6. Notes

Acronyms

Acronym	*Meaning*
Ada LRM	Ada Language Reference Manual
ASCII	American Standard Code for Information Interchange
CLI	Command Line Interface
<CR>	Carriage Return (key or ASCII character)
CSC	Computer Software Component
CSCI	Computer Software Configuration Item
CSU	Computer Software Unit
I/O	Input/Output
LRM	Language Reference Manual (Ada)
MSDOS	Microsoft Disk Operating System (for the PC)
PC	Personal Computer (compatible with the IBM 80x86-family)
SRS	Software Requirements Specification
SUM	Software User's Manual
UNIX	an operating system (not an acronym)
VDD	Version Description Document
VT100	Video Terminal model 100 by Digital Equipment Corporation

fault string is not found. This error is not fatal.

See Section 4.2.4.1. See also Section 4.2.4.2.

9. Too many screens for internal buffers

   This message is displayed when an internal error occurs. This error is caused by the limited number of screen buffers (defined in package SYSDEP as Max_Number_of_Screens) is exceeded. A maintainer of the Ada LRM Reader should be contacted to correct the error. This error is fatal.

10. Unexpected Error -- Continuing

    This message is displayed when an error condition arises in which the Ada LRM Reader has encountered an problem that was not anticipated. A maintainer of the Ada LRM Reader should be contacted to correct the error. This error is not fatal.

The following error messages may also appear. They represent internal errors which indicate that there is either a bug in the code of the Ada LRM Reader or that the *.daf files have not been placed in the proper location or have been damaged in some way. First check out the *.daf files before looking at the source code or seeking further help.

1. Internal DAF Error - No DAF Open

2. Internal DAF Error - Read Error

3. Internal DAF Error - Stack Overflow

4. Internal DAF Error - Unexpected Error

5. Reference Manual – Error messages

1. Invalid Command – Reenter or type HELP for help

   This message is displayed when the command entered by the user is not resolved as an expected command or as a citation. This error is not fatal.

   See Section 4.2.6.

2. Cannot advance beyond the end of this citation

   This message is displayed when the user attempts to execute the N or NEXT command and the current screen is the last screen of Appendix F or one of the following: CONTENTS, INDEX, POSTSCRIPT, FOREWARD, or HELP. This error is not fatal.

   See Section 4.2.3.1. See also Section 4.2.3.3.

3. Cannot back up before the beginning of this citation

   This message is displayed when the user attempts to execute the P or PREVIOUS command and the current screen is the first screen of Chapter 1 or one of the following: CONTENTS, INDEX, POSTSCRIPT, FOREWARD, or HELP. This error is not fatal.

   See Section 4.2.3.2. See also Section 4.2.3.4.

4. DAF FIle Not Found

   This message is displayed when the Ada LRM Reader attempts to access a citation and cannot find the data file containing the information on the citation. This means that there is a problem with the installation and you should check into the *.daf files (DAF = Direct Access File), making sure they are in the correct directory. This error is fatal and will cause the program to abort.

5. Location stack is empty

   This message is displayed when the user attempts to execute the POP command and the location stack is empty (there is no element to which to pop). This error is not fatal.

   See Section 4.2.3.6.

6. Location stack is full

   This message is displayed when the user attempts to execute the PUSH command and the location stack is full. This error is not fatal.

   See Section 4.2.3.5.

7. Print log file error

   This message is displayed when the user attempts to execute the PRINT or PS command and the output log file cannot be created to appended. This error is not fatal.

   See Section 4.2.2.1. See also Section 4.2.2.2.

8. Search string not found

   This message is displayed when the user executes the / or // command and the specified or de-

The above display shall be divided into three areas:

1. an area for the text to be displayed (lines 1 to 22),

2. a command prompt and input line (line 23), and

3. an error message line (line 24).

The command prompt shall indicate the citation currently being displayed, the number of levels deep the user is on the location stack, the number of the current screen in the citation, the total number of screens in the citation, and the current search string (truncated if necessary so the line does not wrap). The current search string shall appear only if the previous command was a search or search next command.

The line containing the search string shall be identified by a less than sign (<) appearing in column 79 of the line.

The above display is divided into three areas:

1. an area for the text to be displayed (lines 1 to 22),
2. a command prompt and input line (line 23), and
3. an error message line (line 24).

