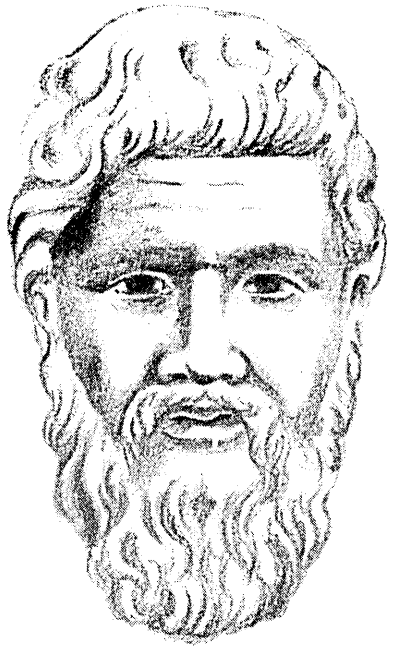
CONTROL DATA PLATO TERMINAL USER'S GUIDE



CONTROL DATA

REVISION RECORD

REVISION	DESCRIPTION
01	Preliminary release.
(7-18-75)	
A	Manual released. This printing obsoletes the previous edition.
(9-19-75)	
B	Manual revised to include most currently developed displays and procedures. This edition
(10-18-76)	obsoletes all previous editions.
C	Manual revised to include information on the Information Systems Terminal (IST) and most currently
(5-16-77)	developed displays and procedures. Because of extensive changes to this manual, chart tape and
	dots are not used and all pages reflect the latest revision level. This edition obsoletes all previous
	editions.
D	Manual revised to direct more attention to new users. Because of extensive changes to this manual,
(5-15-78)	chart tape and dots are not used, and all pages reflect the latest revision level. This edition
	obsoletes all previous editions.

Publication No.
97404800

REVISION LETTERS I, O, Q AND X ARE NOT USED

Address comments concerning this manual to:

Control Data Corporation
Publications and Graphics Division
4201 North Lexington Avenue
St. Paul, Minnesota 55112

or use Comment Sheet in the back of this manual.

LIST OF EFFECTIVE PAGES

New features, as well as changes, deletions, and additions to information in this manual, are indicated by bars in the margins or by a dot near the page number if the entire page is affected. A bar by the page number indicates pagination rather than content has changed.

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
Front Cover	-								
Inside Front Cover	-								
Title Page	-								
ii	D								
iii/iv	D								
v/vi	D								
vii	D								
viii	D								
1-1	D								
1-2	D								
2-1	D								
2-2	D								
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PREFACE

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

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 system 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 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 or C.

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 CMI System Overview	97406100
PLATO CMI Author's Guide	97406200
PLATO CMI Instructor's Guide	97406300
Information Systems Terminal Reference Manual	62984100
Information Systems Terminal Hardware Maintenance Manual	62984200

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 multiples. 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 a group for which the instructor knows the change code (security code). An instructor can design curricula and sequences of study for students and multiples in a group. An instructor can execute any available lesson.

AUTHOR

An author can program (or author) lessons by creating, modifying, or deleting data in files for which the author knows the change code. An author can execute any available lesson.

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
smith	ucd

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 ucd cannot register two smith'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 Information Systems Terminal (IST) 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-up.

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-up connection method, the terminal connects with the computer by a telephone line. If you are using a dial-up 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 key. (Hold down SHIFT key while pressing STOP key.)
4. If you hear a busy signal after dialing, all dial-up 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 key several times until begin display (figure 2-1) is on the screen.
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. When finished, press NEXT. Display should now show group name display (figure 2-4).†
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.

†PLATO terminology is changing course to group. Some displays still use course.

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. Instructor mode 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 key 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.

