a BT modular socket. If this is not already available please use the form shown at the end of this guide to request one from British Telecom. If your PBX was not installed by British Telecom then contact your authorized maintainer.

Approval Number:
TBD. This approval applies to the Informer workstation with built in modem.

CAUTION!

The approval of the Informer workstation for connection to the British Telecom public switched telephone network is invalidated if the apparatus is subject to any modification in any material way not authorized by BABT or if it is used or connected to:

1. Internal software that has not been formally accepted by BABT.

2. External control software or external control apparatus which causes the operation of the modem or associated call set-up equipment to comply with the requirements of the standards set out in BABT/SITS/82/0055/D and BABT/SITS/82/01/C.

   All apparatus connected to this modem and thereby connected directly or indirectly to the British Telecom public switched telephone network must be approved apparatus as defined in section 22 of the British Telecommunications Act 1984.

WARNING!

There are dangerous voltages inside the computer. The telephone must also be regarded as potentially dangerous. It is essential that the instructions in this guide are carefully followed.

Request for Connection of Apparatus to B.T. Lines

Name: **Address**:

Post Code:

Product Number:

Serial Number:

Approval: NS/1397/3/H/600496

Tick in brackets as required

[ ] Please supply B.T. installation socket(s) _____
(Quantity)

[ ] Please supply extra installations socket(s) _____
(Quantity)

Informer Computer Terminals (U.K.). Ltd is not responsible for installation costs or product misuse

When you have completed this form mail it to your nearest British Telecom office.

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Table of Contents (Continued)

List of Figures

QUICK CONNECT

The Quick Connect section is for those of you that are in a REAL hurry to get things "up and running"! This section's "bare essentials" approach makes installation quick.

If you decide you'd rather use the standard installation and operation procedures, start with the **Before You Start** *section. Either way, the 213AE is* **Quick** *and easy to* **Connect**!

To start Quick Connect, turn the page.

CONNECTING AND USING THE 213AE WORKSTATION

[ ] 1. Check the contents of the shipping carton.

[ ] 2. Plug the modular telephone and power cables in.

[ ] 3. Turn the 213AE ON.

[ ] 4. Hold down the ALT key and press the SETUP key to display the Setup Menu. Use the Arrow Keys to move the highlight bar up and down.

[ ] 5. Enter and save configuration values for each host you add.

[ ] 6. Hold down the ALT key and press the SETUP key to exit the Setup Menu.

[ ] 7. Dial the host. Hold down the ALT key and press the DIAL key to initiate dialing. **(Be certain you have saved Config [PF1] before exiting).**

[ ] 8. Logon and initiate the application you want to use.

[ ] 9. To quit the session, logoff per your application.

THANK YOU

Thank you, and congratulations on your purchase of the 213AE Portable Workstation.

The 213AE Portable Workstation truly represents "Technology on the Move". It's lightweight, compact size travels anywhere you do.

Its quick to connect and easy to use. In just minutes you can have the 213AE set up and ready to do business.

We believe the Informer 213AE Portable Workstation satisfies both your business and personal needs by offering a convenient, low cost solution to dial-up networking.

HOW TO USE THIS GUIDE

This guide is written for people that are familiar with the basics of IBM 3270 products, as well as DEC and Protocol Converter operations.

The instructions in this User's Guide are divided into six sections for easy use.

Quick Connect - Pages 8 - 9

Quick Connect is written for those of you that are in a hurry to get things up and running. If you'd like to try Quick Connect, it's located just after the Table of Contents.

Introduction - Pages 10 - 20

This section includes general information that will help you understand the purpose of your 213ae workstation and how you can benefit from it. A list of product features, specifications, package contents, and instructions on how to care for your 213AE are also included in this section.

Installation - Pages 21 - 69

This section provides the information you need to install and configure the 213AE. Be sure to read over this section carefully so installation will be successful the first time around. We recommend installing the 213AE in the same sequence the instructions are presented.

Operation - Pages 70 - 73

After you've installed and configured the 213AE, this section will teach you how to use the 213AE. Even though many of you have differing applications, the 213AE's basic operation will be the same. Be sure to read this section before you begin operating your 213AE.

The Keyboard - Pages 74 - 89

Keyboard operation and definitions of each key are listed in this section. It is important to read this section and the **Operation** section before you begin operating your 213AE.

Appendix - Pages 91 - 108

The Appendix functions as a reference section. General keyboard mapping information is provided in this section, along with a VT100/102 programming reference guide.

ABOUT THE 213AE PORTABLE WORKSTATION

Product Purpose

The Informer 213AE Portable Workstation is a lightweight, portable, IBM compatible device, which emulates a VT100 terminal attached to an IBM host through one of the various Protocol Converters available.

The 213AE is used as an ASYNC device communicating with DEC hosts or Protocol Converters

It's a low cost, easy to use alternative to more expensive units.

Package Contents

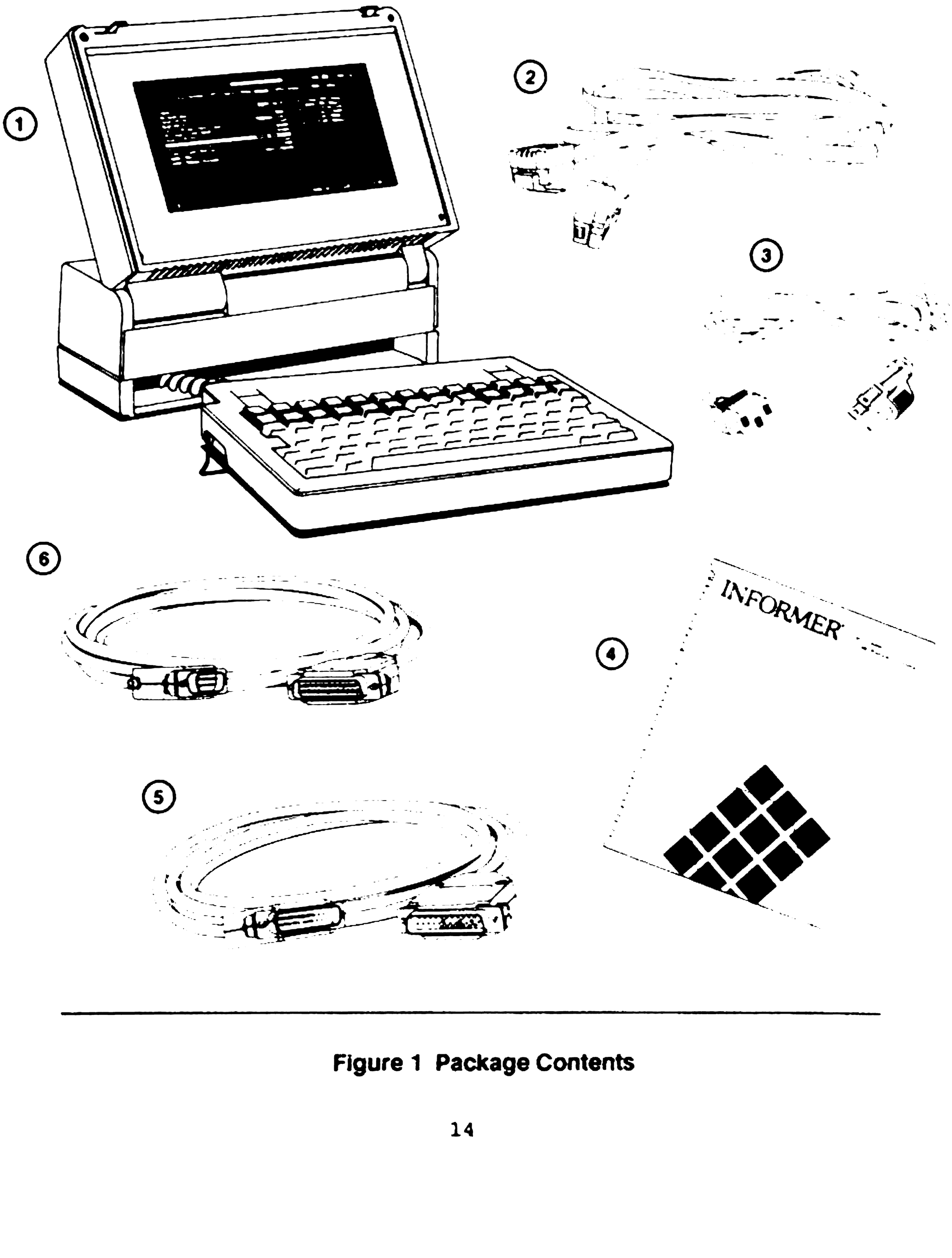


Figure 1 Package Contents

Package Contents

Package contents as illustrated in Figure 1:

1) ICT 213AE Portable Workstation

2) Six foot modular phone cord

3) AC power cord

4) ICT 213AE User's Guide

5) **Optional** six foot modem cable (part number 94643-006)

6) **Optional** six foot printer cable (part number 94646-009) - this cable is configured for use with the Brother, model 1109 printer. Cable and printer may both be purchased from Informer.

7) Carrying case (Not illustrated)

To verify that you received the type of modem you ordered, check the Informer label at the rear of the Workstation.

Informer offers a complete line of **compatible** *networking products. Items such as our:*

371 E SNA PORT CONCENTRATOR,
Stand alone modems,
Printers, and Interface Cables

help you build your network easily and efficiently because everything "fits" together. Contact your sales representative for additional information about these products.

FEATURES

- Lightweight and portable. Display, keyboard and modem are all in one unit.
- Uses VT100 protocol.
- Weighs only eight pounds.
- Comes with its own carrying case.
- Electroluminescent screen lets you operate in dim light without eyestrain.
- Easy to use Setup Menu allows you to program dialing for up to three different hosts.
- Easy installation: plug it in, set it up and dial.
- Built in modem CCITT V.32, 9600 BPS.
- Supports external asynchronous modems with data rates up to 19200 bps.
- RS232C printer port. Supports serial ASCII printers.
- Protocol converter support, features eight popular protocol converter keyboard maps and a user definable custom keyboard map.
- Detachable, IBM 3270 style keyboard.
- Control character display feature for use in troubleshooting network problems.

SPECIFICATIONS

Physical Characteristics

Measurements: 3.5" x 11" x 11.3"
Weight: 8.0 pounds
Power Consumption: 28 watts

Environmental Characteristics

- Operating Temperature: 5 to 40 degrees Celsius
- Storage Temperature: -30 to 65 degrees Celsius
- Humidity: 20% to 90% (Non-condensing)

Other Facts

- Printer Port: RS-232-C Asynchronous DTE interface
- Printers Supported: Serial ASCII
- External Modem Port: RS-232-asynchronous DTE interface

MAINTENANCE

Do not block ventilation openings by placing papers or other items on top of the unit. This causes heat buildup that can damage the workstation.

Avoid areas where there is excessive dust or ashes.

Do not place paper clips or other metallic items on the workstation or keyboard. They may drop between the keys and cause a malfunction.

Do not place liquids that could easily spill, on or near the workstation or keyboard.

CLEANING PROCEDURES

Always **UNPLUG** and **TURN** the 213AE Workstation **OFF** before you clean the screen or cover.

Use separate clean, soft cloths to wash, rinse, and dry the screen. When cleaning the workstation, **make sure the cloth is damp, not wet**.

Do NOT use acid solutions or abrasive products such as cleansers or scouring pads. These products will damage the screen's anti-reflective coating.

To clean the screen, use one of the following suggested procedures.

- Water Only - use one cloth to clean and a separate one to dry.

- Water and Detergent - use one cloth to clean, one cloth to rinse, and one to dry.

- Ammonia-Based Glass Cleaner - apply the cleaner with one cloth and dry with a separate cloth.

SERVICE AND WARRANTY INFORMATION

With Informer products you get superb quality and excellent support. All hardware is extensively pretested and burned-in prior to shipping. In addition, Informer products meet the stringent requirements set forth by the NSTA Pre-shipment Program, which includes extensive vibration, drop and environmental testing.

All products are backed by a one year warranty and supported both nationally by Informer's authorized field service organizations and internationally by Informer and its authorized distributor network. Questions regarding service and support should be directed to Technical Support at one of the following addresses:

USA

Informer Computer Terminals (714) 891-1112
12781 Pala Drive
Garden Grove, CA 92641

Europe

Informer Computer Terminals (UK) Ltd.
Hawthorns Business Centre
Halfords Lane, Warley
West Midlands, England (021) 558-7778

See "Request for Technical Support" form on the next page.

REQUEST FOR TECHNICAL SUPPORT

Serial Number

Model Number

Describe Problem

Please have this form completed before you call for technical support.
When returning a unit include a copy of the completed form.

Before You Start

If you're connecting a printer or external modem, you'll need a flat edge screwdriver to fasten the cable connectors to the 213AE workstation.

If you don't know which options to select for the configuration parameters required by the 213AE, read the section on **Configuration Parameters -** (VT-100). This section explains what the configuration parameters mean. Another resource is your network administrator or telecommunications manager at the host site.

CONNECTING CABLES

1. The illustration in **Figure 2** shows where all the connectors and switches are located on the 213AE. The following pages explain how each connector and switch is used.

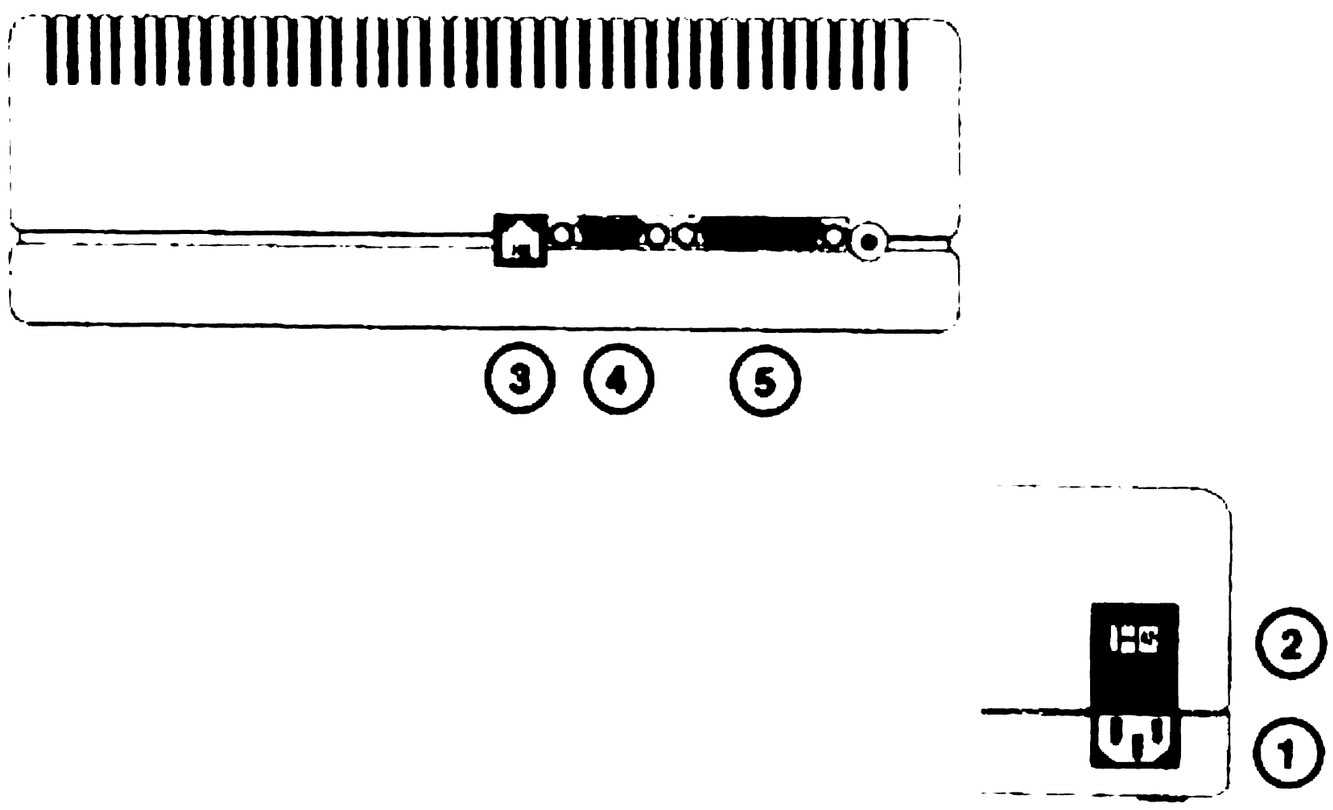


Figure 2 Connector Locations on the 213AE

CONNECTING CABLES (CONTINUED)

Connecting cables as illustrated in Figure 2:

1) AC Power Connector.
Some of you will travel between countries that use different voltages. The 213AE contains a universal 30W power supply which accepts input voltages between 90-260 VAC at frequencies from 47-440 Hz.

