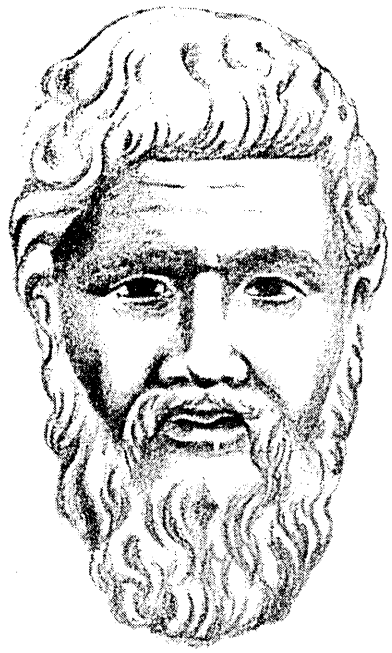
CONTROL DATA

PLATO

TERMINAL USER'S GUIDE



CONTROL DATA

REVISION RECORD

REVISION	DESCRIPTION
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A	Manual released. This printing obsoletes the previous edition.
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B	Manual revised to include most currently developed displays and procedures. This edition obsoletes
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C	Manual revised to include information on the Information Systems Terminal (IST) and most commonly
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LIST OF EFFECTIVE PAGES

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
Front Cover	-								
Inside Cover	-								
Title Page	-								
ii	E								
iii/iv	E								
v/vi	E								
vii	E								
viii	E								
1-1	E								
2-1	E								
2-2	E								
2-3	E								
2-4	E								
2-5	E								
2-6	E								
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D-3	E								
D-4	E								
D-5	E								
D-6	E								
D-7	E								
D-8	E								
Index-1	E								
Index-2	E								
Comment Sheet	E								
Inside Cover	-								
Back Cover	-								

PREFACE

The CONTROL DATA® PLATO® system is a computer-based teaching system that individualizes student instruction.

AUDIENCE AND ORGANIZATION

This manual describes the use and maintenance of the PLATO terminal for new users and for users who are responsible for maintenance of the terminal.

Sections 1 through 7 discuss topics about the PLATO sytem and terminal usage. All new users should read sections 1, 2, 3, and 7. Also, students and multiples should read section 4, instructors should read section 5, and authors should read section 6.

Appendix A describes the keys on the keyboard. Appendix B describes the components unique to the PLATO Information Systems Terminal (IST) and its installation, user maintenance, and troubleshooting. Appendix C describes the components unique to the PLATO Information Systems Terminal II (IST-II) and its installation, user maintenance, and troubleshooting. Appendix D describes the components unique to the PLATO CC546 Plasma Terminal and its installation, user maintenance, and troubleshooting. All users should read appendix A. Users responsible for maintenance of the terminal should read appendix B, C, or D.

CAUTION

Users and maintenance personnel responsible for installing or moving an IST-II must refer to appendix C. The IST-II is an FCC registered device, and the local telephone company must be informed prior to the terminal being connected to local telephone lines.

DISCLAIMER

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

RELATED PUBLICATIONS

The following related publications are available through the nearest Control Data Corporation sales office or Literature Distribution Services.

Control Data Publication	Publication Number
PLATO System Overview	97406700
PLATO User's Guide	97405900
PLATO Author Language Reference Manual	97405100
PLATO Author Language Instruction Formats	97406600
PLATO Director's Guide	97407100
PLATO User's Guide for System Security	97407200
PLATO Learning Management System Overview	97406100
PLATO Learning Management Author's Guide	97406200
PLATO Learning Management Instructor's Guide	97406300
Information Systems Terminal Reference Manual	62984100
Information Systems Terminal Hardware Maintenance Manual	62984200
Information Systems Terminal II Hardware Maintenance Manual	82100083
CDC 40003-107 Data Access Arrangement	62941000

The PLATO User's Guide and the PLATO Author Language Reference Manual are recommended for authors. The PLATO Director's Guide and the PLATO User's Guide for System Security are recommended for account directors. The PLATO Director's Guide is also recommended for course directors.

CONTENTS

APPENDIXES

INDEX

FIGURES

Before you use the PLATO system, you must know what user category you are in, and your group director must register you as a PLATO user.

USER CATEGORIES

Your group director determines what type of user you are, according to what you need to do on the PLATO system. The user categories are student, multiple, instructor, and author. Most users are students or authors.

STUDENT

A student can study lessons assigned by the group director or instructor. (A lesson is a computer program requiring interaction between the student and the computer. A group director is a PLATO user who can access records for a particular group.) The system keeps records about each student between sessions on the system.

MULTIPLE

A multiple can also execute assigned lessons. A multiple is similar to a student, except a student has a unique sign-on and a multiple shares a sign-on with other individuals. Therefore, the system does not keep records of lessons completed, scores, and other individualized information for multiples.

INSTRUCTOR

An instructor can add students and multiples to or delete them from the instructor's own group, or another group for which the instructor knows the change code (security code). An instructor can design curriculums and sequences of study for students and multiples in a group. An instructor can execute any available lesson.

AUTHOR

An author can program (or write) lessons by creating, modifying, or deleting data in files for which the author knows the change code. An author can execute any lesson in the libraries to which the author's account has access.

NEW USER REGISTRATION

Your group director or account director must register you in the PLATO system before you use the PLATO terminal and system for the first time. Registration involves submitting three user identification elements to the system: name, group, and password. These are your sign-on. You cannot use the PLATO system without using a sign-on, because this identifies you as a legitimate user to the computer. Each time you use the system, you must type your sign-on. The following are examples of sign-ons.

Name	Group
faye walker	inst
miller	field
j. pierce	arc

The users' passwords are not shown, because users should never tell their passwords to others.

NAME

You and your group director must select a name for you to use when you sign onto the system. Your PLATO name can be any combination of up to 18 alphanumeric characters. You can use your whole name, your last name, or your first name.

GROUP

A PLATO group is a roster of persons allowed to use the system. Your group director determines in which group to register you. Your group director registers you by entering your name in the PLATO group file. Your group name can be from three to eight alphanumeric characters.

Most groups on the system have more than one user registered. Each user in a group has a name unique to that group (for example, group field cannot register two miller's). The system uses your PLATO name and group to keep a record of your statistics on system use, lesson progress, and so on.

PASSWORD

The first time you sign onto the PLATO system, you must select a password. Your password can be any combination of up to 10 alphanumeric characters. It must be something you can remember, and it should be unusual so that nobody can guess it. Possibly include numbers. Do not use anything obvious like your initials, your spouse's name, or phrases related to your favorite hobby. Change your password periodically to lessen the chance of another user accidently discovering your password. Never tell anyone what your password is.

Not all users have passwords. Authors and instructors must have passwords. Passwords are optional for students and multiples. The group director decides if the students and multiples in the group need passwords. If you forget your password, your group director can arrange for you to select another; however, your group director cannot find out what your current password is.

The PLATO terminal provides user interaction with the PLATO system. The PLATO IST, the PLATO IST-II, and the PLATO Plasma Terminal are currently available. This section describes how to connect the terminal to the PLATO system and how to sign on and off the system.

TERMINAL CONNECTION

Two methods of connecting the PLATO terminal to the central computer are direct connection and dial-in.

With the direct connection method, the terminal is always connected to the computer. The terminal has a direct connection if a telephone is not connected to the terminal. If you are using a terminal connected directly to the computer, turn the terminal on (if it is off), and proceed with the sign-on sequence.

With the dial-in connection method, the terminal connects with the computer by a telephone line. If you are using a dial-in terminal, turn the terminal on, and connect the terminal according to the following procedure. Then you can proceed with the sign-on sequence.

1. Dial the telephone number that connects the terminal to the computer.

2. When you hear a high-pitched tone, followed by a higher-pitched tone with a low-pitched tone superimposed on it, do one of two things.

   a. If you see an acoustic coupler, insert the telephone handset into the acoustic coupler. This connects the terminal to the computer.

   b. If you do not see an acoustic coupler, pull upward on the white exclusion key on the left of the telephone. This disconnects the telephone handset and connects the terminal to the computer. Set the handset aside, but do not hang up the telephone.

3. If the red error indicator lights, press the SHIFT-STOP keys until the error light goes off. (Hold down SHIFT key while pressing STOP key.)†

4. If you hear a busy signal after dialing, all dial-in lines to the computer are busy. Hang up the receiver, check the number, wait awhile, and dial again.

Refer to the appendixes for more detail in connecting specific types of terminals to the system.

SIGN-ON SEQUENCE

The sign-on sequence is the identification exchange between you and the PLATO system. This exchange determines whether or not you can use the system. You must repeat the sequence each time you access the system. The following sequence is the standard sign-on sequence.

1. When the terminal connects properly to the system, the following message appears on the screen.

   Press NEXT to begin

   If the screen shows anything else, press SHIFT-STOP several times until Begin Display (figure 2-1) is on the screen.

   If the PLATO system is temporarily out of service, a message will tell you when to try again. If the PLATO system is unavailable to users, the system displays a closed sign.

2. Press the NEXT key. One of the two following displays appears, depending upon status of the system.

   a. Welcome Display (figure 2-2) appears when the system is operating normally (prime time). Go to step 3.

   b. Extended Time Welcome Display (figure 2-3) appears when system is in extended time; PLATO services personnel are not available. Go to step 3.

3. Type your PLATO name (same name your group director entered during registration). As you type, each character appears to the right of the arrow (⩥) on the Welcome Display. If you make a mistake, press the ERASE key to erase each letter back to the mistake and retype your name correctly. When finished, press NEXT. Display should now show Group Name Display (figure 2-4).

† Throughout this manual, when the names of two keys are joined by a hyphen, the two keys should be pressed simultaneously. Where there is no hyphen joining the two names, the first key is pressed and released before the next key is pressed.

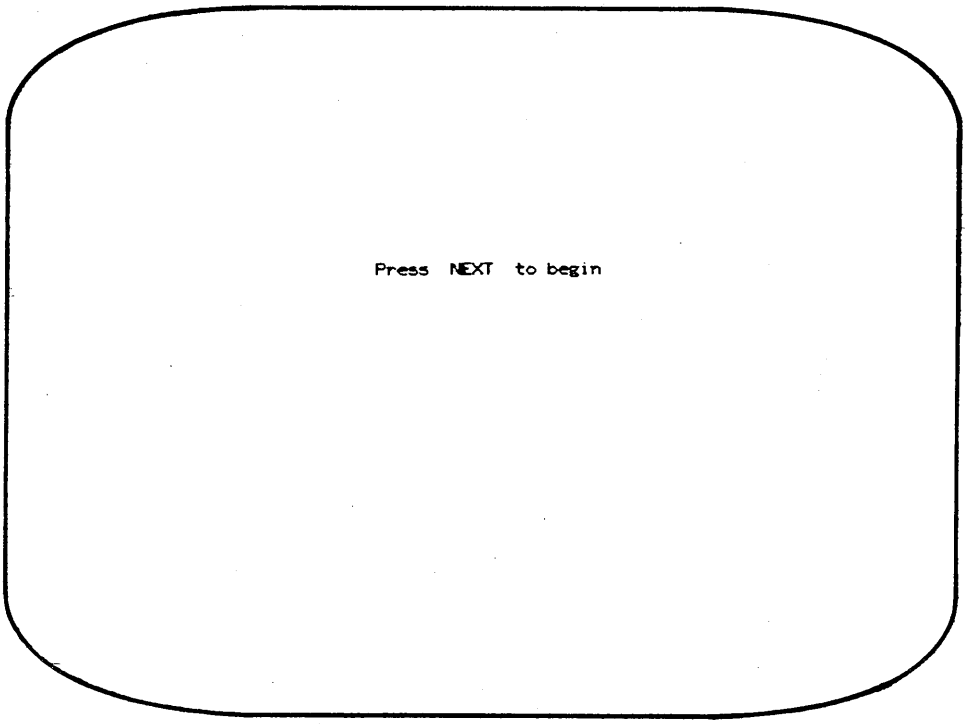


Figure 2-1. Begin Display

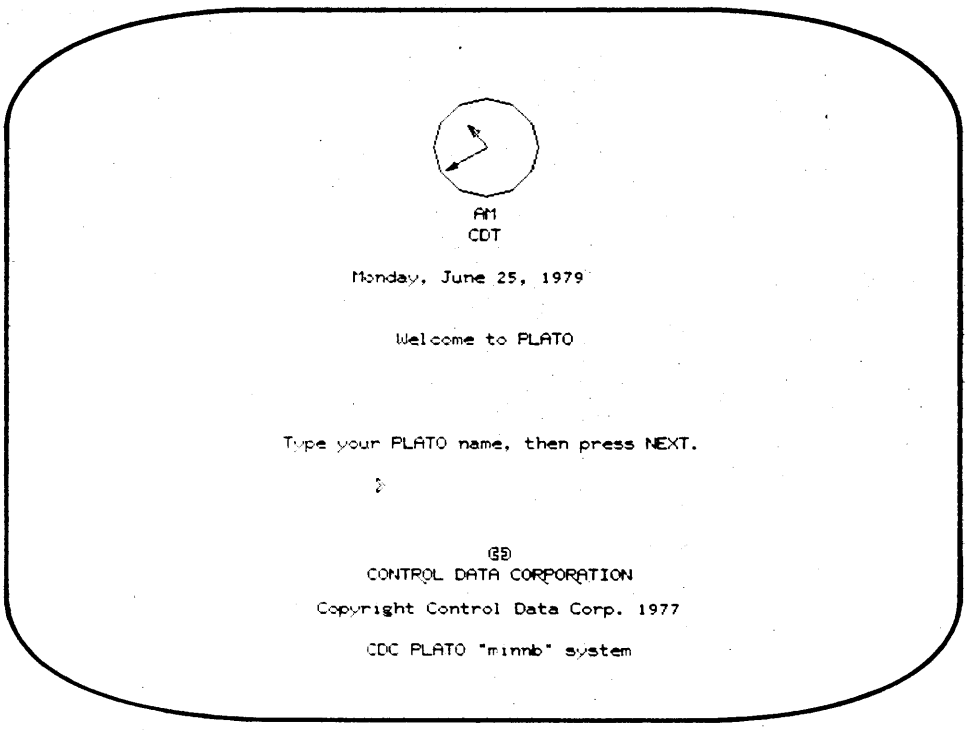


Figure 2-2. Welcome Display

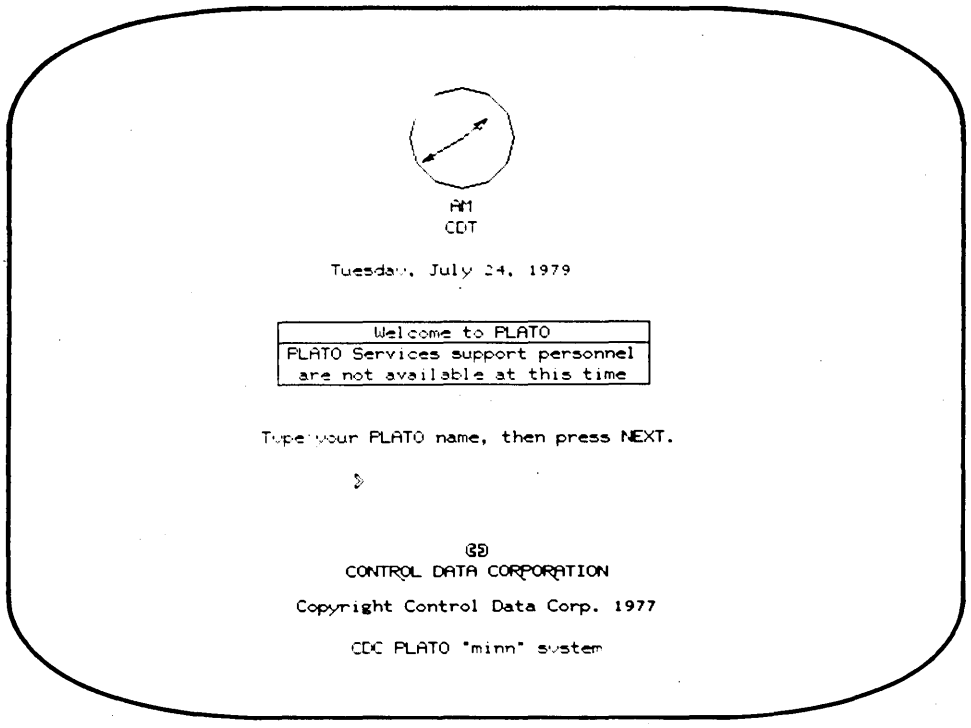


Figure 2-3. Extended Time Welcome Display

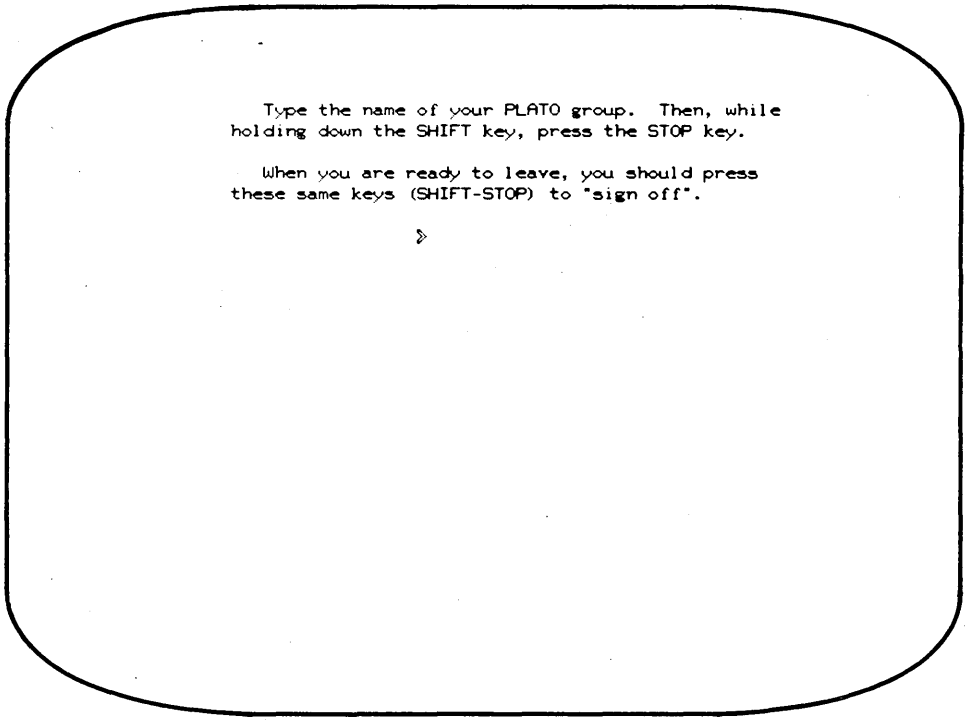


Figure 2-4. Group Name Display

4. Type your PLATO group (same group your group director entered during registration). These characters also appear to the right of the arrow. When finished, press SHIFT-STOP.

5. One of the following displays appears.

   a. If you are a student or multiple and your group director or instructor decided you do not need a password, your current lesson appears.

   b. If you are required to have a password and this is the first time you are signing on, Password Choice Display (figure 2-5, part A) appears. Select your password and type it carefully.

      A random number of X's appear to the right of the arrow so nobody can read your password. When you finish typing your password, press NEXT. Part B of figure 2-5 appears. Type your password again. Press NEXT, and go to step 6.

NOTE

Check with group director or instructor if you have forgotten your password.

   c. If you are required to have a password and this is not the first time you are signing on, the screen shows Password Display (figure 2-6). Type your password (only X's appear to the right of the arrow). Press NEXT. Go to step 6.

      To change your password, press LAB instead of NEXT. Press LAB again for Password Choice Display.

6. One of the following displays appears.

   a. Your current lesson appears if you are a student or a multiple.

   b. PLATO Facilities Display (figure 2-7) appears if you are an instructor.

   c. Author Mode Display (figure 2-8) appears if you are an author.

SIGN-OFF SEQUENCE

You should sign off the system after completing a session on the terminal so that nobody else can use your sign-on. To sign off the system, press the SHIFT-STOP keys until the screen shows the Begin Display (figure 2-1).

NOTE

Turning off the terminal or hanging up the phone does not sign you off the system.