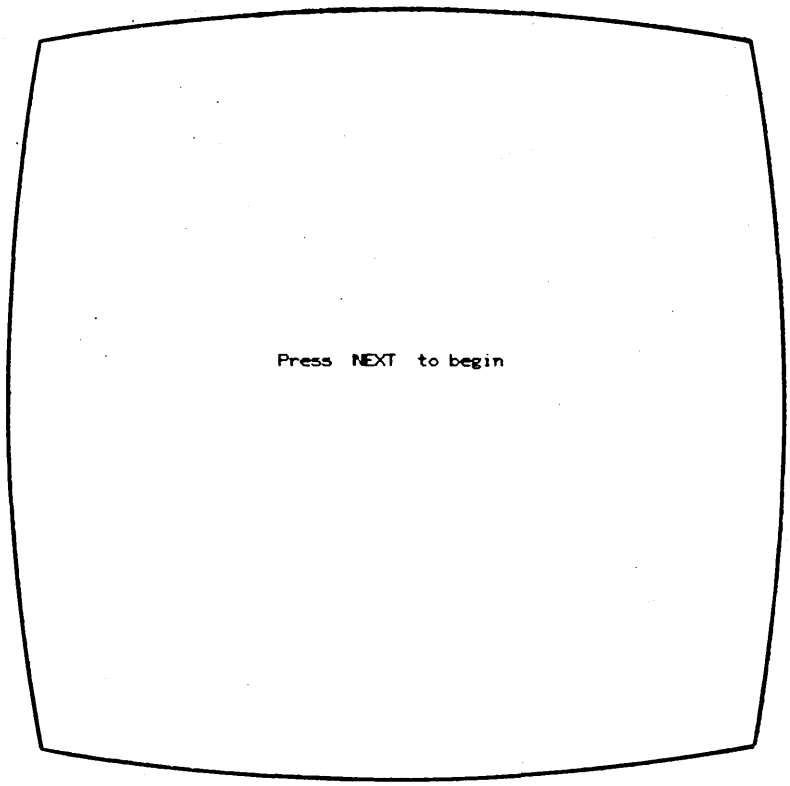


Figure 2-1. Begin Display

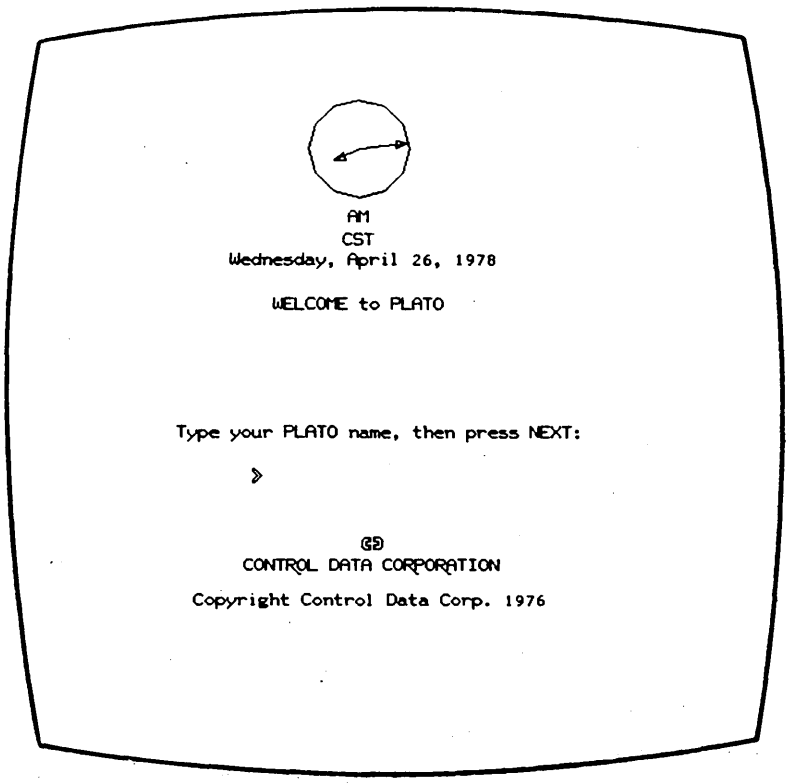


Figure 2-2. Welcome Display

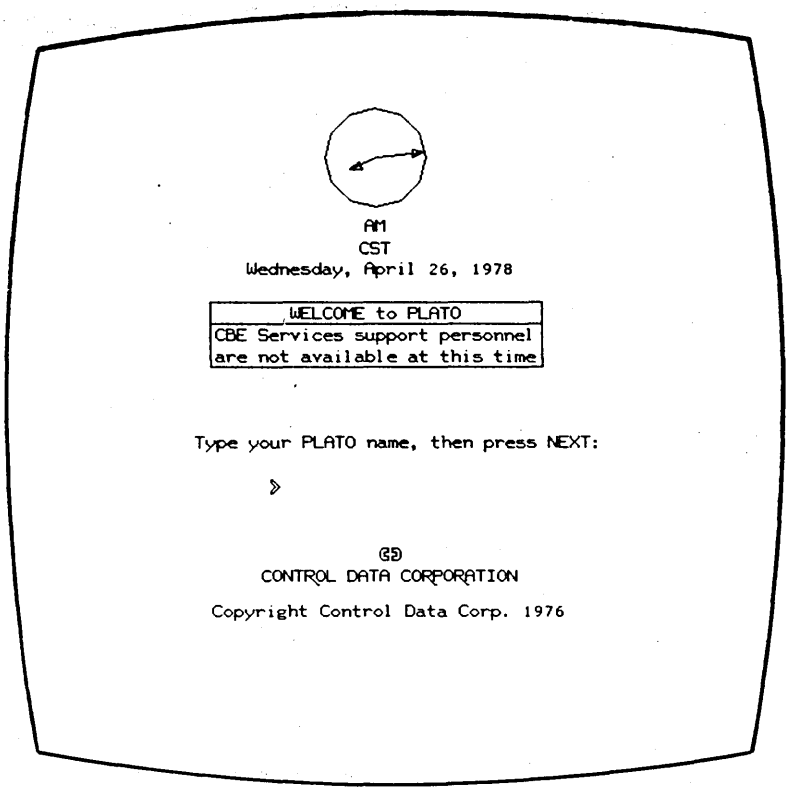


Figure 2-3. Extended Time Welcome Display

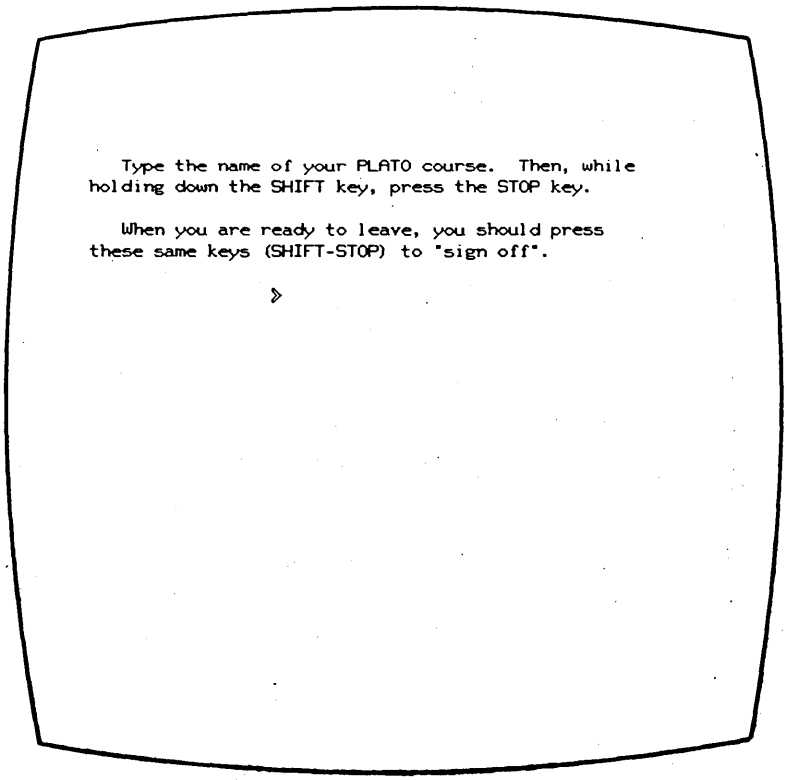


Figure 2-4. Group Name Display

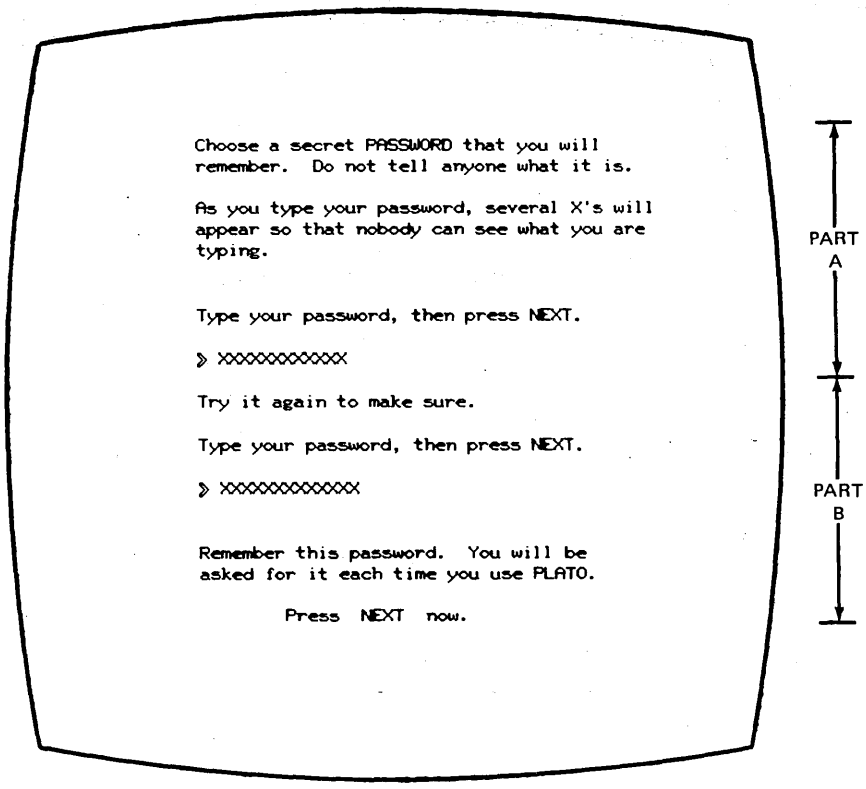


Figure 2-5. Password Choice Display

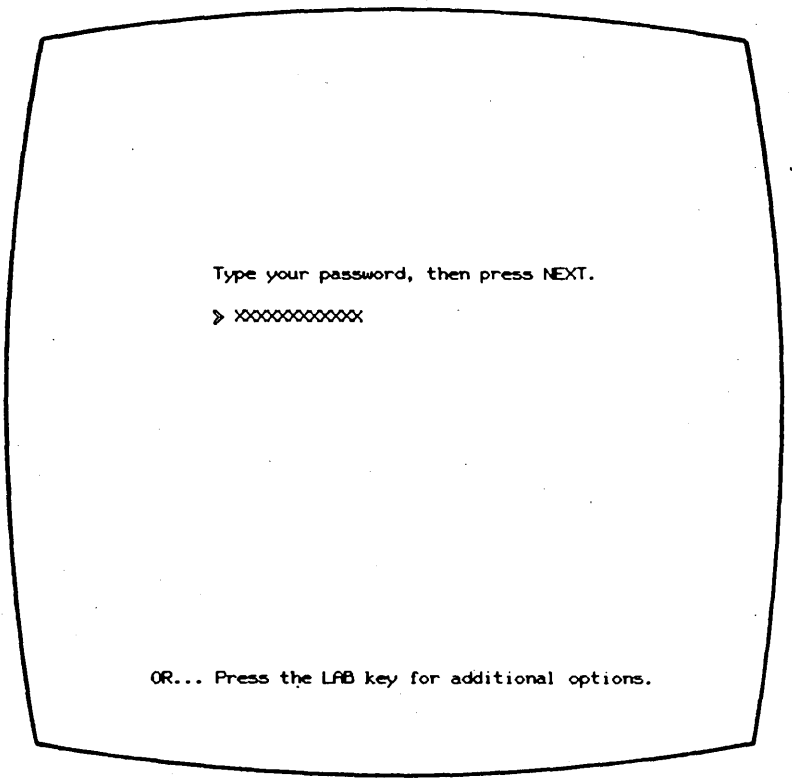


Figure 2-6. Password Display

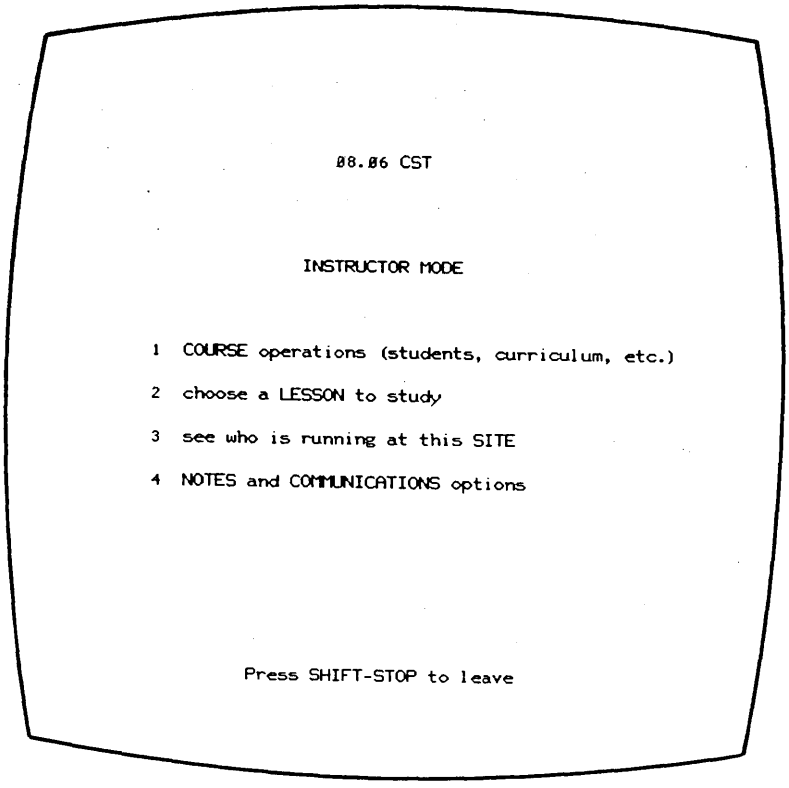


Figure 2-7. Instructor Mode Display

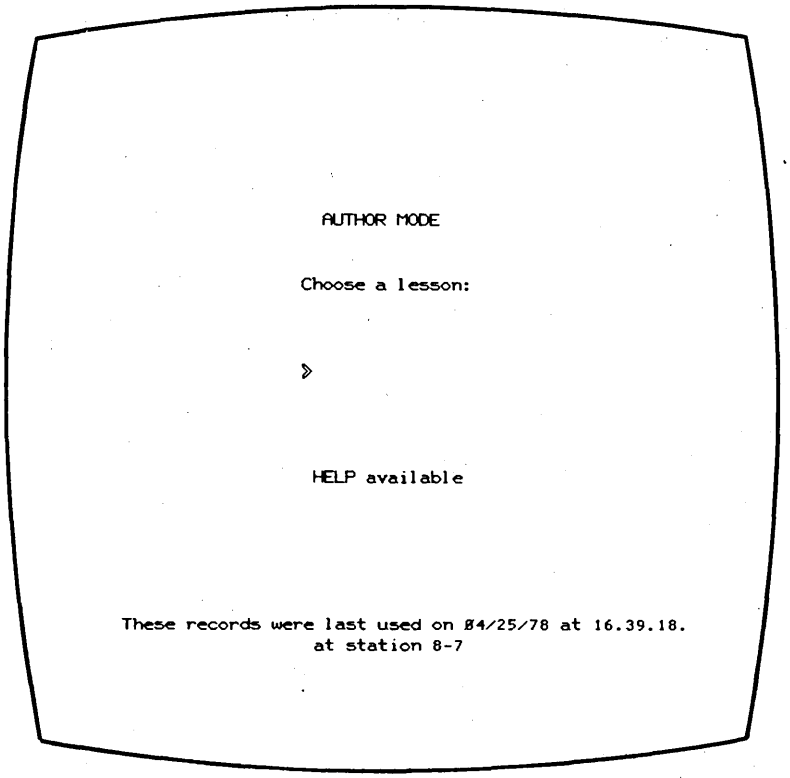


Figure 2-8. Author Mode Display

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 sections 4 (students and multiples), 5 (instructors), or 6 (authors).

