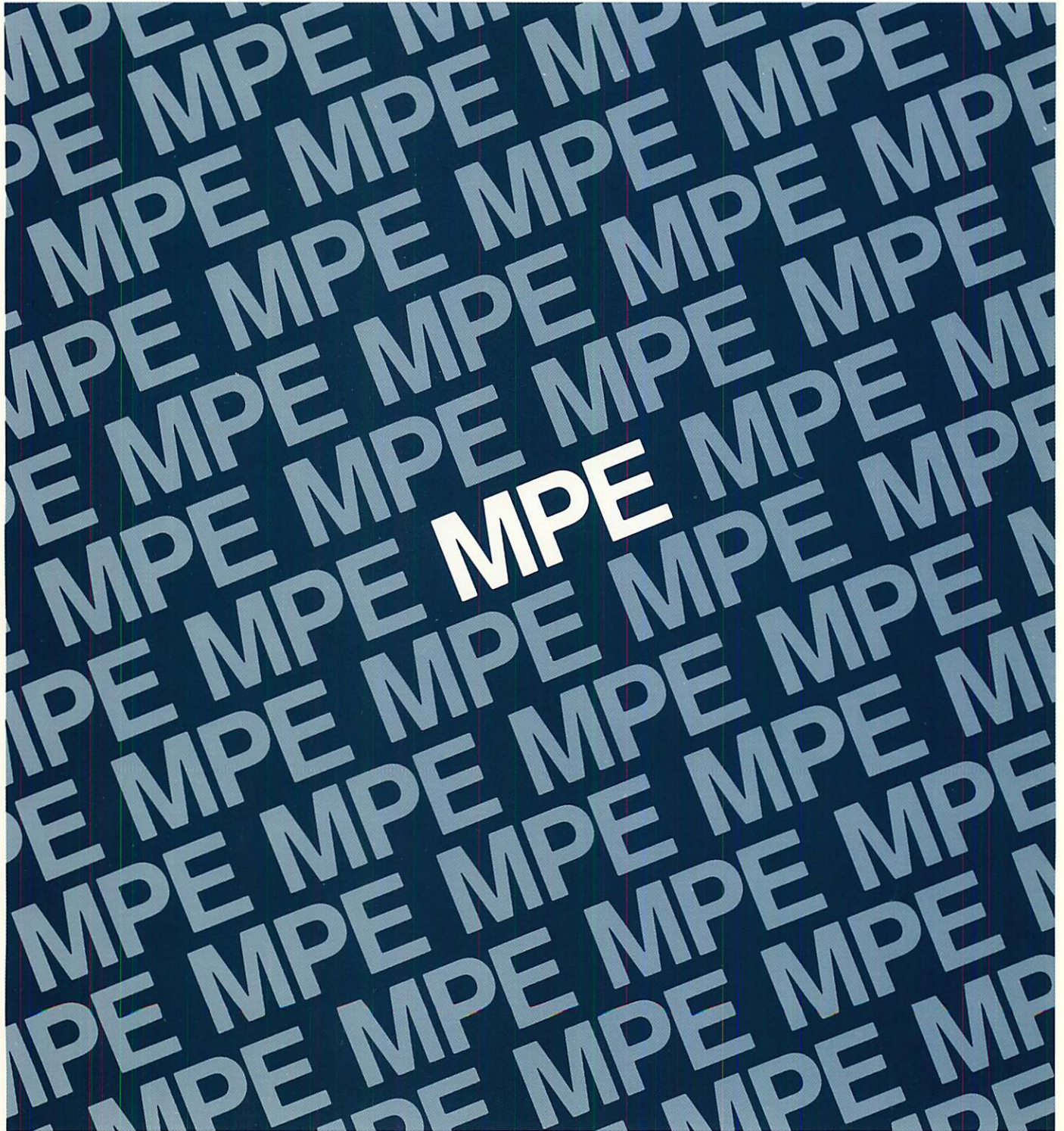AdvanceNet

HEWLETT PACKARD

TERMINAL ONLINE
DIAGNOSTIC/SUPPORT MONITOR (TERMDSM)

Reference Manual

MPE

AdvanceNet

TERMINAL ONLINE
DIAGNOSTIC/SUPPORT MONITOR (TERMDSM)

Reference Manual

HEWLETT PACKARD

The Terminal Online Diagnostic/Support Monitor Reference Manual provides troubleshooting information for serial I/O (input/output) devices. The online diagnostic and support functions of the program pertain to these terminal I/O products:

- The Advanced Terminal Processor (ATP).

- The Advanced Terminal Processor (ATP37/M).

- The Terminal Interface Controller (ATP37).

- The ATP For Meridian SL-1 Interface.

- The Asynchronous Serial Network Link (ASNL).

- The Digital Multiplex Interface (DMI).

- The Asynchronous Data Communications Controller (ADCC).

Devices connected to these products include:

- Terminals.

- Modems.

- Serial Printers.

- PCs (in terminal emulation mode or ASNL mode).

- The HP 7550A Plotter.

The information contained within this manual should be applied to systems that are running on MPE V (version G.00.00 or later) operating systems. If your system is operating MPE V (version F.00.00 or earlier), refer to the *Advanced Terminal Processor (DSN/ATP) Online Diagnostics Manual* (30144-90004) for the ATPDSM program.

Audience

The audience for this manual includes general users, operators, system managers, and HP support representatives. The abilities and responsibilities of each group varies, but all groups should have some knowledge of the following:

- HP 3000 Operating Systems.

- System Manager functions.