2) ON/OFF Switch

3) RJ11 Connector for Internal Modem Connection

4) RS232 C(DB9) Serial Printer Port

5) RS232 (DB25) Serial Communications Port for external modem or for direct connect to the host.

To access the host via the built in modem:

1. Plug one end of the RJ-11 modular telephone cord into the RJ-11 connector.

2. Plug the other end into the telephone line's wall jack.

3. Initiate the automatic dial procedure. (**See Dialing the Host.**)

4) **Printer Port Connector** DB-9 connector wired as an RS-232-C asynchronous DTE interface. The printer must be a serial printer. The 213AE Workstation will not support a parallel printer.

Printer Port Pinouts (Signals provided by Informer)

Pin	Function	Mnemonic
1	Frame Ground	FG
2	Transmit Data	TD
5	Printer Busy	
7	Signal Ground	SG
9	+ 12 Test Voltage	

Printer Cable Pinouts (The printer cable pinouts are for the cable used to connect a Brother, model 1109 printer to the 213AE. Both the cable and printer may be purchased from Informer.)

DB-9 Male Connector (Terminal Side)		DB-25 Male Connector (Printer Side)	
FG	1 - Shield		
TD	2 ----------	3	RD
CTS	5 ----------	20	BUSY
SF	7 ----------	7	SG
+ 12	9 ----------	6	DSR

5) External Modem (Direct Host Connection) Port Connector

DB-25 Female Connector wired as an RS-232-C asynchronous DTE interface. Used to attach an external modem to the 213AE workstation. This connector is designed to be plugged directly into an asynchronous modem. The cable may be purchased from Informer. Port pinouts are shown below.

Cable pinouts are standard RS-232-C.

External Modem Port Pinouts

Pin	Mnemonic	Function
1	Frame Ground	FG
2	Transmit Data	TD
3	Receive Data	RD
4	Request to Send	RTS
5	Clear to Send	CTS
6	Data Set Ready	DSR
7	Signal Ground	SG
8	Data Carrier Detect	DCD
9	+12 Test Voltage	
10	-12 Test Voltage	
15	Transmit Clock	TC
17	Receive Clock	RC
20	Data Terminal Ready	DTR

CONNECTING CABLES (CONTINUED)

If you are building your own cable and the serial cable your using has **a shield, make sure the wire attached** to pin 1 is also attached to the **shield, and not to pin 1 on the opposite end.**

Be sure to consult your printer's installation guide to determine whether or not your printer is compatible with the 213AE.

Follow the installation instructions in your printer's installation guide when installing your printer.

If your printer port pinouts are different from the 213AE's, you will have to assemble your own printer cable to accommodate the pinouts of both devices.

INSTALLATION - THE SETUP MENU

The Setup Menu is used to enter the information that will enable you to communicate with up to three different hosts (only one at a time though). The process of entering these values is called "configuration" or "setup".

To explain the Setup Menu and how to use it, we've separated it into three functional sections. The following information provides a brief overview of each section, followed by the title of the sections providing in depth definitions of the data fields within each section.

See Figure 3 for 213AE Setup Menus.

1 The Command Section

This section displays the commands used to manipulate the Setup Menu screen. You will use these commands to save data, display data previously entered, display default values, move from one screen of information to the next, and select the screen background (dark or light).

Read the **How to Use the Command Section.**

2 The Parameter Section

The Parameter section is used to enter values for each configuration parameter listed on the screen.

There are two parameter sections for each host setup screen, setup menu 1 and setup menu 2.

Once the information is saved, the 213AE is programmed for automatic dial.

Read **How to Use the Parameter Section.**

3 The Status Line Section

The Status Line displays symbols, alpha, and numeric codes representing the status of operations. This line tells you when the system is working correctly, what it is in the process of doing, and when something is wrong.

The modem status also displays in this section of the screen.
The Status Line is visible during both setup and operation mode.

Read **How to Use the Status Line Section.**

ICT 213 SETUP MENU 1

Host Name	**Host 0**	**Enter to Edit**
Show Highlight as	Normal	
Cursor Type	Block/Steady	
New Line	No Newline	
Online/Local	Online	
Local Echo	Local Echo Off	
Control Character Display	Off	
Keyboard Mapped for	Protocol Conversion	
PCS	1076 or Hydra	
Emulation	ANSI	
Auto Wrap Mode	On	
Keyclick	Off	
Status Line Display	On	
Auto Answer	Answer	
Phone Number	DT	

ICT 213 SETUP MENU 2

Host Name	**Host 0**	**Enter to Edit**
Host Port	Modem	
Host Handshake	Xon/Xoff	
Host Character Format	8-None-1	
Printer Character Format	8-None-1	
Host Baud Rate	19200	
Printer Baud Rate	9600	
Modem Protocol	V.32/9600	
Tab Stops	-----	
Margin Bell	Off	
Answerback	-----	
Print Extent	Scroll Region	
Print Terminating Formfeed	Off	

Figure 3 Setup Menus, 213AE

INSTALLATION - HOW TO USE THE COMMAND SECTION

ICT213AE Setup Menu VT100

↑ ↓ = Select PF1 = Save, PF2 = Recall, PF3 = Default, PF4 = Next Host, PF8 = Background, PF5 = Edit DIY, PF6 = Setup Menu 2, Setup = EXIT

↑ ↓..... = Select	Moves the highlight bar up and down, depending on the direction of the arrow on the key you press.

PF1 = Save	When you add, change, or delete values, you must press the PF1 key to save them to permanent memory. We recommend that you save the values you enter for each host before moving to the next host (setup screen). If you power off unit before saving the values for each screen, the values will be canceled.

PF2 = Recall	Displays the values last saved to permanent memory. If you've changed a host value and want to review the "old" value, press the PF2 key to display it. This must be done before you save the changes you've made. Once you've saved a value, it replaces the previous value in permanent memory.

PF3 = Default	Displays the default values. Default values are assigned at the factory. These are the values that appear the first time you access the 213's Setup Menu and prior to your input. In most cases the default values must be changed before the 213 can communicate with the host system.

PF4= Next Host	Moves forward to the next **host** setup screen. There are three setup screens, one for each host you enter. To display the first host setup screen, hold the Alt key down and press the Test key. To move from the first to the second host setup screen press the PF4 key. Press the PF4 key each time you want to move to the next host setup screen. PF4 moves sequentially through the screens.
PF8 = Background	Selects the screen background. Dark or Light.
Setup = Exit	Exits from the Setup Menu. You must hold the ALT key down and press the TEST key at the same time. Holding down these two keys will exit the setup mode.
PF5 = Edit DIY (Setup Menu 1 only)	Enters the **DIY Edit Menu**. Used to edit an existing PCS keyboard map or create a new customized map. (See page 45 for details).
PF6 = Setup Menu 1 and 2	Switches from Setup Menu 1 to Setup Menu 2. (Each **host** setup screen consists of 2 setup menus, Setup Menu 1 and Setup Menu 2).
PF7 = Printer Setup (Setup Menu 2 only)	Enters the **"Printer Initialization Menu"**. Used to send control codes and character strings to the printer port for initialization of the printer. (See page 47 for details).

Host Name	**Host 0**	**Enter to Edit**
Show Highlight as	Normal	
Cursor Type	Block/Steady	
New Line	No Newline	
Online/Local	Online	
Local Echo	Local Echo Off	
Control Character Display	Off	
Keyboard Mapped for	Protocol Conversion	
PCS	1076 or Hydra	
Emulation	ANSI	
Auto Wrap Mode	On	
Keyclick	Off	
Status Line Display	On	
Auto Answer	Answer	
Phone Number		

Figure 4 213AE Setup Menu 1

213AE SETUP MENU 1

The Informer 213AE terminal's protocol converter support (PCS) *features provides you with easy access to your SNA host through any protocol converter. The PCS feature provides a menu of popular protocol converter maps, which are stored in memory. Once the protocol converter is selected, the IBM-compatible keyboard automatically maps itself to the selected protocol converter.*

If the protocol converter is not listed, or customized coding is desired, a setup screen allows you to create a custom map, without losing the compatibility of the 3270 keyboard.

The following information describes each configuration parameter and its options

213 SETUP MENU 1 (CONTINUED)

Host Name	Type a name or phrase that will identify the host. You may enter up to **twenty** alpha and/or numeric characters in this field. (You do not have to name the host. No entry here will not inhibit communications).
Show Highlight as	0 = Normal 1 = Blink 2 = Reverse 3 = Underline When **Normal** is selected, highlighted text appears highlighted. When **Blink** is selected, highlighted text blinks on and off. When **Reverse** is selected, highlighted text appears in reverse video. When **Underline** is selected, highlighted text is underlined.

213 SETUP MENU 1 (CONTINUED)

Cursor Type

Show Highlight as =

0 = Cursor Off
1 = Underline/Steady
2 = Underline/Blink
3 = Block/Steady
4 = Block/Blink

This allows you to select the cursor type that you desire. Simply type the number that corresponds to the cursor type you wish to have displayed as you use the terminal.

New Line =

0 = No New Line
1 = Newline

0 = Return key generates a CR code. An LF code received causes the terminal to perform LF only.

1 = Return key generates a CR & LF. An LF code received causes the terminal to perform a CR and LF.

213 SETUP MENU 1 (CONTINUED)

On Line/Local

0 = Local
1 = Online

Local is for "Off Line" Operation. No host communication takes place in this mode.

Online communicates with the host.

Local Echo =

0 = Local Echo Off
1 = Local Echo On

If your host provides Echo-Select 0 (Local Echo Off).

If your host does not provide Local Echo, select 1 (Local Echo On). This will permit characters entered through the keyboard to display on the screen.

Note:

If you select 1, and your host already provides Local Echo, you will see double characters on the screen each time you enter a character. If this occurs, simply turn off the Local Echo feature.

213 SETUP MENU 1 (CONTINUED)

Control Character Display - O = Off
1 = On

When Control Character Display is on, this causes Control Characters to be displayed on the screen rather than interpreted.

Keyboard mapped for

0 = DEC Communication
1 = Protocol Conversion

This allows selection of the keyboard mapping. Type the number that corresponds to the mapping you wish to use. Select Protocol Conversion will be selected if you are communicating to an IBM host through a protocol converter. DEC communication will be selected if you are communicating to a DEC host.

***PCS**

Selects protocol converter you are attached to. Or, allows editing of keyboard to accommodate protocol converters not listed as well as coding variations between like protocol converters.

(See PCS Edit for instructions on using DIY menu).

* This parameter is ignored if "keyboard mapped for DEC communication".

Emulation

0 = ANSI
1 = VT52

O (Off) = ANSI mode. This is compatible with ANSI X3.64 programming standards. Select this to emulate a DEC VT100.

1 = VT52 mode does not execute ANSI functions. VT52 is a text mode that executes DEC private functions. Use this mode when running software designed specifically for DEC's VT52 terminal.

Auto Wrap Mode

0 = Auto Wrap Off
1 = Auto Wrap On

When Auto Wrap is **off** the 81st character and all subsequent characters are overwritten onto the last character position of the current line.

When Auto Wrap is **on** the 81st character is automatically placed in the first position of the next line.

Keyclick

0 = Off
1 = On

This allows selection of an audible "click" when the keyboard is being used. Type the number that corresponds to your preference.

213 SETUP MENU 1 (CONTINUED)

Status Line Display

0 = Off
1 = On

This selection determines whether or not the Status Line is displayed. It is advisable to keep the Status Line ON, or displayed, as it contains information pertinent to the operation of the terminal. Type the number that corresponds to your preference.

Auto Answer

0 = Disabled
1 = Answer
2 = Originate

This parameter is used when security devices are being used between the terminal and the host. This parameter should be set to the opposite of the host device.

Phone Number

0 = Edit
1 = Conceal

Phone number entered here will be the phone number dialed when the DIAL key is pressed.

0 will allow the phone number to be edited.
1 will conceal the phone number from view.

Note: concealed phoned numbers can never be displayed.

213 SETUP MENU 2

Host Name	**Host 0**	**Enter to Edit**
Host Port	Modem	
Host Handshake	Xon/Xoff	
Host Character Format	8-None-1	
Printer Character Format	8-None-1	
Host Baud Rate	19200	
Printer Baud Rate	9600	
Modem Protocol	V.32/9600	
Tab Stops	-----	
Margin Bell	Off	
Answerback	-----	
Print Extent	Scroll Region	
Print Terminating Formfeed	Off	

213 Setup Menu 2

Figure 5

Host Name

Type a name or phrase that will identify the host. You may enter up to **twenty** alpha and/or numeric characters in this field. (You do not have to name the host. No entry here will not inhibit communications).

If you name the host in Setup Menu 1 it automatically carries over to Setup Menu 2.

Host Port

0 = RS-232
1 = Modem

RS-232 selection activates the external modem port for use with external modems.

Modem selection allows use of the internal modem through the RJ-11 jack.

Host Handshake

0 = XON/XOFF
1 = RTS/CTS
2 = Off

0 = Software synchronizing code. Unit will send XOFF (DC3) code to stop transmission of data from the host when the buffer reaches a pre-set level. When the buffer empties sufficiently to accept more data, XON (DC1) will be sent to the host telling it to resume transmission of data.

1 = Hardware synchronizing code. The RTS/CTS lines are monitored to allow/disallow data flow.

2 = Off. No flow control.

Your system people should advise you which, if any, method is used by the host you are communicating with.

Host Character Format	Select the number of bits, type of parity, and number of stop bits that correspond with the transmission from the host. Select 0 through D.
Printer Character Format	Select the number of bits, type of parity, and number of stop bits that correspond to the attached printer parameters. Select 0 through D.
Host Baud Rate	Select the Transmit and Receive speeds that correspond to the host you are communicating with. This is only valid when using the RS-232 connector for direct connect, or with an external modem.
Printer Baud Rate	Determines the speed at which the printer and terminal transmit and receive characters.

213 SETUP MENU 2 (CONTINUED)

Modem Protocol

0 = V.32/9600
1 = V.22bis/2400

Determines internal modem settings. Selected protocol must match that of the host or protocol converter.

Tab Stops

0 = Forward
1 = Backward
2 = Toggle
3 = Clear All Tabs
4 = Set 8-Column Tabs

This allows setting of tab stops. The locations are displayed at the bottom of the screen. Using the 0 or 1 key, move the cursor to the desired tab stop location. Pressing the 2 key will place a T where the cursor was located. This is now a tab location. Pressing the 2 key again will remove the tab. The 3 key will clear all tab settings, and the 4 key will automatically set a tab stop every 8 columns.

213 SETUP MENU 2 (CONTINUED)

Margin Bell

0 = Off
1 = On

If this parameter is On, you will hear an audible bell tone when the cursor enters the 73rd character position of the line.

Answerback

0 = Edit
1 = Conceal

This parameter provides the terminal the capability of identifying itself by sending a message to the host computer. The Answerback feature is a question and answer sequence where the terminal responds to an ENQ command from the host. The sequence takes place without operator intervention and without writing to the screen. This may or may not be required by your system. 0 edits this parameter and allows it to be visible. 1 allows editing, but conceals the information.

Print Extent

0 = Scroll Region
1 = Entire Screen

This selection allows printing of the entire screen or just the scroll region as defined by the host.

213 SETUP MENU 2 (CONTINUED)

Print Terminating Formfeed

0 = Off
1 = On

This parameter, when On, will send a Form Feed character to the printer after a local print has been performed, causing the printer to do a Top of Form. This will cause the paper to be positioned at the first line of the next form.

PCS (PROTOCOL CONVERTER SUPPORT) EDIT

The following procedures are used to:

* Select a protocol converter map.

* Edit a protocol converter map.

To Select a Protocol Converter Map

1. Press and hold down the **Alt** key while pressing the Setup key. The ICT213 SETUP MENU 1 will appear.

2. Position the highlighted bar over **PCS** (using the ARROW keys).

   This will allow you to choose one of the preset protocol converter keyboard maps available. **Note**: If your particular protocol converter is not listed, proceed to "Edit a protocol converter map".