The text area contains the text of the current citation. The 75-column (max) lines are indented two spaces on the left and three spaces on the right. If a line of the text is longer than 75 columns, it is continued on the next line, where a vertical bar (|) appears in the first column followed by a space and the remainder of the line.

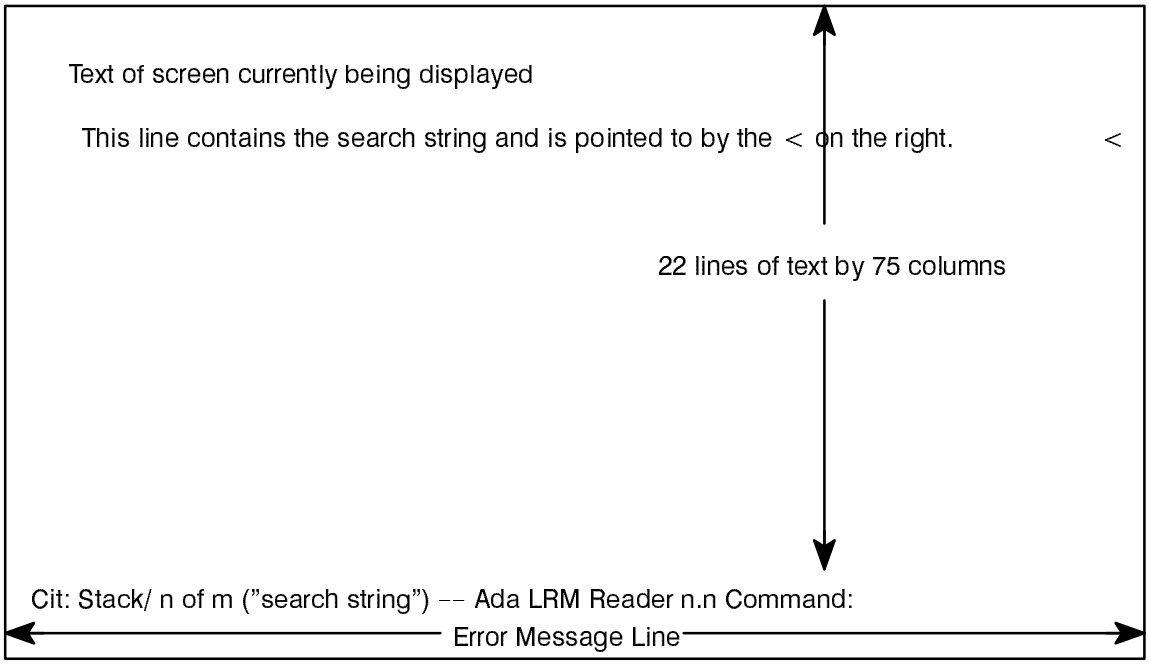
The command prompt indicates the citation currently being displayed, the number of levels deep the user is on the location stack, the number of the current screen in the citation, and the total number of screens in the citation.

The error message line shall be blank most of the time; it shall contain an error message when the previous command resulted in one.

Commands are entered after the command prompt by the user. These commands may be edited via the standard command line editor for the target system. The commands will be processed by the system when the user strikes the RETURN (<CR>) key.

4.6.2. Screen Displays when in Search Mode

When the Ada LRM Reader is in a search mode (one of the two search commands has been issued), the display shall change to that indicated below:



4.2.6. Invalid Commands

If the user types a command which is not a citation or one of the commands listed above, an error message will appear.

4.3. System inputs

The command line argument is the only input from the system accepted by the Ada LRM Reader. Other system inputs, such as environment variables, are not accepted.

4.4. Termination

Execution of this program is terminated by the user entering the QUIT command, described in Section 4.2.5.5.

