

# HP 3000 Computer System

## Diagnostic/Utility System III Reference Manual



COMPUTER SYSTEMS DIVISION, 19447 PRUNERIDGE AVE., CUPERTINO, CALIF. 95014

Part No. 30341-90005  
Index No. 3HDWR.070.30341-90005

Printed in U.S.A 5/81

#### **NOTICE**

The information contained in this document is subject to change without notice.

**HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.**

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied or reproduced without the prior written consent of Hewlett-Packard Company.

## LIST OF EFFECTIVE PAGES

The List of Effective Pages gives the date of the current edition and of any pages changed in updates to that edition. Within the manual, any page changed since the last edition is indicated by printing the date the changes were made on the bottom of the page. Changes are marked with a vertical bar in the margin. If an update is incorporated when an edition is reprinted, these bars are removed but the dates remain.

## **PRINTING HISTORY**

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The date of the title page of the manual changes only when a new edition is published. When an edition is reprinted, all the prior updates to the edition are incorporated.

## SECTION I - GENERAL INFORMATION

Paragraph	Page
INTRODUCTION .....	832-1
HARDWARE REQUIREMENTS .....	832-1

## SECTION II - OPERATING INSTRUCTIONS

Paragraph	Page
INTRODUCTION .....	832-3
LOADING THE SYSTEM .....	832-3
RUNNING DUSIII PROGRAMS .....	832-4
USING THE FILE MANAGER .....	832-4
USING AID .....	832-4

## SECTION III - FILE STRUCTURE AND FORMATS

Paragraph	Page
INTRODUCTION .....	832-5
FILE NAMES .....	832-5
FILE TYPES .....	832-5
FILE CLASSES .....	832-5
FILE ACCESS .....	832-6

## SECTION IV - DUSIII COMMANDS

Paragraph	Page
INTRODUCTION .....	832-7
CHANGE .....	832-7
CLASSIFY .....	832-8
CREATE .....	832-8
EXIT .....	832-8
LC .....	832-9
LF .....	832-9
LOAD .....	832-11
PURGE .....	832-11
RENAME .....	832-11
SAVE .....	832-11

CONTENTS (Continued)

SECTION V - ERROR INTERPRETATION

Paragraph	Page
INTRODUCTION .....	832-13
FIRMWARE TRAPS .....	832-13
ERROR MESSAGES .....	832-13

## 1.0 INTRODUCTION

The Diagnostic/Utility System III (DUSIII) is a memory-resident means of running diagnostic and utility programs on the HP 30341A HP-IB Interface Module attached to an HP 3000 Series III Computer System. The Stand-Alone File Manager (FMGR) is a tape-based software module forming the heart of DUSIII. In addition to the FMGR, DUSIII includes AID together with a set of AID programs and supporting files. Generally, those programs provided in support of the Operating System are classified as Utilities and programs whose primary function is to test hardware and firmware subsystems or peripherals are classified as Diagnostics. Independent of operating systems, the FMGR gives you access to files (located on tape) and enables you to modify, delete, add, or create those files. Also, a tape-based directory allows interchange of file information with other tapes. DUSIII is compatible with any HP 3000 Series III Computer System with an attached HP 30341A HP-IB Interface Module attached (HP3000 Series III HP-IB version computer system).

It is assumed that the operator is familiar with the nomenclature used in describing keyboard terminals and the Control Panel.

It is implied that all user inputs are terminated with ENTER, carriage return on the console device.

### 1.1 HARDWARE REQUIREMENTS

The following hardware is required:

An HP 3000 Series III HP-IB version computer system consisting of:

- (1) Memory - 128K words minimum
- (2) Console - any terminal supported on tapes created by SDUPII