3. Choose your particular protocol converter by pressing the number corresponding to it's description in the list to the right of the menu. (i.e. Pressing 5 will select Tymnet)

4. Press the **PF1** key to save your selection. Once your selection is saved it will become active as the keyboard map.

   "DONE" indicates a successful **SAVE**.

5. Press and hold the **ALT** key followed by the **Setup** key to **EXIT** Setup mode.

EDIT A PROTOCOL CONVERTER MAP

To Edit a protocol converter map:

1. Press and hold down the **Alt** key while pressing the Setup key. The ICT213 SETUP MENU 1 will appear.

2. Position the highlighted bar over **PCS** (using the ARROW keys).

3. Press the **PF5** key. This will take you into the **DIY** Edit Menu.

4. Press the **PF3** key (copy a PCS table to DIY) if you wish to **EDIT** or customize an existing protocol converter map. This will bring the list of available protocol converters to the screen.

5. Enter the number corresponding to the protocol converter map you wish to copy into the **DIY** scratch table.

   Note: This is also a time saver if you are creating an entirely new protocol converter map. Select a protocol converter with mapping closely resembling the map you wish to create and copy it into the **DIY** scratch area. Then **EDIT** only the keys that are different.

   The **DIY** menu will reappear with the codes of the protocol converter you've just selected.

6. Position the highlighted bar to the right of the key you wish to modify. (Using the ARROW keys).

7. Press the **ENTER** key to edit this key sequence. At the bottom of the screen you will be prompted to "**End with <ENTER>**" . Type in desired sequences.

EDIT A PROTOCOL CONVERTER MAP (CONTINUED)

At this point:

* **ASCII Control Codes** may be entered by pressing and holding the Alt (Ctl) key while pressing the corresponding character (e.g. Alt/M = Carriage Return).

* **Escape** can be entered by pressing and holding the **ALT** key while pressing the cent key.

8. Press the **ENTER** key when you have finished typing the sequence for that particular key, . This will return the highlighted area, along with the code you just entered, to the key you had originally selected.

   Continue this process until all changes have been entered and your map is complete. A complete listing of codes is on page 91.

9. Press the **PF1** key to save your changes. "**Done**" indicates a successful save.

   Note: Pressing **PF2** (Recall) will recall the last values entered for all keys before the last save. **PF2** will also erase any changes not saved.

   Pressing **PF5** (Clear) will clear all the values entered for all keys on the menu.

Remember to save your changes by pressing PF1. Any changes made and not saved will be lost when the 213AE is powered off.

This is now the format of your DIY menu, and will be in effect whenever you select 0, or DIY.

The original protocol converter formats retain their original structures. You cannot *make changes except in the DIY menu.*

PRINTER INITIALIZATION SETUP

The Printer Initialization Menu is used to enter, store and send data to the printer for the purpose of initializing the printer. Four different initialization character strings may be conveniently stored, making initialization of the printer for different types of print jobs quick and easy.

The following procedures are used to:

* Enter, edit and store printer initialization character strings.

* Send a character string to the printer.

To Enter or Edit a Character String in the Printer Initialization Menu:

1. Press and hold down the **Alt** key while pressing the Setup key.

   The ICT 213 Setup Menu 1 will appear.

2. Press **PF6** to enter ICT213 Setup Menu 2.

3. Press **PF7** (Printer Setup).

   The Printer Initialization Menu will appear.

4. Position the higlighted bar over the character string to be edited. (Use arrow keys).

5. Press **Enter**.

   At the bottom of the screen you will be prompted to:

   "End with <Enter>".

6. Type in desired character string (consult your printer's manual for a description of its features and codes needed to initialize them).

7. Enter ASCII Control Codes (if desired) by entering their Hex Equivalents. Note: The Alt key must be held down when entering Hex codes (e.g. to generate an Escape, Hex 1B, press and hold down the **Alt** key while pressing the **1** key followed by the **B** key.

8. Press **Enter** (when you have finished typing the character string). This will enter the character string you just entered into the menu field you selected.

Continue this procedure until all changes have been entered and your printer initialization is complete.

9. Press the **PF1** key to save your changes. "Done" indicates a successful save.

PRINTER INITIALIZATION SETUP (CONTINUED)

To Send an Initialization String to the Printer

1. Press and hold down the **Alt** key followed by the Setup key.

   The ICT 213 Setup Menu 1 will appear.

2. Press **PF6** to enter ICT 213 Setup Menu 2.

3. Press **PF7** (Printer Setup) and the Printer Initialization Menu will appear.

4. Position the higlighted bar over the character string to be sent to the printer. (Use arrow keys).

5. Press **PF6** (Send to Printer) and the character string you have selected will be sent to the printer.

6. Press **Alt** to exit the Printer Initialization Menu and enter back into the ICT 213 Setup Menu 2.

   Pressing **PF6** will bring you into the ICT 213 Setup Menu 1. From Setup Menu 1, pressing Alt/Setup will exit Setup mode.

INSTALLATION - MODEM COMMANDS

Place these commands before the host (modem) telephone number you want to call.

B Blind Dial

Initiates dialing without a dial tone. Place at the very beginning of the phone number sequence.

Example: **BDT**714-891-1112

P Pulse Dial

If you're 213AE is connected to a rotary telephone system, the P will precede the other commands to initiate pulse dialing from your modem. See the Sample Dial Sequence.

T Tone Dial Standards.

If your terminal is connected to a touch tone telephone system, and you are using Tone dialing only, it is not necessary to enter the T command. A tone dial is automatically assumed.

Sample Dial Sequence

Example: **P**9,**T**714-891-1112

P is used to Pulse dial a 9, which accesses an outside line through the PBX at your terminal's site. T is used to initiate a Touch Tone dial to access the host. Important: The 9 represents the code used to access an outside line through the PBX. This number differs depending on the PBX standards you're using. If your call has to go through a PBX, find out what number accesses an outside line.

The comma in this example indicates a two second pause before the tone dial is initiated. See Modem Commands - Pauses and Waits.

S Swedish Pulse Dial Standards.

Used when dialing from Sweden. (Not available in UK version.)

Example: **S**9,T714-891-1112

N Norwegian Pulse Dial Standards.

Used when dialing from Norway. (Not available in UK version.)

Example: **N**9,T714-891-1112

MODEM COMMANDS - ANSWER MODES

Place the answer mode command before the host (modem) telephone number you want to call.

If the host you are dialing has a dial back security system, be sure to read the section on Modem Commands - Dial Back Security Systems. The Dial Back codes override all other answer mode commands.

R Reverse Mode. Used to call an "Originate Only" modem at the host site. The R command forces the internal modem to go into Answer mode when the command sequence has finished processing the call.

This command can be placed anywhere in the dial sequence.

If the host you're calling has a dial back security system, do not use the R command. See Modem Commands - Dial Back Security Systems.

Example: **R**9,714-891-1112

MODEM COMMANDS - TIMING

The best way to determine where the timing commands should be placed and the length of time the pause should last, is to dial the modem (at the host site) from your telephone. As the call is processed, note where in the dialing sequence the pauses occur and how long they last.

We recommend that you write this information down so you'll have the correct timing sequence when you enter the telephone number during setup.

W* Initiates a pause of up to 16 seconds. The * indicates the number of seconds the pause will last

To initiate a 1 to 9 second pause, enter W followed by the number representing how many seconds you want the pause to last

W7 represents a 7 second pause.

To initiate pauses lasting from 10 to 15 seconds, enter W followed by a letter A through F.

WB represents an 11 second pause.

W0 (zero) represents a 16 second pause.

Example: P9**W3**T714-891-1112

In the example above, W3 initiates a 3 second pause before initiating a tone dial.

The W command CANNOT be used in the U K

, 2 second pause. Used to allow time for a function to take place before continuing with the next step. i.e. placing the comma after the code used to access an outside line through a PBX. The number of commas you enter depends on how many seconds you want to pause before initiating the next command. The dial sequence in the example below will access an outside line and wait four seconds before initiating a tone dial.

Example: P9,,T714-891-1112

: Wait for a dial tone.

This command causes your modem to wait for a dial tone before proceeding with a second telephone number. (Some systems require the first telephone number to access a central location and dial a second telephone number from there.) If the second number is busy, or the wait lasts more than 24 seconds, the dialing terminates.

Example: P9,T714-891-9164:714-891-1112

MODEM COMMANDS - DIAL BACK SECURITY SYSTEMS

The following commands are used if the host you're calling has a dial back security system installed. (The security system is used to block unauthorized calls.) It is important to know the answer mode the security system modem is set to. Your modem must be set to the opposite mode. This means if the security system at the host site is set for Originate, you must enter a dial sequence that causes your modem to answer (the security system's dial back call), in Answer mode.

LA Initiate Dial Back Procedure and answer in Answer Mode.

The **L** command initiates the dial back procedure used when the host you're calling has a dial back security system installed.

The **L** must be followed by a code representing the mode in which your modem will answer the security system's dial back call.

The **A** command sets your modem to answer the dial back call in Answer mode.

Example: P9,T714-891-1112**LA**(access code)

LO Initiate Dial Back Procedure and answer in Originate Mode

The **L** command initiates the dial back procedure used when the host you're calling has a dial back security system installed.

The **L** must be followed by a code representing the mode in which your modem will answer the security system's dial back call.

The **O** command sets your modem to answer the dial back call in Originate mode.

Example: P9,T714-891-1112**LO**(access code)

The access code entered after the LA or LO command enables your call to be cleared and processed, and depends entirely on the host security system requirements. If you don't know or understand these requirements, ask someone at the host site who is familiar with the network.

/	The / is used as a delimiter between the first and second ID in a security dial back sequence. **The / command is valid only when used with an LA or LO command.**

Example 1: P9,T714-891-1112LOFirst ID/Second ID

Example 2: P9,T714-891-1112LO123456/12345

The information entered after the delimiter is sent after the host calls back. The information before the delimiter is sent to the host when the 213AE's modem calls it.

SAMPLE DIAL BACK PROCEDURE

The internal modem initiates the call to the host modem. The security system intercepts the call and waits for the 213AE to send a security (access) code.

The internal modem sends the code, waits four seconds, automatically hangs up and waits for the security system to verify the security code and dial back.

The internal modem answers the dial back call. (Remember, the 213AE must be set to answer in the mode opposite that used by the host's modem and sends the second access code, if any).

Once the internal modem answers the dial back call and sends the second access code, if any, the security system starts processing the call to the host. Call Progress Messages will appear on the 213AE's screen to indicate the calls progress.

When the internal modem is waiting for an answer tone, handshaking to end, or a security system to call back, time elapsed is indicated as a period symbol. A period will appear every second until approximately 4 minutes have elapsed. If connection wasn't accomplished within that amount of time, the call will abort. You may try again later.

MODEM COMMANDS - MISCELLANEOUS

; Personal Comment.

Placing a semicolon as the last modem command allows you to enter "personal" comments. The comments will not affect the modem commands entered before the semicolon. The comments will be displayed following the phone number during the dialing sequence.

Example: P9,T714-891-1112;ICT

MODEM COMMANDS - CHANGE MODEM DEFAULTS

The following commands are used to change modem defaults. Enter these commands after the last phone number in your dial sequence.

C To change a modem command, enter a C at the very end of the dial sequence. C must be followed by a subcommand that indicates the default change.

Example: P9,T714-891-1112**C***(*Subcommands)

An n = 1-9: Answer on the nth ring

n = 0: Answer on the tenth ring

Auto Answer must be enabled before the 213AE can answer the phone.

MODEM RESPONSES

CALL PROGRESS MESSAGES

Modem responses to commands, modem status, and call progress messages are displayed. The table below lists the modem responses and their meanings.

Response	Meaning
Answering	Auto answering an incoming call.
No Modem	Indicates no modem is installed or a malfunction in the modem or cable.
Busy	Called number is busy.
No Answer	The remote modem did not respond.
Connected	A connection has been made with the remote modem.
Disconnected	The modem is disconnected from the phone line.
Dialing	The modem is dialing.
Waiting for host to call back	Indicates the modem is in call-back security mode and the terminal is waiting for the host to call back.
No Reply	Indicates the modem is in call-back security mode and host has not made the necessary call-back within the 4-minute interval allowed.
No Dial Tone	No dial tone detected.

MODEM RESPONSES (CONTINUED)

Originating	The modem is originating a call. This is the normal response to an "O" command.
Sending ID	The modem is sending the ID digits in the call-back security sequence.
Sending 2nd ID	The second set of ID digits in the call-back sequence have been sent.
Leased Line Mode	Designates a leased line.
Already Connected	The modem is already off hook and connected to the line.
Error	An input error has occurred.
Waiting for Answer Tone	The modem is waiting for an answer tone.
Waiting for Hand-Shake to End	The modem is waiting for handshake to end.
Handshake Failed	The handshake failed to take place.

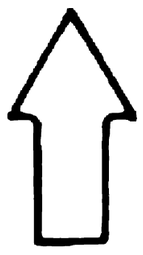
STATUS LINE

The 25th line of the screen is the status line. *The status line displays characters and symbols (indicators) to keep you informed of the current status of the terminal. The status line display can be turned on or off in Set Up Menu 1, although we recommend you leave it on - the information displayed can be helpful when operating the terminal.*

STATUS LINE INDICATORS

Modem	Indicates that the 213AE is configured to use the **Internal Modem** for data communications. The external modem port is not active in this mode.
RS232	Indicates that the 213AE is configured to use the **External Modem Port** for data communications through an external modem. The internal modem is not active in this mode and pressing **Alt/Dial** will give no response.
Local	Indicates that the 213AE is in **Online mode**, allowing for communications with the host computer. Data entered at the keyboard is sent to the host, data received from the host is displayed on the screen.

STATUS LINE INDICATORS (Continued)

ANSI	Indicates that the 213AE is configured for communications as a DEC VT100 compatible with **ANSI** X3.64 programming standards as used when communicating with an IBM host through a protocol converter.
VT52	Indicates that the 213AE is configured for communications using **VT52** text mode, as used when communicating with a DEC host application designed specifically for DEC's VT52 terminal.
Connected	Indicates that a **connection** has been established with a remote modem.
	Indicates that the 213AE is currently in **CAPS LOCK** mode. Alpha keys will display capital letters and symbol keys will display their upper case characters. Numeric keys will display numbers. Numeric keys pressed with the shift key will display their upper case characters.
01/01	**Row/Column** indicator. Indicates the cursor's current position on the screen by giving it's row/column coordinates.

INSTALLATION - HOW TO ENTER CONFIGURATION VALUES

There are three methods used to enter configuration values. These methods are described below.

To display the Setup Menu, hold down the **ALT** *key and press the* **SETUP** *key.*

1. **Select an Option**

   When the highlight bar is on a parameter that requires a option to be selected, the options display on the right side of the screen.

   Press the numeric key representing the option you want to enter.

2. **Type in a Value**

   Some parameters do not offer options to choose from (i.e. Host Name or Phone Number).

   When you are required to type a value, the following prompt will appears on the right side of the screen.

   <ENTER> To Edit

   Press the ENTER key.

The following message will appear at the bottom of the screen.

End with <Enter>:

Type the value you want to enter.

Press the ENTER key. The value just typed will display to the right of the parameter.

3. **Accept the Default Value**

If the default value displayed represents the value you want to enter, just move the highlight bar to the next parameter.

To save the configuration values, press the **PF1** *key.*

To configure the Setup Menu you must have the AC power cord plugged in and the power turned ON. When the power is turned ON, the cursor will appear in the upper left hand corner.

CONFIGURATION PROCEDURE

Changing Configuration Values

[ ] Hold down the **ALT** key and press the **SETUP** key to display the **Setup Menu**.

[ ] **Select** the **host** you want **to change**. The **PF4** key **moves from** one **host** screen **to** the next **host** screen.

[ ] Use the arrow key to move the **highlight** bar to the **item** you want **to change**.

If you want **to display** the **default values** press the **PF3** key. Default values for all parameters will display.

Redisplay **previous values** by pressing the **PF2** key.

[ ] **Make** your **changes** by:

1. selecting another option, or

2. pressing the ENTER key and typing the new information in the "End with <Enter>:" field.

[ ] **Press** the **PF1** key to **Save** the changes.

Operation - Deleting a Host Setup

[ ] Hold down the **ALT** key and press the **SETUP** key to display the **Setup Menu.**

[ ] **Select the host** you want to **delete. The PF4 key moves from one host screen to** the next host screen.