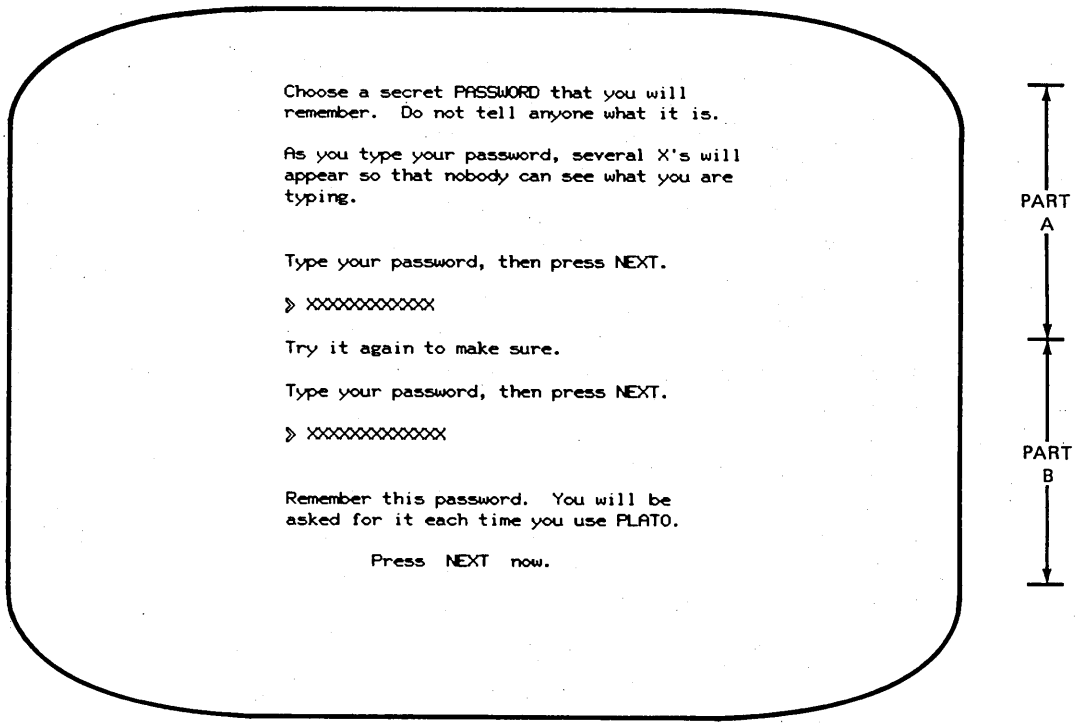


Figure 2-5. Password Choice Display

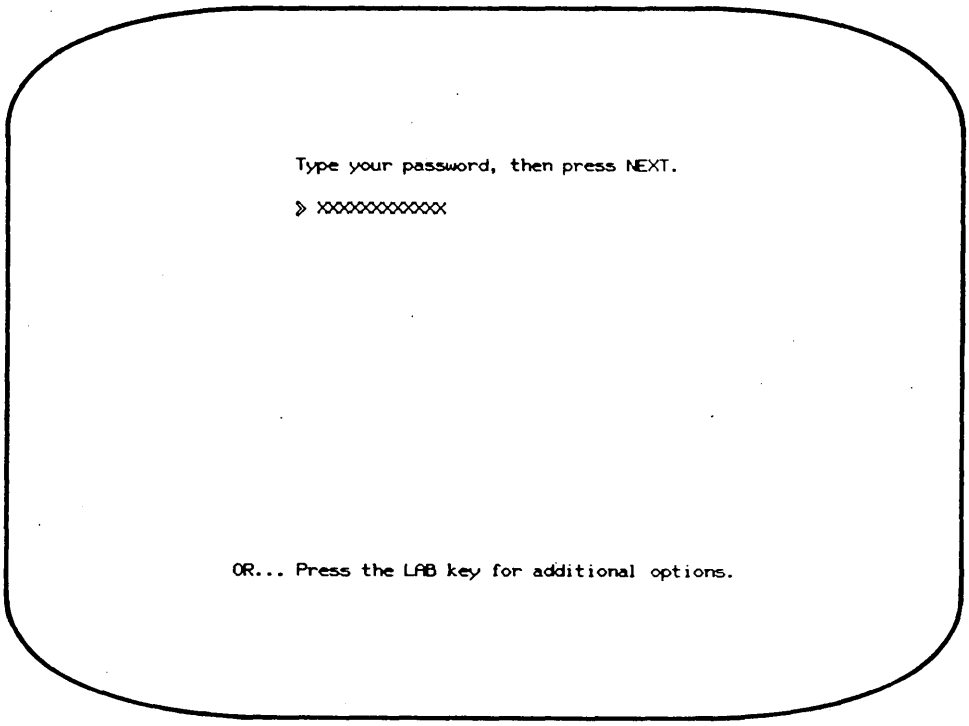


Figure 2-6. Password Display

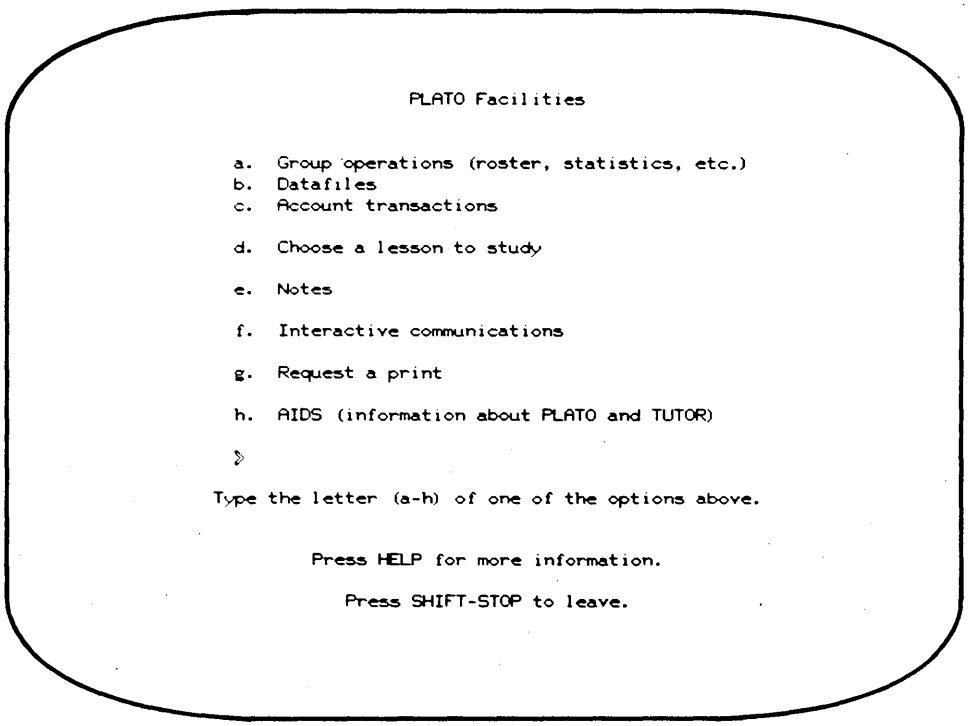


Figure 2-7. PLATO Facilities Display

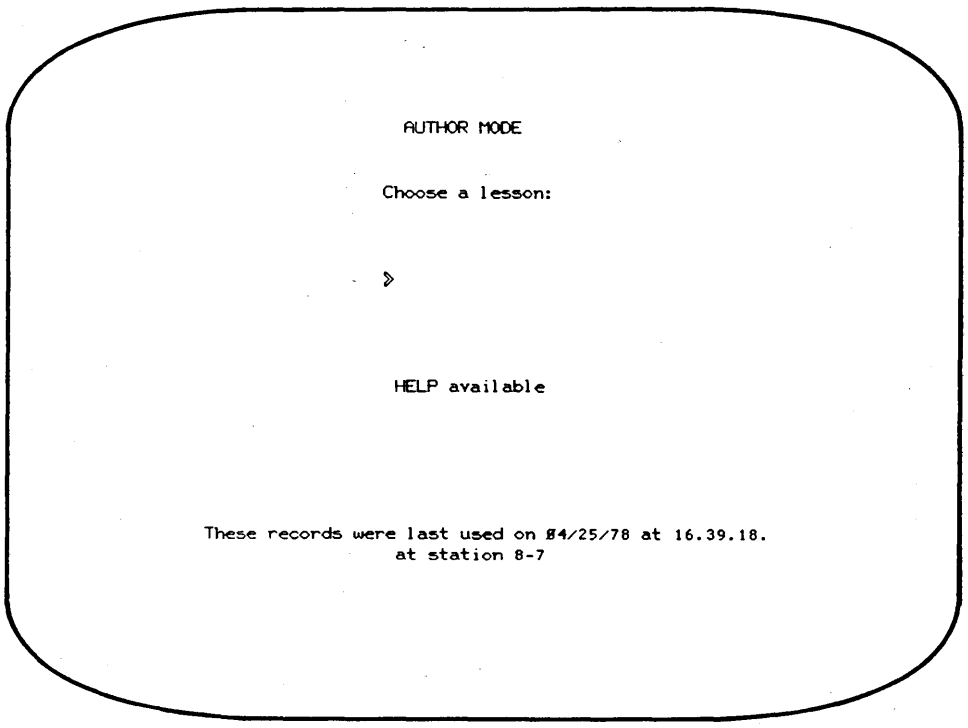


Figure 2-8. Author Mode Display

Understanding the PLATO terminal and how it works helps you use the PLATO system more efficiently. The following lessons are available on the PLATO system as introductions to the terminal. To find out how to access a PLATO lesson, refer to section 4 (students and multiples), 5 (instructors), or 6 (authors).

"Øwhatsnext"

This lesson explains the types of terminals, gives an introduction to the keyboard, and defines what a lesson is.

"Øgenintro"

This lesson introduces the keys on the keyboard and their uses.

"Øintro, Øintroc, Øintrob"

These lessons introduce the keyboard and PLATO features. Each lesson has the same basic information. Lesson "0introc" adds some information, and lesson "0introb" adds more information. While in one of these lessons, press SHIFT-DATA to see the index.

KEYBOARD

The primary means of input to the PLATO system is the keyboard. It has character keys, like a standard typewriter, and function keys. The most-used key is the NEXT key, located on the right. Pressing the NEXT key advances the lesson or tells the computer that you are finished typing a response. Press NEXT whenever you finish what you are doing.

NOTE

When in doubt, press NEXT.

Several notations specify using the SHIFT key with a function key (for example, SHIFT-STOP, STOP1, and shifted STOP mean hold the SHIFT key down while pressing the STOP key).

The keyboard and the system distinguish between the capital letter o (O) and the number zero (Ø). The zero key is at the left of the number keys. Similarly, the keyboard and the system distinguish between the lowercase letter l and the number 1.

Refer to appendix A for more information about the keyboard.

SCREEN

The screen presents information as text or as line drawings. It consists of a grid of 512 dots by 512 dots, which light in any combination to form characters, lines, curves, and figures. The computer can fit 32 lines of alphanumeric characters on the screen with 64 characters per line. When you press a character key on the keyboard, the computer processes the individual keypress and displays an appropriate character, as determined by the current lesson (that is, the character you press might not be the same character that appears).

TOUCH PANEL

CAUTION

To prevent damage and to preserve the optical clarity of the touch panel surface, use only fingertips or soft, blunt instruments to touch the panel. Although the touch panel surface is tough and durable, you can scratch or puncture it by using hard, sharp, or pointed objects such as pencils, pens, fingernails, and so on.

Lessons often use the touch panel for student response to a question. It consists of a 16 by 16 grid with 256 intersections covering the screen. When you touch the screen, the touch panel detects the location, sends this information to the computer, and produces an audible tone. The lesson activates the touch panel. The touch panel works like the NEXT key if the lesson activates the touch panel without a specification that it can answer a question.

As a student, you see one of the following displays after signing on.

- If your instructor has not set up your curriculum, you get a message saying that PLATO does not know what to do with you. Contact your instructor.
- If your instructor has set up your course, you may get an index of lessons from which to choose (figure 4-1), one lesson which you must choose, or your assigned PLATO lesson. Press HELP for an explanation of what to do and to find out about the PLATO bookmark.

The PLATO learning management (PLM) system presents instructions for using the system the first time you sign on. Whenever you sign onto the PLATO system again, you immediately get the Student Welcome Display (figure 4-2).

You can use the TERM key to access additional features, called TERMs, on the PLATO system. Refer to section 7 for information about the TERM key and available TERM features. When you finish using the system, sign off by pressing SHIFT-STOP until the following messge appears.

Press NEXT to begin

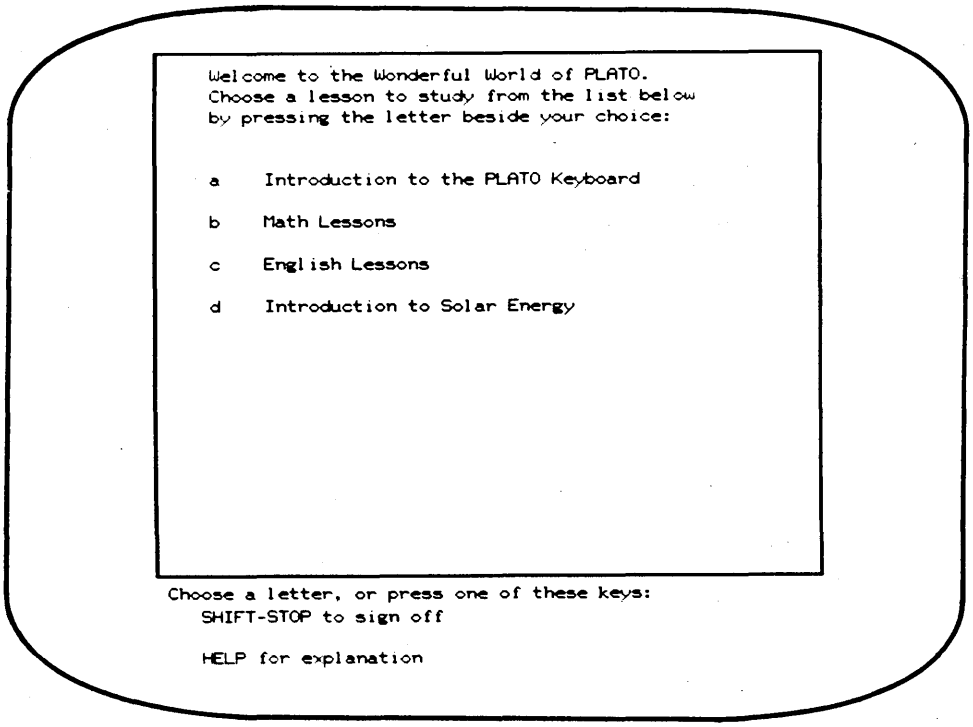


Figure 4-1. Example of Student Index Display

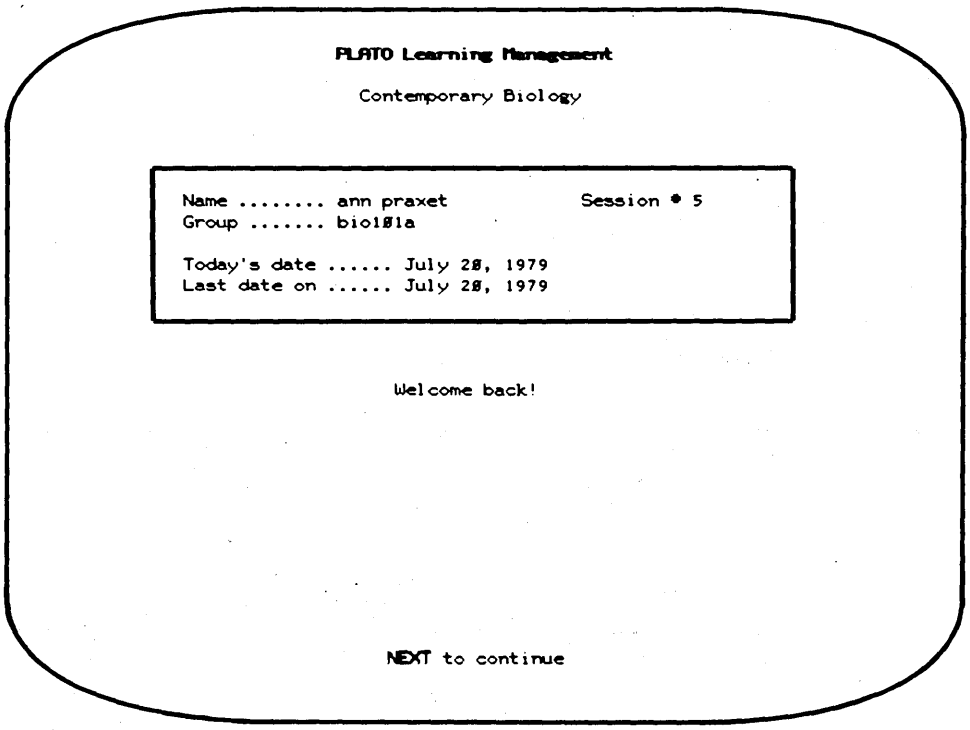


Figure 4-2. Example of Student Welcome Display

The first display an instructor sees after signing onto the PLATO system is the PLATO Facilities Display (refer to figure 2-7). An instructor can choose any option on the PLATO Facilities Display.

For immediate help while on the system, use TERM-consult. Refer to section 7 for information about the TERM key, TERM-consult, and other available TERM features.

INSTRUCTOR OPTIONS

As an instructor, you can choose any option on the PLATO Facilities Display by typing the letter in front of the desired option (for example, to look at the first option, type the letter a). The system then shows you a new display giving you more detail about that option or another list of options.

The PLATO Facilities Display shows only the options that are available to you, determined by your group director. Instructors can have from one to eight options as follows:

- Group operations
- Datafiles
- Account transactions
- Choose a lesson to study
- Notes
- Interactive communications
- Request a print
- AIDS

Whenever you have selected an option from the PLATO Facilities Display, you can usually return to the PLATO Facilities Display by pressing the BACK key.

GROUP OPERATIONS

When you choose the group operations option from the PLATO Facilities Display, the system asks you which group you want. You can:

- Press the NEXT key to edit your PLATO group.
- Press the LAB key to inspect your PLATO group (no editing privileges).
- Type the name of a PLATO group (other than your own) that you want to edit or inspect. The system might ask you for the security code of that group before letting you look at the records of the group.

One of the first things you should learn is to add someone to your group. To do this, follow these steps.

1. Press NEXT to edit your PLATO group. System displays another set of options for group operations (figure 5-1).
2. Select ROSTER option by typing the number in front of it. System displays another set of options for roster operations (figure 5-2).
3. Select ADD option by typing the letter in front of it. The next display (figure 5-3) asks you to choose the type of user category in which you want the new person to be.
4. Type the number of the user category you want.
5. Type the PLATO name that you and the new user decide upon. This name can be up to 18 alphanumeric characters. It can contain numbers and spaces but no capital letters.
6. Press NEXT to add the user to your group, or press LAB to assign the password first. As a security precaution, it is advisable to set the password first and allow the new user to change it the first time he/she signs on. Press DATA to change the user's record, or press NEXT to add a new user in the same user category.
7. When you finish adding users to your group, press BACK to return to the Roster Operations Display, or press SHIFT-STOP and BACK to return to the PLATO Facilities Display.

Refer to the PLATO User's Guide or contact an on-line consultant by using TERM-consult to learn about other group options available to instructors.

DATAFILES

The datafiles option allows instructors to collect information on students' activities within an individual lesson. Only instructors who have datafiles associated with their groups can access this information. An instructor can edit the datafile for a group other than his/her own, if the instructor knows the change or inspect code of the datafile.

Press the HELP key from the PLATO Facilities Display for information on datafiles. Lesson "aids" gives more information on datafiles. Refer to AIDS in this section.

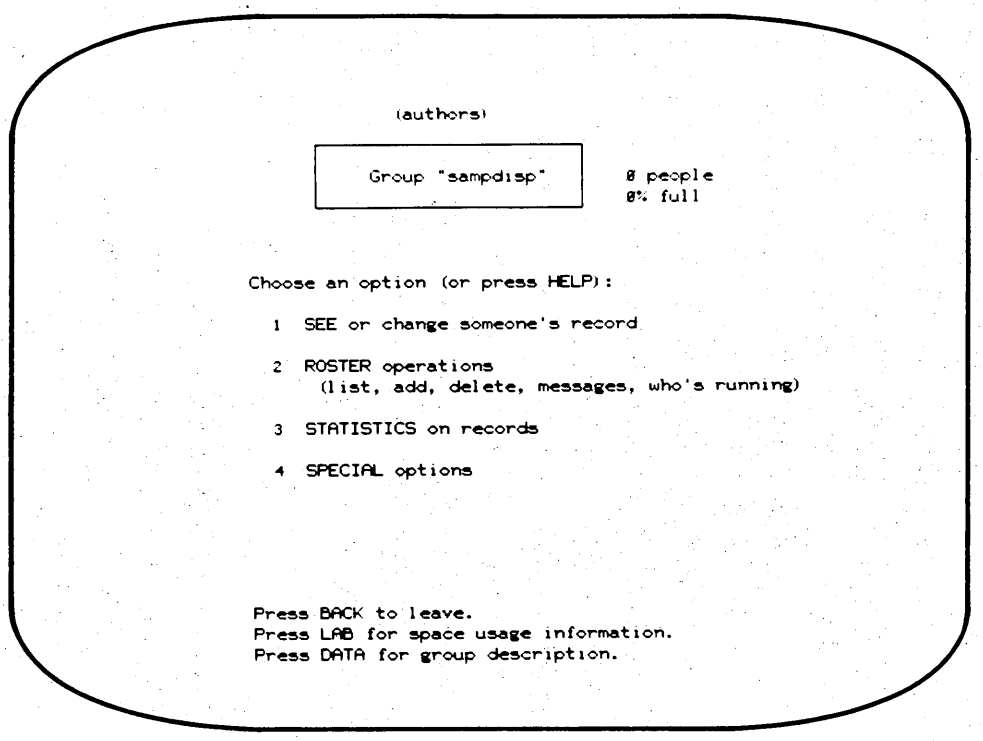


Figure 5-1. Group Operations Display

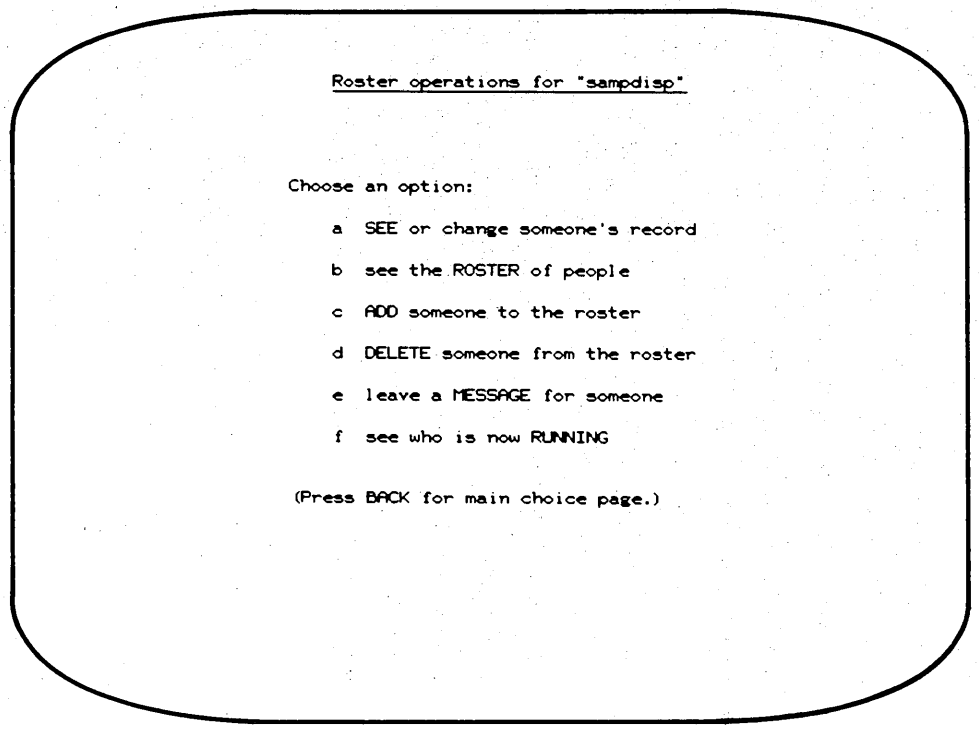


Figure 5-2. Roster Operations Display

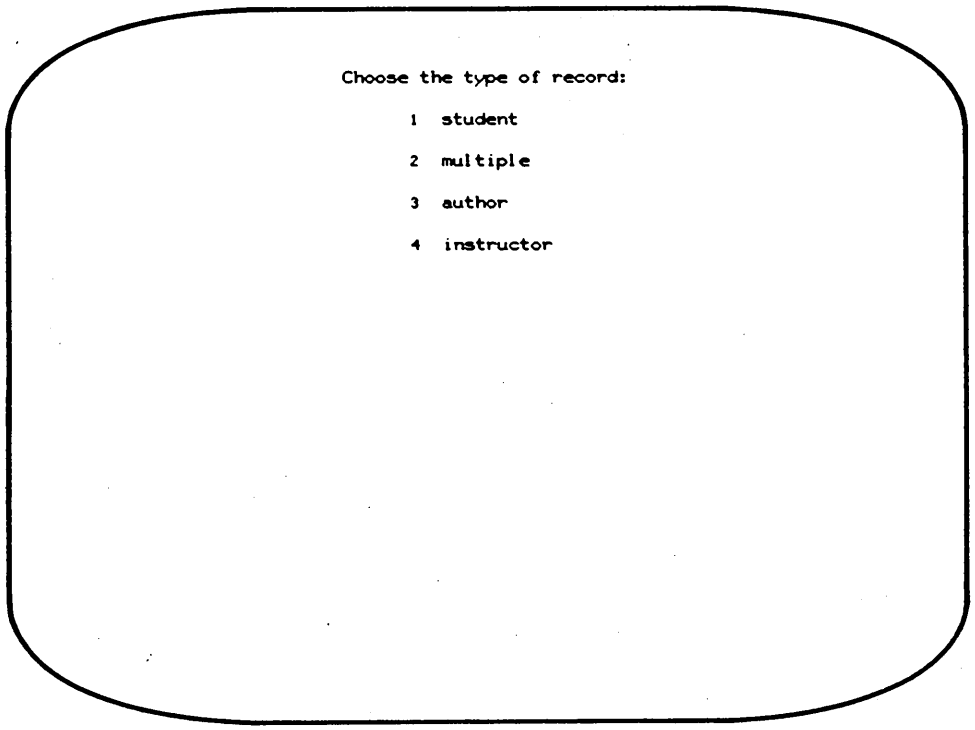


Figure 5-3. Add Option Display

ACCOUNT TRANSACTIONS

This option allows instructors to see what files are in an account, look at statistics on lessons, inspect the log of account transactions, see what users in their account are signed on, and allocate file space.