Lesson	Description
whatsnext	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 for new science students introduce the keyboard and PLATO features. Each lesson has the same basic information. Lesson "Øintroc" adds some information, and lesson "Øintrob" 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 clearness 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 three 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 get either an index of lessons from which to choose or one lesson which you must choose (figure 4-1). Press HELP for an explanation of what to do and to find out about the PLATO bookmark.
- If your instructor has assigned you to a PLATO Computer-Managed Instruction (CMI) course, you might have to type your CMI course name and CMI section name. If one or both of these are required, your instructor can provide this information. The CMI system presents instructions for using the system the first time you sign onto the CMI system. After these instructions and whenever you sign onto PLATO again, you immediately get the module list 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 message appears.

Press NEXT to begin

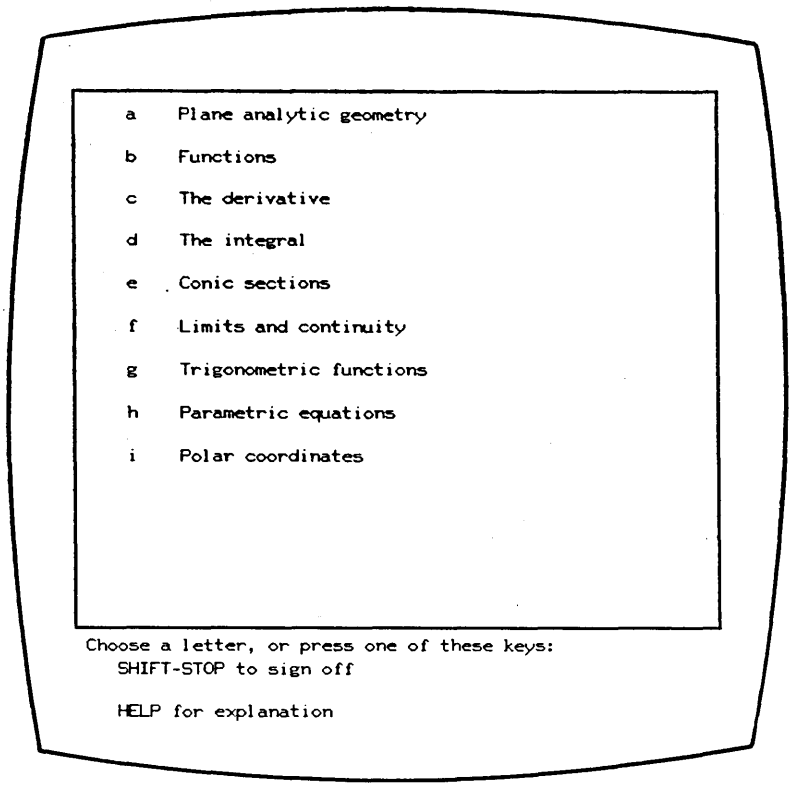


Figure 4-1. Example of Student Index Display

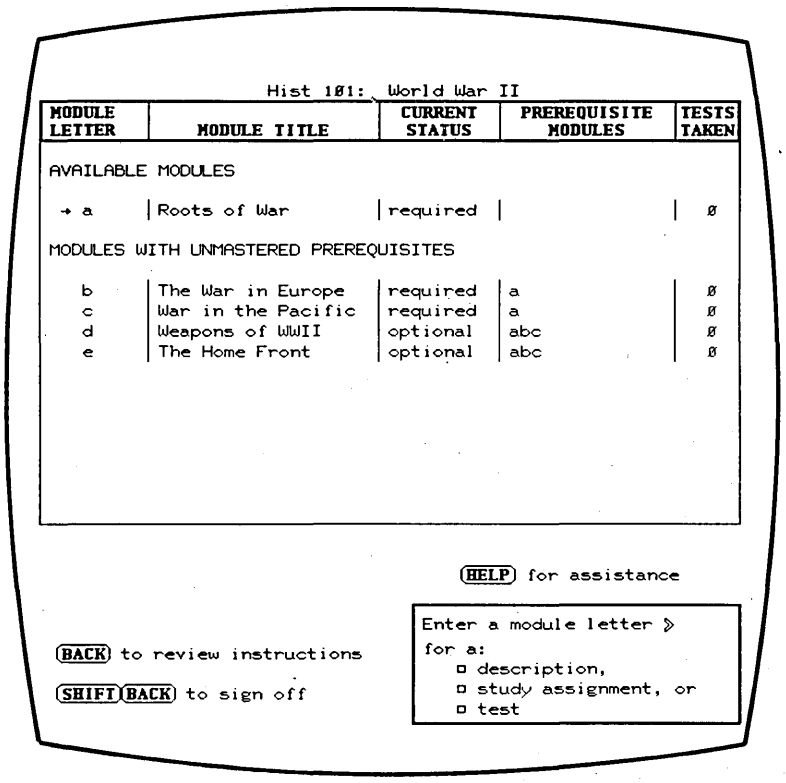


Figure 4-2. Example of Module List Display

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

An an instructor, you can choose any option on the instructor mode display by typing the number in front of the desired option (for example, to look at the first option, type the number 1). The system then shows you a new display giving you more detail about that option or another list of options.

The instructor mode display shows only the options that are available to you, determined by your group director. You can have from one to four options as follows:

- Course operations
- Lesson selection
- Site information
- Notes and communications

Whenever you have selected an option from the instructor mode display, you can usually return to the instructor mode display by pressing the BACK key.

COURSE OPERATIONS

When you choose the COURSE option from the instructor mode display, the system asks you which group (course) 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 another PLATO group that you want to edit or inspect. The system asks 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 course 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.
3. Select ADD option by typing the letter in front of it. The next display asks you to choose the type of user category you want the new person to be in.
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 set the password first. (Normally, you would allow the user to select his/her password.) 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 previous display, or press SHIFT STOP to return to instructor mode display.

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

LESSON SELECTION

From the instructor mode 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.)

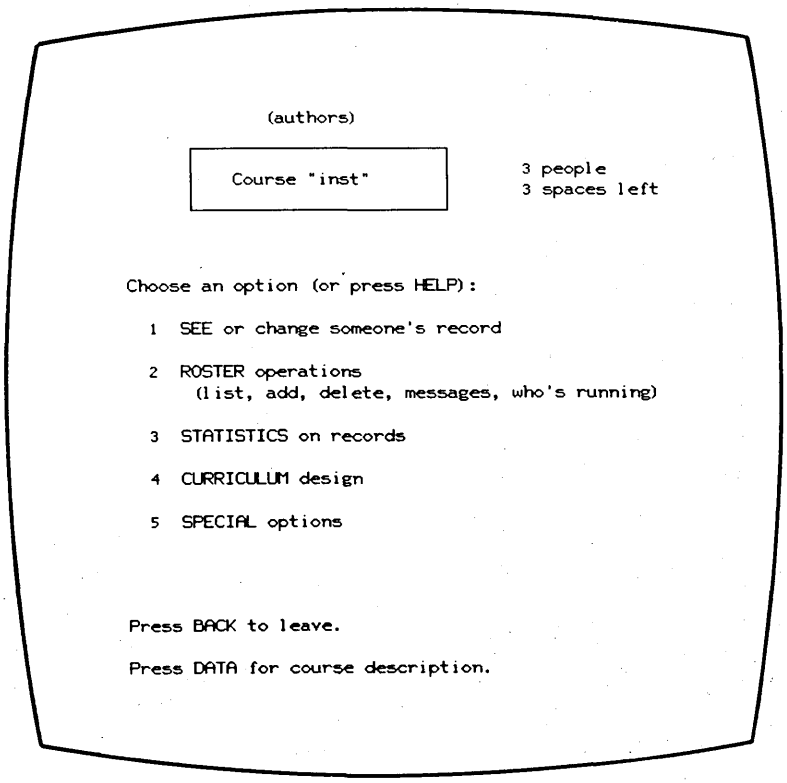


Figure 5-1. Course Operations Display

The following sections list lessons you can study. The system catalog of lessons lists other available lessons. To access this catalog, type catalogs and press NEXT. Refer to Lesson Catalog, section 6.

When you are in a lesson and you want to stop, press the SHIFT STOP key 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 instructor mode display, or press SHIFT STOP to sign off the system.

SITE INFORMATION

This option gives information about your site, which is a group of PLATO terminals that share computer memory (ECS). Press BACK to return to the instructor mode display.

NOTES AND COMMUNICATIONS

Choosing the notes and communications option from the instructor mode display gives you options similar to figure 5-2. Notes are messages stored in the PLATO system. You can look at public notes and system announcements, personal notes, and student notes. Other communication options are talk options and a list of current users. To learn how to write notes, study lesson "Ønotesintr".

Public Notes and System Announcements

Public notes are comments about any PLATO-related topic. Instructors and authors can read and write public notes. System announcements give information about PLATO system operations. Instructors and authors can read system announcements, but only system-support people can write them. Choosing this option displays the PLATO NOTES display. Press HELP for information, press a letter to access an option, or press BACK to return to the instructor mode display.

Personal Notes

Personal notes are private messages to and from instructors and authors. Only the addressee of a personal note can see that note. To send a personal note to another instructor or author, enter that user's PLATO name and PLATO group on the personal notes display (figure 5-3). You can reach the personal notes display from the communications 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 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.