[ ] **Press the PF3** key to display **the default values.**

[ ] **Press the PF1** key to **Save the default values.**

Replacing hosts values with default values deletes the host setup. The "clean" screen may be used to enter a new host and values.

OPERATION - DIALING THE HOST

The following instructions tell you how to dial the host from the built in modem. Make sure the value for Host Port on the Setup Menu is set for Modem.

[ ] Hold down the **ALT** key and press the **SETUP** key to display the **Setup Menu**.

[ ] **Select** the **host** you want **to dial**.

Press the **PF4** key **to move** through the **screens**.

[ ] Hold down the **ALT** key and press the SETUP key to **exit** the **Setup Menu**.

[ ] Hold down the **ALT** key and press the DIAL key to initiate the **automatic dial** procedure.

Call Progress Messages similar to the following will display **on the screen**.

Dialing
DT9,P999-9999

Waiting for answer tone
Waiting for handshake to end
Connected at 9600

TO QUIT A SESSION AND DISCONNECT FROM THE HOST

[ ] Logoff the session. (Your system operator should have provided instructions for this).

[ ] Hold down the ALT key and press the DISCON key to disconnect from the host.

[ ] Turn the 213AE Workstation OFF.

OPERATION - TO PRINT

While you're in an application, you may use the local printer (connected to the 213AE workstation), to print a screen at a time. By enabling Auto Print you can also have the printer automatically print each line of data received from the host as it is displayed on the screen.

The host may also use this printer to print data. To do this, the system programmer or network administrator at the host site must program the host to perform this function, and the protocol converter used must support host printing.

[ ] **To Print Screen - Press and hold the Alt key followed by the PF5 key.**

The screen you are presently viewing will print out.

Repeat this each time you want to print a screen.

[ ] **To enable Auto Print - Press and hold the ALT key followed by the PF6 key.**

Each line displayed on the screen will print out.

To disable Auto Print press Alt PF6 (this toggles Auto Print Off).

FCC REGISTRATION NUMBER and RINGER EQUIVALENCE

Notify your local telephone company with the following information. All modem models have the same FCC Registration Number and Ringer Equivalence.

FCC Registration Number: GAV4FG-10384-DT-E.

Ringer Equivalence: 0.2A

The Keyboard

The standard keyboard for the 213 Workstation is the English (US) version illustrated in Figure 1.4. If you ordered one of the other keyboard options you can still use the following descriptions. There may be minor differences between country and language specific alpha and punctuation mark keys, but the purpose of the function keys remain the same. Keyboard operation and definitions of each key are on the following pages. Each group of keys is illustrated so you can see their location in relation to the other keys.

Any keys that appear in the PCS DIY menu must be mapped to match the protocol converter you are using in order for them to work as described in this section.

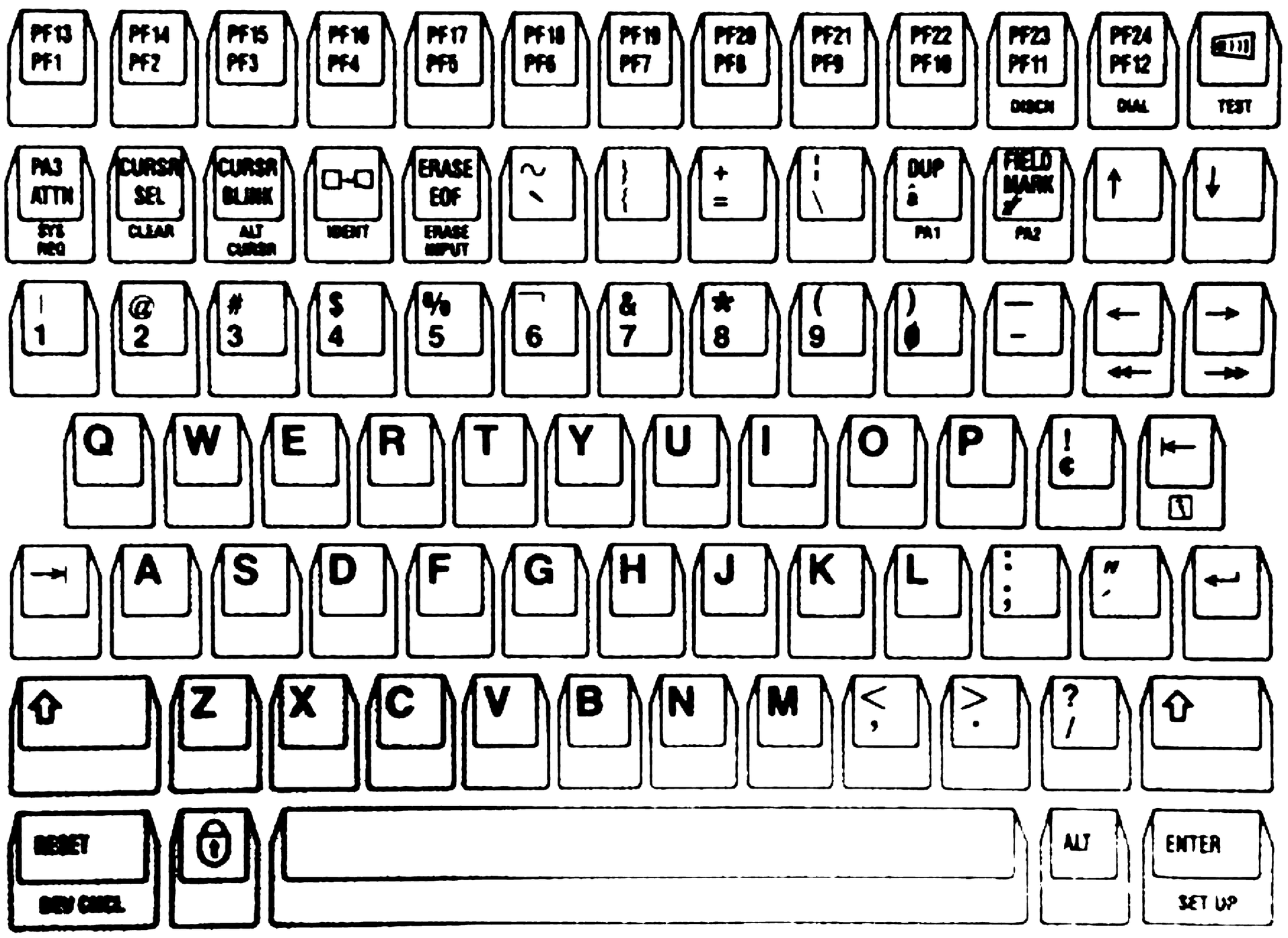


Figure 6 English (US) Keyboard

The Keyboard (Continued)

The keyboard is used to enter and display characters on the screen, change or delete characters, start and end functions, and move the cursor.

The application program you use determines the fields in which you may enter, change or delete characters.

If the cursor is displayed in a position without a character, you may enter a character in that position. Entering a character causes the cursor to advance to the next character location.

If the cursor is displayed under a character on the screen, that character may be changed or deleted.

Most of the keys are used to create more than one character or perform more than one function. Using the key by itself or in combination with the ALT or SHIFT key, determines the character you type or the function you access.

Keycaps are grouped into five categories.

- Keyboard Control Keys
- Data Control Keys
- Screen Control Keys
- Host Function Keys
- Device Control Keys

The following pages describe what each key or combination of keys do. Each key and category of keys is illustrated.

The Keyboard (Continued)

Keyboard Control Keys

The **Keyboard Control Keys** *are* **used in combination with** *other keys determine which character is typed, which case it is typed in, and what is initiated.*

The Keyboard Control Keys are,

- **ALT**
- **Shift**
- **Lock**

These keys are explained on the next page

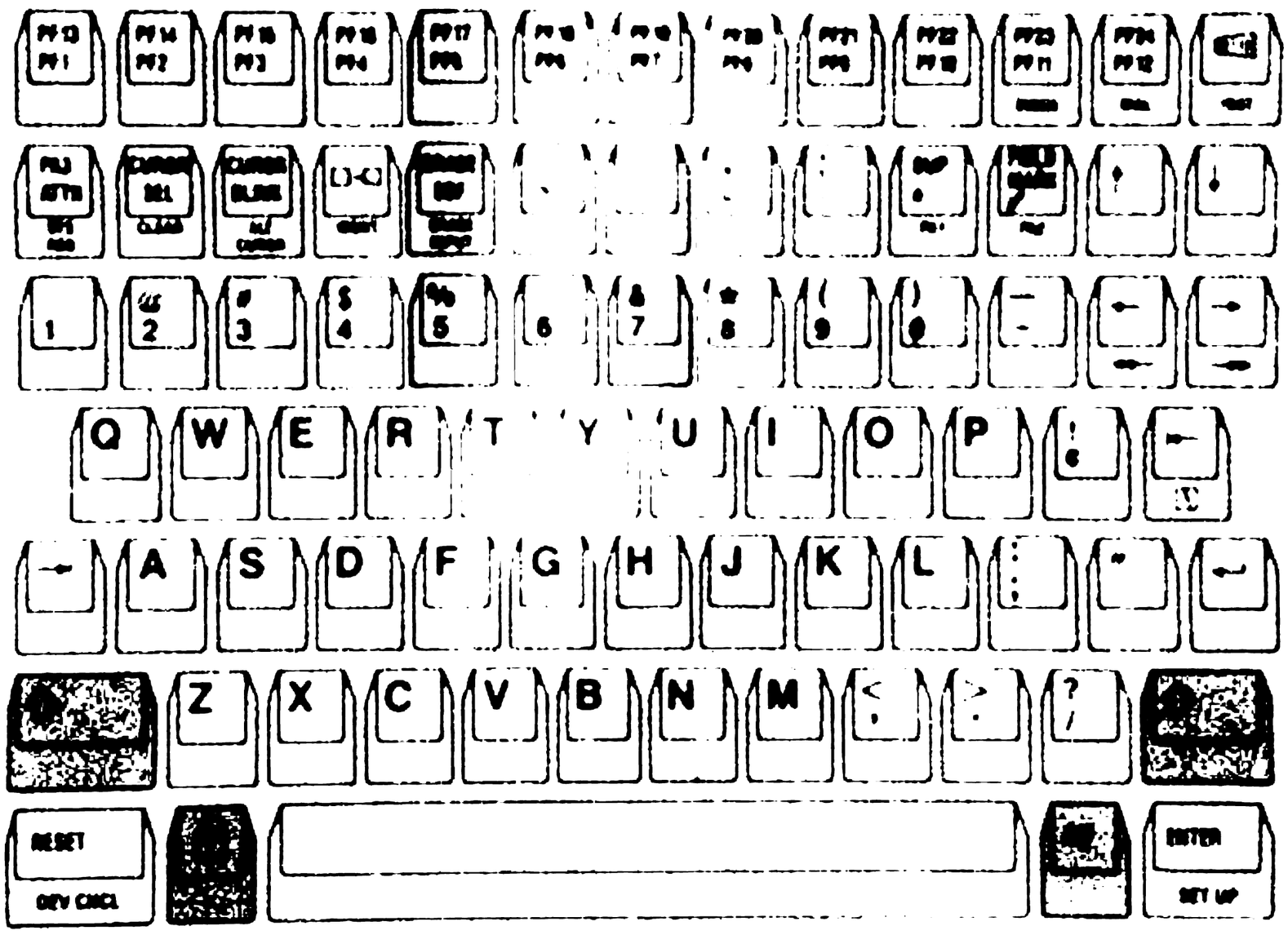


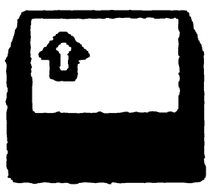
Figure 7 Keyboard Control Keys

The Keyboard (Continued)

The **ALT** key is used with function keys that show the function symbol on the front of the keycap. The ALT key must be held down first and continue to be held down while you press the function key.

The ALT key must be pressed to execute the following functions:

Disc	Ident	Home
Dial	Alt Cursor	Dev Cncl
Test	Erase Input	Setup
Sys Req	PA1	
Clear	PA2	



There are two **Shift** keys. Each side of the keyboard has a Shift key. This makes it convenient to use while typing. The Shift key is used in combination with other keys. Pressing a Shift key and an Alpha key types a capital letter. Pressing a Shift key and a dual character key types the character in the upper half of the key face. Pressing a Shift key and a dual function key initiates the function labeled on the upper half of the key face.

Pressing the **Lock** key locks the keyboard in the shifted (uppercase) mode. Pressing the Lock key accomplishes the following:

- types alpha characters as capital letters,
- types the character shown on the upper half of the keycap face,
- initiates the function displayed in the upper half of the keycap face.

To unlock the keyboard and return to lowercase mode, press the right or left Shift key.

The Keyboard (Continued)

Data Control Keys

The **Data Control Keys** *are used to* **type, position and punctuate data** *entered on the screen. These keys are the,*

- **Alpha and Numeric Keys**
- **Spacebar**
- **Punctuation and Symbol Keys.**

The following pages show where these keys are located on the keyboard and explain each keys purpose and how it is used.

The Keyboard (Continued)

Alpha Numeric Keys

The **Alphabet Keys** are used to enter letters of the alphabet.

The **Numeric Keys** are used to enter numbers.

The characters on the face of the Alphabet keys are displayed as capital letters. Pressing an alphabet key will type a lowercase (small) letter. Pressing an alphabet key and the SHIFT key will type an uppercase (capital) letter.

The Numeric keys display both numbers and punctuation characters. The numeric digit is displayed on the lower half of the key. Pressing a numeric key without pressing the SHIFT key types the digit on the lower half of the key face.

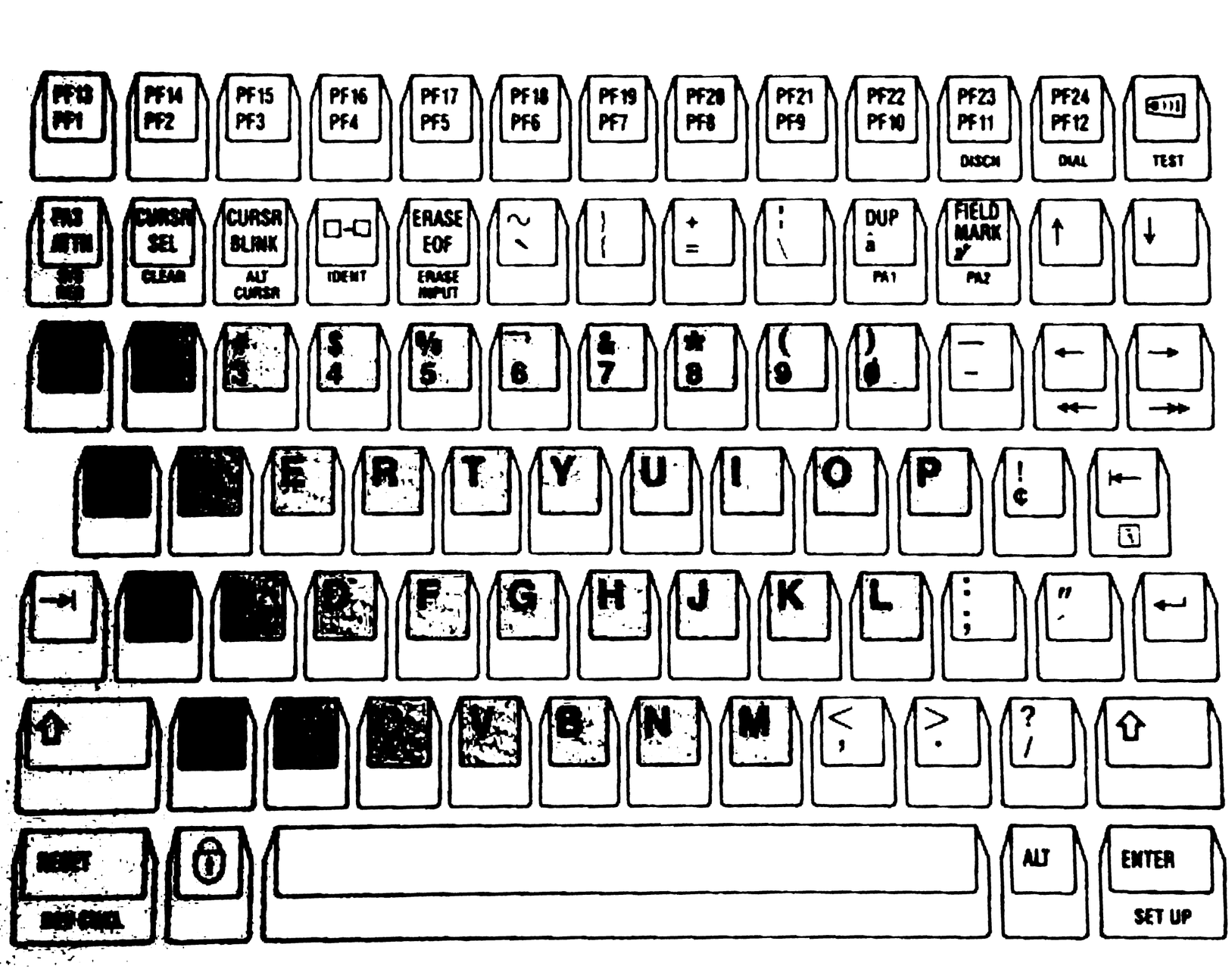


Figure 8 Alpha Numeric Keys

Spacebar The **Spacebar** is the **only unmarked key** on the keyboard.