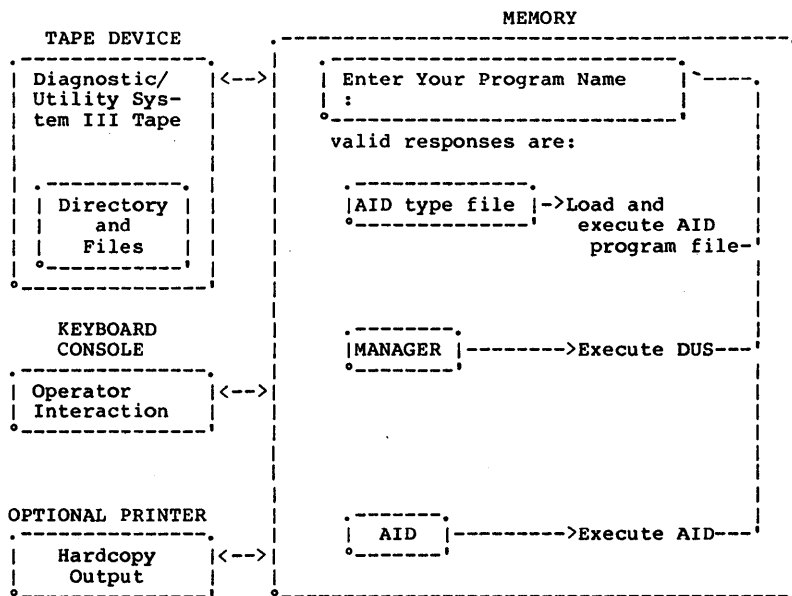
Diagnostic/Utility System III

(3) Tape - HP 7970B/E Magnetic Tape Unit (Used as a cold load device). The tape unit must be connected to the multiplexer channel of the Series III.

OR

- HP 7976 Magnetic Tape Unit

(4) Printer (Optional) - Any printer supported by SDUPII  
 The figure below depicts how the FMGR integrates with other program modules.



DUSIII Structure



OPERATING INSTRUCTIONS	SECTION II
------------------------	---------------

## 2.0 INTRODUCTION

This section covers the specific operating instructions required to load DUSIII and to manipulate the file manager portion of DUSIII.

### 2.1 LOADING THE SYSTEM

- (1) Perform an MPE 'SHUTDOWN' to properly logoff every current session, if applicable.
- (2) Run the terminal Self-Test and verify the displayed results.
- (3) Fully reset the terminal.
- (4) Ensure that the terminal is in REMOTE.
- (5) Install a DUSIII Tape on the Cold-Load Tape Unit.
- (6) If the cold-load device is an HP 7970B/E, set the Control Panel Switch Register to §3006. If the cold-load device is an HP 7976, set the Switch Register to:

```
0 CCCC DDD 01 111 101
```

where: CCCC = channel number (binary) to which the device is attached and DDD = device number (binary) of the device.

- (7) Press HALT; then press ENABLE and LOAD.
- (8) Set the Switch Register to the number assigned to DUSIII (one if DUSIII is the only program put on the tape by SDUPII or 2 if tape contained the GIC diagnostic).
- (9) Press RUN.
- (10) DUSIII will be loaded from tape.
- (11) Press the RETURN key on the terminal to speed-sense the terminal.

## Diagnostic/Utility System III

(12) The welcome message and prompt are displayed:

```
Diagnostic/Utility System III revision XX.XX
Enter your program name (Type HELP for program information)
:
  (The revision is determined by the latest release date of the
  FMGR program.)

  (HELP is an AID program that presents file and command
  information.)
```

### 2.2 RUNNING DUSIII PROGRAMS

To execute an AID program file, enter the program name as follows:

```
Enter your program name. (Type HELP for program information.)
:PROGNAME (The program PROGNAME will now be loaded and executed)
```

```
|
|
| (Upon completion of the program, DUSIII returns to its entry
| mode.)
```

```
|
|
Enter your program name. (Type HELP for program information.)
:
```

### 2.3 USING THE FILE MANAGER

If you wish to create, modify, or inquire about files, type "MANAGER". You will be prompted with:

```
Stand Alone File Manager
Enter Command (LC for List Command)
> (Any DUSIII command may now be executed.)
```

### 2.4 USING AID

If you wish to create, modify, or make changes to an AID program, you may do so by typing "AID". The resulting interaction is described in the AID Diagnostic Language Reference Manual located in this binder.

### 3.0 INTRODUCTION

The information in this section pertains to the file management structure and how diagnostic and utility programs are classified.

### 3.1 FILENAMES

Filenames are restricted to eight alphanumeric ASCII characters starting with an alpha character.

Valid Filenames	Invalid Filenames
-----	-----
TEST	4DIAG
D44TEST	TEST.
ADCCDIAG	.TEST
B	AB/TEST

Note: The filenames DIREC, IDSB00T and SCRATCH are reserved.

