

# **HP 3000 Computer System**

## **IOMAP Diagnostic Reference Manual**



**HEWLETT  
PACKARD**

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## 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.

CONTENTS

SECTION I - GENERAL INFORMATION

Paragraph	Page
INTRODUCTION .....	835-1
REQUIRED HARDWARE .....	835-1
REQUIRED SOFTWARE .....	835-1
LIMITATIONS .....	835-2

SECTION II - OPERATING INSTRUCTIONS

Paragraph	Page
INTRODUCTION .....	835-3
STANDARD MODE OF OPERATION .....	835-3
OPTIONAL MODE OF OPERATION .....	835-3
MESSAGES .....	835-4

SECTION III - TEST DESCRIPTIONS

Paragraph	Page
INTRODUCTION .....	835-7
TEST SECTION 1 - I/O CONFIGURATION TABLE .....	835-7
TEST SECTION 2 - IDENTIFY .....	835-7
TEST SECTION 3 - SELF-TEST .....	835-8
TEST SECTION 4 - HP-IB LOOPBACK .....	835-8

SECTION IV - ERROR INTERPRETATION

Paragraph	Page
INTRODUCTION .....	835-11
I/O TABLE ERRORS .....	835-11
OPTIONAL MODE ERRORS .....	835-12

SECTION V - REFERENCE TABLES

Paragraph	Page
INTRODUCTION .....	835-13
SUPPORTED CHANNELS .....	835-13
SUPPORTED DEVICES .....	835-13



GENERAL INFORMATION	SECTION I
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## 1.0 INTRODUCTION

The IOMAP utility has three purposes:

- (1) It provides a display of the system physical I/O configuration.
- (2) It checks out the basic hardware I/O system.
- (3) It provides Identify, Remote Self-Test, and HP-IB Loopback device tests.

All channels on the IMB are identified. The HP-IB Identify feature is then used to obtain the ID codes for the devices connected to each GIC. Section V provides a list of those identify codes that are recognized by IOMAP.

This identification process tells you that:

- (1) The I/O system (IMB and HP-IBs) is fundamentally working.
- (2) No two channels and devices have the same address.
- (3) The expected channels and devices are present and correctly configured.

In addition to the I/O configuration display, IOMAP has three selectable test sections available to the operator when in the optional mode. This optional operating mode allows you to perform Identify, Remote Self-Test, and HP-IB Loopback tests on selected devices. For intermittent problems, any one of these functions can be looped.

This program is written in the AID language.

### 1.1 REQUIRED HARDWARE

An HP 3000 HP-IB version system with 256 kbytes of memory.

### 1.2 REQUIRED SOFTWARE

Diagnostic/Utility System III tape.

## IOMAP Diagnostic

### 1.3 LIMITATIONS

Channel identification depends on correct operation of the IMB and the CPU's ability to read the Configuration Registers of channels. This involves circuitry on every board connected to the IMB; not just those explicitly involved in the transaction.

Device identification depends on correct operation of the HP-IB which involves circuitry in every device connected to the bus; not just the controller and device being identified.



## 2.0 INTRODUCTION

The following paragraphs describe the method used to load and execute the standard operation for IOMAP. Also described is the optional operating modes of the IOMAP program.

### 2.1 STANDARD MODE OF OPERATION

Perform the following steps to obtain a listing of the current I/O configuration of the system.

1. Load the Diagnostic/Utility System III tape per the procedure found in the Diagnostic/Utility System III Reference Manual, part no. 30341-90005.
2. Once DUSIII has displayed its title message and prompt, enter IOMAP and then press RETURN. IOMAP will respond with its title message and prompt as shown below:

```
IOMAP    REVISION xx.xx
```

```
Enter 'GO' to continue
      'GO,1' to continue with printer output
      'GO 1' for Optional Test Sections
      'GO 1,1' to run Optional Sections with printer output
      ('LC' to list Commands)
```

```
>
```

3. Enter 'GO' or 'GO,1' and the IOMAP program will do an identify to all devices and then display the system I/O configuration table, as shown on page 835-5, and then return control to DUSIII.

### 2.2 OPTIONAL MODE OF OPERATION

In addition to the I/O configuration display, IOMAP has three selectable test sections available to the operator when in the optional mode.

Each of the optional test sections will request the operator to enter a channel and the device number. After the operator enters a legal channel and device number and execution of the selected test section completes, the operator will be returned to the entry point of the selected test section. The request for a channel and device number only occurs on the first pass through the optional test sections. Therefore, entering the AID 'LOOP' command, does not force the operator to re-enter the desired

## IOMAP Diagnostic

channel and device number as each pass is made.

To enter the optional mode, enter 'GO 1' or 'GO 1,1'. In response, the system displays the following message:

IOMAP	Optional Test Sections
Test Section 2	Identify
Test Section 3	Self-Test
Test Section 4	Loopback

Enter Desired Test Section(s)

('LC' to list commands)

>

At this point you enter the term 'TEST' and then the test section number that you want to execute. For example: Entering 'TEST 2' will execute the Identify portion of the IOMAP program.

**NOTE:** To exit the Optional Mode of operation, enter 'TEST' without a test section number and the 'GO' selections will be displayed again.

### 2.3 MESSAGES

Several kinds of messages may be displayed by IOMAP:

**General messages:** Request action from the operator or report results of commands.

Response to the operator's requested function was not expected or operator entered incorrect information in a command.

**I/O table:** All responding channels and devices are displayed in ascending order according to their respective channel address (CHAN ADDR switch position) and device addresses (DEVICE ADDR switch position).