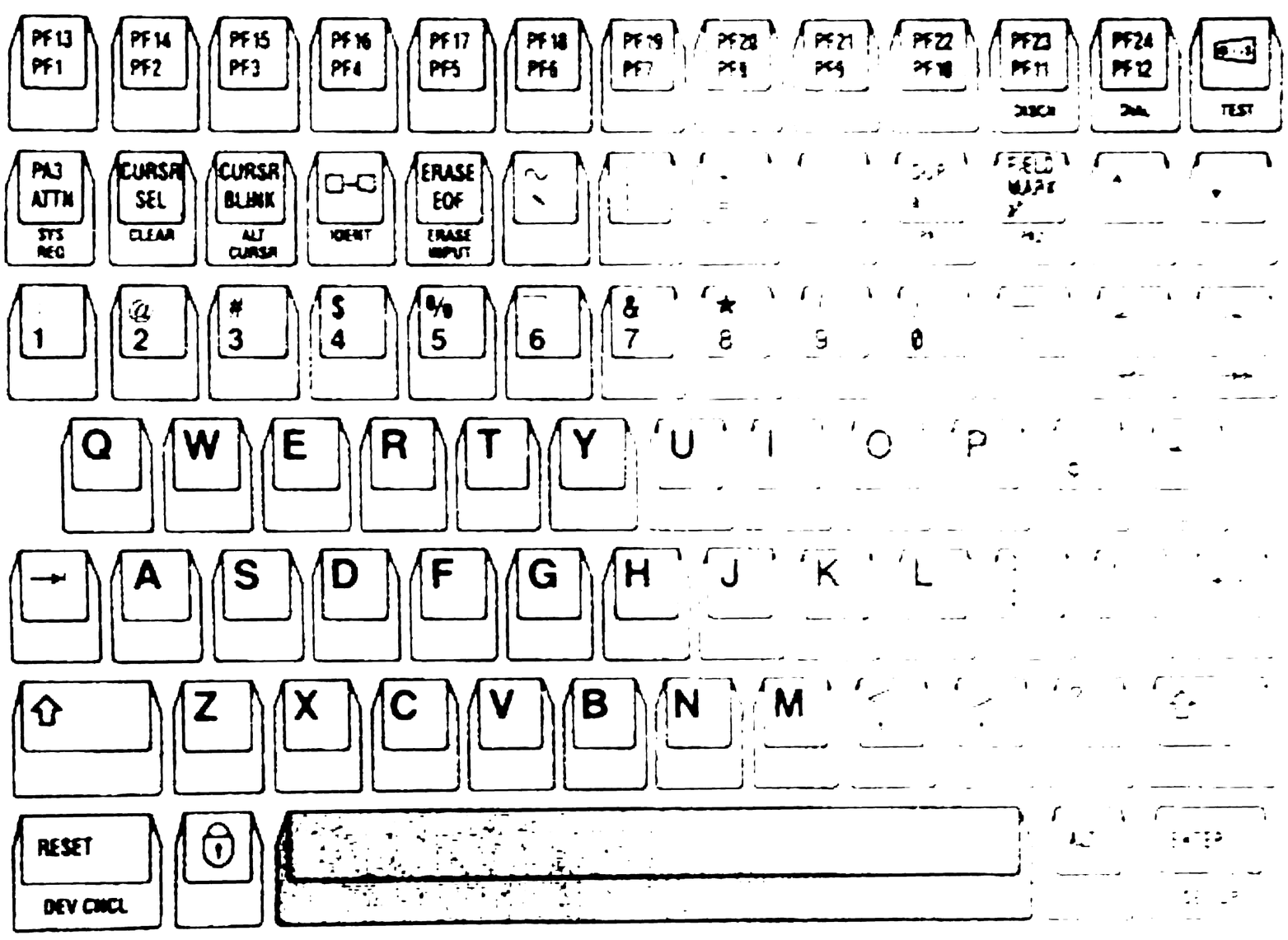


Figure 9 Spacebar

The Keyboard (Continued)

Symbol and Punctuation Mark Keys

The **Symbol** and **Punctuation Mark keys** are dual character keys.

To display symbols and punctuation marks located on the upper half of the keycap face, hold down the Shift key while you press the key with the symbol or punctuation mark you want to type.

To display the symbol or punctuation mark on the lower half of the key, press the symbol or punctuation key only.

The location of each symbol or punctuation mark is shown in the illustration below. The description for each key is on the following page.

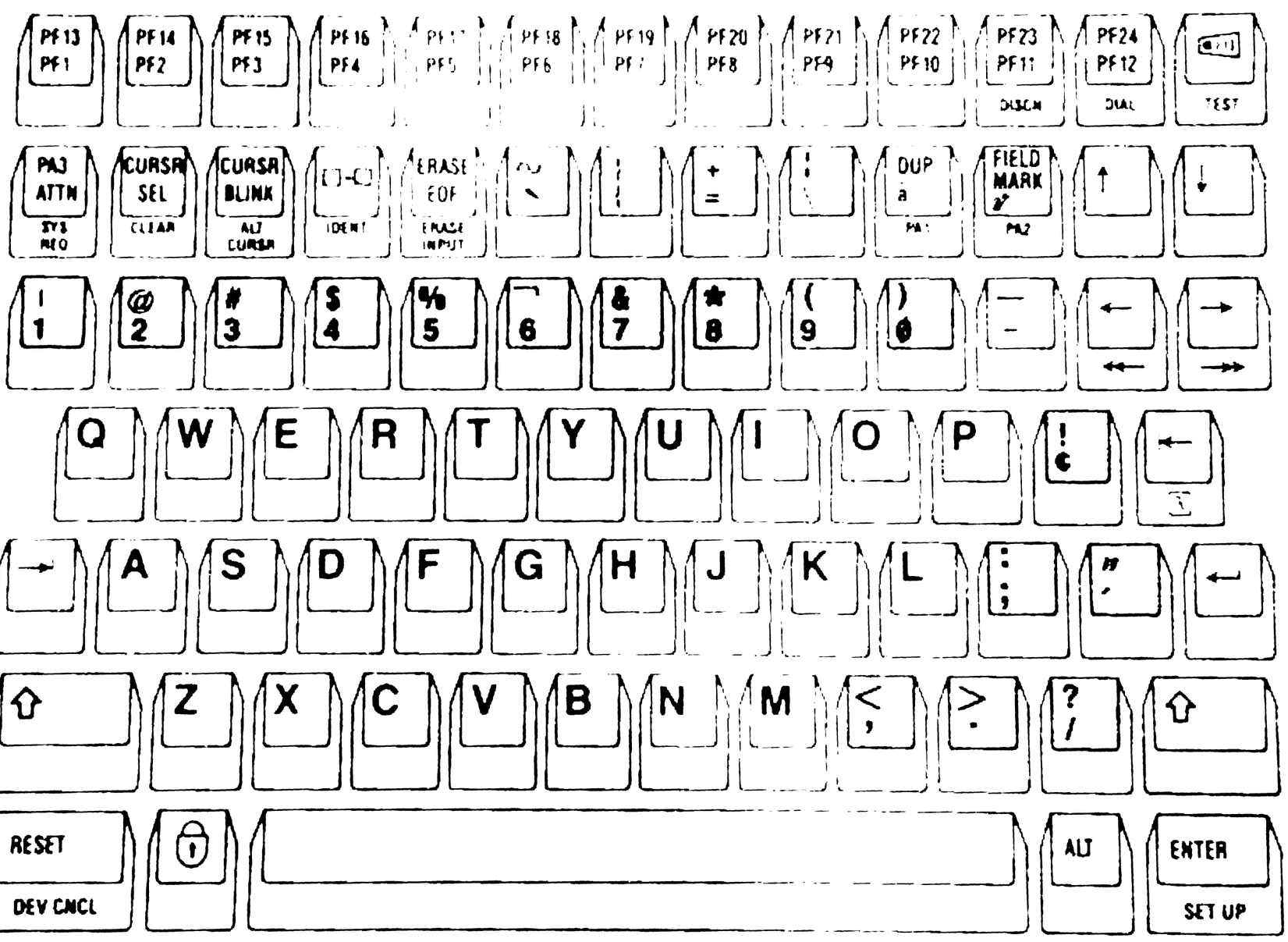


Figure 10 Symbol and Punctuation Keys

The Keyboard (Continued)

Upper Symbol *(The Shift key is required to type these symbols.)*

~	Tilde	*	Asterisk
}	Right Brace	(	Left Parenthesis
+	Plus Sign	)	Right Parenthesis
¦	Broken Vertical Bar	_	Underscore
|	Logical OR Vertical Bar	!	Exclamation Point
@	At Sign	:	Colon
#	Number Sign	"	Quotation Mark
$	Dollar Sign	<	Less Than
%	Percent Sign	>	Greater Than
¬	Logical NOT Sign	?	Question Mark
&	Ampersand		

Lower Symbol *(Shift key is not required to type these symbols.)*

`	Grave Accent	¢	Cent Sign
{	Left Brace	;	Semicolon
=	Equals Sign	'	Apostrophe
\	Back Slash	,	Comma
-	Minus Sign	.	Period
		/	Slash

Screen Control Keys

The **Screen Control Keys have an arrow symbol** *on the face or front of the keycap. These keys are used to move the cursor one or more spaces, create a new line, and enable a function. The SHIFT key is an arrow key, but has to do with keyboard control rather than cursor movement. (See the section on* **Keyboard Control Keys** *for more information on the Shift key.)*

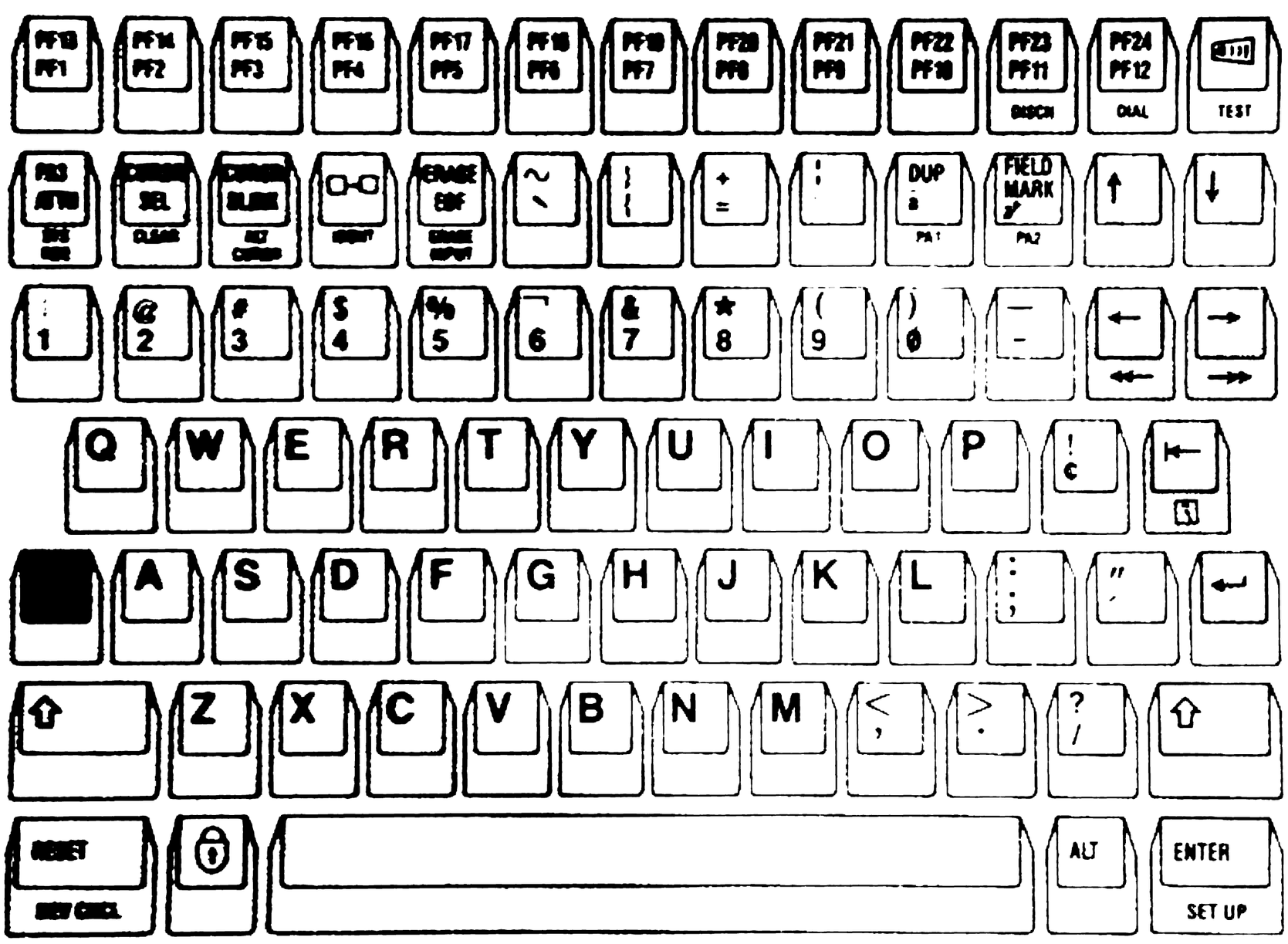
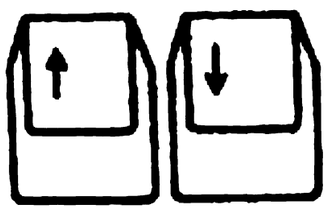
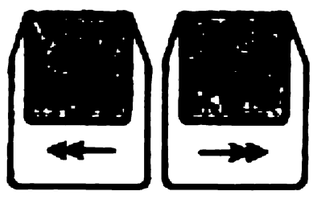


Figure 11 Screen Control Keys

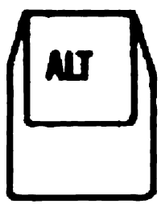
The Keyboard (Continued)

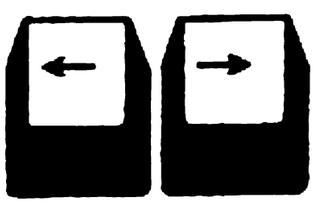


Pressing the **Vertical** (Up and Down) **Arrow** keys, moves the cursor in the direction the arrow is pointing. You can quickly move the cursor any number of lines by holding the key down. When the cursor is located at the position you want, release the key and the cursor stops moving. These keys do not move any of the characters on the screen. They position the cursor only.



Pressing the **Horizontal** (Left and Right) **Arrow** keys, moves the cursor one character position in the direction the arrow is pointing. If you hold the left arrow key down, the cursor will continue to move left. When the cursor reaches the end of the line, it wraps around and reappears on the last character position in the line directly above. The right arrow key will continue to move to the right until the cursor reaches the end of the line. The cursor wraps around and reappears on the first character position in the line directly below. This action will continue until you release the arrow key.

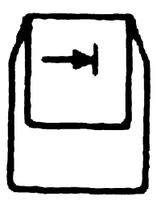




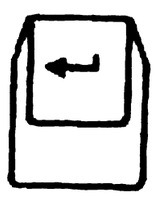
Holding down the ALT key and pressing the **Double-Speed Horizontal Arrow** key moves the cursor two spaces at a time in the direction of the arrow. Holding both keys down continues to move the cursor until you release the arrow key. The Double-Speed Horizontal Arrow keys move the cursor twice as fast as the normal horizontal keys. The cursor will wrap around in the same manner as when using the normal horizontal keys.