### 3.2 FILE TYPES

Internally, files are typed as follows:

Type	Description	Created by
----	-----	-----
AID	AID program	AID SAVE Command
DATA	data file	CREATE Command

The AID type constitutes the programs available to the user. The DATA files are transparent to the user but are accessed by some of the programs.

### 3.3 FILE CLASSES

File classes have no significance to DUSIII. They are provided for the support of software which reads the directory. AID files are classified according to the service they provide. There are two classes of program files: UTILITY (U) and DIAGNOSTIC (D).

Data files are classified by content: ASCII (A), BINARY (B).

## Diagnostic/Utility System III

At file creation time, each AID program file is classified as a DIAGNOSTIC and all DATA files as ASCII. The CLASSIFY Command may be employed to change the classification as required.

### 3.4 FILE ACCESS

The FMGR user may access any file on any DUS Tape. In other words, if you have entered an AID program and cannot save it because of lack of space, you may remove the currently installed DUS Tape, install another, and again attempt to save your program. (This process is repeatable indefinitely.) Similarly, if you need a file that does not reside on the currently installed DUS Tape you can remove it, install another, and determine whether or not the new tape contains the file you want.

#### Note

"DUS tape" refers to both DUS tapes used with the HP 3000 Series 30/33/44 and DUSIII tapes used with the HP 3000 Series III. AID programs and data files can be transferred between computer systems by loading a file (LOAD PROGRAM) from one system, exchanging tapes, and saving the file (SAVE PROGRAM) in another system.

There are some restrictions when accessing certain types of files. Most of these restrictions will be pointed out throughout this document, however a few general rules apply:

- The files DIREC and SCRATCH\* are permanent files; they cannot be modified in any way.
- The files DIREC, and SCRATCH can be read; but only SCRATCH can be written.
- Files that are protected must be unprotected before alteration (See CHANGE Command).

DUSIII COMMANDS	SECTION IV
-----------------	---------------

#### 4.0 INTRODUCTION

The FMGR contains a command set that allows alteration of and access to files. The commands are explained in detail on the following pages. For convenience, some parameters are optional; optional parameters are enclosed in brackets[]. The operator may input any valid command after DUSIII prompts with:

```
Enter Command (LC for List Commands)
>
```

Any error in syntax, or errors which occur during command execution, are identified by a message which should be easily understood by the operator. However, should difficulty arise understanding an error message, refer to Error Messages Section V.

#### 4.1 CHANGE

OPERATION NAME: Change file security

MNEMONIC: CHANGE filename TO U[NPROTECTED]  
CHANGE filename TO P[ROTECTED]

DESCRIPTION: Allows the operator to protect or unprotect a file. A protected file indicates it is not PURGEable and is read-only.

EXAMPLES(S): Enter Command (LC for List Commands)  
>CHANGE DIAG4 TO P (changes the file DIAG4 to a non-PURGEable and read only file)

Enter Command (LC for List Commands)  
>CHANGE DIAG4 TO U (change DIAG4 to a PURGEable read/write file)

## Diagnostic/Utility System III

### 4.2 CLASSIFY

OPERATION NAME: Reclassify a file

MNEMONIC: CLASSIFY filename AS class

DESCRIPTION: This Command has no significance to DUSIII, but provides support for software which accesses the directory. It allows the user to reclassify the file's filename to a new class where:

```
class = U[TILITY]
        D[IAGNOSTIC]
        A[SCII]
        B[INARY]
```

EXAMPLE(S): Enter Command(LC for List Commands)  
>CLASSIFY DATA1 AS B (changes the file DATA1 to a  
BINARY classification)

### 4.3 CREATE

OPERATION NAME: Create a data file

MNEMONIC: CREATE filename, number of 128 word blocks [,revision]

DESCRIPTION: Creates (i.e., adds to the directory of files) an ASCII data file named "filename" which will be X number of word blocks long (e.g., the number entered multiplied by 128). The range for the number of word blocks is  $1 \leq \text{number of word blocks} \leq 310$ . If the optional revision is not added, then the revision 00.00 is used. (See LF command for the format of revision.)