Only instructors who know the security codes of an account can edit that account.

Refer to your account director or press HELP from the PLATO Facilities Display for more information on account transactions.

CHOOSE A LESSON TO STUDY

From the PLATO Facilities Display, choose the lesson option to study a PLATO lesson as a student. Type the name of the lesson you want to access, and press NEXT. (If you have attached the router lesson "mrouter" to your group, you have a choice of studying any lesson on the system or in your group catalog.)

NOTE

Some lessons on the system are in private libraries, or libraries which require an additional use charge, and may not be accessible to everyone.

The following sections refer you to lessons you can study. The system catalog of lessons lists other available lessons. To access this catalog from the PLATO Facilities Display, type the letter in front of the lesson option. This gives you the lesson option display. From this display press LAB. Refer to System Catalog, section 6.

When you are in a lesson and you want to stop, press SHIFT-STOP to return to the display where you can choose a lesson. From this display, you can select another lesson to study, press BACK to return to the PLATO Facilities Display, or press SHIFT-STOP to sign off the system.

NOTES

Choosing the notes option from the PLATO Facilities Display gives you options similar to figure 5-4. Notes are messages stored in the PLATO system. You can look at public notes and system announcements, personal notes, and student notes. To learn how to write notes, study lesson "Ønotesintr."

NOTE

Users of Control Data PLATO services should be aware that the rules and regulations of the United States and International Telecommunications Regulatory Agencies prohibit Control Data from using communications services it leases from domestic, international, and foreign telecommunications carriers to transmit information for its users which is not part of a "single integrated" service, that is, all information transmitted must facilitate or be directly related to the development, proper use, and application of instructional and related materials of the PLATO system. Noncompliance with these rules and regulations may force Control Data to discontinue PLATO service to users who violate these rules and regulations.

Public Notes and System Announcements

Public notes are questions and comments about any PLATO-related topic. Instructors and authors can read and write public notes. System announcements provide information about new PLATO systems, system problems and their corrections, installation of new system features, and changes in prime time hours or holiday services. Instructors and authors can read system announcements, but only system-support people can write them. Choosing this option displays the PLATO Notes Display (figure 5-5). Press HELP for information, press a letter to access an option, or press BACK to return to the Notes Options Display.

Personal Notes

Personal notes are private messages to and from instructors and authors. Only the addressee of a personal note can read that note. To send a personal note to another instructor or author, enter that user's PLATO name, PLATO group, and PLATO system on the Personal Notes Display (figure 5-6).

Pressing NEXT when the arrow is at the Name, Group, or System entry automatically fills in your name, group, or system. Therefore, when you send a note to a user who is on the same system as you are, pressing NEXT when the arrow is at the System entry automatically fills in the correct system. Some Control Data systems are minna, minnb, and minnc.

You can reach the Personal Notes Display from the Notes Options Display or from the PLATO Notes Display.

When you write a note on the PLATO system, you use an editor (a program that helps you write a note). Two available editors are a basic editor which provides fundamental editing options, and a TUTOR editor which provides advanced editing options. Press SHIFT-DATA to switch editors while writing a note. Press the HELP key for help.

Practice sending personal notes by sending a note to yourself. When someone sends you a note, your PLATO Facilities Display and the Notes Options Display show two arrows pointing to the notes option and give the following message.

You have PERSONAL notes which you have NOT read.

When you receive a note, it stays in your file until you delete it by pressing SHIFT-HELP when it is on your screen. To respond to a note, press SHIFT-LAB when it is on your screen.

Student Notes

Student notes are messages to and from instructors and students. They can be similar to either personal notes or group notes. Lesson "aids" gives more information on student notes. Refer to AIDS in this section.

INTERACTIVE COMMUNICATIONS

When you choose the interactive communications option, the system displays four communications options. You can:

- See users at this site.
- See users at other sites.
- Talk to someone.
- Set your talk options.

See Users at This Site

This display provides a list of authors and instructors currently using the system at your site who have turned their listing option "on."

This display also gives information about your site, which is a group of PLATO terminals that share computer memory [Extended Core Storage (ECS)].

For information on how to appear in the on-system list of users, refer to Set Your Talk Options.

See Users at Other Sites

This display allows you to request a list of authors and instructors currently using the system at other sites who have turned their listing option "on." You can look at the entire list, your own logical site, or select another physical site.

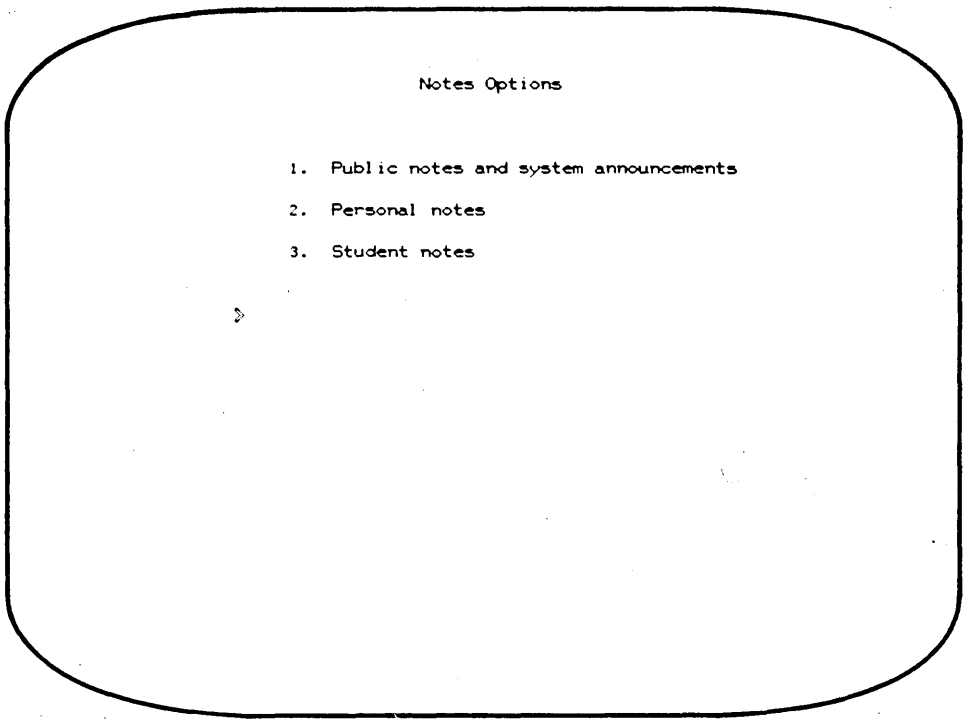


Figure 5-4. Notes Options Display

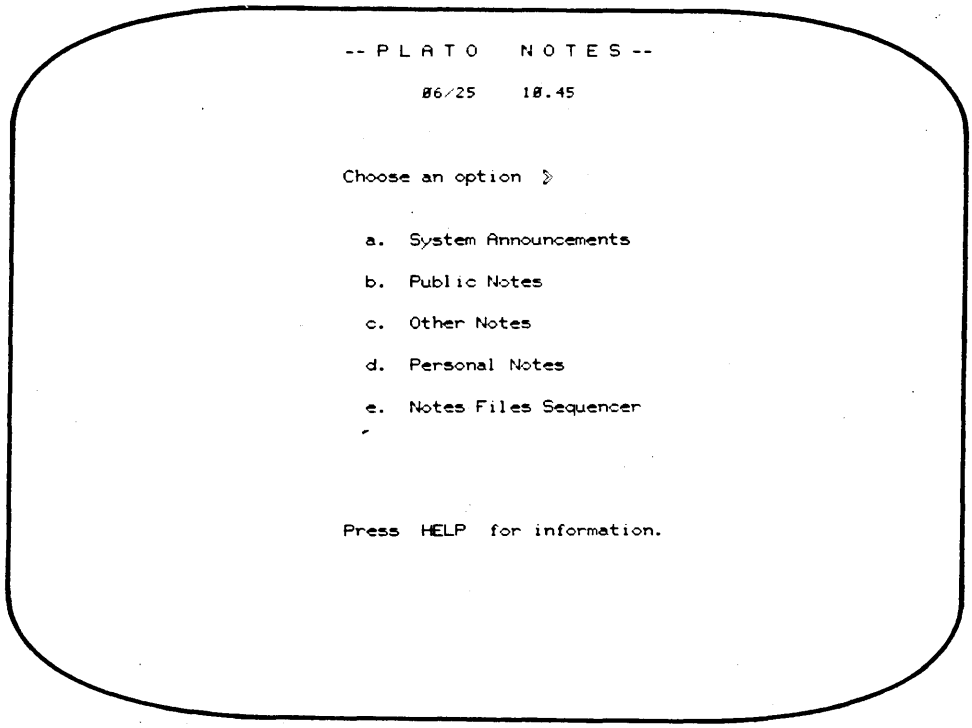


Figure 5-5. PLATO Notes Display

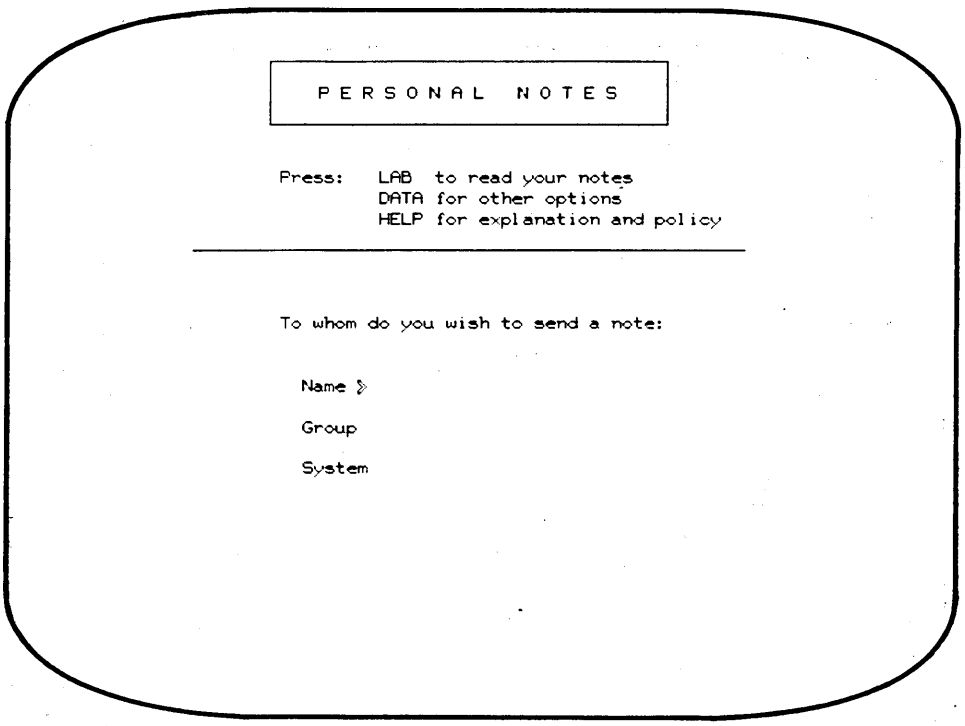


Figure 5-6. Personal Notes Display

Talk to Someone

This display supplies information about your talk options and your use of the PLATO system. By default, your talk options allow any instructor or author to TERM-talk to you. Refer to section 7 for more information about TERM-talk.

NOTE

Users of Control Data PLATO services should be aware that the rules and regulations of the United States and International Telecommunications Regulatory Agencies prohibit Control Data from using communications services it leases from domestic, international, and foreign telecommunications carriers to transmit information for its users which is not part of a "single integrated" service, that is, all information transmitted must facilitate or be directly related to the development, proper use, and application of instructional and related materials of the PLATO system. Noncompliance with these rules and regulations may force Control Data to discontinue PLATO service to users who violate these rules and regulations.

Set Your Talk Options

This display allows you the option of appearing in the on-system list of users. To turn an option on (yes) or off (no), type the number in front of the option. Press HELP for an explanation, or press BACK to return to the PLATO Facilities Display.

REQUEST A PRINT

As an instructor, you can request prints of lessons, datasets, namesets, and datafiles if you know the change codes for the files. This option also allows you to check the status of a print request and the status of the printer.

AIDS

Lesson "aids" is a detailed on-line reference source for the PLATO system. It contains useful information for both instructors and authors.

Study lesson "aids" by typing the letter in front of AIDS on the PLATO Facilities Display. From the "aids" title display, press HELP for information about "aids"; press NEXT for the index; or press DATA, and at the what TUTOR feature arrow (⟫), enter the name of the feature on which you want information (figure 5-7).

SIGNING OFF

When you finish using the system, sign off by pressing SHIFT-STOP until the following message appears.

Press NEXT to begin

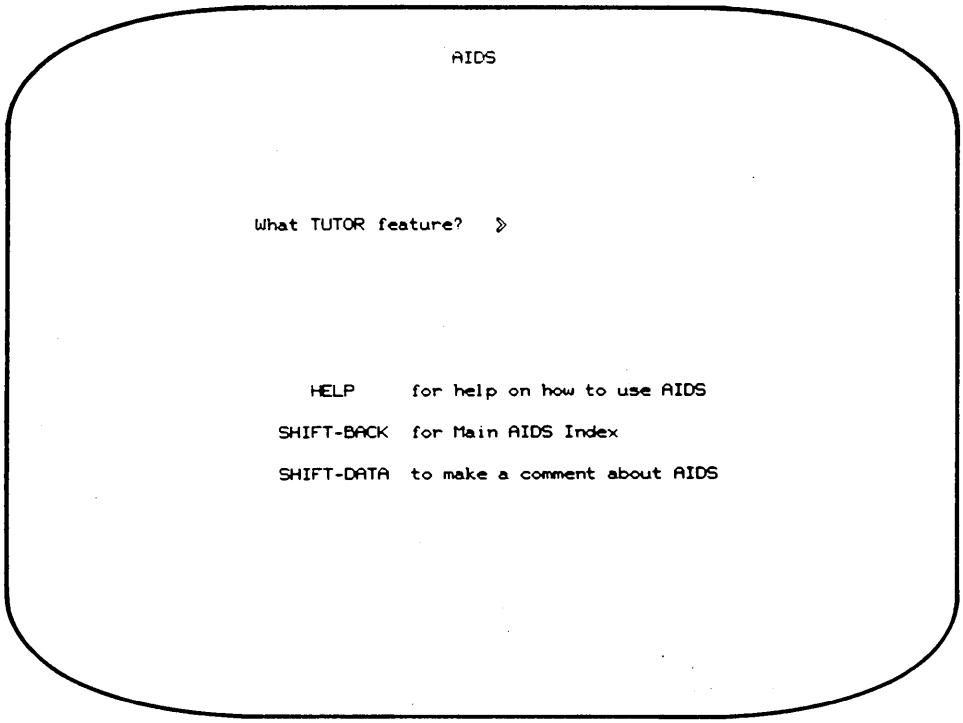


Figure 5-7. Aids Feature Request Display

The first display an author sees after signing onto the PLATO system is the Author Mode Display (refer to figure 2-8). From the Author Mode Display, you can choose any SHIFT-DATA option, select a lesson to study, read and write notes, or write a lesson. Information on how to access these options is in this section.

For immediate help while on the system, use TERM-consult. Refer to section 7 for information about the TERM key, TERM-consult, and other available TERM features.

HELP

As an author, you can get help from the Author Mode Display by pressing the HELP key. This help display tells how to use a lesson as a student and how to edit a lesson. Press NEXT to return to the Author Mode Display.

SHIFT-DATA OPTIONS

From the Author Mode Display, press the SHIFT-DATA keys to access a list of options available to authors (figure 6-1). To access an option, type the letter associated with the option. You can also access an option directly from the Author Mode Display by typing the SHIFTed letter (uppercase). Use this method when you know the letter associated with a specific option. The following list describes the options new authors commonly use.

Letter	Option
a,q	Lesson "aids" is a detailed reference source for the PLATO author language and other PLATO features. Letter a takes you to the "aids" title display. Letter q takes you to the index request display.
b	The bulletin board lists the prime time hours the system is available and gives the PLATO hot line phone number for reporting problems. Press NEXT or BACK to return to the Author Mode Display.
f	Letter f takes you to the first display of the system lesson catalog (refer to Lesson Selection).

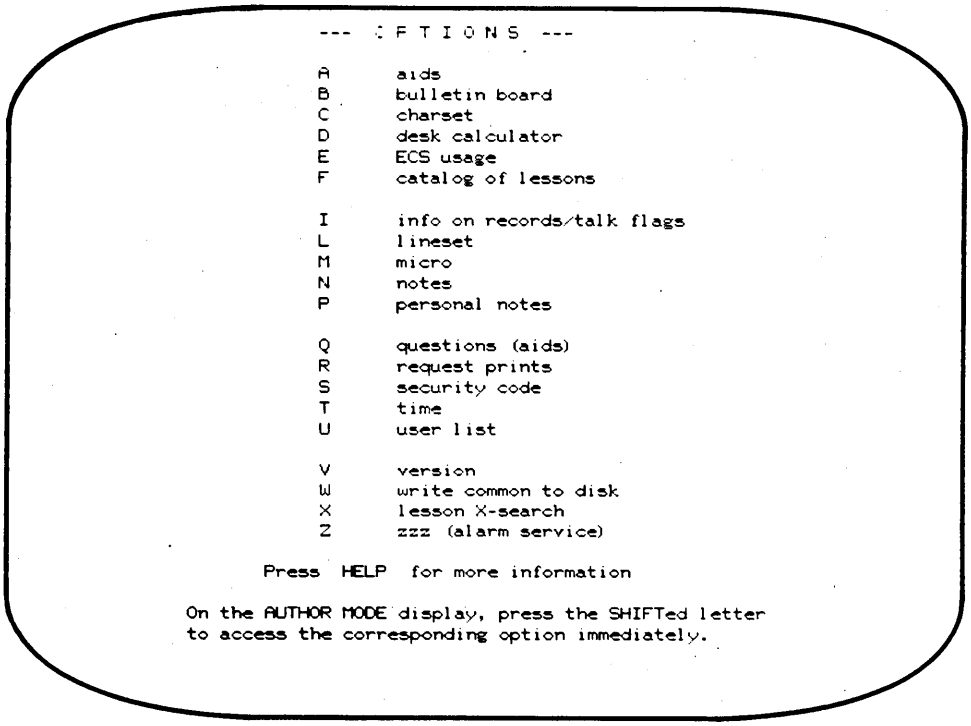


Figure 6-1. SHIFT-DATA Options Display

Letter	Option
i	The records and talk flags option supplies information about your talk options and your use of the PLATO system. By default, your talk options allow any author or instructor to TERM-talk to you (refer to section 7). You might also want to appear in the on-system list of users. To turn an option on (yes) or off (no), type the number in front of the option. Press BACK to return to the Author Mode Display.
n	The PLATO Notes Display allows you to look at system announcements, public notes, group notes, and personal notes (refer to Notes).
p	Letter p takes you to your personal notes (refer to Notes).
u	The current user's option displays a list of authors and instructors currently using the system. Your sign-on appears in the list if you turned on your user listing option in your talk options. Press HELP for an explanation, or press BACK to return.

LESSON SELECTION

From the Author Mode Display, you can study a lesson as a student. Type the name of the lesson you want to access, and press the DATA key. When you are in a lesson and you want to stop, press the SHIFT-STOP keys to return to the Author Mode Display. Sometimes lesson authors provide other exits such as BACK or SHIFT-BACK from their lessons. If a lesson has another exit, the lesson usually informs the user.

You can select lessons to study from the system catalog.

NOTE

Some lessons on the system are in private libraries, or libraries which require an additional use charge, and may not be accessible to everyone.

SYSTEM CATALOG

The system catalog lists lessons available on the PLATO system. Use this catalog to look for lessons on certain topics or for lessons of general interest. To access the catalog, type F on the Author Mode Display.

The catalog gives lesson names only for lessons you may access. Contact your Control Data representative if you want more information about specific lessons.

The catalog contains the following information.

- Instructions for using the catalog.
- Indexes of titles, authors, and subjects.
- Descriptions of lessons.

The first display of the catalog (figure 6-2) gives you the following options from which to choose.

- Instructions for using the catalog.
- Alphabetical title index.
- Alphabetical author index.
- Alphabetical subject index.

To choose an option, type the letter or the number in front of the option, and press NEXT. To return to a previous display, press BACK or SHIFT-BACK. You might want to start with the instructions for using the catalog.

The catalog lists lessons referred to in this manual under the author index heading PLATO User Services. To access this, follow these steps.

1. On the first display of the catalog, type c for author index.
2. The catalog asks you to enter an author. Type PLATO User Services. Press NEXT.
3. The catalog gives you an alphabetical list of authors, starting with PLATO User Services. Type the number in front of PLATO User Services. Press NEXT.
4. The lesson gives you a list of lessons written by PLATO User Services. Choose one, type the number in front of it, and press NEXT for information.

OTHER AUTHORS

Lesson "authors" is a voluntary listing of authors on all the PLATO systems. To access this lesson, type authors on the Author Mode Display, and press DATA. You can look at sign-ons, names, and other information that authors have provided about themselves. To be included in the list, press SHIFT-NEXT to enter your information. You are responsible for keeping your information current.

NOTES

Notes are messages stored in the PLATO system. To reach the PLATO Notes Display (figure 6-3), type N or type notes on the Author Mode Display. From the PLATO Notes Display, you can access system announcements, public notes, group notes, and personal notes.