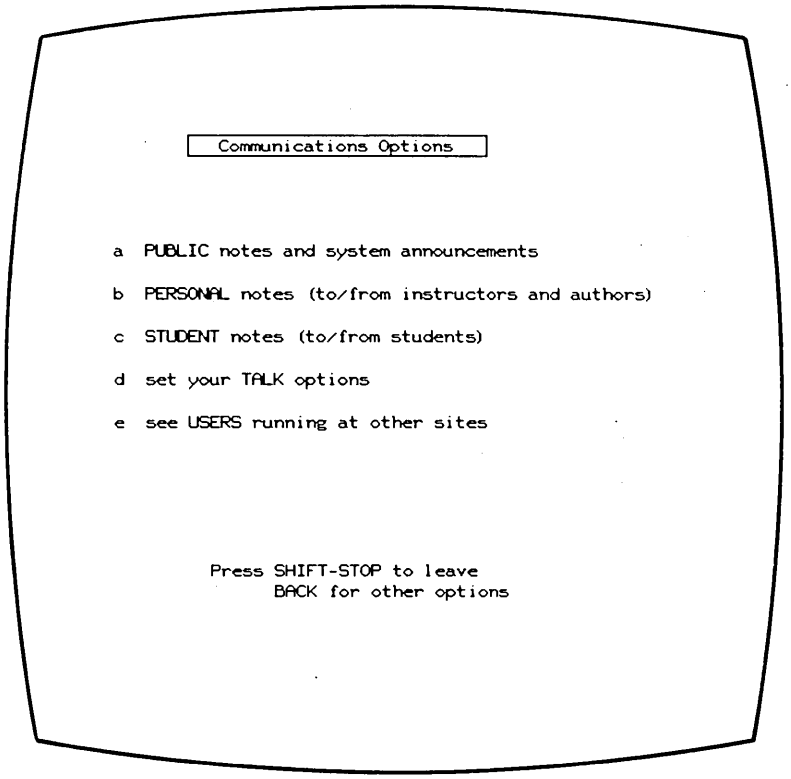


Figure 5-2. Communications Options Display

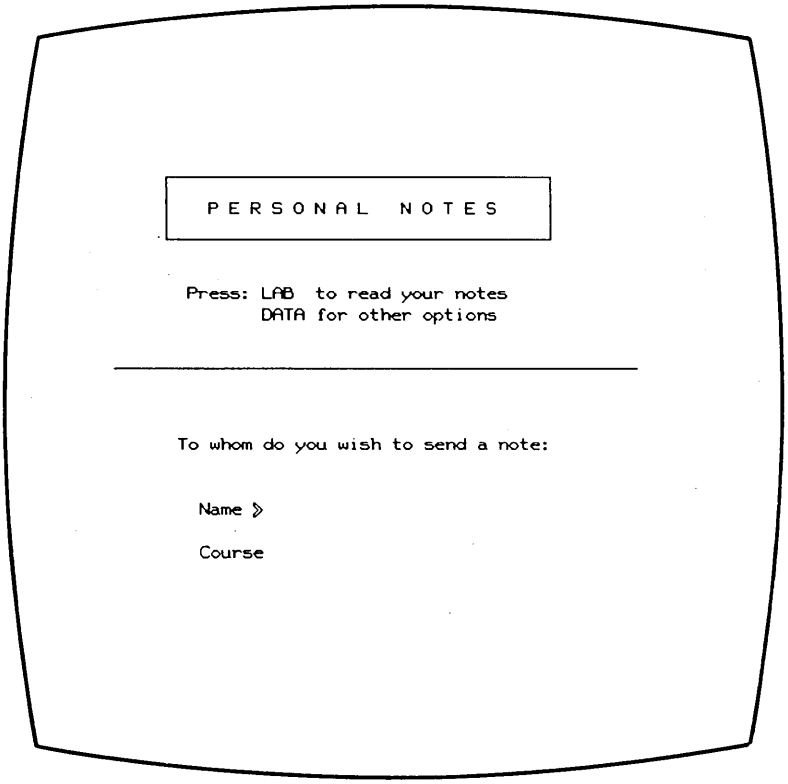


Figure 5-3. Personal Notes Display

Practice sending personal notes by sending a note to yourself or to a friend. When someone sends you a note, your instructor mode display and the communications 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 are similar to personal notes.

Talk Options

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).

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 instructor mode display.

Current Users

This 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 to the instructor mode display.

SIGNING OFF

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

> Press NEXT to begin

The first display an author sees after signing onto the PLATO system is the author mode display (refer to figure 2-8). An author can choose any SHIFT DATA option, select a lesson to study, read and write notes, or write a lesson.

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 key 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 Section).
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 key 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. Lesson "authors" is an information lesson for authors. Refer to section 7 for other lessons to study.

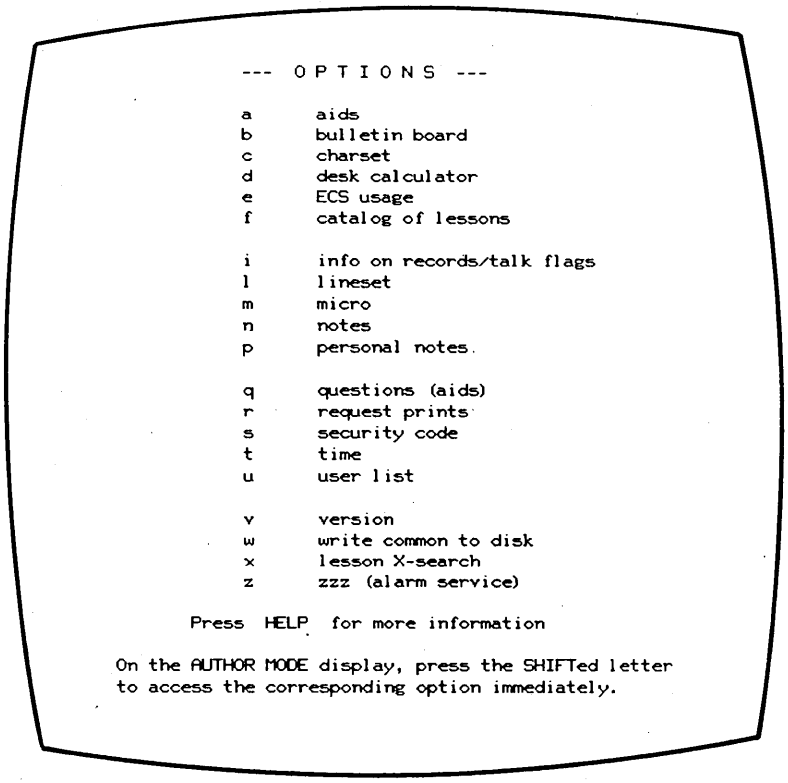


Figure 6-1. SHIFT DATA Options Display

LESSON CATALOG

The system catalog lists lessons available on the PLATO system. Use this catalog to look either for lessons on certain topics or for lessons of general interest. To access the catalog, type F, or type catalogs on the author mode display.

The catalog gives lesson names only for lessons you may access. Contact your CDC 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.

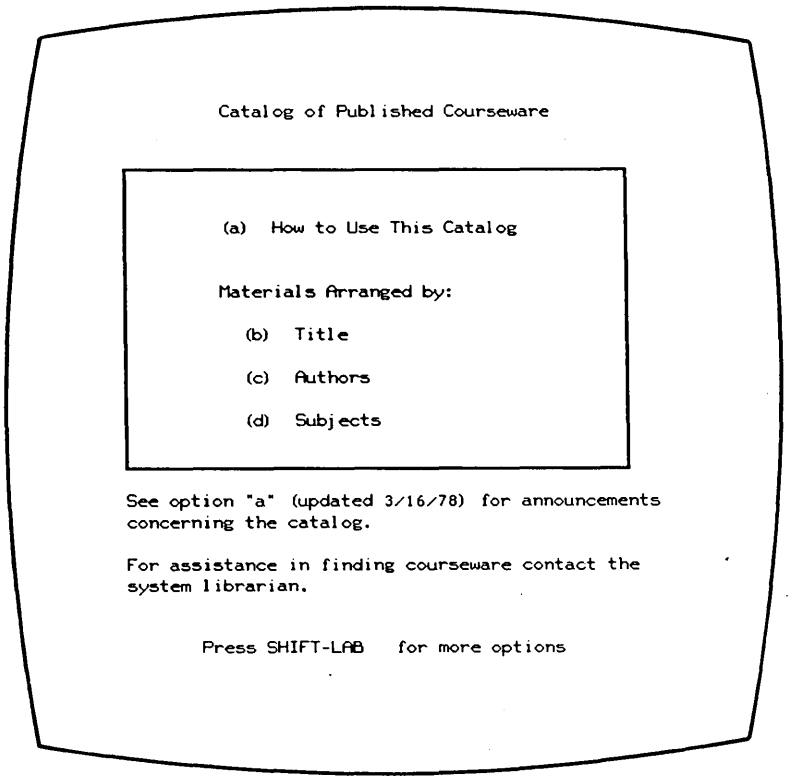


Figure 6-2. Lesson Catalog Display

OTHER AUTHORS

Lesson "authors" is a voluntary listing of authors on the PLATO system. 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.

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 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".

SYSTEM ANNOUNCEMENTS

System announcements form a notes file of information about PLATO system operations. Authors and instructors can read system announcements, but only system-support people can write them.

PUBLIC NOTES

Public notes form a notes file of 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.

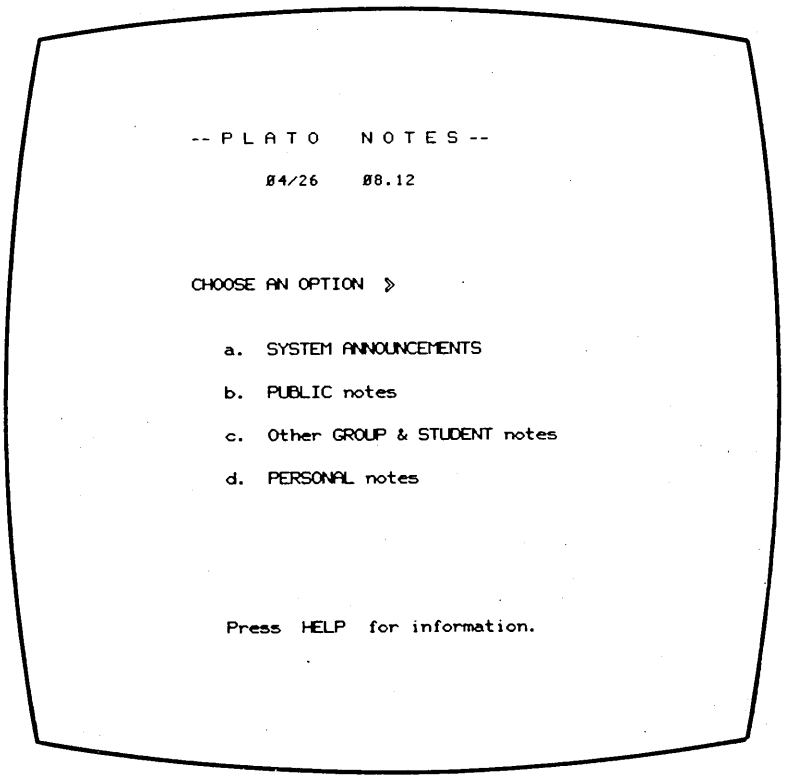


Figure 6-3. PLATO NOTES Display

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 and PLATO group on the personal notes display.