EXAMPLE(S): Enter Command (LC for List Commands)  
>CREATE TEST,4, 01.02 (creates an ASCII data file  
TEST with a length of 512 (= 4\*128) words and a revision of  
01.02)

### 4.4 EXIT

OPERATION NAME: Leave file manager

MNEMONIC: EXIT

DESCRIPTION: Causes computer to leave the file manager and return to the DUSIII entry mode.

Diagnostic/Utility System III

EXAMPLE(S): Enter Command (LC for List Commands)  
>EXIT

Enter Your Program Name  
:

4.5 LC

OPERATION NAME: List the file management commands

MNEMONIC: LC

DESCRIPTION: Lists the File Manager Commands followed by a short description of what the command does.

EXAMPLES(S): Enter Command (LC for List Commands)  
>LC

```
LF          List the file directory
.           .
.           .
.           .
```

4.6 LF

OPERATION NAME: List the file directory

MNEMONIC: LF [P[PRINTER]]

DESCRIPTION: Lists the file directory of the resident DUSIII Tape which contains all pertinent information for the user. If the optional PRINTER is entered, the directory will be listed on the system printer device.

EXAMPLE(S): Enter Command (LC for List Commands)  
>LF

Stand Alone File Directory

File-	Type	Class	P/U	Length	File Num	Revision	Prog	Data	Stack
TEST	AID	U	P	427	0	00.00	320	28123	107
ABC	DATA	A	U	1280	1	00.00	0	0	0

## Diagnostic/Utility System III

The list header has the following meaning:

**Filename** - The name of the file.

**Type** - The currently designated file type. (See File Types paragraph 3.2 for explanation of type meanings.)

**Class** - Classification of the file. (See File Classes paragraph 3.3 for explanation of class meanings.)

**P/U** - Designates whether the file is Protected or Unprotected.

**Length** - The length of the file in words. This length is calculated as follows:

AID type = size of the AID program before execution  
DATA type = created size

**File Num** - Logical File Number on Tape.

**Revision** - A five-digit code with the following format: 01.02

where 01 signifies the major revision level and  
02 signifies the minor revision level.

**Prog** - This length in words is calculated as follows:

AID type = program area (object code) of the AID program.  
DATA type = no significance.

**Data** - This length in words is calculated as follows:

AID type = buffer area available for the AID program.  
DATA type = no significance.

**Stack** - This length in words is calculated as follows:

AID type = (number of AID statements in the program x 2)  
DATA type = no significance.



#### 4.7 LOAD

OPERATION NAME: Load file into memory

MNEMONIC: LOAD filename

DESCRIPTION: Loads a file into the memory. This command would typically be used for modifying a file (i.e., LOAD, modify memory, SAVE) or for transferring a file from one tape to another (i.e., LOAD, switch tapes, SAVE).

#### 4.8 PURGE

OPERATION NAME: Purge File

MNEMONIC: PURGE filename

DESCRIPTION: Allows an operator to erase a file from a tape. Only Unprotected files may be purged. If a protected file must be purged, the operator must change the file to unprotected and then purge it. (See CHANGE command.)

EXAMPLE(S): Enter Command (LC for List Commands)  
>PURGE DIAG

#### 4.9 RENAME

OPERATION NAME: Rename File

MNEMONIC: RENAME old name, new name

DESCRIPTION: Allows the operator to change the name of a file. No other characteristic of the file is changed.

EXAMPLE(S): Enter Command (LC for List Commands)  
>RENAME DIAG1, DIAG44 (DIAG1 becomes DIAG44 (i.e. DIAG1 no longer exists).

#### 4.10 SAVE

OPERATION NAME: Save a file by storing it on a tape

MNEMONIC: SAVE filename [,revision]

DESCRIPTION: Stores the AID or DATA file that is currently in memory onto the System tape. This command would typically be used for modifying a file (i.e., LOAD, modify memory, SAVE) or transferring a file to another tape (i.e., LOAD, switch tapes, SAVE). If the optional revision is not added, the current

Diagnostic/Utility System III

revision of the file is used. (See LF Command for revision format.)

EXAMPLE(S): Enter Command (LC for List Commands)  
>SAVE DIAG, 01.02

ERROR INTERPRETATION	SECTION V
----------------------	--------------

## 5.0 INTRODUCTION

This manual section discusses the possible error conditions that may occur during DUSIII operations.