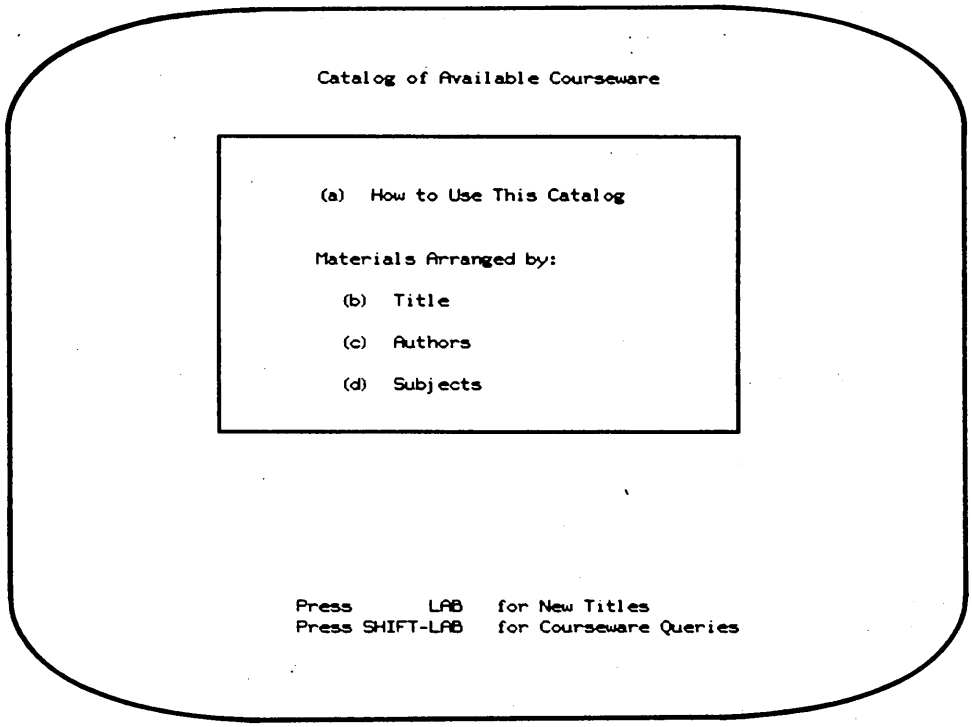


Figure 6-2. System Catalog Display

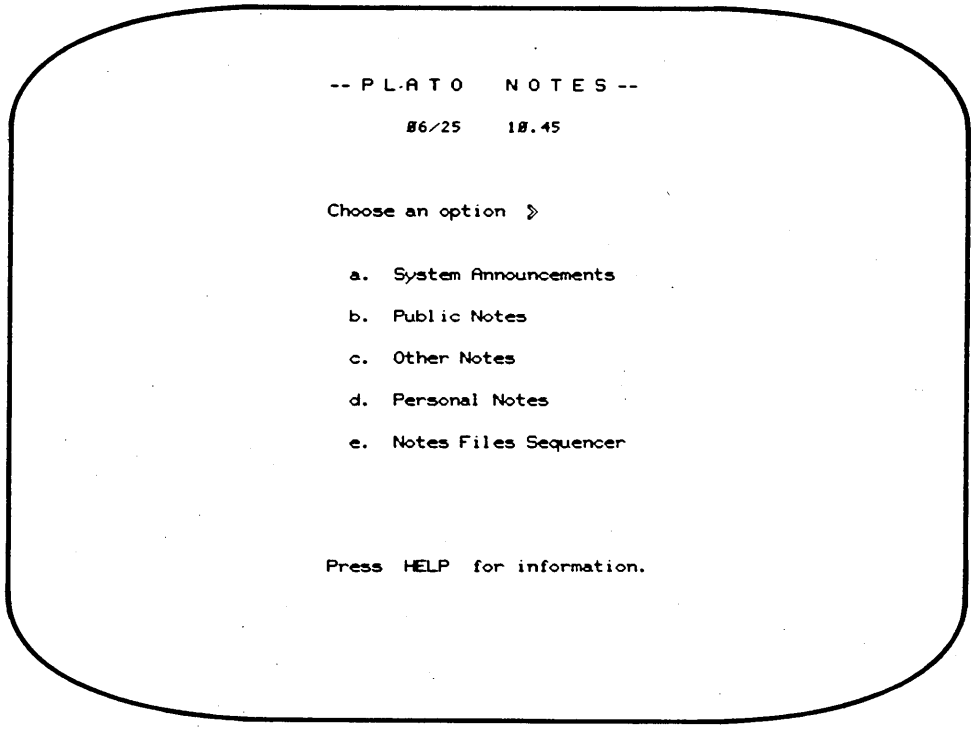


Figure 6-3. PLATO Notes Display

When you write a note on the PLATO system, you use an editor (a program that helps you write a note). Two available editors are a basic editor which provides fundamental editing options, and a TUTOR editor which provides advanced editing options. Press SHIFT-DATA to switch editors while writing a note. Press the HELP key for help.

To learn how to write notes, study lesson "Ønotesintr."

NOTE

Users of Control Data PLATO services should be aware that the rules and regulations of the United States and International Telecommunications Regulatory Agencies prohibit Control Data from using communications services it leases from domestic, international, and foreign telecommunications carriers to transmit information for its users which is not part of a "single integrated" service, that is, all information transmitted must facilitate or be directly related to the development, proper use, and application of instructional and related materials of the PLATO system. Noncompliance with these rules and regulations may force Control Data to discontinue PLATO service to users who violate these rules and regulations.

SYSTEM ANNOUNCEMENTS

System announcements form a notes file of information about PLATO system operations, new PLATO systems, problems and their corrections, installation of new system features, and changes in prime time hours or holiday services. Authors and instructors can read system announcements, but only system-support people can write them.

PUBLIC NOTES

Public notes form a notes file of questions and comments about PLATO-related topics. Authors and instructors can read and write public notes. You can reach public notes either from the PLATO Notes Display or from the Author Mode Display by typing pbnotes and pressing DATA.

GROUP NOTES

A group notes file is a notes file for a specific group of users. An account director can create a group notes file and can restrict access to specific users. Public notes is an example of a group notes file to which all authors and instructors have access.

PERSONAL NOTES

Personal notes are private messages to and from authors and instructors. Only the addressee of a personal note can see that note. Users sometimes refer to personal notes as pnotes. You can reach the Personal Notes Display (figure 6-4) either from the PLATO Notes Display or by typing P on the Author Mode Display.

To send a personal note to an author or instructor, enter that user's PLATO name, PLATO group, and PLATO system on the Personal Notes Display.

Pressing NEXT when the arrow is at the Name, Group, or System entry automatically fills in your name, group, or system. Therefore, when you send a note to a user who is on the same system as you are, pressing NEXT when the arrow is at the System entry automatically fills in the correct system. Some Control Data systems are minna, minnb, and minnc.

Practice sending personal notes by sending a note to yourself. When someone sends you a note, your Author Mode Display gives a PERSONAL NOTES message, and the PLATO Notes Display shows an arrow pointing to the personal notes option. When you receive a note, it stays in your file until you delete it by pressing SHIFT-HELP when it is on your screen. To respond to a note, press SHIFT-LAB when it is on your screen.

WRITING LESSONS

As an author, you can write lessons directly on-line at a terminal. (On-line is the state of being properly signed onto the system.) To write a lesson, you need a lesson space provided by your account director. (A lesson space is an area in computer memory in which you can store author language instructions.) You also need to know how to use the author language and the editor.

Some authors have sign-ons for administrative or PLM purposes rather than lesson-writing purposes. These authors do not need the author language or editor.

AUTHOR LANGUAGE

The author language is the computer language authors use to write lessons. It has individual commands called author language instructions. A line display from a lesson with some author language instructions is shown in figure 6-5. You can learn the author language by taking a 2-week course taught by PLATO User Services or by taking a CREATE course offered by Control Data learning centers. Contact your Control Data representative for more information.

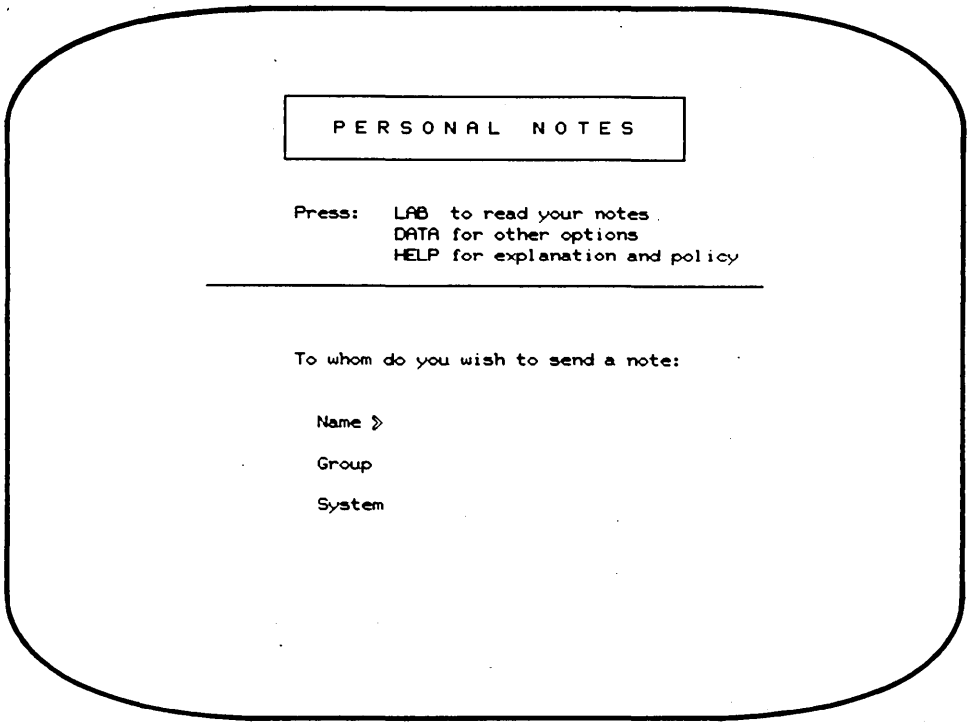


Figure 6-4. Personal Notes Display

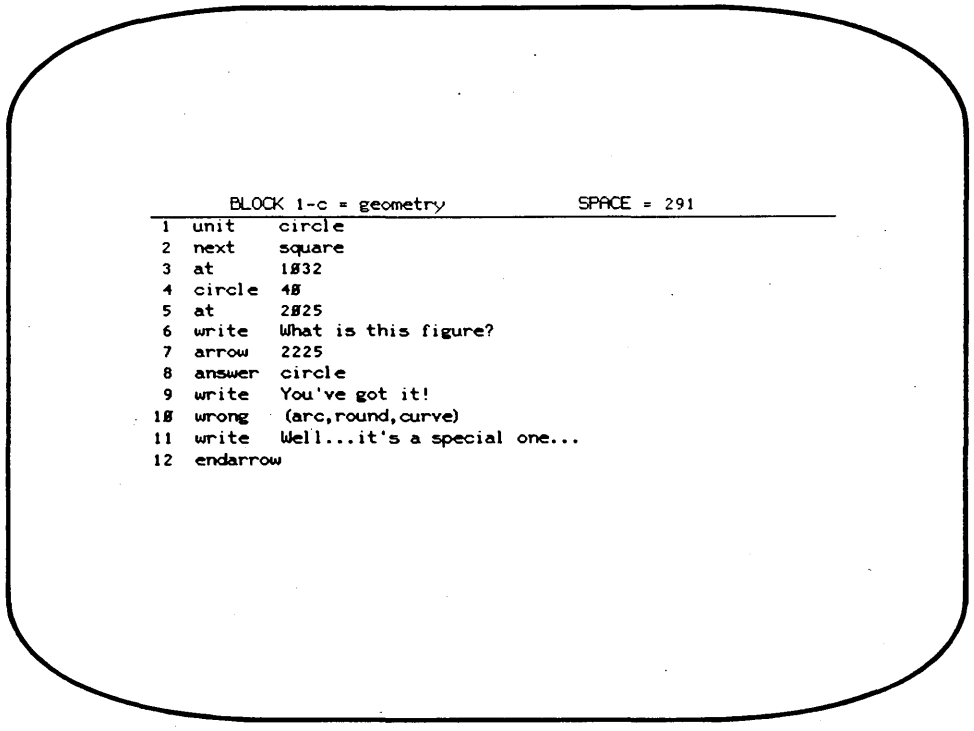


Figure 6-5. Line Display

Lesson "aids" is a detailed author language reference source. For information about an author language instruction or another programming problem while working on a lesson on-line, you can reference "aids," look up the instruction, and return to the same place in your lesson. To use lesson "aids," type A or type aids on the Author Mode Display. From the "aids" title display, press HELP for information about "aids," or press NEXT for the index. From the index, type a to learn about "aids" for new authors, or type b to learn how to use "aids." Study lesson "øaidsintro" to learn more about lesson "aids."

Another available author language resource is the PLATO Author Language Reference Manual, listed in the preface. This manual is for authors who are familiar with the author language.

EDITING

The editor allows authors to write lessons on-line. The editor is part of the computer system that lets you insert, delete, and read lines of text or data. Study lessons "øediting1," "øediting2," and "øediting3" to learn how to use the editor. For more help, press HELP when editing.

Some advanced editing features are SD (show display) and ID (insert display). To learn about these advanced features, study lessons "øtermcurso" and "øsd."

SIGNING OFF

When you finish using the system, sign off by pressing SHIFT-STOP until the following message appears.

Press NEXT to begin

The TERM key gives access to additional useful features on the PLATO system. You can use these features, called TERMs, almost anytime you are signed on.

To access a TERM, press TERM. TERM is the uppercase function of the ANS/TERM key. To press TERM, hold down the SHIFT key as you press the ANS/TERM key. The system responds with

what term?⟩

near the bottom of the screen. Type in the name of the TERM (for example, calc) and press NEXT. If the system accepts the TERM, the bottom lines of the screen erase, and the system prints a message that usually requires a response. If you do not want to respond, press BACK to return.

If the system does not accept the TERM, the what term? message erases and nothing happens.

The what term? message might not appear. A TERM might not work in a lesson if the lesson author has prevented its use.

Lesson "aids" gives a list of TERMs and a short explanation of each. To access this list, enter lesson "aids," press the DATA key, type system terms, and press NEXT.

TERMS FOR ALL USERS

TERMs available to students, multiples, instructors, and authors are TERM-calc, TERM-comments, TERM-spell, and TERM-time.

CALC

TERM-calc is a method of getting answers to calculations. To use TERM-calc, follow these steps.

1. Press TERM (SHIFT-ANS/TERM key).
2. Type calc and press NEXT. Bottom two lines on the screen erase. System displays an arrow (⟩).
3. Type in your calculation; do not include = sign. Press NEXT. [For example, 49(14.4+27.8) NEXT.] System gives answer (for example, 2067.8).
4. Press NEXT to enter another expression, HELP for instructions, or BACK to return to your previous activity.

COMMENTS

TERM-comment or TERM-comments (you can use either spelling) is a method of writing a comment about a lesson you are studying. The system sends your comment to the lesson author. The author receives your comment either as a group note or as a personal note. Study lesson "øtermcomme" to learn how to use TERM-comments.

SPELL

TERM-spell is a method of checking the correct spelling of a word. Users can also suggest words to be included on the system. Study lesson "termspell" to learn how to use TERM-spell.

TIME

TERM-time gives the current time and date on the bottom line. Press TERM, type time, and press NEXT.

TERMS FOR INSTRUCTORS AND AUTHORS

TERMs available to instructors and authors are TERM-busy, TERM-consult, TERM-pnote, and TERM-talk.

BUSY

TERM-busy is a way of making you unavailable for TERM-talk. To access TERM-busy, press TERM, type busy, and press NEXT. If someone tries to call you after you have accessed TERM-busy, the system tells you who is calling and sends a message to the caller stating you are busy and have been notified who called.

You can leave TERM-busy at any time and become available for TERM-talk again by pressing TERM, typing busy, and pressing the DATA key. Signing off also cancels TERM-busy.

CONSULT

TERM-consult is a method of getting immediate help from a consultant signed on at another terminal. A consultant is a Control Data employee who helps instructors and authors with any problem they have on the PLATO system. Instructors can use TERM-consult to get help with setting up a curriculum. Authors often use TERM-consult to get help with writing lessons. Study lesson "øtermconsu" to learn how to use TERM-consult.

PNOTE

TERM-pnote allows the user to write personal notes from anywhere on the system. To learn how to use TERM-pnote, enter lesson "aids," press the DATA key, type term-pnotes, and press NEXT.

TALK

TERM-talk provides immediate communication with other instructors and authors who are signed on at other terminals. You can type messages back and forth on the two bottom lines of the screen. Study lesson "ØtermtalkØ" to learn how to use TERM-talk.

Users can also monitor each other's screens while in TERM-talk. To learn about monitor mode, enter lesson "aids," press the DATA key, type monitoring, and press NEXT.

NOTE

Users of Control Data PLATO services should be aware that the rules and regulations of the United States and International Telecommunications Regulatory Agencies prohibit Control Data from using communications services it leases from domestic, international, and foreign telecommunications carriers to transmit information for its users which is not part of a "single integrated" service, that is, all information transmitted must facilitate or be directly related to the development, proper use, and application of instructional and related materials of the PLATO system. Noncompliance with these rules and regulations may force Control Data to discontinue PLATO service to users who violate these rules and regulations.

TERMS FOR AUTHORS

TERMs available only to authors are TERM-cursor, TERM-grid, and TERM-step.

CURSOR

TERM-cursor finds locations on the screen through a small cursor, which marks the current screen location. Study lesson "ØtermcursoØ" to learn how to use TERM-cursor.

GRID

TERM-grid draws a grid of touch panel squares over your current display. (The touch panel divides the screen into 256 squares.) TERM-grid does not activate the touch panel. The grid stays on your display until you go to a new display. To use TERM-grid, press TERM, type grid, and press NEXT.

STEP

TERM-step allows you to step through a lesson one author language instruction at a time. Step mode is useful for debugging lessons. Study lesson "ØtermstepØ" to learn how to use TERM-step.

The keyboard is the primary means of input to the PLATO system. The keyboard consists of character keys and function keys.

The character keys are the unshaded keys in figure A-1, part A. These keys resemble typewriter keys and, when pressed, display the associated characters on the screen. Five shaded keys to the extreme left of the character keys also display characters. The TAB key and the shaded keys to the extreme right of the character keys are function keys. They are used for a variety of purposes and do not display characters.

The two SHIFT keys produce the capital letters of the alphabetic characters and allow the other keys (numeric and function keys) to have two characters or functions [for example, the spacebar is a backspace (with no erase) when shifted .] Figure A-1, part B shows the lowercase (unshifted) keyboard, and figure A-1, part C shows the uppercase (shifted) keyboard. When you want a shifted character, hold the SHIFT key down while pressing the appropriate key.

CHARACTER KEYS

The 46 character keys display numbers, lowercase letters, punctuation, and arithmetic characters (figure A-1, part B). These keys also display uppercase letters and other punctuation marks when shifted (figure A-1, part C).

To display the lowercase ACCESS characters (figure A-1, part D), press the ACCESS key (SHIFT-□ key), release it, and press the appropriate key. To display the uppercase ACCESS characters (figure A-1, part E), press the ACCESS key, release it, and press the appropriate shifted key (for example, to display the copyright symbol, press the ACCESS key, release it, and press SHIFT-c). These characters are always available. However, the author can create and specify other characters with the FONT and MICRO keys, because the keyboard is redefinable. If a lesson does not specify a micro table, the MICRO key functions in the same manner as the ACCESS key.

FUNCTION KEYS

Each function key has a lowercase function and an uppercase function. To use an uppercase function, press the function key. To use an uppercase function, hold the SHIFT key down while pressing the function key. The SUPER and SUB keys also have ACCESS functions.

The author enables the needed function keys and usually informs the student in the lesson which function keys are active.

NEXT key

The NEXT key is the most frequently used key on the keyboard. This key indicates to the PLATO system that the response to a question is complete or that the student is ready for the lesson to continue. Because of the fundamental nature of the NEXT key in relation to a lesson, when in doubt, press NEXT.

Branching keys

The branching keys are SHIFT-NEXT, BACK, SHIFT-BACK, and STOP. If the author specifies a branch in the lesson, it takes the student to that part of the lesson when he/she presses the appropriate key. Pressing SHIFT-NEXT, BACK, and SHIFT-BACK has no effect if the author has not specified a branch for that key. However, pressing BACK or SHIFT-BACK while in a help sequence usually returns the student to the part of the lesson from which the student accessed the help sequence.

Help keys

The help keys are HELP, SHIFT-HELP, LAB, SHIFT-LAB, DATA, and SHIFT-DATA. The student can access help sequences by pressing the help keys on the keyboard. These help sequences are available to the student only if the author has specified them. If a help sequence is not associated with a specific help key, pressing that key has no effect.

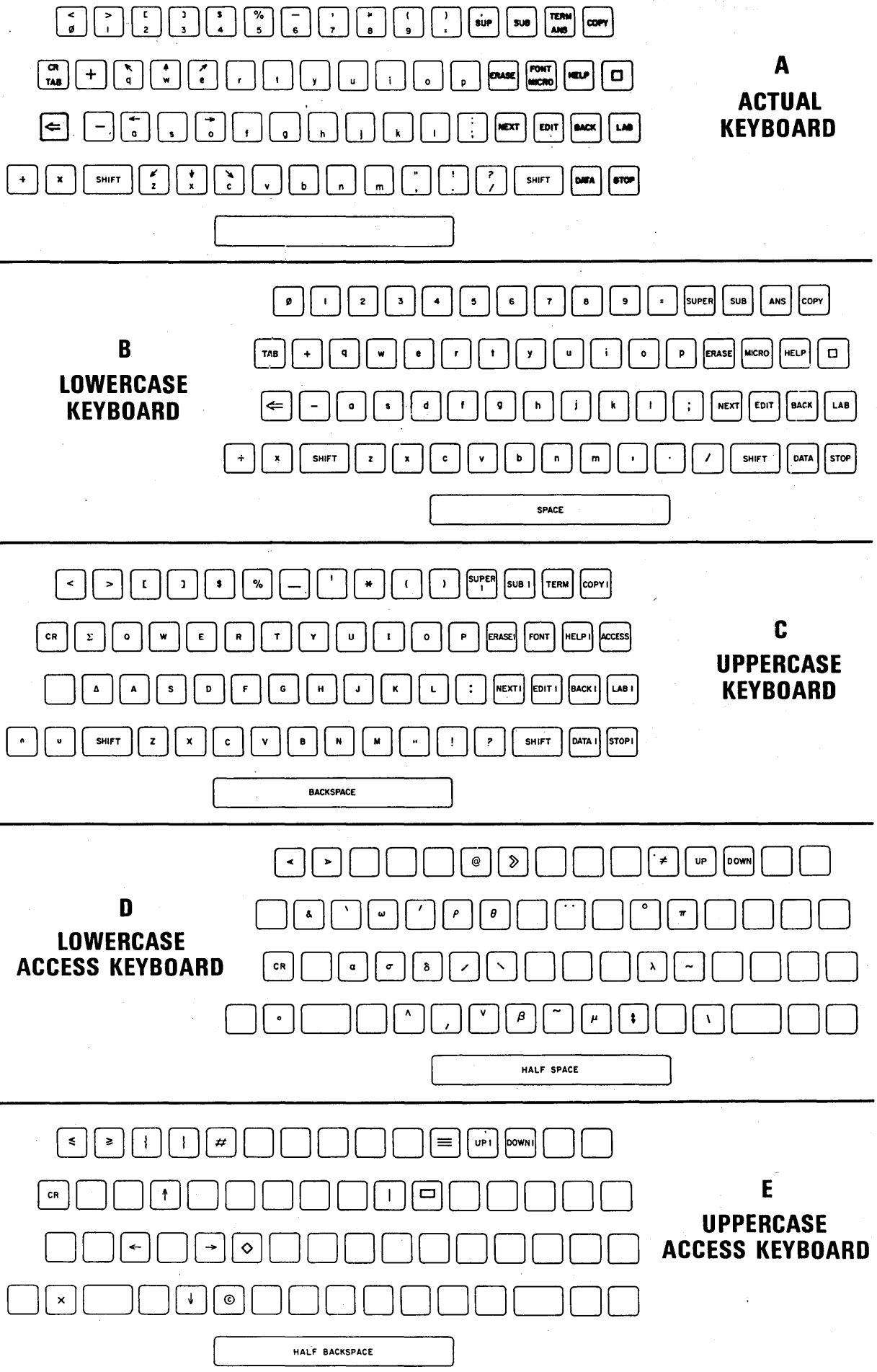


Figure A-1. Keyboard Assignments

SHIFT-STOP keys

The SHIFT-STOP (STOP1) keys are the only keys that an author cannot control. Pressing the SHIFT-STOP keys stops execution of the lesson and returns you to system control.