4.5. Restart

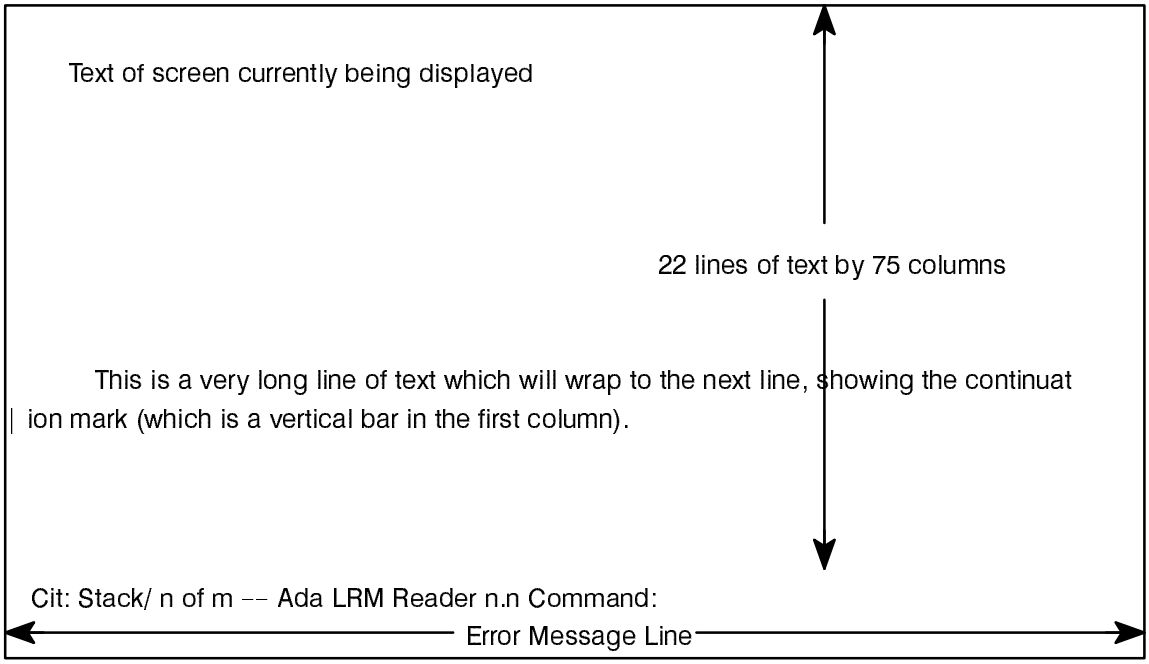
The procedure for restarting this program is the same as for starting it from scratch. See Section 4.1.

4.6. Outputs

Error messages are described in Section 5. The command descriptions and details on their outputs are in Section 4.2. The following shows the key screen displays and discusses their meanings.

4.6.1. Normal Screen Displays

Each display to the user resembles the following:



The string argument in this command is optional. If omitted, the last string looked for is used. If the string argument is omitted and there was no last string, an error message is displayed.

4.2.4.2. Command: //[<string>] – String Search from Next Line of Citation

The // command causes the Ada LRM Reader to search for the indicated string from the beginning of the next line in the current citation. The string argument starts immediately after the second slash, so a space after the second slash, for instance, is the first character of the search string. Spaces may be embedded in the search string as required. The search is not case-sensitive.

This command is intended to be used to allow the user to resume searching from where the / command left off.

The string argument in this command is optional. If omitted, the last string looked for is used. If the string argument is omitted and there was no last string, an error message is displayed.

4.2.5. Other capabilities

4.2.5.1. Command: REFRESH – Redisplay current screen

The REFRESH command commands the Ada LRM Reader to redisplay the current screen of the current citation.

4.2.5.2. Command: PAUSE – Delay for about 5 seconds

The PAUSE command causes the Ada LRM Reader to delay execution for about 5 seconds.

This command is useful when testing the Ada LRM Reader via a batch command file redirected to standard input.

4.2.5.3. Command: HELP – Display online help

The HELP command commands the Ada LRM Reader to push into the help screen from the current citation. This allows the user to easily return to where he was when he issued the HELP command by simply issuing a POP command.

4.2.5.4. Command: ABOUT – Display information about the program

The ABOUT command displays information about the Ada LRM Reader, including information on how to contact the author and the maintainer. Distribution rights are also presented on this screen.

4.2.5.5. Command: QUIT – Exit the program

The QUIT command commands the Ada LRM Reader to exit, returning to the shell from which it was invoked. If any PRINT or PS commands were issued, the log file is closed. If any citation files are currently open, they are closed.

rent citation is the first citation in the LRM, an error message will be displayed and the user will stay on the current screen.

4.2.3.3. Command: NEXT – Next citation

The NEXT command commands the Ada LRM Reader to advance to the first screen of the next citation. If the current citation is the last citation in the LRM, an error message will be displayed and the user will stay on the current screen.