Practice sending personal notes by sending a note to yourself or to a friend. 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 PLATO Computer-Managed Instruction (CMI) purposes rather than lesson-writing purposes. These authors do not need the author language or editor.

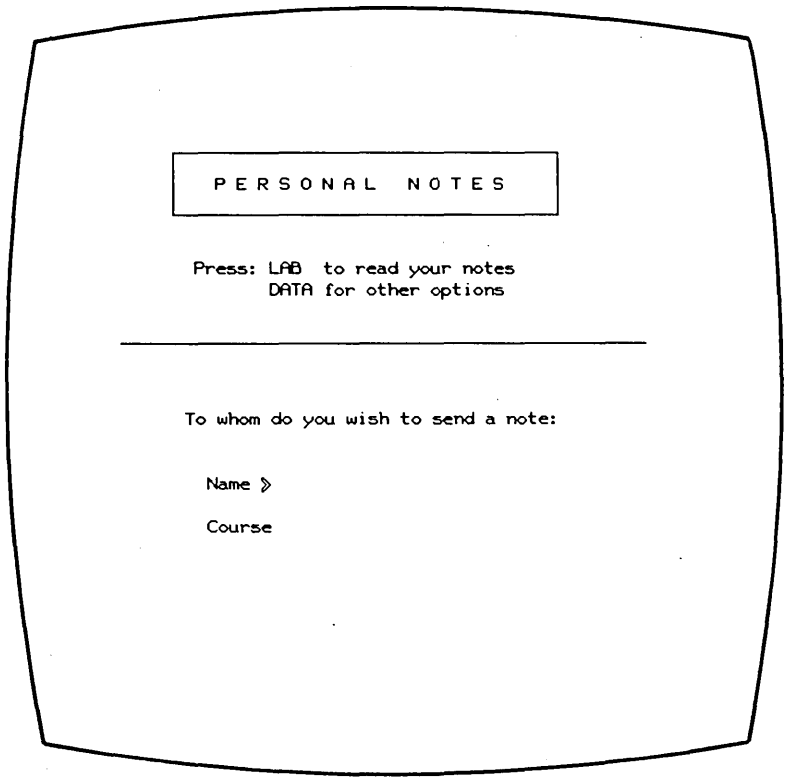


Figure 6-4. Personal Notes Display

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 CDC learning centers. Contact your CDC representative for more information.

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.

Two editing features are the SD and ID display options. SD (show display) executes many graphics instructions without condensing the entire lesson. (The system condenses a lesson to prepare it for execution. The system then executes or performs each author language instruction.) SD saves time and conserves system resources. ID (insert display) generates author language instructions automatically after you put line drawings and text on the screen locations and other numbers. Study lesson "Øsd" to learn how to use SD and ID. (Before you study "Øsd", study "Øtermcurso" and "Øediting1".) For more help, press HELP when in SD or ID mode.

SIGNING OFF

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

Press NEXT to begin

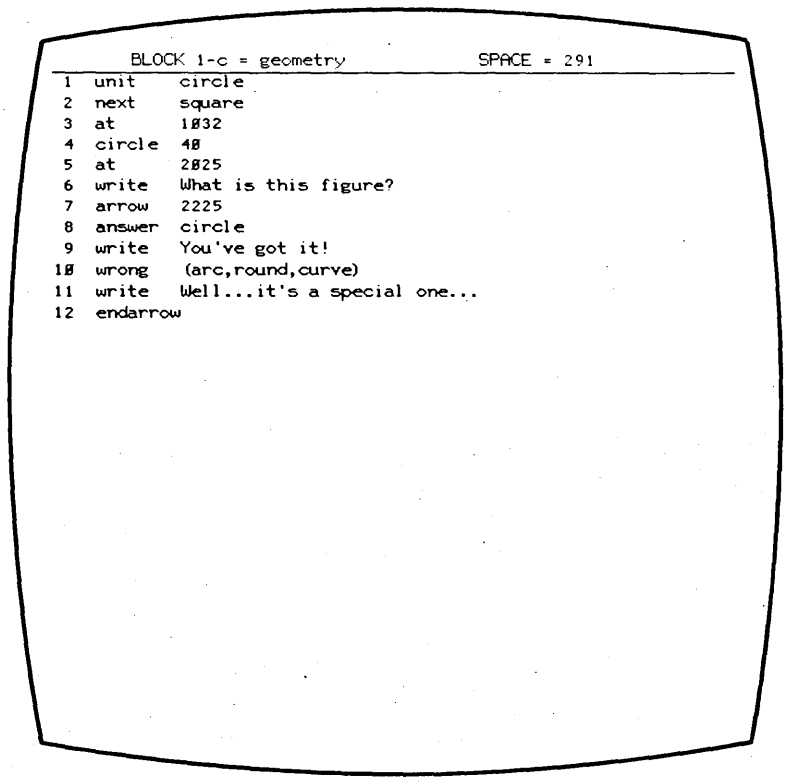


Figure 6-5. Line Display

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 following message erases and nothing happens.

what term?≫

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, 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.

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-consult and TERM-talk.

CONSULT

TERM-consult is a method of getting immediate help from a consultant signed on at another terminal. A consultant is a CDC employee who helps instructors and authors with any problem they have on the PLATO system. Instructors often 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.

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 "Øtermtalk" 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.

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 "Øtermcurso" 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 "Øtermstep" 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 on 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 a lowercase 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.

SHIFT STOP key

The SHIFT STOP (STOP1) key is the only key that an author cannot control. Pressing the SHIFT STOP key 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 key), 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.

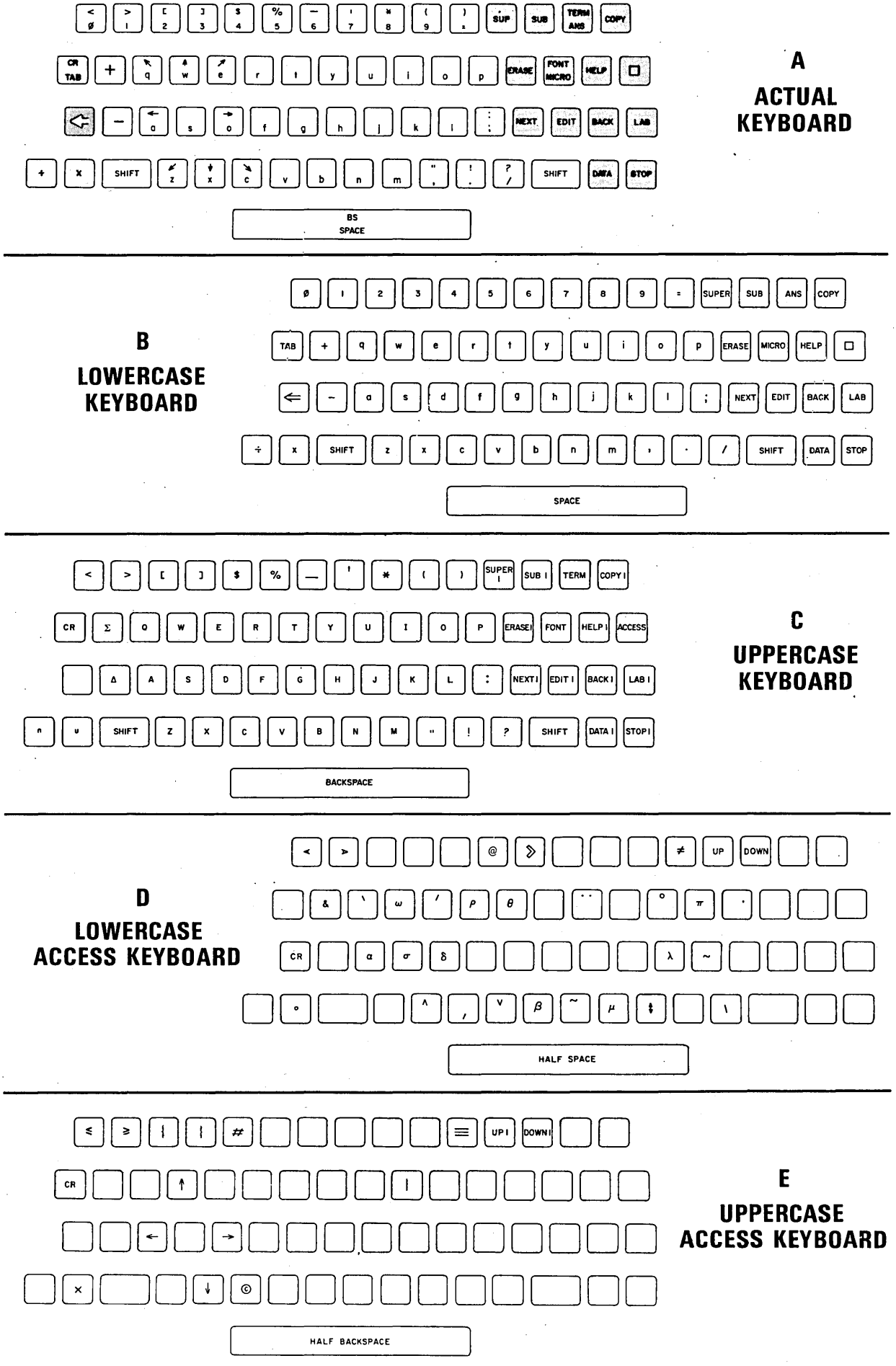


Figure A-1. Keyboard Assignments

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 CMI, the student presses the ANS key to record a response.

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) key 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) key.

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) key locks the terminal into subscript mode. The terminal stays in this mode until you press the SHIFT SUPER (SUPER1) key.

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.

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) key on the right-hand side of the keyboard. This key is the only function key without a name written on the key.

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. 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 key 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 key 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 key 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 section discusses the components unique to the IST (the CRT screen and controls and indicators). Section 1 discusses the components common to all terminals (the detachable keyboard and the touch panel).