TERM key

The TERM key is similar to the help keys, but the student often does not return to the part of the lesson in which he/she used the TERM key. By pressing TERM (SHIFT-ANS keys), the message

what term? ⟩

appears on the bottom of the screen. After typing in the desired term and pressing NEXT, the student arrives at the appropriate part of the lesson if the author has specified such a term. For example, this key is useful when a lesson contains an index of available topics. Pressing the TERM key and typing the word index takes the student to the index of the lesson, if so specified by the author. If the student types in a term that the author has not specified, nothing happens.

ANS key

The ANS key answers a given question if the author has so provided. Often, authors do not specify that the student should be given the proper response to the question when he/she presses the key. In this case, the ANS key has no effect. In PLM, the student presses the ANS key to record a response.

ACCESS key

Not all of the permanent characters available to the PLATO terminal appear on the keyboard. These hidden characters, accessed by the ACCESS key, are similar to the visible characters with both lowercase and uppercase access characters. Figure A-1, part D shows the lowercase access characters, and figure A-1, part E shows the uppercase access characters. The ACCESS key is the SHIFT-□ (SHIFT-square) keys on the right-hand side of the keyboard. This key is the only function key without a name written on the key.

SUPER key

Use the SUPER key to write superscripts or to perform exponentiation in an algebraic expression. Pressing the SUPER key causes the next character to appear 5/16 of a line higher than ordinary text. If the superscript contains more than one character, press the SHIFT-SUPER (SUPER1) keys to lock the terminal into superscript mode. All typed-in text then appears as part of the superscript until you press the SHIFT-SUB (SUB1) keys.

Pressing the ACCESS SUPER keys (UP) causes the next character to appear one line higher than ordinary text (press the ACCESS key, release it, and press the SUPER key). Pressing the ACCESS SHIFT-SUPER keys (UP1) locks the terminal into this mode so that all typed-in text appears on the higher line until you press the ACCESS SHIFT-SUB keys.

SUB key

The SUB key is similar to the SUPER key but produces subscripts rather than superscripts (that is, the character appears 5/16 of a line lower than ordinary text). Pressing the SHIFT-SUB (SUB1) keys locks the terminal into subscript mode. The terminal stays in this mode until you press the SHIFT-SUPER (SUPER1) keys.

Pressing the ACCESS SUB keys (DOWN) causes the next character to appear one line lower than ordinary text. Pressing the ACCESS SHIFT-SUB (DOWN1) keys locks the terminal into this mode so that all typed-in text appears on the lower line until you press the ACCESS SHIFT-SUPER keys.

MICRO key

The MICRO key can perform either of two functions, depending upon the lesson. If the author has not specified a micro table, the MICRO key functions in the same manner as the ACCESS key. If the author has specified a micro table, the MICRO key accesses the table.

The micro table specifies up to 40 characters to replace a single character if a press of the MICRO key precedes the single character. For example, the key c may have a micro associated with it such that pressing MICRO and then c produces the text PLATO on the screen.

FONT key

In addition to the permanent characters, the author can specify as many as 126 other characters. These characters vary from lesson to lesson. When a lesson uses them, it usually informs the student. The student accesses them with the FONT key (SHIFT-MICRO). Unlike the SUPER, SUB, or ACCESS keys, you need not press the FONT key each time you want a character from the alternate character set. Instead, when you press the FONT key, the terminal switches to the alternate character set (for example, the Cyrillic alphabet), where it remains until you press the FONT key again.

TAB key

The TAB key functions in the same manner as the tab key on a typewriter; it allows you to skip from the current position on the screen to a specified column on the same line. The TAB key differs from the tab key on a typewriter in that the author rather than the student controls the positions of the columns; thus, the key has no effect if the lesson does not specify the use of the key.

CR (carriage return) key

The carriage return (SHIFT-TAB) returns the position of the display to the left margin; however, this is not necessarily the left-hand side of the screen. The position at which your response begins also sets that column as the left margin for a carriage return. To ignore the left margin and return the position of the display to the left-hand side of the screen, press the ACCESS ⇐ keys. Pressing the ACCESS SHIFT-TAB keys returns the position of the display to the upper left-hand corner of the screen.

COPY key

If the author enables the COPY key, the student can copy a string of words into his/her response. Each press of the COPY key enters one word.† Pressing the SHIFT-COPY keys copies the entire string or the remainder of the string if you have already copied some string. The copy option is available only if the author has so specified. If available, the student can copy the string of words only once. If the copy option is not available or you have already copied the string once, the COPY key has no effect.

ERASE key

Use the ERASE key to erase part of the response. Each press of the ERASE key removes one character from the response. Pressing the SHIFT-ERASE keys removes an entire word.† Erasing begins with the last character entered in the response.

EDIT key

The EDIT key functions similarly to the COPY key. The first press of the EDIT key removes the entire response from the screen; thereafter, each press of the EDIT key brings back one word† of the response. Pressing the SHIFT-EDIT keys returns the remainder of the response. Use of the EDIT key, unlike the COPY key, is circular (that is, if the entire response has been returned to the screen, pressing the EDIT key again removes the entire response, as at its first use). The lesson can disable the EDIT key, so it is not always available; however, it is usually available.

☐ (square) key

If the author enables the square key, it functions in the same manner as the COPY key, except that each press of the square key copies a single character from the string instead of an entire word.

†When using the COPY, ERASE, and EDIT keys, a word is defined as a set of continuous characters separated from the other characters of the response with a blank space or punctuation.

The PLATO Information Systems Terminal (IST) provides user interaction with the PLATO system. Most of the terminal capabilities are under control of the lesson being executed and are not necessarily available at any given time.

TERMINAL COMPONENTS

The IST is of modular construction and consists of three main units (figure B-1). The matching display, keyboard, and controller units are easily interconnected or separated for convenience and portability during installation, maintenance, and unit replacement. The display unit consists of the cathode-ray tube (CRT) screen, the touch panel, and controls and indicators. The controller unit also has controls. This appendix discusses the components unique to the IST (the CRT screen and controls and indicators). Refer to section 3 for the components common to all terminals (the detachable keyboard and the touch panel).

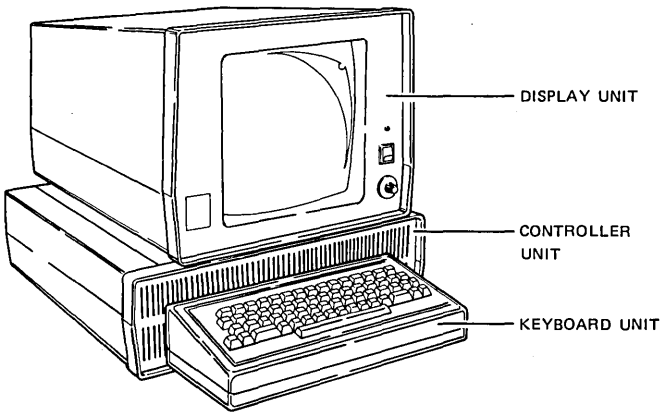


Figure B-1. PLATO Information Systems Terminal (IST)

CRT SCREEN

The CRT screen presents information on the IST. The 22-centimetre by 22-centimetre (8.5-inch by 8.5-inch) screen is a high-resolution CRT. The display area is a matrix of 512 by 512 elements and is much like a television display, because it needs continual refreshing to keep an element lit. The computer lights elements in the matrix individually or in groups for displaying characters, lines, or figures.

CONTROLS AND INDICATORS

The controls provide the terminal's operational control and interface elements (power and panel controls, error controls, and signal/power connectors). The following controls and indicators for the display unit and the controller unit are shown in figure B-2.

ERROR indicator

Lights during loss of communication and during a communication parity error. Under normal operation, it clears automatically. If the indicator stays lit, press the STOP key or the SHIFT-STOP keys. If the light does not go off, press the master clear switch.

Power ON/OFF switch

A two-position rocker switch that provides on/off control of the terminal's operating power. The down position is OFF, and the up position is ON.

BRIGHTNESS control

Used to adjust the video brightness of the display to a comfortable viewing level. Clockwise rotation increases the intensity of the display, and counterclockwise rotation decreases the intensity of the display.

CAUTION

If the BRIGHTNESS control is set too high, the display will be out of focus, and the life of the CRT will be shortened unnecessarily.

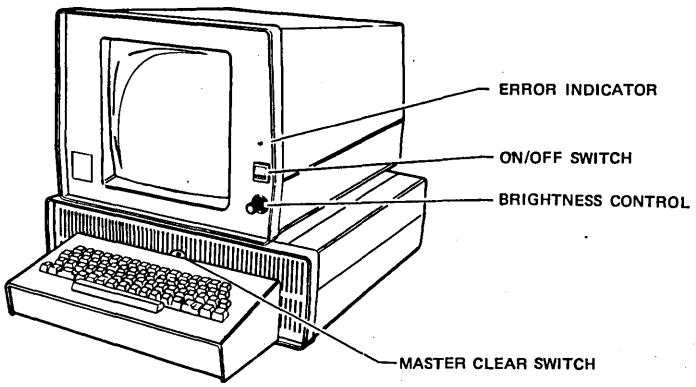
Master clear switch

If the ERROR indicator lights and the terminal ignores all keyboard and touch panel input, press the master clear switch and press NEXT to continue the lesson. If this does not work, press SHIFT-STOP and reenter the lesson.

Vertical centering control (V)

Moves the display up or down in relation to the center of the CRT. Clockwise rotation moves the display up, and counterclockwise rotation moves the display down.

TERMINAL FRONT



TERMINAL REAR

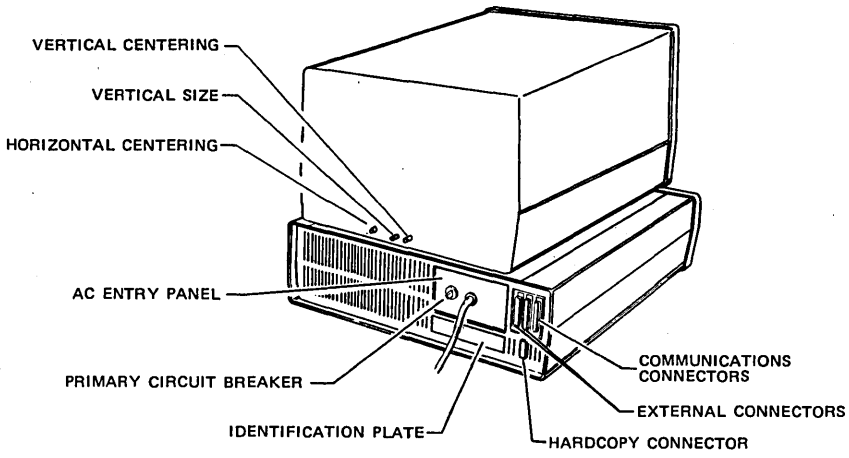


Figure B-2. Controls and Indicators

Vertical size control (S)

Adjusts the vertical display size. Clockwise rotation increases the vertical size, and counterclockwise rotation decreases the vertical size.

NOTE

To ensure operational stability and to avoid thermal effects that can cause component drift, allow at least 30 minutes for the terminal to warm up before attempting to adjust vertical centering, horizontal centering, or vertical size controls.

Horizontal centering control (H)

Moves the display right or left in relation to the center of the CRT. Clockwise rotation moves the display to the right, and counterclockwise rotation moves the display to the left.

NOTE

Normally, the user should not need to adjust the centering controls unless the equipment is moved or if the displayed data has drifted off from centerlines due to the normal effects of component aging.

AC entry panel

Attaches the primary power cord for the terminal and contains the primary circuit breaker.

PRIMARY CIRCUIT BREAKER

Protects all other terminal components by tripping whenever a voltage, temperature, or overload condition exists. Must be in the up position (ON) before applying power to the terminal with the power ON/OFF switch.

CAUTION

To prevent damage to the terminal, never use the circuit breaker to apply power.

NOTE

If the circuit breaker trips because of an overtemperature condition, the circuit breaker cannot be reset until after a cooling-off period, which permits the internal temperature sensor to return to its normal operating range. If the circuit breaker trips repeatedly with each attempt to reapply power, terminal failure has occurred. Set the power ON/OFF switch to OFF and notify the site director.

Identification plate

Contains terminal's serial number. This number is required for certain administrative and maintenance purposes.

External connectors

Connecting point for optional external equipment. Connected only when optional external equipments are used with the terminal.

Communications connector

Connecting point for the external communication equipment. Transmits data to and from the computer.

Hardcopy connector

Connecting point for optional hardcopy printer. Installed only when optional hardcopy printer is used with the terminal.

INSTALLATION

Certain installation site facilities must be available before an IST can become operational. Consult the following terminal specifications to provide these facilities.

Power

U.S.: 120-volt, 50/60-Hz, 2.5-ampere, 3-wire.

International: 220-volt, 50-Hz, 1.25-ampere, 3-wire.

Operating environment

10° to 35°C (50° to 95°F), recommended 24°C (75°F) with 10 to 90 percent relative humidity, 10°C (18°F) per hour temperature gradient, and 2000 metres (6560 feet) altitude.

Storage environment

-10° to 50°C (14° to 122°F) with 0 to 100 percent relative humidity.

Ventilation

When positioning the terminal, allow an 8-centimetre (3-inch) clearance from any obstruction along the entire back surface; internal fans require 1.4 m^3/min (50 cfm) at inlet.

Heat dissipation

300 W (1025 Btu/hr).

Signal connection

The standard length of the communications cable is 7.5 metres (25 feet), and the standard length of the keyboard cable is 0.75 metres (2.5 feet). Cables are supplied with the terminal. User can arrange installation of a Data Access Arrangement (DAA) through Control Data Corporation, or user can use a Control Data acoustic coupler.

The following specifications are for the terminal with the keyboard attached.

Height	48 centimetres (19 inches)
Width	51 centimetres (20 inches)
Depth	71 centimetres (28 inches)
Weight	54 kilograms (105 pounds)

The following specifications are for the keyboard.

Height	8 centimetres (3 inches)
Width	38 centimetres (15 inches)
Depth	18 centimetres (7 inches)
Weight	2 kilograms (4.5 pounds)

The following specifications are for the display unit.

Height	33 centimetres (13 inches)
Width	41 centimetres (16 inches)
Depth	56 centimetres (22 inches)
Weight	18 kilograms (40.5 pounds)

The following specifications are for the controller unit.

Height	15 centimetres (6 inches)
Width	51 centimetres (20 inches)
Depth	53 centimetres (21 inches)
Weight	27 kilograms (60 pounds)

INITIAL INSTALLATION PROCEDURE

CAUTION

To prevent overheating, allow an 8-centimetre (3-inch) clearance from obstructions along the terminal's rear surface for ventilation purposes.

1. To mount display unit on controller unit, place guide rails of display unit on guide rails of controller unit (figure B-3). Slide display unit back. Continue sliding display unit back as far as possible until automatic latch clicks.

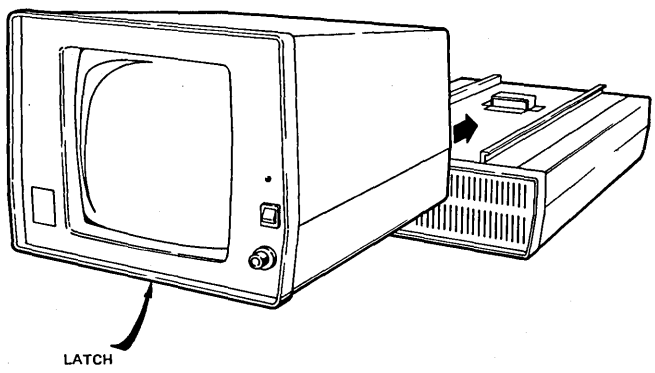


Figure B-3. Display Unit Mounting

2. Install 25-pin keyset connector at front of terminal using screws provided. To prevent stripping screws, align them correctly. If screw gives any resistance, remove it and try again.

3. Install communications cable to 25-pin communications connector at rear of terminal using screws provided. If communications cable is not assembled, refer to Communications Cable Assembly and Hookup.

4. Set power ON/OFF switch to OFF. Set PRIMARY CIRCUIT BREAKER to down position (OFF).

5. Connect power cord to 120-volt, 50/60-Hz, 3-wire, 2-5-ampere grounded wall outlet for United States model, or 220-volt, 50-Hz, 3-wire, 1.25-ampere grounded wall outlet for International model.

6. Set PRIMARY CIRCUIT BREAKER to up position (ON). Terminal is now ready for connection to PLATO system (refer to Connecting Terminal to PLATO System).

COMMUNICATIONS CABLE ASSEMBLY AND HOOKUP

To assemble the communications cable kit, determine which communication interface the terminal uses and perform the following procedure.

Assembly

1. Connect applicable color-coded wires to connector according to table B-1 and figure B-4. Do not connect more than one interface selection to connector. Pins cannot be extracted from connector except with a special tool.

TABLE B-1. INTERFACE SELECTIONS

Pin No.	RS-232-C	Internal Modem	Long Line
1	Bare	Bare	Bare
3	Red	-	-
7	Black	-	-
11	-	Red	-
14	White	-	-
18	-	Black	-
21	-	-	White
22	-	-	Black
23	-	-	Red
24	-	-	Green

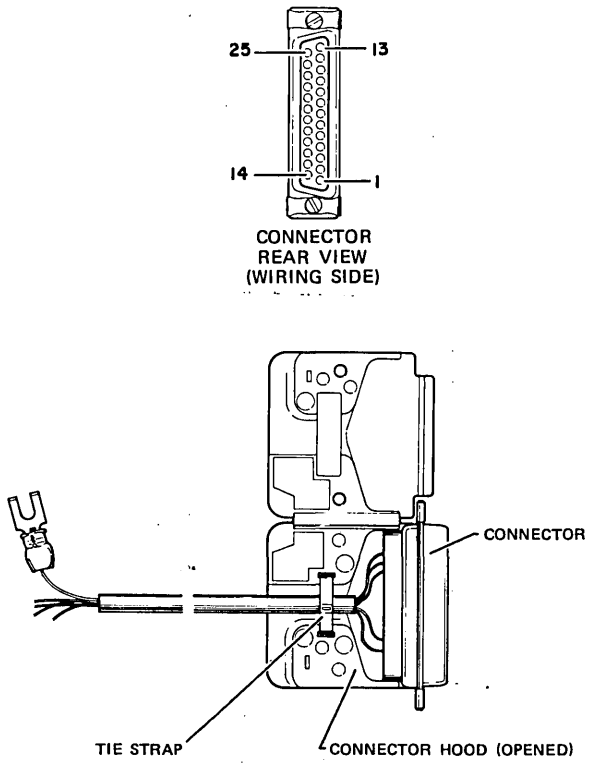


Figure B-4. Data Set Cable Kit Assembly

2. Place connector in mounting slot of connector hood, and clamp down cable with tie strap provided (refer to figure B-4). Do not clamp down unused wires with tie strap.

3. Tape unused wires of cable against cable jacket; do not cut off.

4. Close connector hood and fasten with two screws provided.

NOTE

Remove optional internal modem from common logic chassis (location 05) when using long line or RS-232-C interface.

Hookup

1. Connect communications cable to 25-pin communications connector at rear of controller unit.

2. Do one of the following.

   a. If communications connection uses DAA (figure B-5), refer to 40003-107 Hardware Maintenance Manual for information on installation.

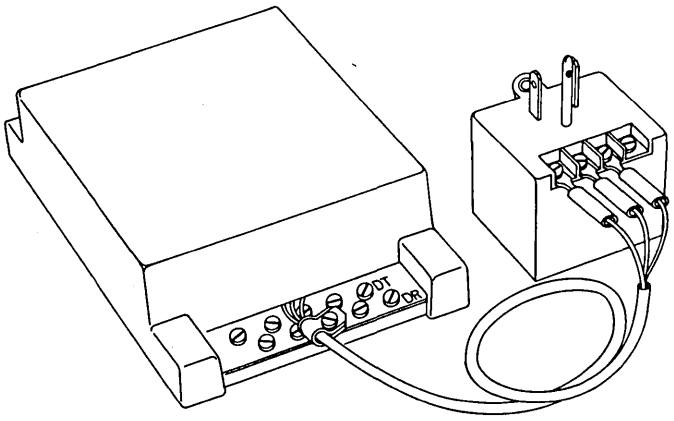


Figure B-5. Data Access Arrangement

   b. If communications connection uses acoustic coupler, connect lugged leads at other end of communications cable to acoustic coupler connections DT and DR (polarity unimportant) (figure B-6).

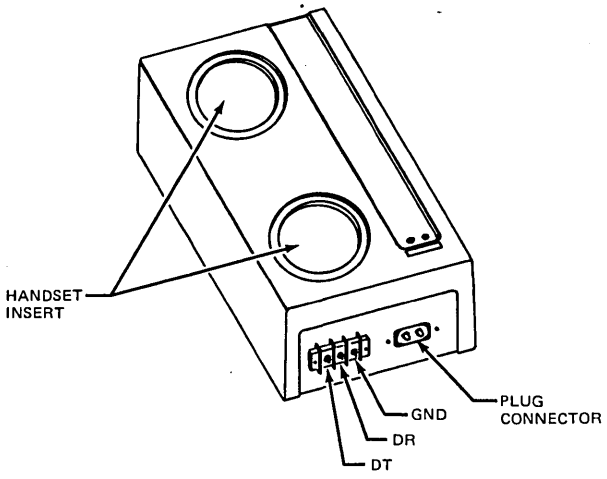


Figure B-6. Acoustic Coupler

MOVING THE IST

1. Set power ON/OFF switch to OFF and PRIMARY CIRCUIT BREAKER to down position (OFF).
2. Disconnect AC power cord from wall outlet.
3. Unscrew communications cable.
4. Unscrew keyset connector.
5. To take display unit off controller unit, disengage latch under front of display unit, and slide display unit forward and off guide rails (refer to figure B-3).

CONNECTING TERMINAL TO PLATO SYSTEM

1. Ensure that terminal power cord is connected to 120-volt, 50/60-Hz, 2.5-ampere, 3-wire grounded wall outlet for United States model, or 220-volt, 50-Hz, 1.25-ampere, 3-wire grounded wall outlet for International model.
2. Ensure that PRIMARY CIRCUIT BREAKER is in up position (ON).
3. Set power ON/OFF switch to ON (refer to figure B-2). (CRT takes approximately 1 minute to warm up after circuit breaker is turned on.)

NOTE

If circuit breaker trips following initial power-on sequence, set power ON/OFF switch and PRIMARY CIRCUIT BREAKER to OFF, and then reset PRIMARY CIRCUIT BREAKER to ON. If circuit breaker trips repeatedly with each attempt to reapply power, terminal failure has occurred.

4. Terminal now runs through its resident diagnostic program. Terminal is nonoperational if it fails to display the message TERMINAL READY within 10 seconds after power is applied. If no errors are detected and all tests in the resident diagnostic program are completed successfully, terminal displays the message TERMINAL READY and may light ERROR indicator, depending upon conditions. A firmware identification tag may follow the TERMINAL READY message. Adjust the BRIGHTNESS control to obtain the most comfortable viewing level.
5. Direct connected terminal (option).