The Keyboard (Continued)

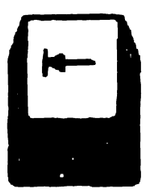
Pressing the **Backspace** key moves the cursor one position to the left, just as the left arrow key does. This duplication of function is for operator convenience. Holding the Backspace key down continues the backspacing action until the key is released.



Using the **Tab** key is a quick way to move the cursor forward to the next field. Pressing the Tab key moves the cursor to the first character location in the next field. If you're working with an unformatted screen with no input fields, the cursor will return to the first location in line 1.



Pressing the **New Line** key moves the cursor to the first character location on the next line.



Holding down the **ALT** key and pressing the **Home** key moves the cursor to the first input character located on your screen. If your screen is unformatted and has no fields, the cursor moves to the first location on line 1.

Host Function Keys

The **Host Function Keys** *are used to* **initiate a function** *from the host. The keys are categorized as* **PA (Program Access) keys** *and* **PF (Program Function) keys**. *The following pages show their location on the keyboard and explain more about their use.*

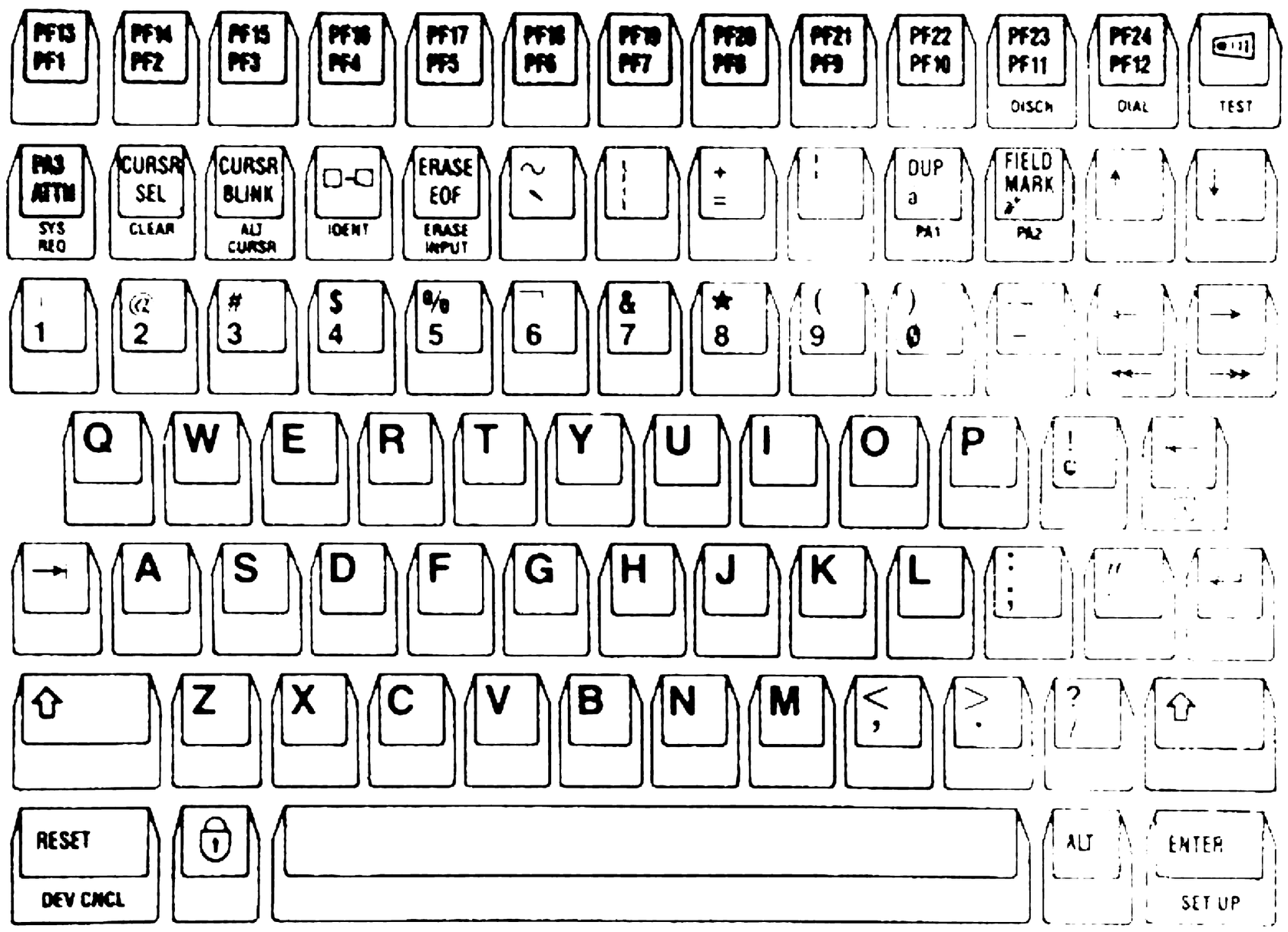


Figure 12 Host Function Keys

The Keyboard (Continued)

PA Keys

The **PA (Program Access) keys** are,

- **PA1**
- **PA2**
- **PA3**

These keys are used to signal the program or communicate with it. These keys provide an immediate signal to the host that a specific action is required to initiate the function designated by the PA key pressed.

The functions performed by these keys depend on the program running in the host system at the time you access it.

When a program is written, the programmer determines the function of each PA key. For example, one application program might use PA1 to overwrite a file. while another application program might use PA1 to access a Help menu.

If you don't know the function of each PA key, ask the appropriate person in your organization or refer to the program user's guide.

To initiate a PA function, hold down the Alt key while you press the PA key.

The Keyboard (Continued)

PF Keys

The **PF (Program Function) keys** are,

- **PF1 - PF12**
- **PF13 - PF24**

Like the PA keys, the PF keys are used to signal the program or communicate with it. These keys provide an immediate signal to the host that a specific action is required to initiate the function designated by the PF key pressed.

The functions performed by these keys are defined by the application program you're running in the host system at the time you access it.

When a program is written, the programmer determines the function of each PF key. For example, one application program might use PF1 to undo a command, while another application program might use PF1 to save a file.

If you don't know the function of each PF key, ask the appropriate person in your organization or refer to the program user's guide.

To use PF1 through PF12 keys, press the PF key only.

To use the PF13 through PF24 keys, hold the SHIFT key down while you press the PF key.

There are some functional differences between the PA and PF keys. For instance the functions initiated by the PF keys generally take longer to transmit to the host and to process.While the differences may be invisible to the program user, they do affect the programmer and programming decisions.

The Keyboard (Continued)

Device Control Keys

The **Device Control Keys** *are used to* **perform local functions**. *The illustration below shows their location on the keyboard. The following pages explain how they are used.*

The keycaps with symbols are explained first. The rest of the keycap definitions are presented in alphabetical order.

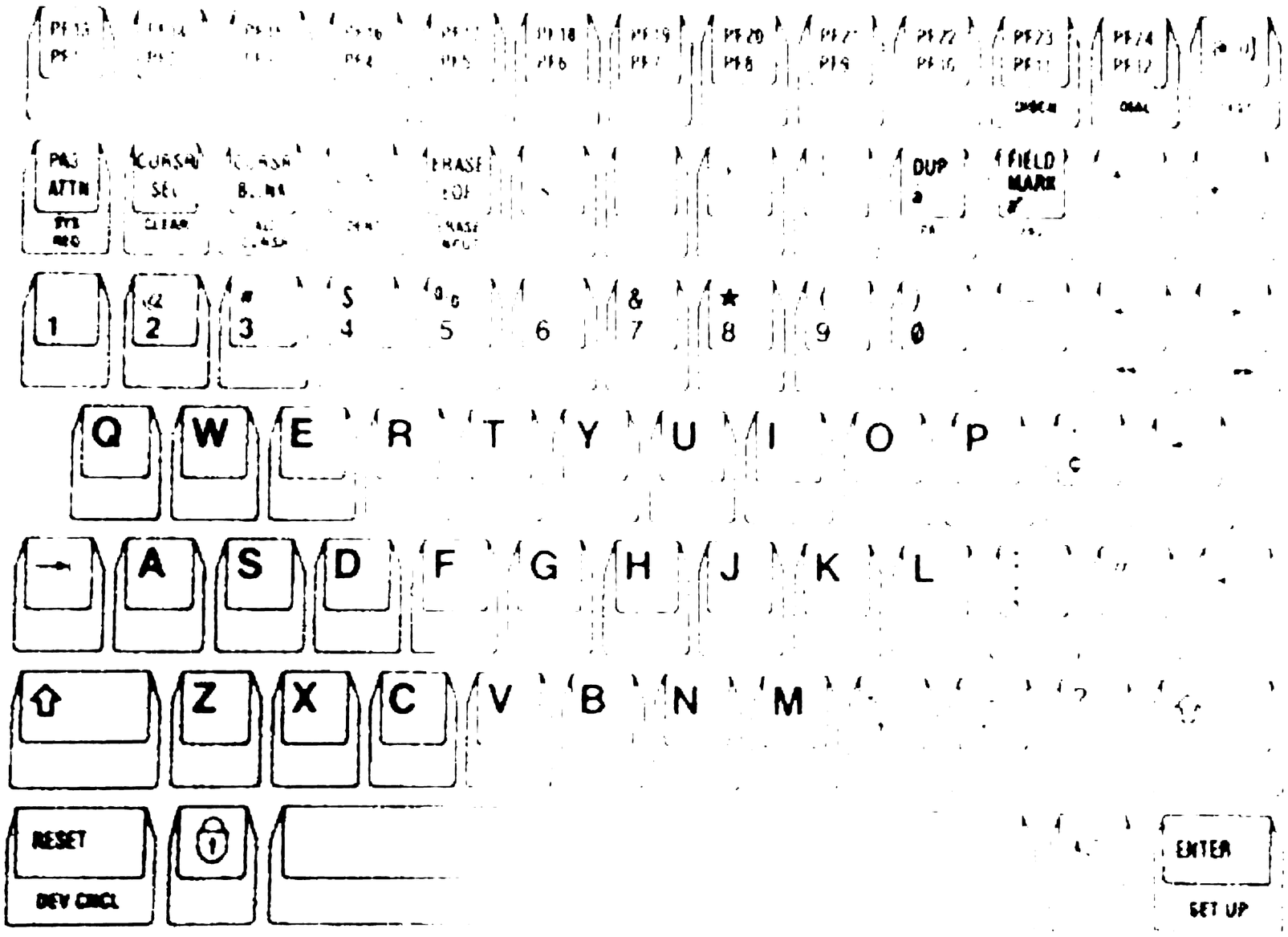
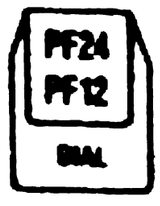


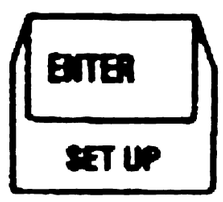
Figure 13 Device Control Keys

The Keyboard (Continued)



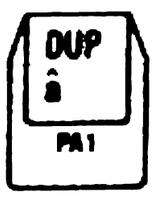
Holding down the **ALT** key and pressing the **DIAL** key dials the host. (See the instructions under *Dialing the Host.*)

Hold down the **ALT** key then press the **DISCN** (Disconnect) key to disconnect the workstation from the network and stops communication between your workstation and the host.



Holding down the **ALT** key and pressing the **SETUP** key displays the 213's Setup Menu. To exit the Setup Menu, hold down the Alt key and press the **SETUP** key.

Pressing the Delete key will erase the character or blank space the cursor is positioned under. Characters to the right will move one space to the left for each character or blank space deleted.



Pressing the Insert key allows you to insert characters into a group of other characters without overtyping the characters that are already displayed. When the keyboard is in the Insert mode, a ^ symbol displays in the status line.

213AE GENERAL KEYBOARD MAPPING

FUNCTION FEATURES	213AE IBM * STYLE
*SCREEN PRINT	ALT/PF5
*AUTO PRINT	ALT/PF6
TX ANSBACK	ALT/ATTN
BREAK	ATTN
LONG BREAK	SHIFT/ ATTN
NO SCRL	RESET
ESC	ALT/CENT SIGN
SET-UP	ALT/ ENTER
CLEAR SCREEN	SHIFT/ RESET

* Keystroke is likely to be different for IBM keyboards when in DEC communications mode. (See "IBM Keyboard Mapping for DEC Communication").

213AE GENERAL KEYBOARD MAPPING

The following keypad symbols display alternate symbols on the screen when using Informer IBM-style keyboards:

Keycap Symbol	Result	Hex Code
|	|	21
¬	^	5E
¦	]	5D
Cent Sign	[	5B
Alt/Cent sign	ESC	1B (E_C)
Alt/Q	Scroll Off	11 (D_1)
Alt/S	Scroll On	13 (D_3)
Alt	Control	
Alt/G	Bell	07(b_L)
Alt/PF20*	Break (Short)	
Alt/PF21*	Break (Long)	
Attn**	Break (Long)	
Shift/Attn*	Break (Short)	

*In PCS Mode only.

** In DEC mode

IBM KEYBOARD MAPPING FOR DEC COMMUNICATION

DEC KEYSTROKE	IBM PORTABLE
1	PF1
2	PF2
3	PF3
4	PF4
5	PF5
6	PF6
7	PF7
8	PF8
9	PF9
0	PF10
-	PF11
,	PF12
.	
ENTER	ENTER
BREAK	ATTN
ESC	ALT/CENT SIGN
[	CENT SIGN
]	SHIFT/CENT SIGN
^	SHIFT/6
!	SHIFT/1
NO SCRL	RESET
DELETE	SHIFT/|-
BACKSPC	|-
LINE FEED	ALT/RESET
TAB	-|
RETURN	-|
PRINT	ALT/PF5
AUTO PRINT	ALT/PF6
CLEAR SCREEN	SHIFT/RESET

Appendix

IBM KEYBOARD ENTRY OF SPECIAL CODES

KEYSTROKES	ASCII CHARACTER	INFORMER GRAPHIC	HEX VALUE
ALT.	NUL	N_U	00
ALT A	SOH	S_H	01
ALT B	STX	S_X	02
ALT C	ETX	E_X	03
ALT D	EOT	E_T	04
ALT E	ENQ	E_Q	05
ALT F	ACK	A_K	06
ALT G	BEL	B_L	07
ALT H	BS	B_S	08
ALT I	HT	H_T	09
ALT J	LF	L_F	0A
ALT K	VT	V_T	0B
ALT L	FF	F_F	0C
ALT M	CR	C_R	0D
ALT N	SQ	S_Q	0E
ALT O	SI	S_I	0F
ALT P	DLE	D_L	10
ALT Q	DC1	D_1	11
ALT R	DC2	D_2	12
ALT S	DC3	D_3	13
ALT T	DC4	D_4	14
ALT U	NAK	N_K	15
ALT V	SYN	S_Y	16
SLT W	ETB	E_B	17
ALT X	CAN	C_N	18
ALT Y	EM	E_M	19
ALT Z	SUB	?	1A
ALT/CENT SIGN	ESC	E_C	1B
ALT\	FS	F_S	1C
ALT {	GS	G_S	1D
ALT <	RS	R_S	1E
ALT /	US	U_S	1F
ALT '	DEL	D_T	7F

Informer IBM Symbol Character Set

		BIT POSITIONS 7.6.5.							
		000	001	010	011	100	101	110	111
BITS 4.3.2.1.	HEX	0	1	2	3	4	5	6	7
0000	0	NUL	DLE	SP	ø	@	P	P	
0001	1	SOH	DC1	!	1	A	Q	S	—
0010	2	STX	DC2	”	2	B	R	A	Z
0011	3	ETX	DC3	#	3	C	S	^	—
0100	4	EOT	DC4	$	4	D	T	B	
0101	5	ENQ	NAK	%	5	E	U	6	
0110	6	ACK	SYN	&	6	F	V	◄	X
0111	7	BEL	ETB	’	7	G	W		
1000	8	BS	CAN	(	8	H	X	→	←
1001	9	HT	EM	)	9	I	Y		
1010	A	LF	SUB	*	:	J	Z		
1011	B	VT	ESC	+	;	K	[		
1100	C	FF	FS	,	<	L	/	B	4
1101	D	CR	GS	-	=	M	]		A
1110	E	SO	RS	.	>	N	^	?	
1111	F	SI	US	/	?	O	_		