4.2.3.4. Command: PREVIOUS – Previous citation

The PREVIOUS command commands the Ada LRM Reader to back up to the first screen of the previous citation. If the current citation is the first citation in the LRM, an error message will be displayed and the user will stay on the current screen.

4.2.3.5. Command: PUSH <citation> – Save location and jump

The PUSH command commands the Ada LRM Reader to save the user's current location (citation and screen) on a location stack and to then jump to the indicated citation. A subsequent POP command will place the user back into the citation and screen last saved on the stack.

If the location stack is full, an error message will be displayed and the user will stay on the current screen.

4.2.3.6. Command: POP – Return to saved location

The POP command commands the Ada LRM Reader to jump to the citation and screen currently stored at the top of the location stack.

If the location stack is empty, an error message will be displayed and the user will stay on the current screen.

4.2.4. String searches

4.2.4.1. Command: /[<string>] – String Search from Beginning of Citation

The / command causes the Ada LRM Reader to search for the indicated string from the beginning of the current citation. The string argument starts immediately after the slash, so a space after the slash, for instance, is the first character of the search string. Spaces may be embedded in the search string as required. The search is not case-sensitive.

This command is convenient for searching through the larger citations, such as the Index, Appendix E (the syntax appendix), or one of the other appendices.

3. n.n.n	Chapter, section, and subsection number, such as 11.4.2
4. l	Appendix letter, such as a to f or A to F
5. CONTENTS	Table of contents
6. INDEX	Index
7. FOREWARD	Foreward
8. POSTSCRIPT	Postscript
9. HELP	Online help display
10. ABOUT	Information about the Ada LRM Reader program

Citations may be used in two places: as a command themselves, which causes the Ada LRM Reader to jump to that citation, or as an argument to the PUSH command, which causes the Ada LRM Reader to push the location of the current citation onto a stack and then jump to the indicated citation. The POP command may be used to return to the citation displayed at the time the PUSH command was issued.

4.2.2. Print citations

4.2.2.1. Command: PRINT – Print the current citation

The PRINT command prints the current citation, as ASCII text, to a log file named LRM.LOG. Subsequent PRINT and PS (see next paragraph) commands append to the end of this log file. The log file is closed and available for review and printing when the user exits the Ada LRM Reader via the QUIT command.

4.2.2.2. Command: PS – Print the current screen

The PS command prints the current screen of the citation, as ASCII text, to a log file named LRM.LOG. Subsequent PRINT and PS commands append to the end of this log file. The log file is closed and available for review and printing when the user exits the Ada LRM Reader via the QUIT command.

4.2.3. Movement within and between citations

4.2.3.1. Command: N or <CR> – Next screen

The N command or a line containing only a RETURN (<CR>) commands the Ada LRM Reader to advance to the next screen. If the current screen is the last screen of a citation, the user is advanced to the first screen of the next citation. If the current citation is the last citation in the LRM, an error message will be displayed and the user will stay on the current screen.

4.2.3.2. Command: P – Previous screen

The P command commands the Ada LRM Reader to back up to the previous screen. If the current screen is the first screen of a citation, the user is backed up to the last screen of the previous citation. If the cur-

4. Reference Manual – Execution procedures

4.1.Initialization

The Ada LRM Reader is invoked in two ways:

1.The command "lrm" with no arguments invokes the Ada LRM Reader in such a way that the help screen comes up. The user may then read the help screen or enter a command or citation at this point.

2. The command "lrm citation" invokes the Ada LRM Reader in such a way that the indicated citation is displayed initially.

See Section 4.2.1.1. for the definition of a citation.

4.2.User inputs

The following table summarizes the commands the user may give to the program. This is done interactively.

<Citation>	Jump to the indicated citation
N or <CR>	Advance to the next screen or citation
P	Back up to the previous screen or citation
NEXT	Advance to the next citation, first screen
PREVIOUS	Back up to the previous citation, first screen
PUSH <Citation>	Jump to the indicated citation, saving the current location on the location stack
POP	Return to the location at the top of the location stack
PRINT	Print the current citation to a log file
PS	Print the current screen to a log file
REFRESH	Redisplay the current screen
PAUSE	Delay for about 5 seconds
/[<string>]	Search for the optional string from the beginning of the current citation
//[<string>]	Search for the optional string from the next line
HELP	Push into the help screen
ABOUT	Display information about the Ada LRM Reader
QUIT	Exit the Ada LRM Reader

See Section 4.2.1.1. for the definition of a citation.