   Proceed with sign-on sequence.
6. Dial-in connected terminal (option).

   a. Dial telephone number that connects computer, and listen for high-pitched tone followed by higher-pitched tone with low-pitched tone superimposed.

      If busy signal results, hang up receiver, check number, wait awhile, and dial again.

   b. DAA connection only. Pull upward on left-hand (white) button of telephone (disconnects handset and connects terminal), and set handset aside but do not hang up telephone.

      Acoustic coupler connection only. Insert handset into acoustic coupler (connects terminal).

   c. Terminal ERROR indicator may light. Press SHIFT-STOP keys to turn light off. If light does not go off, press master clear switch.

   d. Proceed with sign-on sequence.
7. To disconnect terminal/computer connection, sign off system, and hang up telephone handset.
8. Turn off terminal by setting power ON/OFF switch to OFF.

USER MAINTENANCE

Maintenance of an IST at the user level is limited and is restricted to cleaning the cabinet of the terminal. Performing the following procedures at the recommended time intervals can reduce maintenance downtime.

KEYBOARD CLEANING

Remove dust accumulations from hard-to-reach areas of the keyboard with a soft brush weekly.

GRILLWORK CLEANING

Check the grillwork at the front of the controller unit for dust accumulations monthly. If it is dusty, set the power ON/OFF switch to OFF, set the PRIMARY CIRCUIT BREAKER to OFF, and disconnect the terminal power connection. Clean the grillwork with a soft brush and a vacuum cleaner. This grillwork area is the cooling air intake.

CABINET AND SCREEN CLEANING

Clean the exterior of the terminal cabinet every 60 days.

Set the power ON/OFF switch to OFF, set the PRIMARY CIRCUIT BREAKER to OFF, and disconnect the terminal power connection. Clean the touch panel using a mild soap and water solution and a soft cloth. Any grit on the cloth will scratch the screen.

CAUTION

Do not use detergents containing ammonia or bleach; these cleaners discolor finished surfaces.

Clean the exterior of the terminal cabinet with a solution of warm water and mild household detergent applied with a soft cloth. Do not introduce liquid into the cabinet interior. If liquid reaches the interior, allow an appropriate drying time before applying power. Dry the terminal surfaces completely before applying power.

TROUBLESHOOTING

NOTE

If the ERROR indicator lights and the terminal ignores all keyboard and touch panel input, a communications error has occurred. Press the master clear switch and press NEXT to continue the lesson. If this does not work, press SHIFT-STOP and reenter the lesson.

If a display cannot be achieved or if trouble occurs during on-line operation, follow the troubleshooting procedure in figure B-7. This eliminates the following items as the cause of terminal failure.

- Incorrect terminal setup.
- Loose power cord connections.
- Loose communications cable connections.
- Source power problems.
- Tripped circuit breaker.
- Power ON/OFF switch not set to ON.
- BRIGHTNESS control not turned up.

The terminal diagnostic lesson "diag" can also be used to troubleshoot a faulty terminal. Lesson "diag" provides diagnostics to test the PLATO terminal. Some of the available options are a pattern test, character tests, and a touch panel test. Lesson "diag" can be used with any terminal.

The user can access lesson "diag" from two different points in the sign-on sequence. If the user has an author sign-on, he/she can type the word diag on the Author Mode Display and press DATA to access lesson "diag." If the user does not have an author sign-on, he/she can type the word diag on the Welcome Display, press NEXT, type m on the Group Name Display, and press SHIFT-STOP to access lesson "diag."

The terminal user can correct terminal failure by resetting the circuit breaker and correcting loose power cord and loose communications cable connections. All other types of terminal failures should be corrected by an authorized customer engineer.

CAUTION

Do not hold the PRIMARY CIRCUIT BREAKER in the up position if it trips immediately while resetting it. If the circuit breaker resets but continues to trip, terminal failure has occurred.

A terminal which is properly plugged into a live power outlet but which shows no sign of power via the ERROR indicator or CRT lighting indicates an open circuit breaker. To reset the circuit breaker, set the power ON/OFF switch and the PRIMARY CIRCUIT BREAKER to OFF and then reset the PRIMARY CIRCUIT BREAKER to ON.

To check a power outlet for voltage, connect other devices to the power outlet to see if they function properly. Report outlet problems to building maintenance electricians.

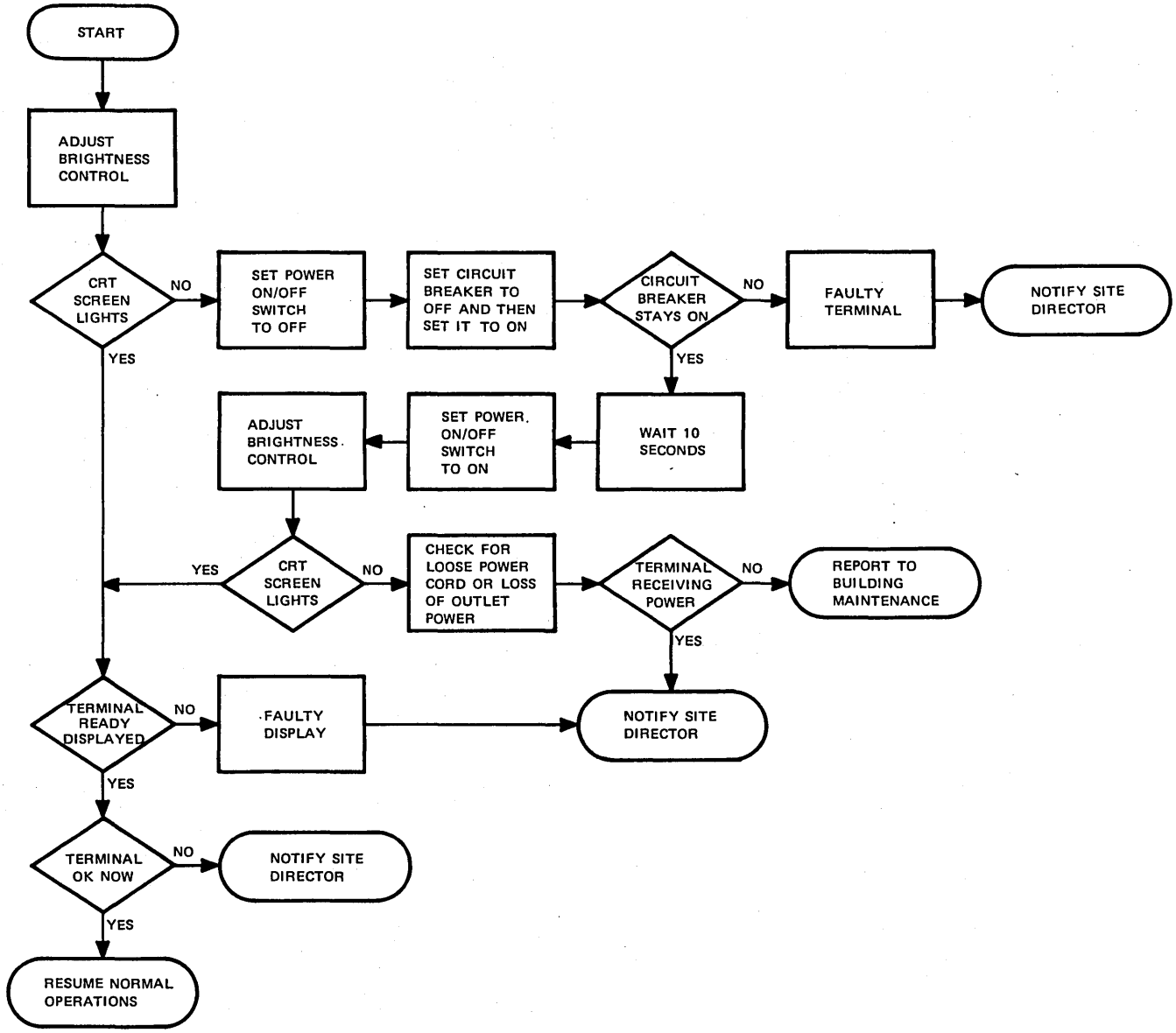


Figure B-7. IST Troubleshooting

The PLATO Information Systems Terminal II (IST-II) provides user interaction with the PLATO system. Most of the terminal capabilities are under control of the lesson being executed and are not necessarily available at any given time.

CAUTION

Important Instructions to User

The IST-II has been approved by the Federal Communications Commission (FCC) as not being harmful to the telephone network when connected directly to the telephone lines. In order to fully comply with Part 68, FCC Docket 19528, the following should be read carefully and followed completely where applicable:

- The FCC rules require that all direct connection to the telephone lines must be made through standard plugs and jacks as supplied with IST-II terminals equipped with internal modems. No connection can be made to party lines or coin lines. Prior to connecting the device to the lines, you must inform the local telephone company of the installation required. You must also:
  - Call the local telephone company and inform them that you have an FCC registered device which you wish to connect to their lines. Give them the 14-digit FCC Registration Number and Ringer Equivalence Number, both of which are on the label located on the back of the terminal.
  - Inform the telephone company of the jack (connector) required for the device. Recently installed telephones are provided with the required jack.
- After the telephone company has installed the required jack, connect the terminal in the manner described in this manual.
- Operation of the IST-II is described in this manual.
- All repairs must be accomplished as described in the IST-II Hardware Maintenance Manual.
- If it appears that the terminal is malfunctioning, it should be disconnected from the telephone line until it can be determined if the equipment or the telephone line is the source of the trouble. If the equipment needs repair, it should not be reconnected until such repairs are made.
- The terminal has been designed to prevent harm to the public network. If, in the case of malfunction, out of limit parameters are noted by your telephone company, service may be temporarily discontinued.
- The telephone company may make changes in its communication facilities, equipment, operations, or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the Rules and Regulations of the FCC. If such changes can be reasonably expected to render any customer's terminal equipment incompatible with the telephone company communications facilities, or require modification or alteration of such terminal equipment, or otherwise materially affect its use or performance, adequate notice will be given to allow you an opportunity to maintain uninterrupted service.

Service Requirements

In the event of equipment malfunction, check with your Control Data Corporation Sales Representative to check on the type of service warranty you have. Under FCC Rules, Part 68, users are not authorized to maintain their own terminals. Terminals must be maintained by Control Data maintenance personnel.

Faulty terminals should be reported to the PLATO Services Site Director, or the nearest Control Data Service Center.

TERMINAL

The IST-II is a single self-contained unit (figure C-1). The terminal consists of a cathode-ray tube (CRT) screen, a keyboard, and controls and indicators. Additional features include a touch panel, an internal modem, and an expanded memory. This appendix discusses the components unique to the IST-II (the CRT screen, controls, indicators, and internal modem). Section 3 discusses the components common to all terminals (the keyboard and touch panel).

NOTE

Although the IST-II keyboard is not detachable, its layout is the same as that discussed in appendix A.

CRT SCREEN

The CRT screen presents information on the IST-II. The high-resolution CRT displays a 22-centimetre by 22-centimetre (8.5-inch by 8.5-inch) image. The dis area is a matrix of 512 by 512 elements and is much li television display, because it needs continual refreshing to keep an element lit. The computer sends information to the terminal which lights elements in the ma individually or in groups for displaying characters, lines figures.

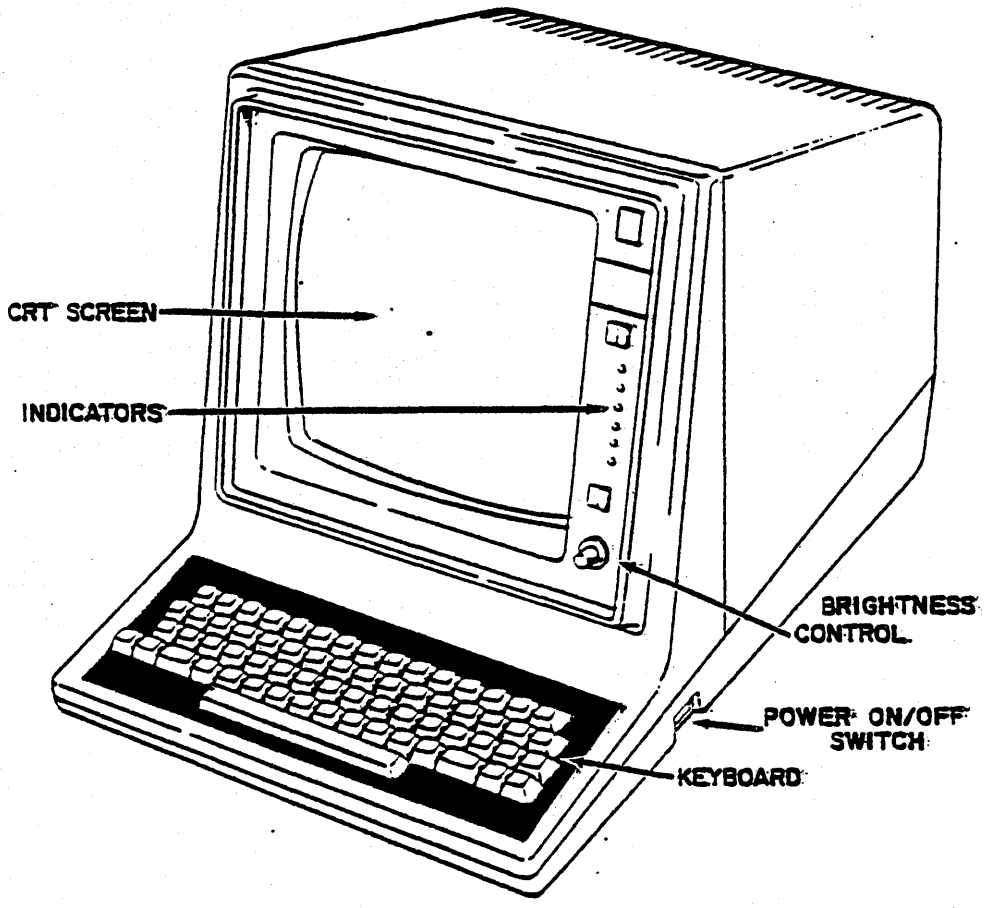


Figure C-1. PLATO Information Systems Terminal II

EXTERNAL CONTROLS, INDICATORS, AND CONNECTORS

The controls provide the terminal's operational control and interface elements (power and panel controls, error controls, and signal/power connectors). The following controls and indicators for the display unit and the controller unit are shown in figure C-2.

Power ON/OFF switch

A horizontal two-position rocker switch that provides on/off control of the terminal's operating power. This switch also serves as a circuit breaker switch. Before using the terminal, the user must wait approximately 45 seconds after turning the power on to allow the CRT filaments to warm up.

BRIGHTNESS control

Used to adjust the video brightness of the display to a comfortable viewing level. Clockwise rotation increases the intensity of the display; counterclockwise rotation decreases the intensity of the display.

CAUTION

If the BRIGHTNESS control is set too high, the display will be out of focus, and the life of the CRT will be shortened unnecessarily.

RESET switch

If the error (ERR) indicator lights and the terminal ignores all keyboard and touch panel inputs, press the RESET switch momentarily and then press NEXT to continue the lesson. If this does not work, press the SHIFT-STOP keys and reenter the lesson. All indicators light momentarily when the RESET switch is pressed.

Pressing the RESET switch momentarily initializes the terminal logic and causes a check sum test of each major controlware block. Controlware blocks found to be in error reload automatically. Pressing the RESET switch and holding it down for longer than 3 seconds initializes the terminal logic; initiates the terminal resident diagnostics (as selected by front panel switches), and causes a full autoload of the terminal's controlware from the PLATO system.

The following six indicators serve two purposes: 1) when the user is running the resident diagnostic programs, they indicate the status of the terminal, and, if an error is detected, the area where the program failed (refer to Troubleshooting for a description of the error codes); and 2) to monitor the signals corresponding to the indicator labels, described as follows:

ERR indicator

The ERR indicator lights during loss of communication and during communication parity error. Under normal operation it clears automatically. If the indicator stays lit, press the STOP key or the SHIFT-STOP keys. If the light does not go off, press the RESET switch.

XMT indicator

The transmitted data (XMT) indicator monitors the terminal output to the PLATO system. It flickers on and off as data is transmitted.

RCV indicator

The received data (RCV) indicator monitors the terminal input from the PLATO system. It flickers on and off as data is received.

RTS indicator

The request to send (RTS) indicator is always lit when the resident diagnostics are not being run.

DSR indicator

The data set ready (DSR) indicator follows the state of the DSR signal as provided at the terminal's PLATO interface connector or as provided by the internal modem. This indicator will be lit when using the internal modem or when connected to a functioning external modem. It will always be lit when using the communications cable kit identified in table C-1.

DTR indicator

The data terminal ready (DTR) indicator normally is lit when the resident diagnostics are not being run.

The following switch routes signals between the user's telephone and terminal.

DATA/TALK switch

The DATA/TALK switch must be used when the terminal is employing the internal modem. The switch should be set to TALK to use the telephone. It should be set to DATA after the user has dialed into the PLATO system to connect the terminal.

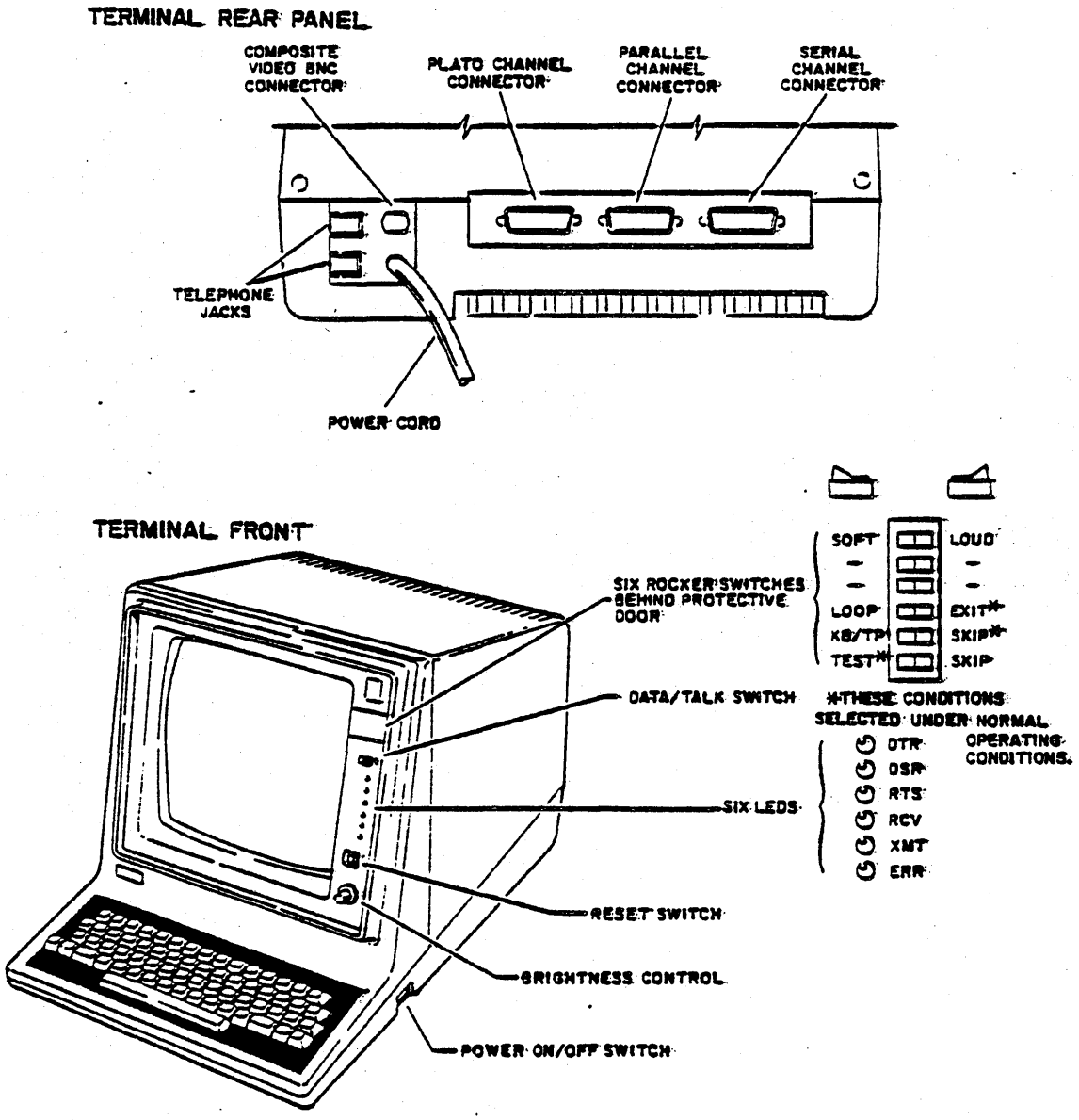


Figure C-2. External Controls, Indicators, and Connections

Six rocker switches are located behind a protective door on the front of the terminal. Only the following four switches are presently used; the settings of the two unlabeled switches (switches 4 and 5) do not affect terminal operation. The following paragraphs define the function of the functional switches.

NOTE

Pressing RESET switch for more than 3 seconds is necessary to initiate terminal resident diagnostics.

TEST/SKIP switch

In the TEST position, the terminal runs the internal diagnostic test. In the SKIP position, it bypasses this test. This switch should be used in conjunction with the LOOP/EXIT switch.

KB/TP/SKIP switch

In the KB/TP position, the operator may perform a test of the keyboard and touch panel. In the SKIP position, this test is bypassed. This switch functions only if the TEST/SKIP switch is set to TEST.

LOOP/EXIT switch

In the LOOP position, the terminal keeps repeating the internal diagnostic test. In the EXIT position, it runs the internal diagnostic test and exits. This switch functions only if TEST/SKIP switch is set to TEST.

SOFT/LOUD switch

This switch permits the operator to select between two volume levels of the audible alarm signal.

The following identification plate and connectors are located on the rear of the terminal.

Identification plate

Contains terminal's serial number. This number is required for certain administrative and maintenance purposes.

Serial channel connector

Interfaces the terminal to external devices over an asynchronous bit-serial/byte-serial channel which meets the EIA RS-232-C interface standard.

Parallel channel connector

Interfaces the terminal to external devices over an 8-bit-wide-parallel/byte-serial channel.

PLATO channel connector

Interfaces terminal logic with the PLATO system via an RS-232 interface or long line driver interface.

Composite video BNC connector

Supplies a composite video signal of the display picture.

NOTE

The timing of the composite video signal is not compatible with standard TV sweep rate.

Telephone connectors

Standard telephone miniature modular connectors are employed in units with the internal modem/Data Access Arrangement (DAA) installed. Two miniature modular jacks, mounted to the back of the terminal, accept the telephone line from the wall and phone set. A cable, 4.3 metres (14 feet) long, with miniature modular plugs is supplied with the terminal having an internal modem.

The jack labeled PHONE must be connected to the phone set, and the jack labeled LINE must be connected to the phone line leading to the wall. Refer to figure C-3.

Power cord

A three-prong plug connects to 120-volt, 60-Hz wall outlet for United States model, or 220-volt, 50-Hz wall outlet for International model.

INSTALLATION

Certain installation site facilities must be available before the IST-II can become operational. The following terminal specifications provide the necessary information to set up the proper facilities.