US/UK Character Set

		BIT POSITIONS 7.6.5.							
		000	001	010	011	100	101	110	111
BITS 4.3.2.1.	HEX	0	1	2	3	4	5	6	7
0000	0	NUL	DLE	SP	ø	@	P	‘	p
0001	1	SOH	DC1	!	1	A	Q	a	q
0010	2	STX	DC2	”	2	B	R	b	r
0011	3	ETX	DC3	#	3	C	S	c	s
0100	4	EOT	DC4	$	4	D	T	d	t
0101	5	ENQ	NAK	%	5	E	U	e	u
0110	6	ACK	SYN	&	6	F	V	f	v
0111	7	BEL	ETB	’	7	G	W	g	w
1000	8	BS	CAN	(	8	H	X	h	x
1001	9	HT	EM	)	9	I	Y	i	y
1010	A	LF	SUB	*	:	J	Z	j	z
1011	B	VT	ESC	+	;	K	[	k	{
1100	C	FF	FS	,	<	L	/	l	|
1101	D	CR	GS	-	=	M	]	m	}
1110	E	SO	RS	.	>	N	^	n	~
1111	F	SI	US	/	?	O	_	o	DEL

Special Characters and Line Drawing Set

		BIT POSITIONS 7.6.5.							
		000	001	010	011	100	101	110	111
BITS 4.3.2.1.	HEX	0	1	2	3	4	5	6	7
0000	0	NUL	DLE	SP	ø	@	P	◆	$\overline{\text{SCAN 3}}$
0001	1	SOH	DC1	!	1	A	Q	▮	$\overline{\text{SCAN 5}}$
0010	2	STX	DC2	”	2	B	R	H_T	$\overline{\text{SCAN 7}}$
0011	3	ETX	DC3	#	3	C	S	F_F	$\overline{\text{SCAN 9}}$
0100	4	EOT	DC4	$	4	D	T	C_R	⊢
0101	5	ENQ	NAK	%	5	E	U	L_F	⊣
0110	6	ACK	SYN	&	6	F	V	o	⊥
0111	7	BEL	ETB	’	7	G	W	±	⊤
1000	8	BS	CAN	(	8	H	X	N_L	∣
1001	9	HT	EM	)	9	I	Y	V_T	≤
1010	A	LF	SUB	*	:	J	Z	┘	≥
1011	B	VT	ESC	+	;	K	[	¬	π
1100	C	FF	FS	,	<	L	\	┌	≠
1101	D	CR	GS	−	=	M	]	└	£
1110	E	SO	RS	.	>	N	^	+	●
1111	F	SI	US	/	?	O	_	$\overline{\text{SCAN}}$	DEL

CONTROL CHARACTERS RECEIVED

Name	Character Mnemonic	Hex Code	Function
Null	NUL	00	This character is ignored when received (not stored in input buffer) and used as a fill character.
Enquire	ENQ	05	This character transmits the answerback message.
Bell	BEL	07	This character generates a bell tone.
Backspace	BS	08	This character moves the cursor to the left one character position, unless it is at the left margin, in which case no action occurs.
Horizontal	HT	09	This character moves the Tab cursor to the next tab stop, or to the right margin if there are no more tabs.
Line Feed	LF	0A	This character causes a line feed or a new line operation. (refer to Line feed/New Line mode).
Vertical Tab	VT	0B	This character is processed as LF.
Form Feed	FF	0C	This character is processed as LF. It can also be selected as a half-duplex turnaround character
Carriage Return	CR	0D	This character moves the cursor to the left margin on the current line. It can also be selected as a half-duplex turnaround character.

CONTROL CHARACTERS RECEIVED (Continued)

Name	Character Mnemonic	Hex Code	Function
Shift Out	SO	0E	This character selects the GI character set, as designed by a Select Character Set sequence.
Shift In	SI	0F	This character selects the GO character set, as designed by a Select Character Set Sequence.
Device Control 1	DC1	11	This character is processed as XON. It causes the terminal to continue transmitting characters.
Device Control 3	DC3	13	This character is processed as XOFF. It causes the terminal to stop transmitting all characters except XOFF and XON. It can also be selected as a half-duplex turnaround character.
Cancel	CAN	18	If received during an escape or control sequence, the sequence is cancelled and substitution character is displayed.
Substitute	SUB	1A	This character is processed as CAN.
Escape	ESC	1B	This character is processed as a sequence introducer.
Delete	DEL	7F	This character is ignored when received (not stored in input buffer), unless the ESC command which set IBM symbol was received

Set Mode

Name	Mnemonic	Mode	Sequence
Keyboard action	KAM	Locked	ESC[2h
Insertion-replacement	IRM	Insert	ESC[4h
Send-receive	SRM	Off	ESC[12h
Line feed/new line	LMN	New Line	ESC[20h
Cursor key	ICTCKM	Application	ESC[?1h
ANSI/VT52	ICTANM	ANSI	N/A
Column	ICTCOLM	132 column	ESC[?3h
Screen	ICTSCNM	Reverse	ESC[?5h
Origin	ICTOM	Relative	ESC[?6h
Auto Wrap	ICTAWM	On	ESC[?7h
Print form feed	ICTPFF	On	ESC[?18h
Print extent	ICTPEX	Full Screen	ESC[?19h

Reset Mode

Name	Mnemonic	Mode	Sequence
Keyboard action	KAM	Unlocked	ESC[21*
Insertion-replacement	IRM	Replace	ESC[41*
Send-receive	SRM	On	ESC[121*
Line feed/new line	LMN	Line feed	ESC[201*
Cursor key	ICTCKM	Cursor	ESC[?11*
ANSI/VT52	ICTANM	VT52	ESC[?21*
Column	ICTCOLM	80 column	ESC[?31*
Screen	ICTSCNM	Normal	ESC[?51*
Origin	ICTOM	Absolute	ESC[?61*
Auto Wrap	ICTAWM	Off	ESC[?71*
Print form feed	ICTPFF	Off	ESC[?181*
Print extent	ICTPEX	Scrolling Region	ESC[?191*

* The last character of the sequence is lowercase L (154).

Cursor Keycodes Generated

Cursor Key (Arrow)	ANSI Characters Generated	
	Reset (Cursor)	Set (Application)
Up	ESC[A	ESC O A
Down	ESC[B	ESC O B
Right	ESC[C	ESC O C
Left	ESC[D	ESC O D

Keypad Codes Generated

Key	VT52 Numeric Keypad Mode	VT52 Alternate Keypad Mode	ANSI Numeric Keypad Mode	ANSI Alternate Keypad Mode
		ESC ? p		ESC O p
1	1	ESC ? q	1	ESC O q
2	2	ESC ? r	2	ESC O r
3	3	ESC ? s	3	ESC O s
4	4	ESC ? t	4	ESC O t
5	5	ESC ? u	5	ESC O u
6	6	ESC ? v	6	ESC O v
7	7	ESC ? w	7	ESC O w
8	8	ESC ? x	8	ESC O x
9	9	ESC ? y	8	ESC O y
-(minus)	-(minus)	ESC ? m	-(minus)	ESC O m
,(comma)	,(comma)	ESC ? l	,(comma)	ESC O l
.(period)	.(period)	ESC ? n	.(peirod)	ESC O n
ENTER	Same as RETURN	ESC ? M	Same as RETURN	ESC O M
PF1	ESC P	ESC P	ESC O P	ESC O P
PF2	ESC Q	ESC Q	ESC O Q	ESC O Q
PF3	ESC R	ESC R	ESC O R	ESC O R
PF4	ESC S	ESC S	ESC O S	ESC O S

Select Character Sets SCS

Character Set	GO Designator	GI Designator
United Kingdom (UK)	ESC (A	ESC) A
United Kingdom (USASCII)	ESC (B	ESC) B
Special Characters and line drawing set	ESC (O	ESC) O

Character Attributes

Name	Mnemonic	Sequence
Select Graphic Rendition (no attributes)	SGR	ESC [m
Select Graphic Rendition (no attributes)	SGR	ESC [O m
Select Graphic Rendition (select attribute bold)	SGR	ESC [1 m
Select Graphic Rendition (select attribute underline)	SGR	ESC [4 m
Select Graphic Rendition (select attribute blink)	SGR	ESC [5 m
Select Graphic Rendition (select attribute,reverse video)	SGR	ESC [7 m

Scrolling Region

Name	Mnemonic	Sequence	Function
Set top and bottom margins	ICTSTBM	ESC[Pt;Pb r	Pt is the first number of the first line in the scrolling region. Pb is the line number of the bottom line. If either Pt or Pb is not selected, they default to top and bottom respectively Lines are counted from "1"

Cursor Movement Commands

Name	Mnemonic	Sequence	Function
Cursor up	CUU	ESC [Pn A	Moves cursor up Pn l in the same column.
Cursor down	CUD	ESC [Pn B	Moves cursor down Pn lines in the same column.
Cursor forward (right)	CUF	ESC [Pn C	Moves cursor right Pn columns.
Cursor backward (left)	CUB	ESC [Pn D	Moves cursor left Pn columns.
Cursor position	CUP	ESC [Pl;P c H	Moves cursor to line Pl, column Pc.
Cursor position (home)	CUP	ESC [H	
Horizontal and vertical position	HVP	ESC [P1; P c f	Moves cursor to line Pl, column Pc.
Horizontal and vertical position (home)	HVP	ESC [f	
Index	IND	ESC D	
Reverse Index	RI	ESC M	
Next line	NEL	ESC E	
Save cursor (& attributes)	ICTSC	ESC 7	
Restore cursor (& attributes)	ICTRC	ESC 8	

ANSI COMPATIBLE SEQUENCES

Tab Stops

Name	Mnemonic	Sequence
Horizontal tab set (at current column)	HTS	ESC H
Tabulation clear (at current column)	TBC	ESC [0 g
Tabulation clear (all tabs)	TBC	ESC [3 g

Line Attributes

Name	Mnemonic	Sequence
Double-height top half	ICTDHL	ESC # 3
Double-height bottom half	ICTDHL	ESC # 4
Single-width single-height	ICTSWL	ESC # 5
Double-width single-height	ICTDWL	ESC #6

Erasing

Name	Mnemonic	Sequence
Erase in line (cursor to end of line)	EL	ESC [K
Erase in line (cursor to end of line)	EL	ESC [O K
Erase in line (beginning of line to cursor)	EL	ESC [1 K
Erase in line (entire line containing cursor)	EL	ESC [2 K
Erase in display (cursor to end of screen)	EL	ESC [J
Erase in display (cursor to end of screen)	EL	ESC [O J
Erase in display (beginning of screen to cursor)	EL	ESC [1 J
Erase in display (entire screen)	EL	ESC [2 J

Editing Functions

Name	Mnemonic	Sequence	Function
Delete character	DCH	ESC [Pn P	Deletes Pn characters starting with the cursor postion.
Insert line	IL	ESC [Pn L	Inserts Pn lines at the cursor.
Delete line	DL	ESC [Pn M	Deletes Pn lines starting at the line with the cursor.

Print Commands

Name	Mnemonic	Sequence
Media copy (enter auto print)	MC	ESC [? 5 I
Media copy (exit auto print)	MC	ESC [? 4 I
Media copy (enter printer controller)	MC	ESC [5 I
Media copy (exit printer controller)	MC	ESC [4 I
Media copy (print screen)	MC	ESC [I
Media copy (print screen)	MC	ESC [O I
Media copy (print cursor line)	MC	ESC [? 1 I

Reports

Name	Mnemonic	Sequence
Device Status report (request status of VT102)	DSR	ESC [5 n
Response:		
Terminal OK	DSR	ESC [O n
Terminal not OK	DSR	ESC 3 n
Device status report (request status on printer)	DSR	ESC [? 15 n
Response:		
Printer ready	DSR	ESC [? 10 n
Printer not ready	DSR	ESC [? 11 n
No printer	DSR	ESC [? 13 n
Device status report (report cursor position)	DSR	ESC [6 n
Cursor position report	CPR	ESC [Pl; Pc R Pl defines line; Pc defines column
Device attributes (what are you)	DA	ESC [c
Device attributes (what are you)	DA	ESC [O c
Identify Terminal (what are you)	DECID	DSC Z

NOTE: ESC Z is not recommended.

Device attributes Response VT102	DA	ESC [? 6 c

Reset

	Mnemonic	Sequence
Reset to initial state	RIS	ESC c

Tests and Adjustments

Name	Mnemonic	Sequence
Screen alignment display (fill screen with "ES"	ICTALN	ESC #8

Keyboard LED's -- DEC Keyboard/Communication

Name	Mnemonic	Sequence
Load LED's	ICTLL	ESC [Ps q

Note: The sequence can be separated by semicolons for chaining of LED's. Example: ESC [P1; P2; P3; q would turn LED's 1,2 and 3 on.

VT52 Compatible Mode

Models	Sequence
Enter ANSI mode	ESC <

Keypad character selection

Name	Sequence
Enter alternate keypad mode	ESC =
Exit alternate keypad mode (Numeric keypad mode)	ESC >

Note: VT52 alternate keypad and numeric keypad mode are different than ANSI.

Character Sets

Name	Sequence
Special graphics character set	ESC F*
Select US/UK character set (as determined by the US/UK character SET-UP feature)	ESC G

*Same as special character and line drawing set in ANSI mode.

Cursor Position

Name	Sequence
Cursor up	ESC A
Cursor down	ESC B
Cursor right	ESC C
Cursor left	ESC D
Cursor to home	ESC H
Direct cursor address	ESC Y Pl Pc Pl defines line; Pc defines column
Reverse line feed	ESC I

ANSI COMPATIBLE SEQUENCES

Erasing

Name	Sequence
Erase to end of line	ESC K
Erase to end of screen	ESC J

Print Commands

Name	Sequence
Enter auto print mode	ESC ^
Exit auto print mode	ESC
Enter printer controller mode	ESC W
Exit printer controller mode	ESC X
Print Screen	ESC]
Print cursor line	ESC V

Reports

Name	Sequence
Identify (what are you?)	ESC Z
Response: VT102	ESc / Z

INFORMER ESCAPE SEQUENCES

Name	Sequence
Turn off status line	ESC l
Turn on status line	ESC @
Set IBM symbol	ESC ~
Reset IBM symbol	ESC ;
Informer cursor position	ESC [Pl:Pc!
	Pl defines line
	Pc defines column

Glossary

ACK - A control character sent to acknowledge that a transmission block has been received.

Acoustic Coupler - A device that converts electrical signals into audio signals, enabling data to be transmitted over the current for the loop (active) and a device that must draw its current from connected equipment (passive).

Address - A unique designation for the location of data or the identity of an intelligent device; allows each device on a single communications line to respond to its own message.

ANSI (American National Standards Institute) - The principal standards development body in the U.S.A. ANSI is a nonprofit nongovermental body supported by over 1000 trade organizations, professional societies and companies. U.S.A.'s member body to ISO (International Standards Organization).

Asynchronous Transmission - Transmission in which time intervals between transmitted characters may be of unequal length. Transmission is controlled by start and stop bits at the beginning and end of each character.

Bandwidth - The range of frequencies available for signaling; the difference expressed in Hertz between the highest and lowest frequencies of a band.

Baud - Unit of signaling speed. The speed in baud is the number of discrete conditions or events per second. If each event represents only one bit condition, baud rate equal bps. When each event represents more than one bit (e.g. dibit), baud rate does not equal bps.

Baudot - Data transmission code in which five bits represent one character. Use of letters/figures shift enables 64 alphanumeric characters to be represented. Baudot is used in many teleprinter systems with one start bit and 1.42 stop bits added.

BCC (Block Check Character) - The result of a transmission verification algorithm accumulated over a transmission lock. It is normally added to the end; e.g. CRC, LRC.

Bisynchronous Transmission (BSC) - A byte- or character-oriented IBM communications protocol that has become the industry standard. It uses a defined set of control characters for synchronized transmission of binary coded data between stations in a data communications system.

Bit (Binary Digit) - Contraction of "binary digit", the smallest unit of information in a binary system; a one or zero condition.

Bit Error Rate/Block Error Rate Testing (BERT/BLERT) - An error-checking technique that compares a received data pattern with a known transmitted data pattern to determine transmission line quality.