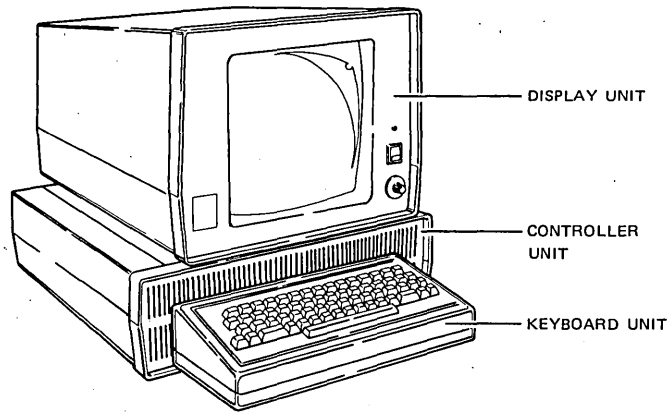


Figure B-1. PLATO Information Systems Terminal (IST)

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 a 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 key. 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.

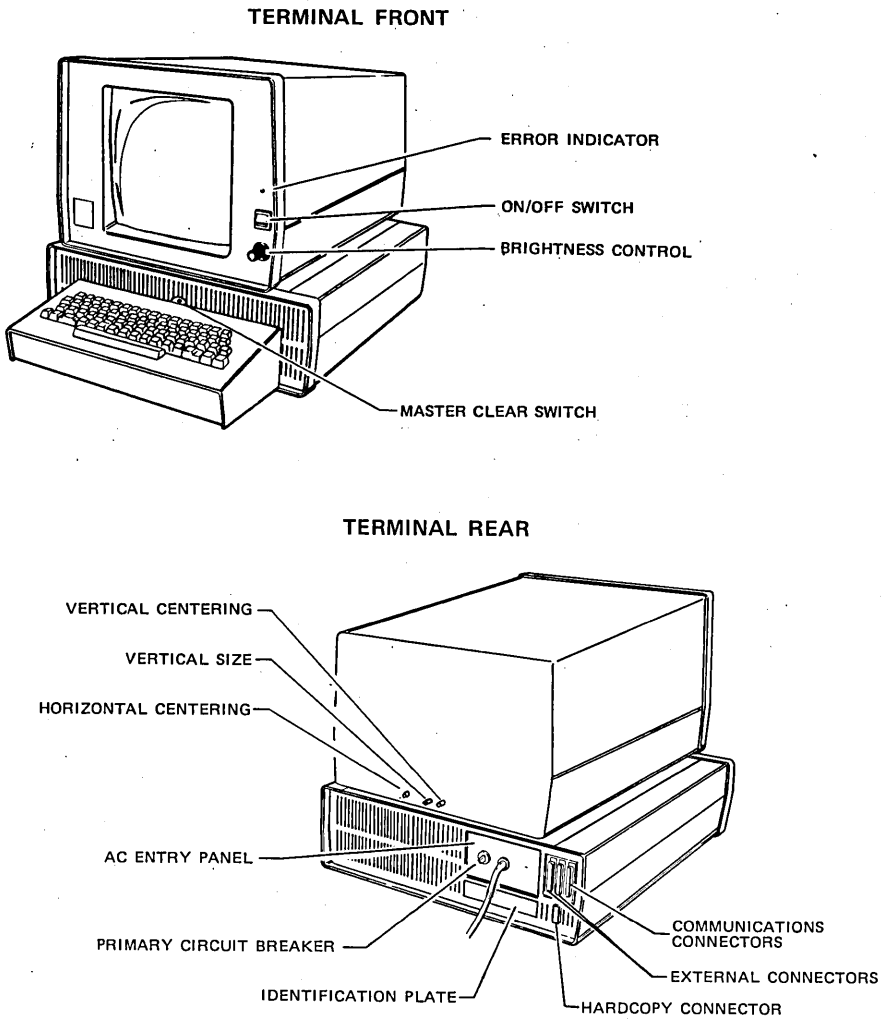


Figure B-2. Controls and Indicators

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.

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. Installed 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	120 V, 50/60-Hz, 2.5 A, 3-wire.
Operating environment	10°C to 35°C (50°F to 95°F) recommended 24°C (75°F) with 10% to 90% relative humidity, 10°C (18°F) per hour temperature gradient, and 2000 m (6560 ft) altitude.
Storage environment	-10°C to 50°C (14°F to 122°F) with 0% to 100% relative humidity.
Ventilation	When positioning the terminal, allow a 3-in 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 m (25 ft), and the standard length of the keyboard cable is 0.75 m (2.5 ft). Cables are supplied with the terminal. User must arrange installation of the AT&T 1000A Data Access Arrangement (DAA) or equivalent with the local telephone company, or user must use CDC acoustic coupler.

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

Height	48 cm (19 in)
Width	51 cm (20 in)
Depth	71 cm (28 in)
Weight	54 kg (105 lb)

The following specifications are for the keyboard.

Height	8 cm (3 in)
Width	38 cm (15 in)
Depth	18 cm (7 in)
Weight	2 kg (4.5 lb)

The following specifications are for the display unit.

Height	33 cm (13 in)
Width	41 cm (16 in)
Depth	56 cm (22 in)
Weight	18 kg (40.5 lb)

The following specifications are for the controller unit.

Height	15 cm (6 in)
Width	51 cm (20 in)
Depth	53 cm (21 in)
Weight	27 kg (60 lb)

INITIAL INSTALLATION PROCEDURE

CAUTION

To prevent overheating, allow a 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 when automatic latch clicks.

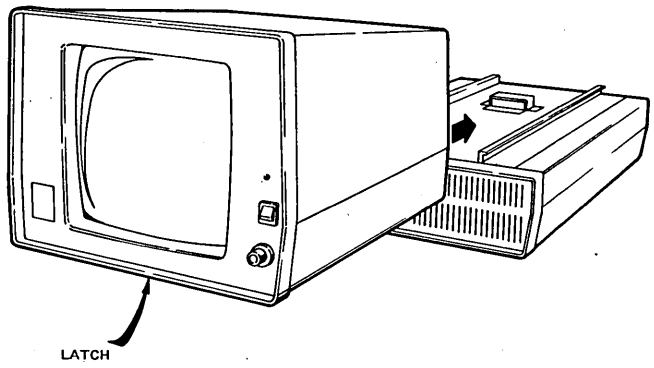


Figure B-3. Display Unit Mounting

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.

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

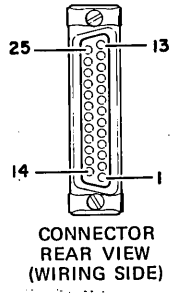
To assemble the communications cable kit, determine which communication interface the terminal uses and perform the following procedure.

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



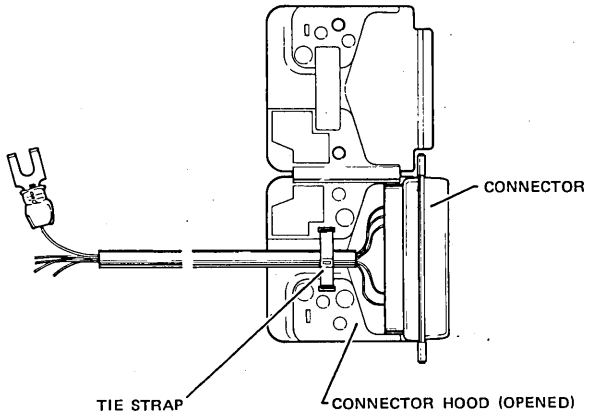


Figure B-4. Data Set Cable Kit Assembly

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, connect lugged leads at other end of communications cable to connections DT and DR (polarity unimportant) of DAA supplied by telephone company. Cycle TEST switch on DAA two or three times, leaving switch positioned so that red dot is out (figure B-5).

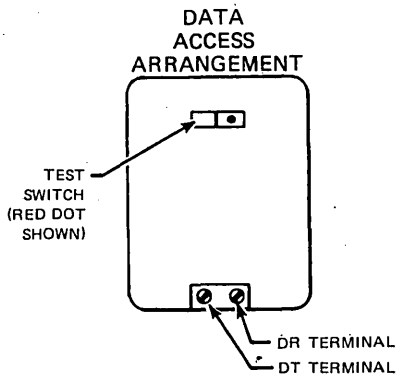


Figure B-5. Data Access Arrangement

   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).

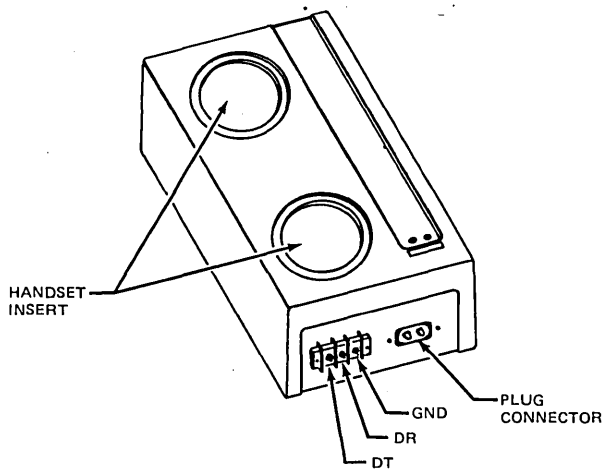


Figure B-6. Acoustic Coupler

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.

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 non-operational 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 key to turn light off. If light does not go off, press master clear switch.

   d. Proceed with sign-on sequence.