Power

U.S.: 120-volt, 60-Hz, 1.4-ampere, 3-prong

International: 220-volt, 50-Hz, 0.7-ampere, 3-prong

Operating environment

Temperature:	10°C to 40°C (50°F to 105°F), with 24°C (75°F) recommended.
Relative Humidity:	10 to 90 percent.
Temperature Gradient:	10°C (18°F) per hour, maximum.
Altitude:	3000 metres (9850 feet), maximum.

Storage environment

-40°C to 70°C (-40°F to 158°F) with 0 to 100 percent relative humidity.

Ventilation

Natural convection, allowing free movement of air around terminal. When positioning terminal, allow a 10-centimetre (4-inch) clearance around terminal.

Heat dissipation

116 W (400 Btu/h)

Signal connection

The standard length of the telephone communications cable is 4.3 metres (14 feet). The terminal can be plugged into the telephone wall jack (a modular plug is provided). The telephone is then plugged into the terminal.

If the parallel channel or serial chan connectors are used, refer to the IST-II Hardwa Maintenance Manual.

Height

41 centimetres (16.5 inches)

Width

39 centimetres (15.75 inches)

Depth

60 centimetres (23.75 inches)

Weight

20 kilograms (45 pounds), U.S. models

24 kilograms (53 pounds), International models

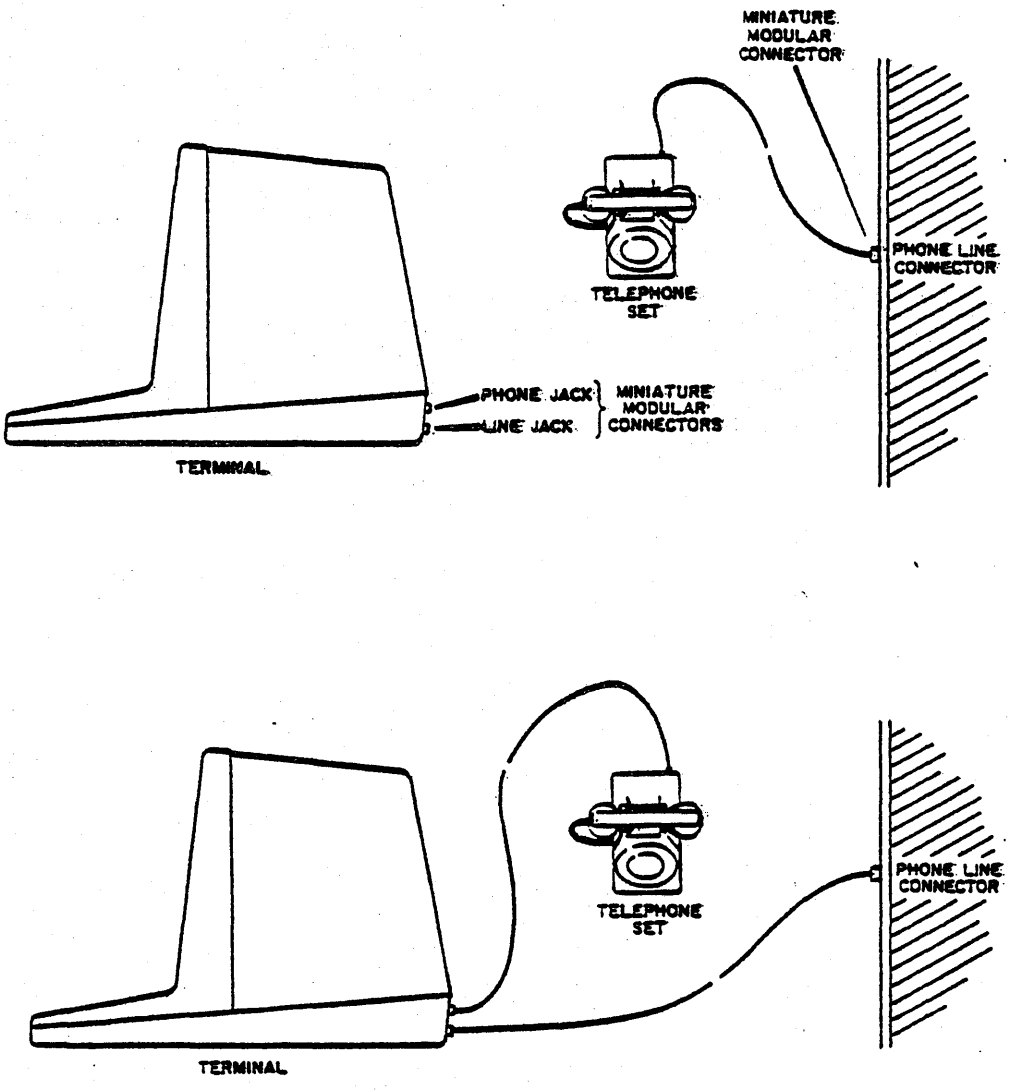


Figure C-3. Terminal/Telephone Connectors

INITIAL INSTALLATION PROCEDURE

1. Set the terminal on a flat surface in the area in which it is to be used.

2. Set the power ON/OFF switch to OFF.

3. If internal modem is being employed, unplug the telephone set from the wall jack and plug it into the terminal jack labeled PHONE. Using the telephone cable supplied with the terminal, connect the terminal to the telephone line by plugging one end of this cable into the terminal jack labeled LINE and the other end into the wall jack (see figure C-3).

If the terminal is to be directly connected to the PLATO communication equipment (no internal modem), see the following section on Communications Cable Assembly and Hookup.

If parallel channel, or serial channel connectors are used, refer to the IST-II Hardware Maintenance Manual.

If a dedicated phone line is to be used with a terminal that has an internal modem, connect the terminal to the dedicated line by using the telephone cable supplied with the terminal. Plug one end of this cable into terminal jack labeled LINE and the other end into the dedicated line. The DATA/TALK switch on the terminal should always remain in the DATA position.

If an acoustic coupler is to be used with a terminal that has an internal modem, connect the terminal to the connector supplied with the acoustic coupler. Plug one end of cable into terminal jack labeled LINE and the other end into the jack supplied with the acoustic coupler. (If the user does not have a jack, contact the PLATO Services hot line.) The DATA/TALK switch on the terminal should always remain in the DATA position.

4. Connect power cord to 120-volt AC, 60-Hz, 3-wire grounded wall outlet for United States model, or 220-volt AC, 50-Hz, 3-wire grounded wall outlet for International model.

5. Terminal is now ready for connection to PLATO system (refer to Connecting Terminal to PLATO System).

COMMUNICATIONS CABLE ASSEMBLY AND HOOKUP

This section not applicable if using an internal modem.

To assemble the communications cable kit, determine which communication interface the terminal uses and perform the following procedure.

1. Connect applicable color-coded wires according to table C-1. Do not connect more than one interface selection to connector. Jumper wires are provided with cable kit assembly. Pins cannot be extracted from connector except with a special tool.

TABLE C-1. INTERFACE SELECTION

Signal	Pin Number	RS-232-C†	Long Line
Protective Gnd	1	Bare	Bare
RCV	3	Red	-
DSR	6	Yellow jumper	Yellow jumper
Logic Gnd	7	Black	-
FWD CH CD	8	Orange jumper	Orange jumper
RV CH XMT	14	White	-
XMT CLOCK	15	Green††	-
RV CH RTS	19	Orange jumper	Orange jumper
DTR	20	Yellow jumper	Yellow jumper
+LLXMT	21	-	White
-LLXMT	22	-	Green
+LLRCV	23	-	Red
-LLRCV	24	-	Black

†If internal modem is installed, disconnect internal modem flat ribbon cable from controller board (AJ5 connector).
††This pin is assigned for an externally supplied Transmit Clock signal and is only used in special installations.

2. Place connector in mounting slot of connector hood, and clamp down cable with tie strap provided (figure C-4). Do not clamp down unused wires with tie strap.

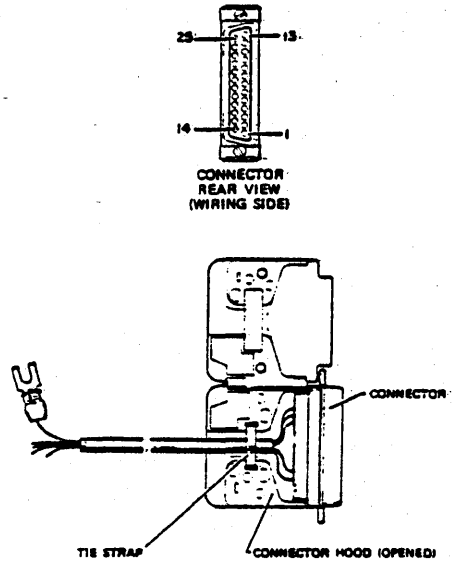


Figure C-4. Data Set Cable Assembly

3. Tape unused wires of cable against cable jacket; do not cut off.

4. Close connector hood and fasten with two screws provided.

NOTE

If internal modem is installed, disconnect internal modem flat ribbon cable from controller board (AJ5 connector).

5. Remove terminal hood and set configuration/mode switches on the controller board. Switches are numbered S2-1 to S2-10 (bottom to top). Switch polarity is illustrated in figure C-5.

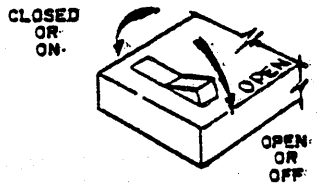


Figure C-5. Switch Polarity

Set the following switches according to the interface selection chosen:

a. S2-1. Clear to send. The ON (closed) position gives a constant clear to send (FOR CED). The OFF (open) position enables external clear to send.

b. S2-2. The OFF (open) position enables long line interface. The ON (closed) position enables RS-232-C interface. If the RS-232-C interface is selected, switch S2-7 must be set to ON (closed) position.

c. S2-3, S2-4, S2-5. These switches must be set to the correct transmitter baud rate. Consult a PLATO Services Site Director to determine the transmission rate. Refer to table C-2 for correct switch settings.

d. S2-6. Serial channel parity inhibit. The ON (closed) position enables insertion of parity bit on transmit and parity check on receive. The OFF (open) position disables parity.

e. S2-7. Forward/reverse channel. The ON (closed) position selects reverse channel. T OFF (open) position selects forward channel.

f. S2-8. Serial channel stop bits select. The ON (closed) position selects 1 stop bit to transmitted after the parity bit. The O (open) position selects 2 stop bits for 6-, 7-, or 8-bit words or 1.5 stop bits for 5-bit words.

g. S2-9. Touch panel present. In the (closed) position the touch panel is not present. In the OFF (open) position the touch panel is present.

h. S2-10. Memory option select. The ON (closed) position selects 16-K program memory. The OFF (open) position sele 32-K program memory.

TABLE C-2. BAUD RATE SWITCH SELECTIONS

S2-5	S2-4	S2-3	Frequency
ON	X†	ON	75 bps
OFF	X†	ON	120 bps
X†	ON	OFF	1200 bps
X†	OFF	OFF	External clock††

†X means that the position of that switch is irrelevant.
††The external clock is brought in through RJ1-15 (RS-232-C transmit clock).

MOVING THE IST-II

1. Set power ON/OFF switch to OFF.
2. Disconnect AC power cord from wall outlet.
3. Unplug telephone line cable from wall jack a terminal. Pack cable with terminal. Unplug telephone set from terminal and reconnect it to wall jack.

CONNECTING TERMINAL TO PLATO SYSTEM

1. Ensure that terminal power cord is connected to 120-volt AC, 60-Hz, 3-wire grounded wall outlet for United States model, or 220-volt AC, 50-H 3-wire grounded wall outlet for Internatio model.
2. Set power ON/OFF switch to ON.

3. Direct connected terminal (RS-232 or long line driver interfaces).

   a. The terminal must load its controlware from the PLATO system. This process takes about 1-1/2 minutes.

      During this loading process, the terminal displays one of the following messages:

      NOP

      No operation. Indicates that the communication link between the terminal and the PLATO system is down. Refer to the IST-II Hardware Maintenance Manual.

      NO REPLY

      Indicates that the terminal has received no response from the PLATO system. The terminal continues to solicit a response from the PLATO system approximately every 4 seconds until a reply is received.

      LOADING FAILURE

      Indicates that the loading process was unsuccessful and the program has aborted. Refer to the IST-II Hardware Maintenance Manual.

      LOADING xx

      Indicates a successful loading process. xx signifies the block being loaded. This message is followed by the Begin Display.

   b. Proceed with sign-on sequence.

4. Dial-in connected terminal (internal modem).

   a. Set the DATA/TALK switch to TALK.

   b. Dial telephone number that connects computer, and listen for the computer telephone to ring, followed by a period of no sound, and then a high-pitched answer tone which indicates connection to the computer.

   c. Set DATA/TALK switch to DATA, and hang up telephone.

   d. The terminal must be loaded with its controlware from the PLATO system. This process takes about 1-1/2 minutes.

      During this loading process, the terminal displays one of the following messages:

      NOP

      No operation. Indicates that the communication link between the terminal and the PLATO system is down. Refer to the IST-II Hardware Maintenance Manual.

      NO REPLY

      Indicates that the terminal has received no response from the PLATO system. The terminal continues to solicit a response from the PLATO system approximately every 4 seconds until a reply is received.

      LOADING FAILURE

      Indicates that the loading process was unsuccessful and the program has aborted. Refer to the IST-II Hardware Maintenance Manual.

      LOADING xx

      Indicates a successful loading process. xx signifies the block being loaded. This message is followed by the Begin Display.

   e. Proceed with sign-on sequence.

5. To disconnect the terminal from the PLATO system, sign off system, hang up telephone handset, and set the DATA/TALK switch to TALK.

6. Turn off terminal by setting power ON/OFF switch to OFF.

USER MAINTENANCE

Maintenance of an IST-II at the user level is limited and is restricted to cleaning the external surfaces of the terminal.

KEYBOARD CLEANING

Remove dust accumulations from hard-to-reach areas of the keyboard with a soft brush.

CABINET AND SCREEN CLEANING

To clean the exterior of the terminal, set the power ON/OFF switch to OFF, and disconnect the terminal power connection. Clean the touch panel using a soft cloth, slightly dampened with a mild soap and water solution. Ensure the cloth is free of grit particles or other abrasives that will scratch the display screen.

CAUTION

Do not use detergents containing ammonia or bleach; these cleansers discolor finished surfaces.

Clean the exterior of the terminal cabinet with a solution of warm water and a mild, non-detergent cleanser applied with a soft cloth. Do not introduce liquid into the cabinet interior. If liquid reaches the interior, allow appropriate drying time before applying power. Dry the terminal's surfaces completely before applying power.

TROUBLESHOOTING

Users responsible for the maintenance of the terminal must be able to interpret error codes generated by the terminal. This enables the user to explain terminal problems to customer engineering over the telephone.

This section discusses common terminal problems, the PLATO diagnostic lesson, and IST-II terminal resident diagnostics.

COMMON TERMINAL PROBLEMS

NOTE

If the ERR indicator lights and the terminal ignores all keyboard and touch panel input, a communications error has occurred. Press the RESET switch and press NEXT to continue the lesson. If this does not work, press SHIFT-STOP and reenter the lesson.

If a display cannot be achieved or if trouble occurs during on-line operation, check the following items as the possible cause of terminal failure.

- Power ON/OFF switch not set to ON.
- BRIGHTNESS control not turned up.
- Loose power cord connections.
- Source power problems.
- Loose communications cable connections.
- Incorrect terminal setup.
- Improper switch settings.

The terminal user can correct terminal failure by correcting loose power cord and/or loose communications cable connections. All other types of terminal failures should be corrected by an authorized customer engineer.

To check a power outlet for voltage, connect other dev to the power outlet to see if they function prope... Report outlet problems to building maintenance electricians.

PLATO DIAGNOSTIC LESSON ("diag")

The terminal diagnostic lesson "diag" can also be used troubleshoot a faulty terminal. Lesson "diag" provides diagnostics to exercise the PLATO terminal. Some of the available options are a pattern test, character tests, ar touch panel test. Lesson "diag" can be used with PLATO terminal.

The user can access lesson "diag" from two different po in the sign-on sequence. If the user has an author sign- s/he can type the word diag on the Author Mode Display and press DATA to access lesson "diag." If the user does not have an author sign-on, s/he can type the word diag the Welcome Display, press NEXT, type m on the Gr Name Display, and press SHIFT-STOP to access lesson "diag."

IST-II TERMINAL RESIDENT DIAGNOSTICS

The IST-II terminal resident diagostics are a firmware t residing in the terminal which checks the internal terminal electronics. To run the terminal resident diagnostics, the TEST/SKIP, KB/TP/SKIP, and/or LOOP/EXIT roc switches must be employed. These switches are loca behind the protective door on the front of the termi Refer to External Controls, Indicators, and Connectors definitions of each switch.

The IST-II terminal resident diagnostic program consists of three sections. These sections test the random access memory (RAM), the PLATO serial interface, the exter serial interface, the keyboard, and the touch panel.

CRT ALIGNMENT, KEYBOARD, AND TOUCH PAN TESTS

This section consists of three tests. First, this sect displays an alignment pattern to check the CRT alignme and touch panel installation. This section also contains keyboard and touch panel tests.

The alignment pattern consists of four lines outlining screen border with two diagonal lines intersecting at screen center.

The touch panel has 256 touch sensitive areas. Touch any one of these areas causes the CRT pattern of that area to be inverted. Repeated touches cause repeated inversions.

The keyboard portion of this test displays on the screen a binary representation of the hexadecimal code received from the keyboard. These keyboard codes are defined the IST-II Hardware Maintenance Manual. This bina representation is made up of long (=1) and short (=0) bars, with the bottom bar being the lowest order bit.

Example:

Binary representation of w keyboard code, 57 hexadecimal.

Bit 6
Bit 5
Bit 4
Bit 3 $= 1010111_2 = 57_{16}$
Bit 2
Bit 1
Bit 0

DIAGNOSTIC ERROR INDICATION

Whenever an error is detected, the alarm sounds and an error code is displayed by the indicators located on the front of the terminal. The user should note what the error code is and relay that information to a customer engineer. The following error codes are displayed as binary representations with the ERR indicator being the lowest order. (Refer to figure C-6.)

Code	Cause of Error
01	Memory error writing/reading 55 hexadecimal pattern.
02	Memory error writing/reading AA hexadecimal pattern.
03	Memory error due to addressing problem.
04	PLATO serial interface error.
05	External serial interface error.
06	Keyboard/touch panel test in progress.

For error codes 01 and 02, a second level of indication is provided by pressing any keyboard key. The second level is the chip number where the error was first detected.

For error codes 04 and 05, a second level of indication is also provided by pressing any keyboard key. The second level for an 04 error is as follows:

Code	Description
01	No character request status.
02	Character request dropped after lower bits output.
03	Character request active after upper bits output.
04	First byte flag not set.
05	Start bit not received.
06	No character ready status.
07	Data error.

The second level for an 05 error (serial transmission error) is as follows:

Code	Description
01	No character request.
02	No character ready.
03	Data error.

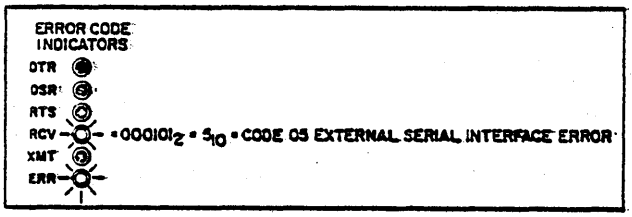


Figure C-6. Error Code Indicators

The PLATO CC546 Plasma Terminal provides user interaction with the PLATO system. Most of the terminal capabilities are under control of the lesson being executed and are not necessarily available at any given time.

TERMINAL COMPONENTS

The plasma terminal consists of the plasma panel, the keyboard, the touch panel, the auxiliary panels, and the optional microfiche projector (figure D-1). This section discusses the components unique to the plasma terminal (plasma panel, auxiliary panels, and microfiche projector). Section 3 discusses the components common to all terminals (the detachable keyboard and touch panel).

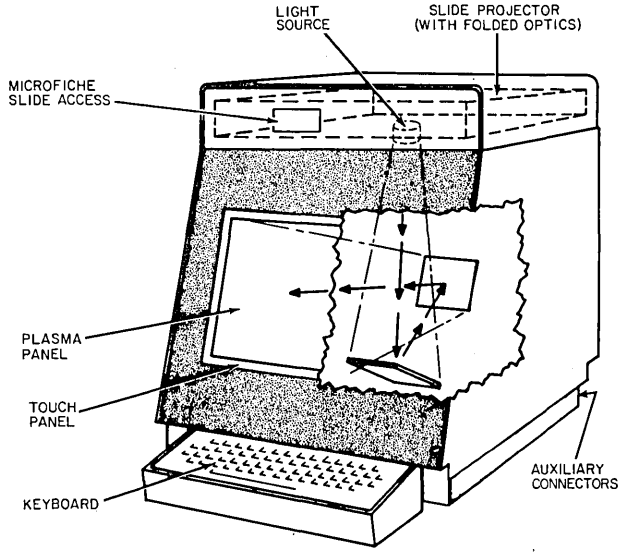


Figure D-1. PLATO CC546 Plasma Terminal

PLASMA PANEL

The plasma panel presents information on the plasma terminal. It is a translucent, plastic-covered, glass panel 22-centimetres by 22-centimetres (8.5-inches by 8.5-inches). This panel consists of a 512 by 512 grid of fine electrodes embedded in two plates of glass, separated by a space containing neon gas (figure D-2). When the computer addresses an intersection of horizontal and vertical electrodes, the intersection glows as a small orange dot which stays lit until the computer turns it off. Each of the dots can be lit individually or in groups for displaying characters, lines, or figures.

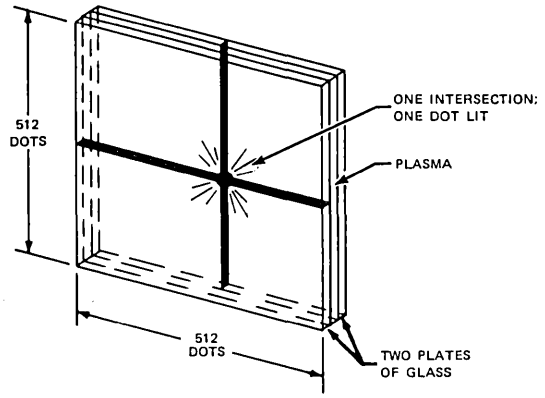


Figure D-2. Plasma Panel

AUXILIARY PANELS

The auxiliary panels contain the terminal's operational control and interface elements (power and panel controls, error controls, and signal/power connectors).

The front and rear auxiliary panels, located along the bottom edge of the terminal's front and rear surfaces, contain the following elements that are related to the basic operational status of the terminal (figure D-3).

KEYSET connector

The connecting point for the plug from the keyboard.

CLEAR switch

A white, spring-loaded switch that master clears terminal logic, causing a total erase of the display panel each time it is pressed.

ERROR indicator

Lights to indicate the detection of error condition on the communication lines between the terminal and the central computer.