4.2.1. Display citations

4.2.1.1. Command: <Citation> – Jump to a citation

A citation in the Ada LRM is accessed by the user simply typing its identifying name, such as 1 for Chapter 1, 4.1 for Section 1 of Chapter 4, 11.4.1 for Subsection 1 of Section 4 of Chapter 11, A for appendix A, CONTENTS for the table of contents, INDEX for the index, and FOREWARD for the foreward.

Valid citations are:

1. n Chapter number, such as 1 to 14

2. n.n Chapter and section number, such as 4.2

citations, as in this case, if you note the references on 9.7 (Screen 1 of 1). The ”push” and ”pop” commands allow us to jump from where we are to the reference, placing a ”bookmark” in our old location, and then jump back to where we were. Now try this:

```
push index<cr>
/wait<cr>
```

Note that this caused you to jump into the INDEX of the Ada LRM and find the first occurrence of the string ”wait”. Look carefully at the little ”<” on the far right -- it indicates the line on which the string was found. Now try:

```
//<cr>
//<cr>
```

You have continued your search twice. This shows you that block statements may include selective waits, so you may read 9.7.1 to look into it. Try this:

```
push 9.7.1<cr>
```

You now find yourself in 9.7.1 on level 3 of the location stack. To get back to where you started, try this to move through the index location to 9.7:

```
pop<cr>
pop<cr>
pop<cr>
```

Caught you! Note that I gave you one too many ”pop” commands. If you try to ”pop” too far, the Ada LRM Reader simply catches you with an error message. As our last experiment, try the following:

```
help<cr>
```

Note that, unlike the other citation references, the ”help” command automatically performs a ”push”. Look at the various commands and the notes on the prompt line presented here and experiment as you desire. Be sure to try the ”about” command. When you are done, issue the ”quit” command to exit.

```
p<cr>
```

Note that you did not move and an error message appeared. You attempted to move in front of a citation which has no preceding citation. The citations HELP, ABOUT, CONTENTS, INDEX, FOREWARD, and POSTSCRIPT are isolated and have no preceding or following citations. However, if you do this:

```
4.1<cr>
p<cr>
p<cr>
```

you will have jumped to citation 4.1 (screen 1 of 4), backed up to 4 (screen 1 of 1), and then backed up again to 3.9 (screen 4 of 4). Likewise, if you now do this:

```
<cr>
<cr>
<cr>
```

you will have advanced forward to citation 4.1 (screen 2 of 4). Now try this:

```
next<cr>
next<cr>
previous<cr>
previous<cr>
```

The longer "next" and "previous" commands move a citation at a time rather than a screen at a time. Note that you move to 4.1.1 and 4.1.2, and then back to 4.1.1 and 4.1. Of course, you can still always jump around to where you want to go:

```
c<cr>
a<cr>
previous<cr>
```

jumps you to Appendix C (screen 1 of 14), Appendix A (Screen 1 of 22), and 14.7 (Screen 1 of 3). Appendices A to F follow Chapter 14. Note that if you type this:

```
f<cr>
<cr>
<cr>
```

you will advance to Appendix F (Screen 1 of 2), and then try to advance to the screen beyond Appendix F. An error message appears indicating that the Ada LRM Reader cannot advance further. Likewise, typing:

```
1<cr>
p<cr>
```

jumps you to Chapter 1 (Screen 1 of 1) and then trys to back up before this screen, again resulting in an error message. Now try the following:

```
9.7<cr>
push 9.7.2<cr>
<cr>
pop
```

This jumps you to 9.7, pushes your location onto the location stack and jumps to 9.7.2 (Screen 1 of 3), advances to 9.7.2 (Screen 2 of 3), and then pops the location stack, placing you back at 9.7 (Screen 1 of 1). Note also that the prompt changed while you were in 9.7.2 from 1/ to 2/, indicating that you were on the 2nd element of the location stack. You might want to try this again to note the changes in the prompt. For your convenience, the location stack is 20 levels deep. Often, when we are reading in the Ada LRM, we find references to other

3. Quick start

This section of the Software User's Manual is designed to quickly introduce the user to the Ada LRM Reader. It is not a complete introduction to all of the features, but it will get you up and running in a very short time.