Block Check Character - Used to check transmission accuracy, a character transmitted by the sender after each message block and compared with a block check character computed by the receiver.

BPS (Bits Per Second) - Unit of data transmission rate.

Break-Out Box (BOB) - A testing device that permits the user to cross and tie leads using jumper wires.

Buffer - A temporary-storage device used to compensate for a difference in data rate and data flow between two devices (typically a computer and a printer); also called a spooler.

Bus - A data bus shared by many devices (e.g. multipoint line) with one or more conductors for transmitting signals, data or power. In LAN technology, a bus is a type of linear network topology.

Byte - A binary element string functioning as a unit, usually shorter than a computer "word". Eight-bit bytes are most common. Also called a "character".

Carrier Detect - Same as Received Line Signal Detector. An RS-232 modem signal that indicates to an attached terminal that the modem is receiving a signal from a remote modem.

CCITT (Consultative Committee International Telegraph and Telephone) - An international association that sets worldwide communications standards (e.g. V.21, V.22 V.22 bis).

Clear To Send (CTS) - Modem interface signal that indicates to the DTE device to begin transmission.

Clock - Shorthand term for the source(s) of timing signals used in synchronous transmission. More generally, the source(s) of timing signals sequencing electronics events.

Cluster - A collection of terminals or other devices in a single location.

Common Carrier - A private data communications utility company that furnishes communications services to the general public.

Communications Protocol - The rules governing the exchange of information between devices on a data link.

Concentrator (Statistical Multiplexor) - A device used to divide a data channel into two or more channels of lower average speed, dynamically allocating channel space according to demand in order to maximize throughput.

Conditioning - The addition of equipment to a leased voice-grad channel, enabling the channel to meet specifications for data transmission.

Contention - The facility provided by the dial network or a data PABX which allows multiple terminals to compete on a first-come, first-serve basis for a smaller number of computer ports.

CPU (Central Processing Unit) - Portion of a computer that directs the sequence of operations and initates the proper commands to the computer for execution.

CRC (Cyclic Redundancy Check) - An error detection scheme in which the block check character is the remainder after dividing all the serialized bits in a transmission block by a predetermined binary number.

Crosstalk - The unwanted transmission of a signal on a channel that interferes with another adjacent channel.

CRT (Cathode Ray Tube) - A television-like picture tube used in a terminal, commonly used as a synonym for CAI terminal.

CTS (Clear to Send) - An RS-232 modem interface control signal which indicates that the attached DTE may begin transmitting.

Data Terminal Ready (DTR) - Modem interface signal which alerts the modem that the DTE device is ready for transmission.

DCE (Data Communications Equipment) - Devices that provide the functions required to establish, maintain and terminate a data transmission connection, e.g. a modem.

Dial Network - A network that is shared among many users, any one of whom can establish communication between desired points, when required, by use of dial or pushbutton telephones.

Digital Data - Information transmitted in a coded form (from a computer) represented by discrete signal elements.

DIP Switches - Switches for opening and closing leads between two devices. When a lead is opened, a jumper wire can be used to cross or tie it to another lead.

Downloading - The process of sending configuration parameters, operating software or related data from a central source to remote stations.

DSR (Data Set Ready) - An RS-232 modem interface control signal which indicates that the terminal is ready for transmission.

DTE (Data Terminal Equipment) - Devices acting as data source, data sink, or both.

DTMF (Dual-Tone Multiple Frequency) - The audio signaling frequency on touchtone, pushbutton telephones.

DTR (Data Terminal Ready) - An RS-232 modem interface control signal which indicates to the modem that the terminals are ready for transmission.

Dumb Terminal - Both hard copy and VDT type ASCII asynchronous terminals that do not use a data transmission protocol and usually send data one character at a time.

Duplex Transmission - See Full Duplex.

EBCDIC (Extended Binary Coded Decimal Interchange Code) - An eight-bit character code used primarily in IBM equipment. The code allows for 256 different bit patterns.

EIA (Electronic Industries Association) - A standards organization in the USA specializing in the electrical and functional characteristics of interface equipment.

EOT (End of Transmission) - A transmission control character used to indicate the conclusion of the transmission of one or more texts.

EPROM - Read-only, non-volatile, semi-conductor memory that is erasable via ultraviolet light and reprogrammable. See PROM and ROM.

ESC (Escape) - A control character which is used to provide additional control functions. It alters the meaning of a limited number of continuously following bit combinations.

ETX (End of Text) - A transmission control character that terminates a text.

Even Parity - A "dumb" terminal data verification method in which each character must have an even number of "on" bits.

FCC - Federal Communications Commission.

FDX - See Full Duplex.

Firmware - A computer program or software stored permanently in PROM or ROM or semi-permanently in EPROM.

Flow Control - The procedure for regulating the flow of data between two devices; prevents the loss of data once a device's buffer has reached its capacity.

Frequency-Division Multiplexor (FDM) - A device that divides the available transmission frequency range into narrower banks each of which is used for a separate channel.

Front-End Processor - A computer designed for communications control of a mainframe.

Full-Duplex (FDX) - Simultaneous two-way independent transmission in both directions (4-wire).

Half-Duplex (HDX) - Transmission in either direction but not simultaneous (2-wire).

Handshaking - Exchange of predetermined signals between two devices establishing a connection. Usually part of a communications protocol.

HDLC (High-Level Data Link Control) - The international standard communication protocol defined by ISO.

Header - The control information added to the beginning of a message, either a transmission block or a packet.

Hertz (Hz) - A measure of frequency or bandwidth. The same as cycles per second.

Hexadecimal Number System - The number system with the base of sixteen. In hexadecimal, the first ten digits are 0-9 and the last six digits are represented by the letters A-F.

Interface - A shared boundary defined by common physical interconnection characteristics, signal characteristics and meanings of interchanged signals.

ISO - International Standards Organization.

Jumper - A wire which connects a number of pins on one end of a cable only, such as looping back Request to Send from Clear to Send, pins 4 and 5.

LED (Light Emitting Diode) - A semiconductor light source that emits visible light or invisible infrared radiation.

Leased Line - A telephone line reserved for the exclusive use of leasing customers, without interexchange switching arrangements. Also called a Private Line.

Line Driver - A signal converter that conditions a digital signal to ensure reliable transmission over an extended distance.

Line Turnaround - The reversing of transmission direction from sender to receiver or vice versa when using a half-duplex circuit.

Loaded Line - A telephone line equipped with loading coils to add inductance in order to minimize amplitude distortion.

Local Area Network (LAN) - A data communications system confined to a limited geographic area (up to 6 miles or about 10 kilometers) with moderate to high data rates (100 Kbps to 50 Mbps). The area served may consist of a single building, a cluster of buildings or a campus-type arrangement. The network uses some type of switching technology and does not use common carrier circuits although it may have gateways or bridges to other public or private networks.

Loopback - Type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data communications link or network. A loopback test permits the comparison of a returned signal with the transmitted signal.

LRC (Longitudinal Redundancy Check) - An error detection scheme in which the check character consists of bits calculated

on the basis of odd and even parity for all the characters in the block.

Mainframe - A large-scale computer system that can house comprehensive software and several peripherals.

Mark - Presence of signal. In telegraph communication, a mark represents the closed condition or current flowing. A mark impulse is equivalent to a binary 1.

Menu - The list of available software functions for selection by the operator, displayed on the computer screen once a software program has been entered.

Modem (Modulator-Demodulator) - A device used to convert serial digital data from a transmitting terminal to a signal suitable for transmission over a telephone channel or to reconvert the transmitted signal to serial digital data for acceptance by a receiving terminal.

Modem Eliminator - A device used to connect a local terminal and a computer port in lieu of the pair of modems that they would ordinarily connect to; allows DTE-to-DTE data and control connections otherwise not easily achieved by standard cables or connector.

Modulation - Modifying some characteristics of a wave form.

Multidrop Line - A single communications circuit that interconnects many stations, each of which contains terminal devices.

Multiplexor - A device used for division of a transmission facility into two or more subchannels, either by splitting the frequency band into narrower bands (frequency division) or by allotting a common channel to several different transmitting devices one at a time (time division).

Multipoint Line - A single line or circuit interconnecting several stations; usually requires some kind of polling mechanism to address each connected terminal with a unique address code.

NAK (Negative Acknowledgement) - A control character used to indicate that the previous transmission block was in error and the receiver is ready to accept retransmission.

NRZ (Non-Return-To-Zero) Pulses in alternating directions for successive 1 bits; no change from existing bias for 0 bits.

Null Modem - A device that connects two DTE devices directly by emulating the physical connections of a DCE device.

PABX (Private Automatic Branch Exchange) - A user-owned, automatic telephone exchange that accommodates the transmission of calls to and from the public telephone network.

Packet - A group of bits (including data and call control signals) transmitted as a whole on a packet-switched network. Usually smaller than a transmission block.

PAD (Packet Access Device) - An interface between a terminal or computer and a packet-switching network.

Parallel Transmission - Transmission mode that sends a number of bits simultaneously over separate lines (e.g. eight bits over eight lines) to a printer. Usually unidirectional.

Parity Bit - A bit that is set at "0" or "1" in a character to ensure that the total number of 1 bits in the data field is even or odd.

Parity Check - The addition of noninformation bits that make up a transmission block to ensure that the total number of 1s are always either even (even parity) or odd (odd parity).

Point-to-Point (Link) - A connection between two, and only two, pieces of equipment.

Polling - A means of controlling devices on a multipoint line.

Port - A computer interface capable of attaching to a modem for communicating with a remote terminal.

Private Line - A telephone line that does not go through the central office and is reserved for exclusive use of a single customer.

PROM (Programmable Read Only Memory) - Nonvolatile memory chip that allows a program to reside permanently in a piece of hardware.

Protocol - A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.

Public Switched Network - Any switching communications system - such as Telex, TWX or public telephone networks - that provides circuit switching to many customer.

Pulse Dialing - Older form of phone dialing, utilizing breaks in DC current to indicate the number being dialed.

RAM (Random Access Memory) - Semiconductor read-write volatile memory. Data stored is lost if power is turned off.

Received Line Signal Detector - Modem interface signal, defined in RS-232, that indicates to the attached data terminal equipment that it is receiving a signal from the distant modem.

Redundancy Check - A technique of error detection involving the transmission of additional data related to the basic data in such a way that the receiving terminal, by comparing the two sets of data, can determine the probability that an error has occurred in transmission.

Request-to-Send (RTS) - An RS-232 modem interface signal (sent from the DTE to the modem on pin 4) which indicates that the DTE has data to transmit.

Response Time - The elapsed time between the generation of the last character of a message at a terminal and the receipt of the first character of the reply. It includes terminal delay and network delay.

ROM (Read-Only Memory) - Nonvolatile semiconductor memory manufactured with predefined data content, permanently stored

RS-232 - Interface between data terminal equipment and data communication equipment employing serial binary data interchange

RS-449 - General purpose 37-pin and 9-pin interface for data terminal equipment employing serial binary data interchange

RTS (Request-to-Send) - Physical modem interface control signal from DTE requesting clearance to transmit

RIV (Reverse interrupt) - A control character transmitted by a receiving station to request termination of the current transmission because of another high-priority message it must send.

SDLC (Synchronous Data Link Control) - IBM standard protocol superseding BSE.

Serial Transmission - The most common transmission mode. In serial, information bits are sent sequentially on a single data channel.

Short Haul Modem - A signal converter which conditions a digital signal to ensure reliable transmission over DC continuous private line metallic circuits without interfering with adjacent pairs in the same telephone cable.

Simplex Transmission - Data transmission in one direction only.

Software - A computer program or set of programs held in some kind of storage medium and loaded into read/write memory (RAM) for execution. (Compare with firmware and hardware).

SOH (Start of Header) - A transmission control character used as the first character of a heading of an information message.

Space - Absence of signal. In telegraph communications, a space represents the open condition or no current flowing. A space impulse is equivalent to a binary 0.

Start Bit - In asynchronous transmission, the first bit or element in each character, normally a space, which prepares the receiving equipment for the reception and registration of the character.

Statistical Multiplexor - A device that allows a single channel to carry information from multiple devices simultaneously.

Stop Bit - In asynchronous transmission, the last bit, used to indicate the end of a character, normally a mark condition, which serves to return the line to its idle or rest state.

STX (Start of Text) - A transmission control character that precedes a text and is used to terminate a heading.

Switched Line - A communications link for which the physical path may vary with each usage, such as the public telephone network.

STN (Synchronous Idle) - A transmission control character used by synchronous transmission system in the absence of any other character (idle condition), to provide a signal.

Synchronous Modem - A modem that carries timing information with data.

Synchronous Terminal - A data terminal that operates at a fixed rate with transmitter and receiver in synchronization.

Synchronous Transmission - Transmission in which data bits are sent at a fixed rate, with the transmitter and receiver synchronized. Synchronized transmission eliminates the need for start and stop bits.

Time-Division Multiplexer (TDM) - A device that accepts multiple channels on a single transmission line by connecting terminals, one at a time, at regular intervals interleaving bits (bit TDM) or characters (character TDM) from each terminal.

Time-Sharing - A method of computer operation that allows several interactive terminals to use one computer. Although the terminals are actually served in sequence, the high speed of the computer makes it appear as if all terminals were being served simultaneously.

Transient - An abrupt change in voltage of short duration (e.g. a brief pulse caused by the operation of a switch)

Turnaround Time - The actual time required to reverse the direction of transmission from sender to receiver or vice versa when using a half-duplex circuit. Time is required for line propagation effects, modem timing and computer reaction.

Two-Wire - Circuit that indicates information signals in both directions for data carried by the same path.

V.35 - CCITT standard governing data transmission at 48 Kbps using 60-108 KHz group band circuits.

Voice-Frequency - Frequency in part of the audio frequency range essential for the transmission of commercial quality speech.

VRC (Vertical Redundancy Check) - An error detection scheme in which the parity bit of each character is set to "1" or "0" so that the total number of "1" bits in the character is odd or even.

VT (Vertical Tabulation) - A format effector which advances the active position to the same character position on the next predetermined line.

WACK (Wait before Transmit) - The WACK character sequence allows a receiving station to indicate a "temporarily not ready to receive" condition to the transmitting station.

WATS (Wide Area Telephone Service) - A service provided by telephone companies in the United States that permits a customer to make calls to or from telephones in specific zones for a flat monthly charge. The monthly charges are based on size of the zone instead of the number of calls.

Wideband - A communications channel that has a greater bandwidth than voice grade lines.

X.21 - CCITT standard governing interface between data terminal equipment (DTE) and data circuit terminal equipment (DCE) for synchronous operation on public data networks.

X.25 - CCITT standard governing interface between data terminal equipment (DTE) and data circuit terminating equipment (DCE) for terminals operating in the packet mode on public data networks.

X.25 Pad - A device that permits communication between non-X.25 devices and the devices in an X.25 network.

X-ON/X-OFF (Transmitter On/Transmitter Off) - Control characters used for flow control instructing a terminal to start transmission (X-ON) and end transmission (X-OFF).

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Computer Terminals, Inc.

213AE ADDENDUM 1

P/N 65067-001 Rev. A

The 213AE, beginning with release 1.3, has enhancements to the DIY menu which allow greater flexibility when entering protocol converter sequences.

To accomplish this, the method of entering some Escape sequences and Control codes was modified.

Any non-displayable function to be entered into the DIY menu now requires the user to enter the HEX code equivalent. For example, to enter ESC, the user would access the DIY menu, position the highlighted bar at the key to be coded, press ENTER, press and hold ALT, then enter 1B, which is the HEX equivalent for ESC.

To enter A-Z, a-z, 0-9, or any displayable character, simply press the desired key.

Following is a cross reference of HEX codes. All require the ALT key to be pressed to enter the function.

Function	HEX	Function	HEX
ACK	06	FF	0C
BEL	07	FS	1C
BS	08	GS	1D
CAN	18	HT	09
CR	0D	LF	0A
DC1	11	NAK	15
DC2	12	NUL	00
DC3	13	RS	1E
DC4	14	SI	0F
DEL	7F	SO	0E
DLE	10	SOH	01
EM	19	STX	02
ENQ	05	SUB	1A
EOT	04	SYN	16
ESC	1B	US	1F
ETB	17	VT	0B
ETX	03		

The following also applies:

ALT = Control Key
CENT = Left Bracket
SHIFT CENT = Right Bracket

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[redacted]