### 5.1 FIRMWARE TRAPS

If the machine firmware detects a condition that takes control from the executing user program (e.g., BOUNDS VIOLATION, STACK OVERFLOW) because of either a software or hardware problem, the following message is printed on the System Console:

```
Example:      **SYSTEM FAILURE**
              While executing FILENAME
              Delta P=%341 Code Segment=3
              Stack Overflow
```

Delta P equals the octal offset from PB+0. Code segment equals the code segment that was executing when the failure occurred and finally, a descriptive message indicating the nature of the failure (i.e., Stack Overflow in this example). The system is halted and, if RUN is pressed, an attempt to return to the DUSIII entry mode is made.

### 5.2 ERROR MESSAGES

Message -----	Meaning -----
Invalid Filename	The filename parameter did not meet the requirements of a valid filename. (See FILENAMES Section.)

## Diagnostic/Utility System III

Error on Directory write! Media is probably no longer usable!

While writing an updated directory, a write and subsequent retry failed. The directory may be in one of the following states:

- 1) Invalid data was written, meaning the DUSIII file system media is no longer usable.
- 2) No write actually occurred, meaning the DUSIII media is intact with the last file operation disregarded.
- 3) Enough data was written, before the error occurred meaning the DUSIII media would be intact with the last file store operation successful.

In any case, try a new cold-load and LF Command to ascertain the condition of the DUSIII Tape.

File Directory Full

The current operation would exceed the 58 filename directory entries limit. Alternatives include PURGEing a file or using another tape.

File access violation

This error occurs when a file access is attempted on a file or file type that is not compatible with the command or operation, e.g. RENAME oldfile,newfile where newfile exists already or an attempt is made to alter the files DIREC, IDSBOT, or SCRATCH.

File system unaltered

Can occur during a command such as SAVE. A recoverable error occurred with no alteration of the directory. Retries of the last operation may be attempted.

No such file

Indicates that the specified file does not exist in the resident DUSIII Filename Directory. Check for misspelling or try another DUSIII Tape.

Not a Diagnostic/Utility System

Indicates an attempt was made to store a file onto a tape other than a DUSIII Tape.

Diagnostic/Utility System III

Invalid Command or Input	The command requested or parameters following it do not conform to the required command structure. Execute an LC command or refer to the command description to ascertain the correct format.																
Abort!! System not usable	The last operation resulted in an irrecoverable error. Verify correctness of the last operation. Cold load to attempt restart.																
**SYSTEM FAILURE**	See Firmware Traps paragraph 5.1 of this document.																
No File in memory	A SAVE Command was attempted when no valid file is resident in memory. See LOAD command.																
File Protected	An attempt was made to PURGE a file which has been designated as protected. See CHANGE command for changing protected status.																
Invalid Revision	The revision input did not meet the syntax requirement. See LF Command for the expected format.																
Can Not Write Past End Of Tape	Tape is full. Purge the last file or use another tape.																
Magnetic Tape Transfer Count Is X, Should Be Y	Last transfer using system tape was incomplete.																
Magnetic Tape Failure N	<table border="0" style="margin-left: 2em;"> <thead> <tr> <th style="text-align: left;">N Value</th> <th style="text-align: left;">Meaning</th> </tr> <tr> <th style="text-align: left;">-----</th> <th style="text-align: left;">-----</th> </tr> </thead> <tbody> <tr> <td>%31</td> <td>EOT</td> </tr> <tr> <td>%12</td> <td>EOF</td> </tr> <tr> <td>%73</td> <td>Back Space From BOT</td> </tr> <tr> <td>%44</td> <td>SIO Failure</td> </tr> <tr> <td>%54</td> <td>Unit (7970/7976) Failure</td> </tr> <tr> <td>%144</td> <td>Channel Failure</td> </tr> </tbody> </table>	N Value	Meaning	-----	-----	%31	EOT	%12	EOF	%73	Back Space From BOT	%44	SIO Failure	%54	Unit (7970/7976) Failure	%144	Channel Failure
N Value	Meaning																
-----	-----																
%31	EOT																
%12	EOF																
%73	Back Space From BOT																
%44	SIO Failure																
%54	Unit (7970/7976) Failure																
%144	Channel Failure																

**Diagnostic/Utility System III**

**NOTES**