IOMAP Diagnostic

Sample I/O table (with tape unit off line or not selected)

```
IOMAP          SYSTEM I/O CONFIGURATION
-----
>Control panel switch settings: Channel=15 Device=5
-----
Channel 7  ID=!0      General I/O Channel (GIC)
Device 7  ID=!2004   2680 Page Printer
-----
End of pass n
```

"n" indicates the number of passes that have been made to this point.

Note: Channel/Device refers to the load device as seen by the Series III Computer System.

IOMAP Diagnostic

TEST DESCRIPTIONS	SECTION III
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### 3.0 INTRODUCTION

The following paragraphs describe each test section operation and possible error situations and messages.

#### 3.1 TEST SECTION 1 - I/O CONFIGURATION TABLE

The program performs the following sequence for each channel.

- (1) Performs Roll Call on the IMB for specific channel type.
- (2) Reads Register of the channel.
- (3) Performs ID sequence on the channel's HP-IB.

#### 3.2 TEST SECTION 2 - IDENTIFY

This test section will display the channel and device ID code and type when executed. The following is displayed upon entry of Test Section 2:

##### TEST SECTION 2 --- IDENTIFY

Function: To describe the device on a specific channel.  
 Enter a channel and device number separated by a comma, or enter -2 to EXIT this test section.

?

The AID prompt character '?' waits for the operator's response.

Upon entry of a legal channel and device number, the test executes.

Upon entry of '-2', the utility returns the operator to:

"IOMAP REVISION XX.XX"

Enter 'GO' to continue

'GO,1' to continue with printer output

'GO 1' for Optional Test Sections

'GO 1,1' to run Optional Sections with printer output

('LC' to list Commands)

## IOMAP Diagnostic

At this time the operator may enter the 'TEST' and RETURN to exit the IOMAP utility, select another test section, or enter 'GO' to continue.

### 3.3 TEST SECTION 3 - SELF-TEST

In this test section, the following sequence is sent to a selected channel/device:

Initiate Self-Test, read self-test results, and display self-test results. Test Section 3 begins with the following title and question:

TEST SECTION 3 ---- SELF-TEST

Function: To Invoke Self-Test.  
Enter channel and device number separated by a comma,  
or enter -2 to exit this test section.

?

The AID prompt character, '?' waits for the operator's response. Upon entering a legal channel/device number, execution of this test section begins. (Entering a -2 causes same reaction as described in Test Section 2.) The Self-Test results are displayed upon completion of the test section. The results displayed on the first pass are used as the basis for comparing subsequent pass results. On the first pass through this section, the following message is displayed:

Initial Self-Test Results - !XXXX

On subsequent passes the following message is displayed:

New Self-Test Result Equivalent to Initial Result of !XXXX

or,

Self-Test Results changed on Pass X, expected !XXXX  
Received !XXXX.

NOTE: Not all devices will have Self-Test Capability.

### 3.4 TEST SECTIONS 4 - HP-IB LOOPBACK

This test section attempts the HP-IB loopback function on the selected channel/device. This test section begins as follows:

TEST SECTION 4 ---- LOOPBACK

IOMAP Diagnostic

Function: To perform the Loopback test. Enter a channel and device number separated by a comma or, Enter -2 to exit this test section.

?

The AID prompt character '?' waits for the operator's response.

Upon entering a legal channel and device number this test section begins execution. (Entering a -2 causes the same reaction as described in Test Section 2.) Upon completion of this test, the following is displayed:

LOOPBACK TEST HAS COMPLETED

OR

LOOPBACK ERROR: PASS X BYTE A  
Received !D sent !C  
LOOPBACK Test has completed.

Note 1: Not all devices have loopback capability.

**IOMAP Diagnostic**



ERROR INTERPRETATION	SECTION IV
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#### 4.0 INTRODUCTION

The following paragraphs describe possible error situations and corrective actions.

##### 4.1 I/O TABLE ERRORS

If a device responds with an ID code not recognized, the following message is displayed in the description field of the I/O configuration list.

"Device responds but ID code undefined."

Possible causes:

- (1) Device is not responding with correct ID code. Look up correct code in Section V; check for stuck bits.
- (2) Device is not supported on system. Check current Configuration Guide brochure.
- (3) Device is newly supported on system and IOMAP program copy is not up-to-date.

A non-recognized channel type will cause the following message:

"ID=!XXXX \*\*Undefined Channel ID code."

XXXX= ID code of channel.

Possible causes:

- (1) Operator error.
- (2) Channel is identifying incorrectly. Look up correct code in Section V; check for stuck bits.
- (3) Channel is newly supported on system and IOMAP copy is not up-to-date.

## IOMAP Diagnostic

### 4.2 OPTIONAL MODE ERRORS

"Device X does not exist on Channel Y."

"Enter a channel and device number separated by a comma, or  
Enter '100' to run IOMAP again.

?

The AID prompt character '?' waits for the operator's response. Each test section will stay in this loop (requesting entry of a channel and device number) until a legal channel and device number has been entered. The three Optional Test Sections are described in detail in Section III.

#### Possible causes:

- (1) Operator error.
- (2) Channel or Device is intermittently failing to Identify.

REFERENCE TABLES	SECTION V
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## 5.0 INTRODUCTION

This section contains a quick reference for identify codes recognized and supported by an HP 3000 HP-IB version computer system.

### 5.1 SUPPORTED CHANNELS

IOMAP currently recognizes the following channels:

GIC

### 5.2 SUPPORTED DEVICES

IOMAP currently recognizes the following devices:

ID code	DEVICE
-----	-----
10081	HP 7902 or HP 9895 Flexible Disc Drive
10082	HP 12745 HP-IB Adapter for HP 13037 Disc Controller
10176	HP 7976 Magnetic Tape Unit
12004	HP 2680 Page Printer
16000	GIC as device

**NOTES**