The text below assumes that the name of the executable to invoke the Ada LRM Reader is:

lrm

The text below presents commands for you to type in a distinctly different font. Try running the Ada LRM Reader as you are reading this section of the SUM and typing the commands as they are presented. For example, if you see:

```
lrm<cr>
```

you should type the letters l, r, and m and then strike the RETURN key (<cr> is a symbol for the RETURN key). If you make a mistake, the command line editor for your particular system is being used, so you may use your normal editing commands to fix errors (such as the BACKSPACE or DELETE key to delete the previous character typed).

3.1. Getting into and out of the Ada LRM Reader

Issue the command:

```
lrm<cr>
```

You show be looking at the first screen of the online help citation of the Ada LRM Reader. There are currently only two screens. Try the following:

```
<cr>
p<cr>
```

The "<cr>" advanced you to the next screen (2 of 2), and the "p<cr>" backed you up to the previous screen (1 of 2). You may also try the following:

```
n<cr>
p<cr>
```

These commands did the same thing. The command "n<cr>" or just "<cr>" are equivalent, advancing you to the next screen. Now try the command:

```
quit<cr>
```

This gets you out of the program.

3.2. A tour

Try the following commands:

```
lrm contents<cr>
<cr>
<cr>
p<cr>
p<cr>
```

By specifying the citation "contents" on the command line, the Ada LRM Reader starts at that point. You have looked at the beginning of the table of contents (first three screens) and then backed up to the first screen. Now try this:

2. References

2.1. Documents

Conn, Richard, **Software Requirements Specification for the Ada LRM Reader**, University of Cincinnati, Department of Electrical and Computer Engineering, Mail Location 30, Cincinnati, Ohio 45221

This document contains other references which may be useful.

Conn, Richard, **Software Design Document for the Ada LRM Reader**, University of Cincinnati, Department of Electrical and Computer Engineering, Mail Location 30, Cincinnati, Ohio 45221

2.2. Terminology

The following application-specific terms are defined below in order to better follow this document:

Citation - A body of text in the Ada LRM or an LRM Support File which is uniquely identified by a numeric reference or a keyword (these are called citation labels). For example, the citation identified by 4 is:

```
                    4. Names and Expressions


    The rules applicable to the different forms of name and expression, and
    to their evaluation, are given in this chapter.
```

Citation Label - A numeric reference or a keyword which identifies a citation. For example, 4 is the citation label for the above citation. Valid citation labels take the following forms:

Label	*Refers to*
n	Chapter (1-14)
n.n	Chapter and Section
n.n.n	Chapter, Section, and Subsection
letter	Appendix (A-F)
CONTENTS	Table of Contents
INDEX	Index
FOREWARD	Foreward
POSTSCRIPT	Postscript
HELP	Online help screens for the Ada LRM Reader
ABOUT	Online program description of the Ada LRM Reader

Citation ID - An alphabetic reference used in the CITATION_ID enumeration type which maps to a citation label. Citation IDs are discussed in the Software Design Document for the Ada LRM Reader. Each citation label has one and only one citation ID.

1. Scope

The Ada LRM Reader is a tool for browsing through an online copy of the Ada Language Reference Manual (LRM). This tool allows a user to interactively view the Ada LRM, search for strings, and move through the Ada LRM with ease. Ease of human interface is a chief concern.

The target user is assumed to have a VT100-style display terminal or VT100 emulation capabilities. The user will be using this tool in one of several modes:

1. As a user on a UNIX workstation running in a VT100 emulator window,
2. As a user accessing a UNIX workstation remotely, also running a VT100 or VT100 emulator on a PC, and
3. As a user on a PC running the Ada LRM Reader on the PC.

The Ada LRM Reader is a single program written in Ada and will be considered to be a single CSCI. This CSCI includes:

1. The source code, in Ada, of the Ada LRM Reader
2. All data files needed by the Ada LRM Reader
3. All source files and programs used to create the data files needed by the Ada LRM Reader
4. All documentation associated with the Ada LRM Reader
5. Installation instructions for compiling the setting up the Ada LRM Reader for a PC or UNIX platform
6. A complete executable version of the Ada LRM Reader with its associated data files and installation instructions which is ready to run on a PC under MSDOS 3.3 or higher

For: conn
Printed on: Thu, Jun 18, 1992 07:46:21
From book: Ada LRM SUM
Document: SUM
Last saved on: Thu, May 7, 1992 12:36:15

pl2ps 4.0.5 Copyright 1988 Interleaf, Inc.