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

7. 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 elminates 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

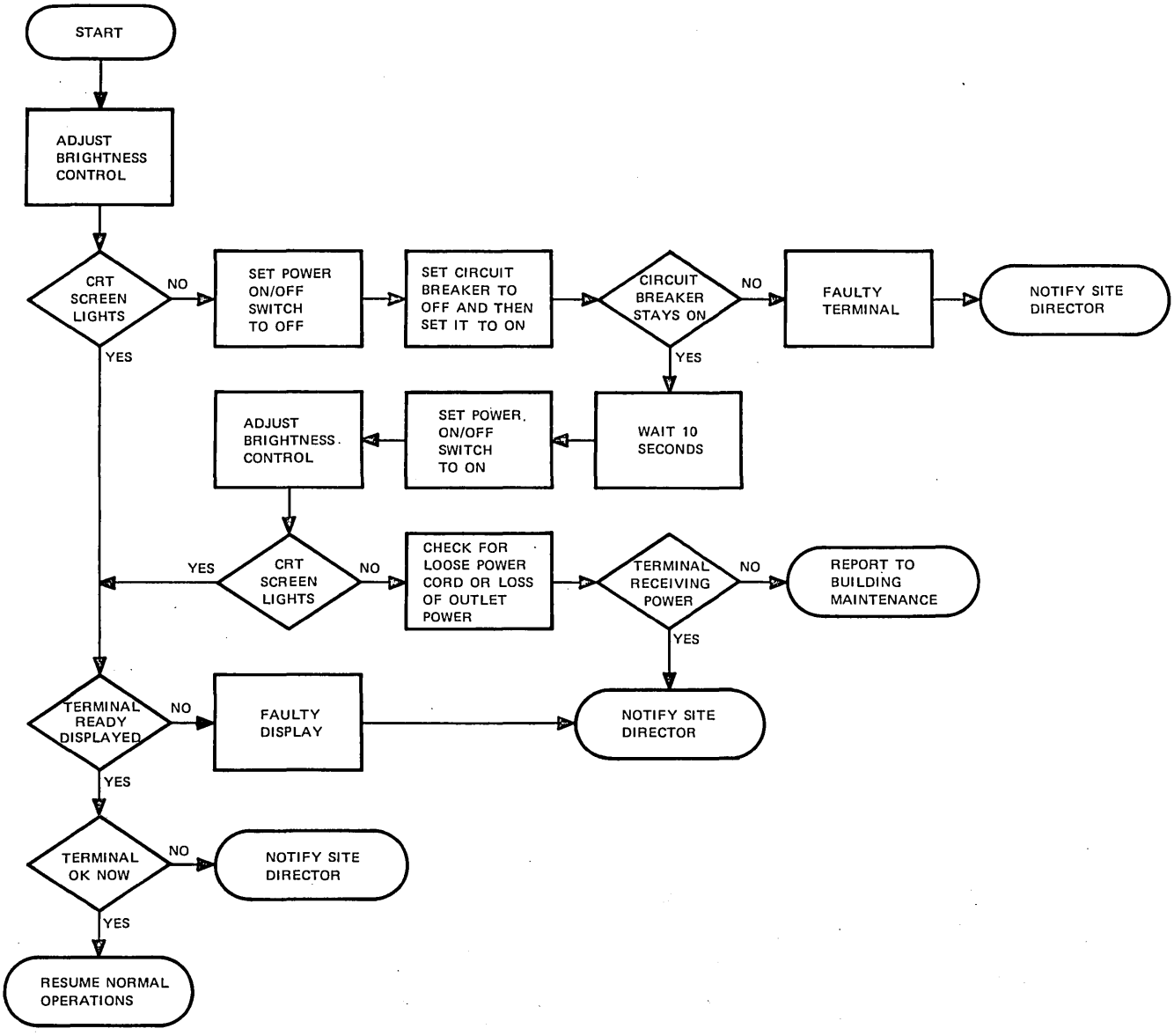


Figure B-7. IST Troubleshooting

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 page 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 page, press NEXT, type e on the group name page, 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 terminal serviceman.

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.

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

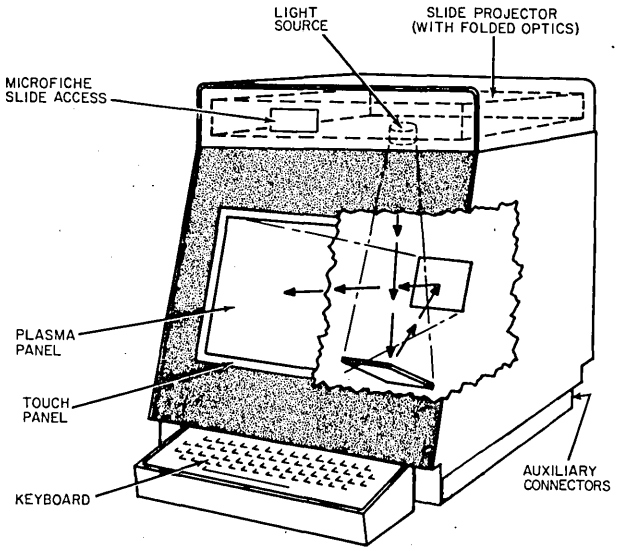


Figure C-1. PLATO CC546 Plasma Terminal

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 C-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.

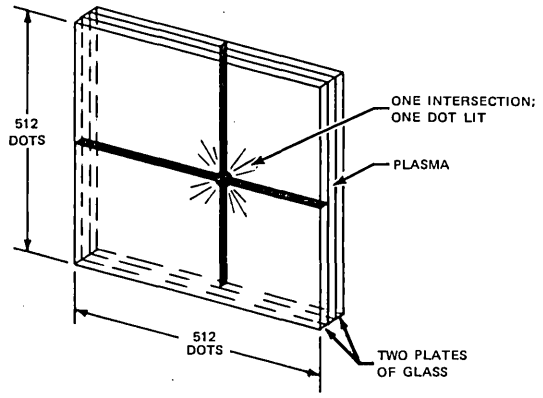


Figure C-2. Plasma Panel

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 C-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.
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.

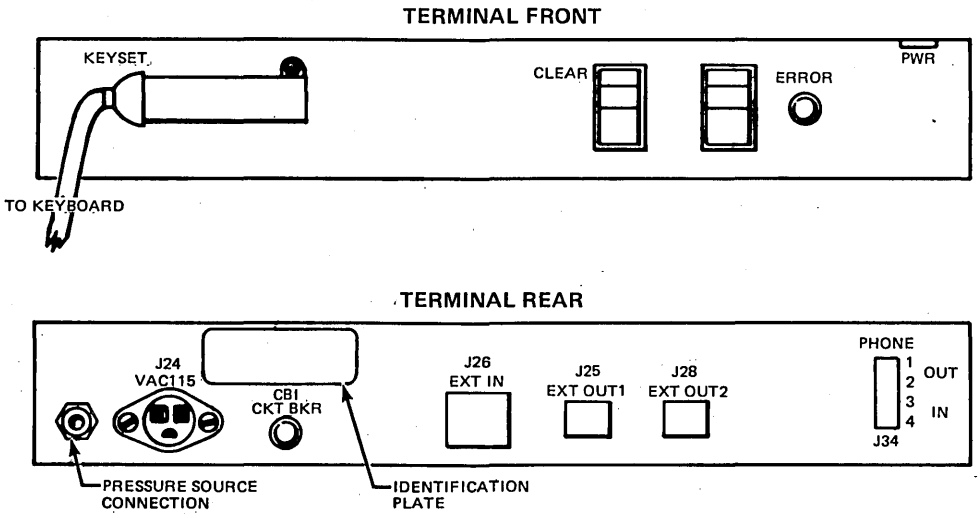


Figure C-3. Auxiliary Panels

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 C-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.

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 V, 60-Hz, 5 A (maximum), 3-wire.
Operating environment	10°C to 38°C (50°F to 100°F) with 10% to 80% relative humidity and 300 m to 1800 m (980 ft to 7000 ft) altitude.
Ventilation (cabinet)	When positioning the terminal, allow a 2-in 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-in OD by 1/4-in ID plastic tubing (not supplied with terminal).

The following specifications are for the terminal.

Height	56 cm (22 in)
Width	46 cm (18 in)
Depth	76 cm (30 in)
Weight	59 kg (130 lb)

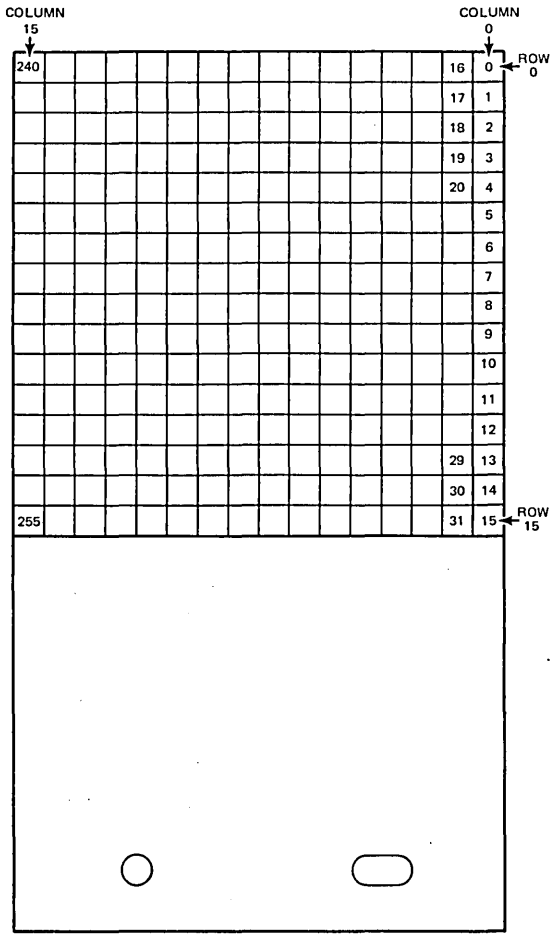


Figure C-4. Microfiche Layout

The following specifications are for signal connection (J34).

Direct connected	A 4-conductor cable (supplied with terminal) in a length suitable to connect the terminal to the multiplexer or the site controller.
Dial-in connected	A 2-conductor cable (supplied with terminal) in a length suitable to connect the terminal to Control Data acoustic coupler or to AT&T 1000A Data Access Arrangement (DAA) or equivalent. User must arrange installation of the DAA with local telephone company.

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

CAUTION

To prevent overheating, a 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.

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. DAA connection only. Connect lugged leads at other end of cable to connections DT and DR (polarity unimportant) of DAA supplied by telephone company. Cycle TEST switch on DAA two or three times, leaving switch positioned so that red dot is out (figure C-6).

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

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 C-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, 3-wire, 5-ampere grounded wall outlet.