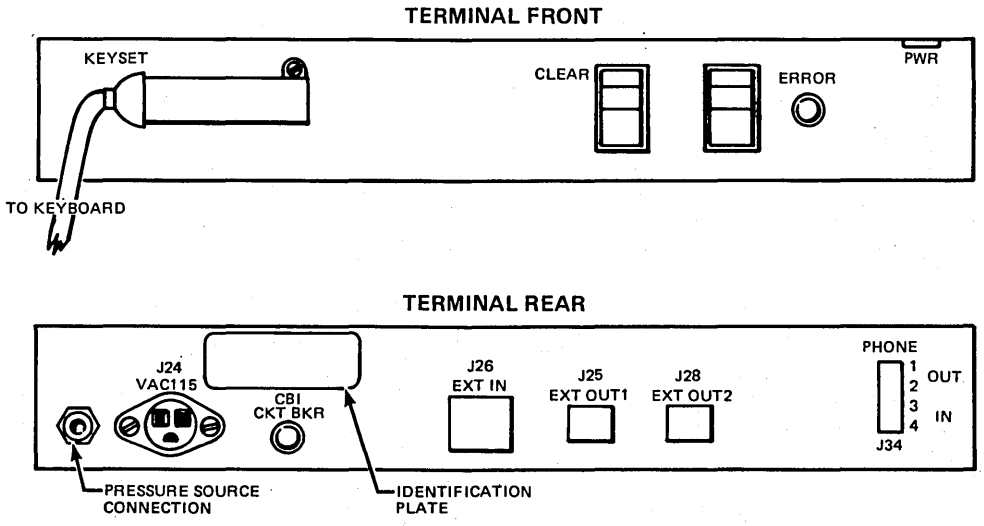


Figure D-3. Auxiliary Panels

ERROR switch

Pressing this red, spring-loaded switch causes a lighted ERROR indicator to extinguish, unless the cause of the error is still present.

PWR switch

A two-position rocker switch that provides on/off control of the terminal's operating power.

Pressure source connection

Connecting point for tubing to air-pressure source if optional slide projector is used.

J24 VAC 115 connector

Connecting point for terminal operating power (115-volt, 60-Hz, 5-ampere, 3-wire).

Identification plate

Contains terminal's serial number. This number is required for certain administrative and maintenance purposes.

CB1 CKT BKR

Protects terminal from faults in line voltage circuit by disconnecting the terminal. Pressing the circuit breaker reapplies line voltage, unless the line fault is still present.

J26 EXT IN jack

Connecting point for input data from other than standard PLATO devices.

J25 EXT OUT1 jack

Used to send data from the terminal to an external device.

J28 EXT OUT2 jack

Used to send data from the terminal to an external device.

J34 PHONE connector

Telecommunications signal connector.

For direct connection from site controller or multiplexer, pins 3 and 4 are the receive pair (data from the computer), and pins 1 and 2 are the transmit pair (data to computer).

For dial-in or dedicated two-wire line connection, only pins 3 and 4 are used. The order of wire connection within the pair is not important (balanced signal).

MICROFICHE PROJECTOR

An optional feature of the plasma terminal is the microfiche slide projector. Microfiche is a 10-centimetre by 18-centimetre (4.0-inch by 7.25-inch) sheet of film carrying up to 256 color slides (figure D-4). The lesson controls the slide projector, which is driven pneumatically. The projector rear-projects a slide onto the screen and superimposes it on any text or graphics which might be on the screen.

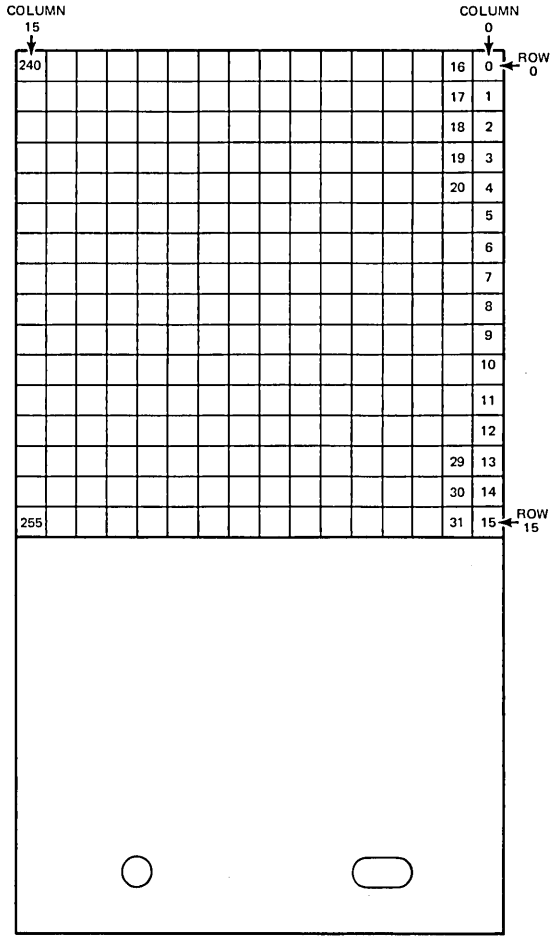


Figure D-4. Microfiche Layout

INSTALLATION

Certain installation site facilities must be available before a PLATO terminal can become operational. Consult the following terminal specifications to provide these facilities.

Power

115-volt, 60-Hz, 5-ampere (maximum), 3-wire.

Operating environment

10° to 38°C (50° to 100°F) with 10 to 80 percent relative humidity and 300 to 1800 metres (980 to 7000 feet) altitude.

Ventilation (cabinet)

When positioning the terminal, allow a 5-centimetre (2-inch) clearance from any obstruction along the entire back surface.

Air pressure source (slide projector equipped units only)

82-kPa to 103-kPa (12-psi to 15-psi), 5-cm^3/s (0.01-cfm) delivery, connected by 3/8-inch OD by 1/4-inch ID plastic tubing (not supplied with terminal).

The following specifications are for the terminal.

Height	56 centimetres (22 inches)
Width	46 centimetres (18 inches)
Depth	76 centimetres (30 inches)
Weight	59 kilograms (130 pounds)

The following specifications are for signal connection (J34).

Direct connected

A four-conductor cable (supplied with terminal) in a length suitable to connect the terminal to the multiplexer or the site controller.

Dial-in connected

A two-conductor cable (supplied with terminal) in a length suitable to connect the terminal to Control Data acoustic coupler or to a Data Access Arrangement (DAA). User can arrange installation of the DAA with Control Data Corporation.

The following procedure describes the installation of the plasma terminal (figure D-5).

CAUTION

To prevent overheating, a 5-centimetre (2-inch) clearance from obstructions must be allowed along the terminal's rear surface for ventilation purposes.

1. Snap 25-pin keyset connector in place at front of terminal.

NOTE

Terminal signal cable installation depends upon connection type; use step 2 or 3, as applicable.

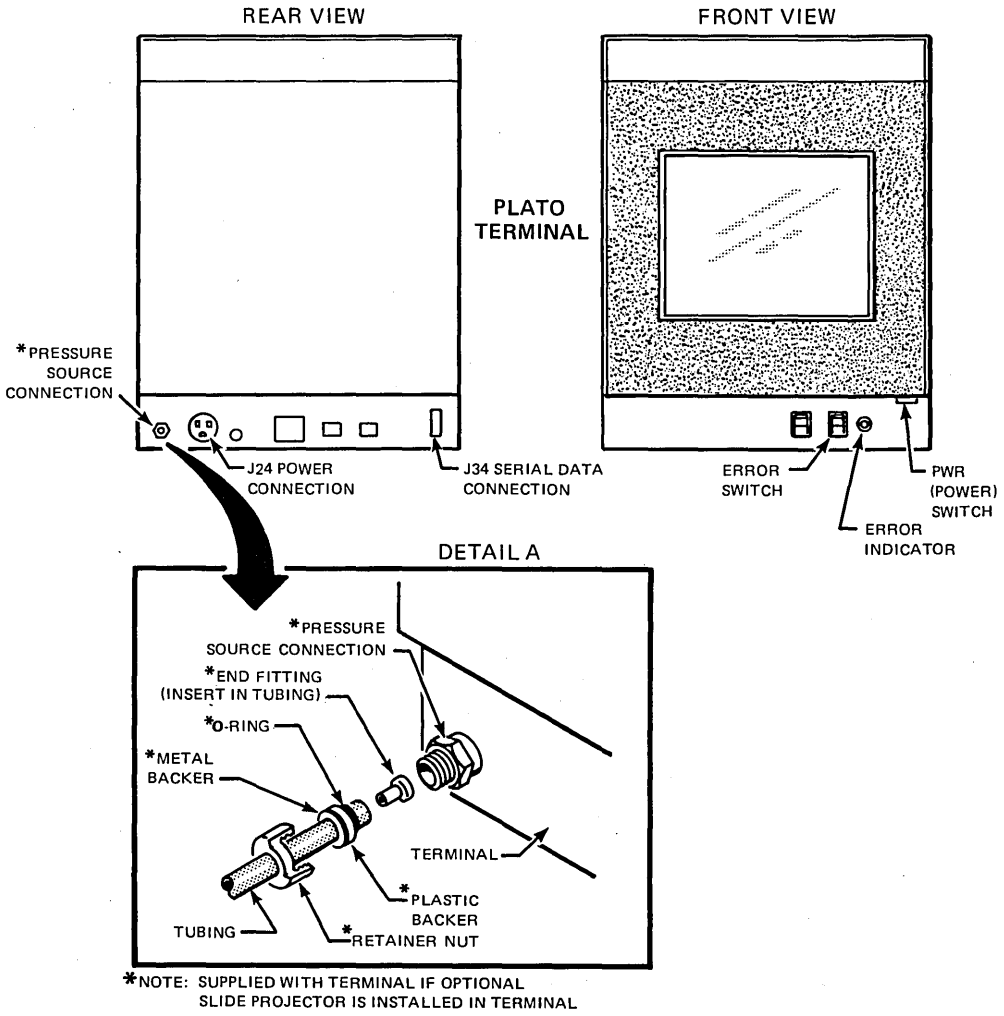


Figure D-5. Installation Elements

2. Direct connected terminal only. Using four-conductor cable provided with terminal, connect J34 of terminal to available connector on site controller or associated network equipment (multiplexer and so on).

3. Dial-in connected terminal only.

   a. Connect plug of two-conductor cable provided with terminal to J34.

   b. For DAA connection (figure D-6), refer to 40003-107 Hardware Maintenance Manual for information on installation.

   c. Acoustic coupler connection only. Connect lugged leads at other end of cable to connections DT and DR (polarity unimportant) on acoustic coupler (figure D-7).

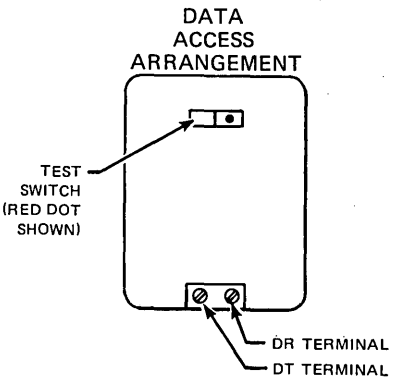


Figure D-6. Data Access Arrangement

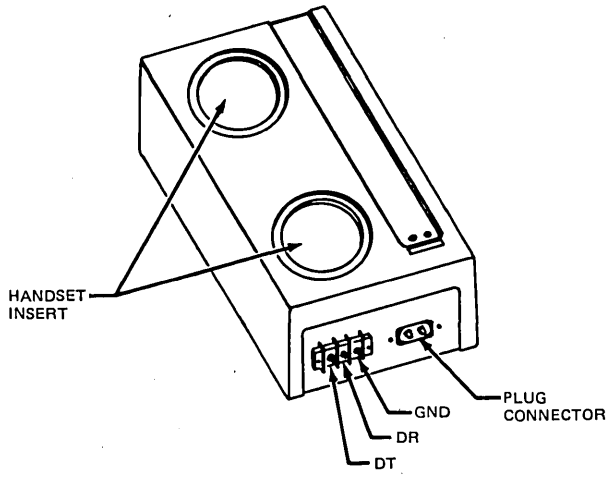


Figure D-7. Acoustic Coupler

4. Slide projector equipped terminal only. Operation of slide projector requires that terminal be connected to 82-kPa to 103-kPa (12-psi to 15-psi), 5-cm^3/s (0.01-cfm) air-pressure source. Make connection with 3/8-inch OD (1/4-inch ID) flexible plastic tubing. Neither tubing nor pressure source is supplied with terminal. Make air-pressure connection according to following procedure.

   a. Measure and cut amount of tubing required to connect terminal pressure source connection to pressure source.

NOTE

Five piece parts required to connect tubing at terminal are shipped with terminal. Parts are assembled to short length of tubing (not intended for further use) as following step indicates.

   b. Install one end of tubing to terminal according to detail A of figure D-5.

   c. Connect other end of tubing to site air-pressure source.

5. Connect power cord between terminal connector J24 and 115-volt, 60-Hz, 5-ampere, 3-wire grounded wall outlet.

6. Press terminal circuit breaker (CB1 CKT BRK) in. Terminal is now ready for connection to PLATO system.

CONNECTING TERMINAL TO PLATO SYSTEM

1. Ensure that terminal power cord is connected to 115-volt, 60-Hz, 5-ampere, 3-wire grounded wall outlet.

2. Set terminal PWR switch to ON (refer to figure D-5). When power is applied, fan begins running and perimeter of screen lights.

3. Direct connected terminal (option).

   Proceed with sign-on sequence.

4. Dial-in connected terminal (option).

   a. Dial telephone number that connects computer, and listen for high-pitched tone followed by higher-pitched tone with low-pitched tone superimposed. If busy signal results, hang up receiver, check number, wait awhile, and dial again.

   b. DAA connection only. Pull upward on left-hand (white) button of telephone (disconnects handset and connects terminal), and set handset aside but do not hang up telephone.

      Acoustic coupler connection only. Insert handset into acoustic coupler (connects terminal).

   c. Terminal ERROR indicator should light. Press SHIFT-STOP keys to turn light off. If indicator did not light, connection with computer was not made; repeat the procedure from step 4a.

   d. Proceed with sign-on sequence.

5. To disconnect terminal/computer connection, sign off system, and hang up telephone handset.

CAUTION

Frequent application and removal of power to terminal may damage terminal. Apply power until end of working day or until daily terminal use is complete. When PWR switch is turned OFF, wait at least 20 seconds before reapplying power to prevent damage to screen.

6. Turn off terminal by setting PWR switch to OFF.

USER MAINTENANCE

Maintenance of a plasma terminal at the user level is limited and is restricted to scheduled maintenance (preventive maintenance). If done at the recommended time, scheduled maintenance can reduce maintenance downtime.

SCHEDULED MAINTENANCE

Air Filter Cleaning

Clean the terminal air filter monthly (unair-conditioned area) or bimonthly (air-conditioned area) according to the following procedure.

CAUTION

Failure to clean the air filter may cause inadequate ventilation leading to terminal damage caused by high temperature.

1. Set terminal PWR switch to OFF, and disconnect terminal power connection.
2. Remove top cover of terminal by raising it straight up. Set cover aside.
3. Release four quarter-turn fasteners securing rear panel, and set panel aside.
4. Pull air filter out of holding bracket.
5. Clean air filter with solution of warm water and mild household detergent.
6. Dry filter, and return it to holding bracket. Do not apply power until filter is completely dry.
7. Reposition rear panel on terminal, and secure with four quarter-turn fasteners.
8. Replace terminal top cover.

Slide Projector Mirror Cleaning

The microfiche slide projector is an option. If a projector is installed, clean the mirrors (used to rear-project a slide image on the display screen) while cleaning the air filter. Use a soft, dry lint-free cloth to wipe away dust from the mirror surfaces.

Cabinet and Screen Cleaning

Clean the exterior of the terminal cabinet bimonthly.

Set the terminal PWR switch to OFF and disconnect the terminal power connection. Clean the display screen using a household window cleaner and a soft cloth.

CAUTION

Do not use detergents containing ammonia or abrasives; these cleaners discolor finished surfaces.

Clean the exterior of the terminal cabinet with a solution of warm water and mild household detergent applied with a soft cloth. Do not introduce liquid into the cabinet interior. If liquid reaches the interior, allow an appropriate drying time before applying power. Dry the terminal surfaces completely before applying power.

UNSCHEDULED MAINTENANCE

Film Carriage Clamp Assembly Cleaning

The film carriage clamp assembly is part of the slide projector option. If a projector is installed and a slide-clarity problem is encountered, clean this assembly according to the following procedure.

1. Set terminal PWR switch to OFF, and disconnect terminal power connection.
2. Remove top cover of terminal by raising it straight up. Set cover aside.
3. Remove any contamination from film carriage clamp assembly (located just above the slide projector lens) using air-pressure source or soft brush.
4. Replace terminal top cover.

Power Switching Fault

If the circuit breaker on the rear auxiliary panel (refer to figure D-3) removes power to the terminal, attempt to restore power by momentarily pressing the circuit breaker once or twice. If the breaker does not restore power in one or two attempts, a power circuit failure is probable. Report the failure to the proper maintenance personnel.

Slide Projector Lamp Replacement

The microfiche slide projector is an option. If a projector is installed and its lamp fails, use the following procedure to replace the lamp (figure D-8).

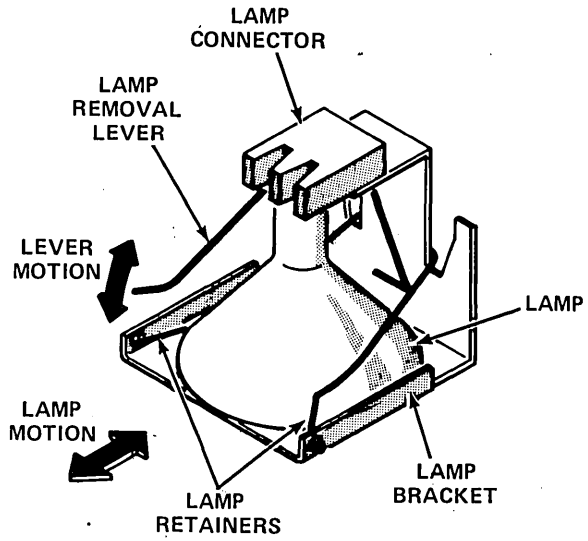


Figure D-8. Projector Lamp Replacement

1. Set terminal PWR switch to OFF, and disconnect terminal power connection.
2. Remove top cover of terminal by raising it straight up. Set cover aside.

WARNING

Lamp and adjacent hardware may be hot. Allow them to cool before continuing.

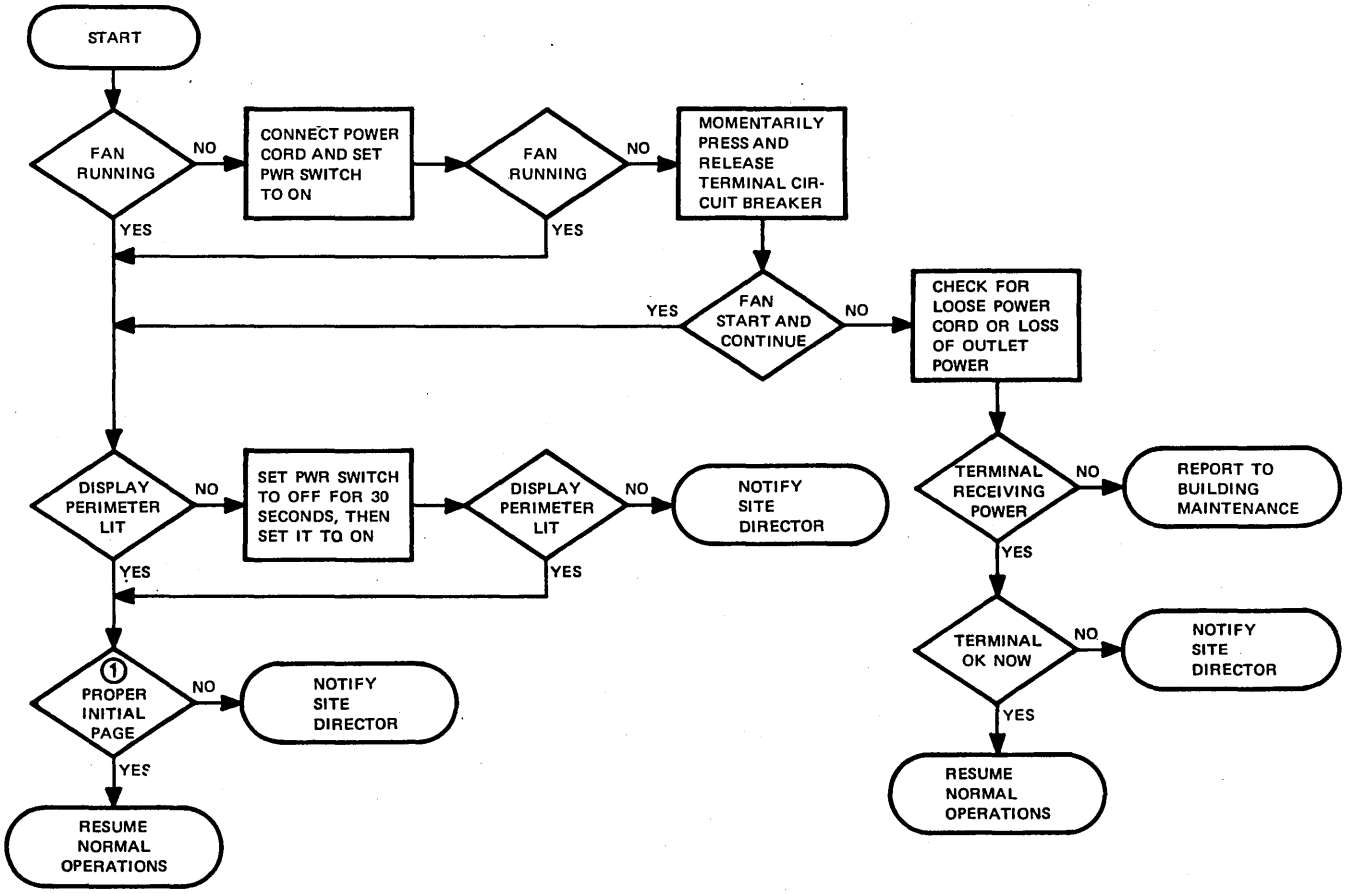
3. Release looped ends of both lamp retainers.
4. Carefully raise lamp removal lever with one hand and control lamp as it slides out of lamp bracket with other hand. Set faulty lamp aside.
5. Using General Electric EKP (or equivalent) projection lamp, place lamp on lamp bracket so that lamp pins line up with slots in lamp connector.
6. Slide lamp along bracket until connector receives pins.
7. Replace looped ends of lamp retainers in holds of lamp bracket.
8. Replace terminal top cover.

TROUBLESHOOTING

If a display cannot be achieved, follow the troubleshooting procedure in figure D-9. If a malfunction is detected, follow established maintenance reporting procedures.

The terminal diagnostic lesson "diag" can also be used to troubleshoot a faulty terminal. Lesson "diag" provides diagnostics to test the PLATO terminal. Some of the available options are a pattern test, character tests, and a touch panel test. Lesson "diag" can be used with any terminal.

The user can access lesson "diag" from two different points in the sign-on sequence. If the user has an author sign-on, he/she can type the word diag on the Author Mode Display and press DATA to access lesson "diag." If the user does not have an author sign-on, he/she can type the word diag on the Welcome Display, press NEXT, type m on the Group Name Display, and press SHIFT-STOP to access lesson "diag."



NOTES:

① INITIAL PAGE VARIES WITH SITE CONFIGURATION. CAN BE "PRESS NEXT TO BEGIN" PAGE, "WELCOME" PAGE, ETC.

Figure D-9. Plasma Terminal Troubleshooting

INDEX

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