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

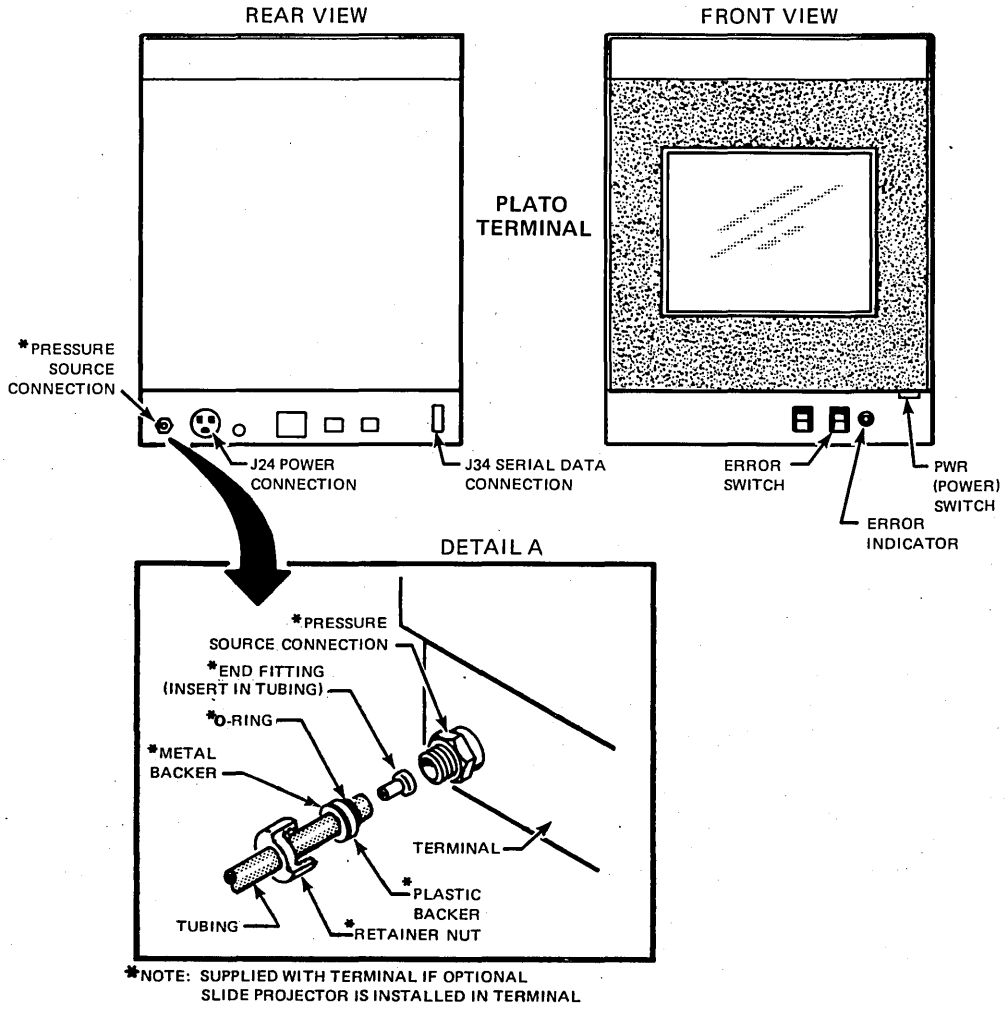


Figure C-5. Installation Elements

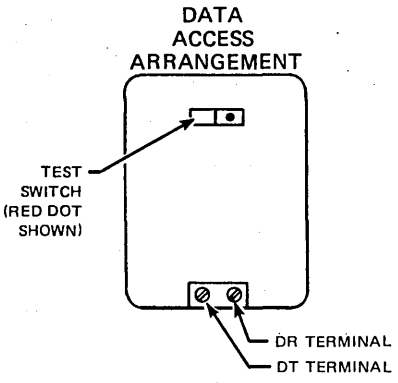


Figure C-6. Data Access Arrangement

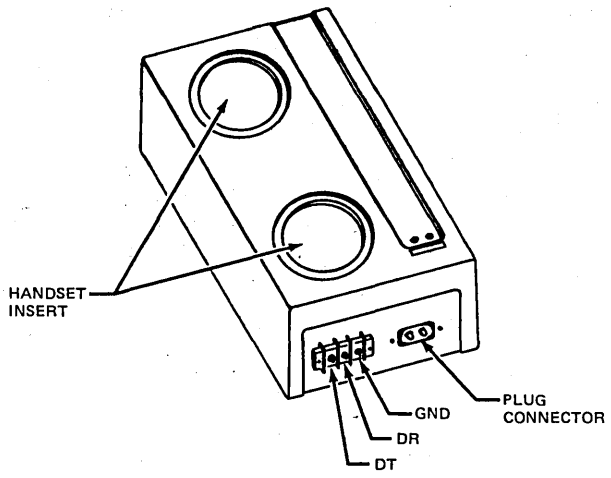


Figure C-7. Acoustic Coupler

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 C-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 key 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.

   e. 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.

5. 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 (unconditioned 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 C-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 C-8).

1. Set terminal PWR switch to OFF, and disconnect terminal power connection.

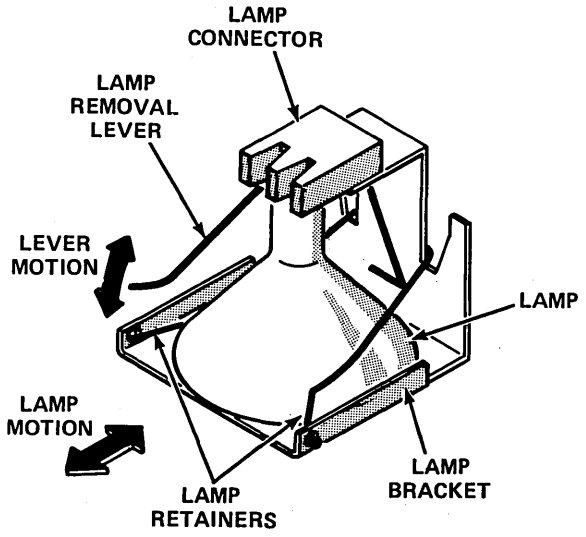


Figure C-8. Projector Lamp Replacement

2. Remove top cover of terminal by raising it straight up. Set cover aside.

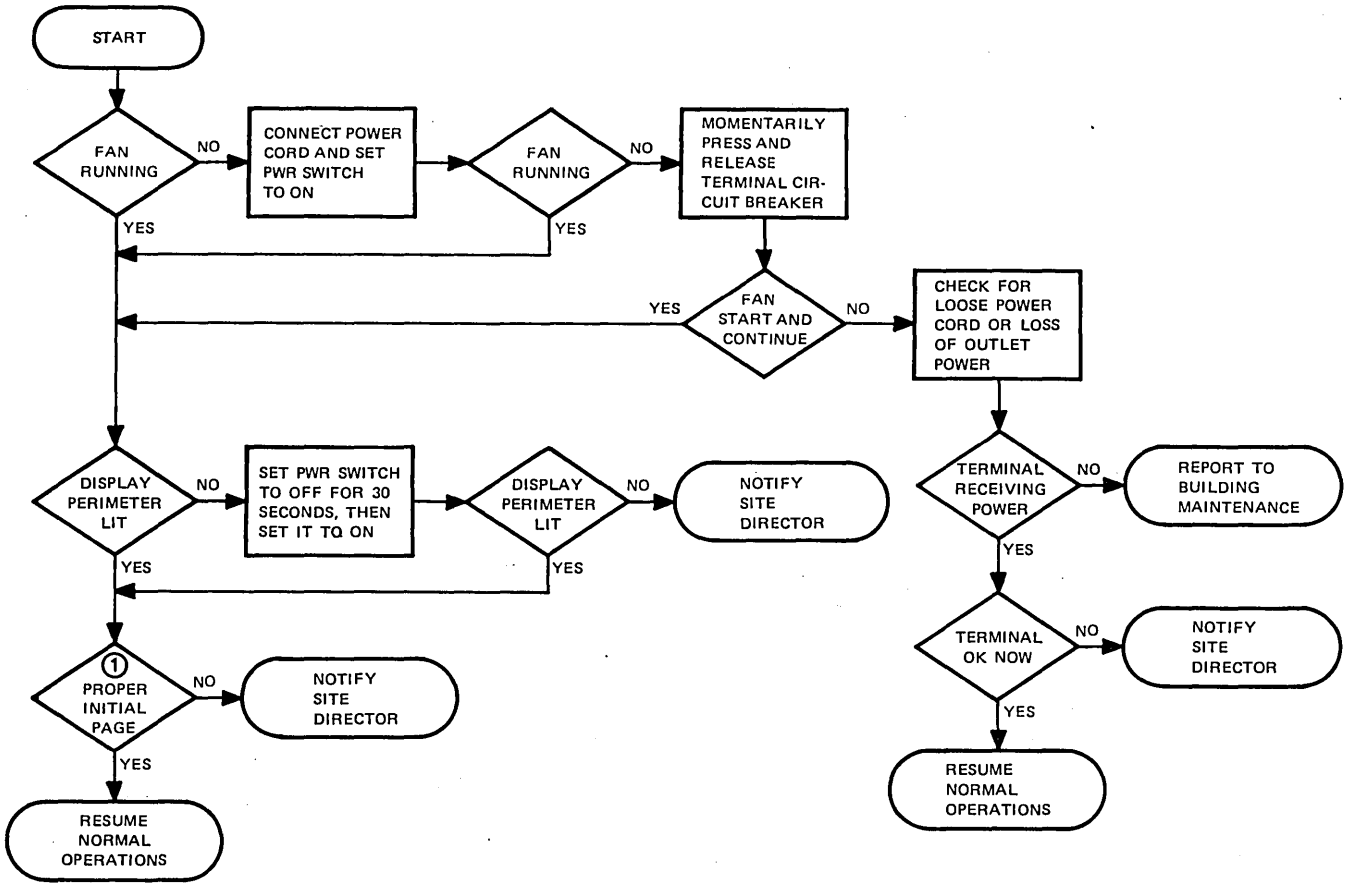
WARNING

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 level 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 C-9. If a malfunction is detected, follow established maintenance reporting procedures.



NOTES:

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

Figure C-9. Plasma Terminal Troubleshooting

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 page 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 page, press NEXT, type e on the group name page, and press SHIFT STOP to access lesson "diag".

INDEX

COMMENT SHEET

MANUAL TITLE CDC PLATO Terminal User's Guide

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