- Basic troubleshooting procedures for solving problems.

Related Manuals

This manual may be used in conjunction with related documentation for the HP 3000 Series 37, 37XE, 42, 48, 52, 58, 68, and 70, the Micro 3000, and the Micro 3000XE Computer Systems. Related documents include the following technical manuals:

- *HP 3000 Computer Systems Communications Handbook*, (5957-4634).

- *HP 3000 Distributed Systems Network/Advanced Terminal Processor Offline Diagnostic Procedures Manual*, (30144-90003).

- *Point-to-Point Workstation I/O Reference Manual*, (30000-90250).

- *HP 3000 Distributed Systems Network/Advanced Terminal Processor Installation Manual*, (30144-90002).

- *MPE V System Operation and Resource Management Reference Manual*, (32033-90005).

- *ATP For Meridian SL-1 Interface Supplement to the ATP Installation Manual*, (30144-90016).

- *Digital Multiplexed Interface (DMI) Reference Manual*, (30288-90001).

Manual Topics

This manual is organized as follows:

- Section 1 introduces you to TermDSM product functionality.

- Section 2 presents to you suggested troubleshooting technologies and processes.

- Section 3 provides you with the instructions for operation and the TermDSM diagnostic commands.

- Section 4 introduces you to DMI product functionality. It also contains the instructions for operation and the DMI diagnostic commands.

- Appendix A contains diagrams of the loopback connectors.

- Appendix B provides you with a sample dump.

- Appendix C contains instructions for performing the MUX Download.

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Effective Pages   Date

all. . . . . DEC 1987

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 dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

The software code printed alongside the date indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one to one correspondence between product updates and manual updates.

CONVENTIONS USED IN THIS MANUAL

NOTATION   **DESCRIPTION**

nonitalics   Words in syntax statements which are not in italics must be entered exactly as shown. Punctuation characters other than brackets, braces and ellipses must also be entered exactly as shown. For example:

                   EXIT;

italics   Words in syntax statements which are in italics denote a parameter which must be replaced by a user-supplied variable. For example:

                   CLOSE *filename*

[ ]   An element inside brackets in a syntax statement is optional. Several elements stacked inside brackets means the user may select any one or none of these elements. For example:

                   $\begin{bmatrix} A \\ B \end{bmatrix}$ User *may* select A or B or neither.

{ }   When several elements are stacked within braces in a syntax statement, the user must select one of those elements. For example:

                   $\begin{Bmatrix} A \\ B \\ C \end{Bmatrix}$ User *must* select A or B or C.

. . .   A horizontal ellipsis in a syntax statement indicates that a previous element may be repeated. For example:

                   [,*itemname*]...;

                   In addition, vertical and horizontal ellipses may be used in examples to indicate that portions of the example have been omitted.

                   A shaded delimiter preceding a parameter in a syntax statement indicates that the delimiter *must* be supplied whenever (a) that parameter is included or (b) that parameter is omitted and any *other* parameter which follows is included. For example:

                   itema[,*itemb*] [,*itemc*]

                   means that the following are allowed:

                        itema
                        itema,*itemb*
                        itema,*itemb*,*itemc*
                        itema,,*itemc*

Δ   When necessary for clarity, the symbol Δ may be used in a syntax statement to indicate a required blank or an exact number of blanks. For example:

SET[(*modifier*)]Δ(*variable*);

underlining   When necessary for clarity in an example, user input may be underlined. For example:

NEW NAME? <u>ALPHA</u>

Brackets, braces or ellipses appearing in syntax or format statements which must be entered as shown will be underlined. For example:

LET *var*[<u>[</u>*subscript*<u>]</u>] = *value*

Output and input/output parameters are underlined. A notation in the description of each parameter distinguishes input/output from output parameters. For example:

CREATE (*parm1*,*parm2*,<u>*flags*</u>,<u>*error*</u>)

shading   Shading represents inverse video on the terminal's screen. In addition, it is used to emphasize key portions of an example.
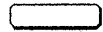
⬭   The symbol ⬭ may be used to indicate a key on the terminal's keyboard. For example, (RETURN) indicates the carriage return key.

(CONTROL)*char*   Control characters are indicated by (CONTROL) followed by the character. For example, (CONTROL)Y means the user presses the control key and the character Y simultaneously.

INTRODUCTION

The Terminal Online Diagnostic/Support Monitor, referred to as TermDSM, is a software tool used for verification, testing, and detailed troubleshooting. The most valuable feature of TermDSM is its ability to diagnose asynchronous data communication port failures. The program allows portions of MPE (Multiprogramming Executive) tables to be "dumped" to a disc file and problem ports to be "reset" without the need to halt system operations for a memory dump and WARMSTART.

There are several types of asynchronous data communication connections that are able to use the Online Diagnostic/Support Monitor. They include:

- The ATP (Advanced Terminal Processor).

- The ATP37 (Terminal Interface Controller).

- The ATP37/M (Advanced Terminal Processor).

- The ATP For Meridian SL-1 Interface.

- The ASNL (Asynchronous Serial Network Link).

- The DMI (Digital Multiplex Interface).

- The ADCC (Advanced Data Communications Controller).

A brief description of each product follows.

ATP

The Advanced Terminal Processor (ATP) is an I/O controller for low and medium speed bit-serial asynchronous devices. It can support up to 96 asynchronous ports, directly connected or through a modem link. It supports a transfer rate range of 300 to 19.2K. The interface consists of one System Interface Board (SIB) and up to eight Asynchronous Interface Boards (AIB). HIOTERM1 (for terminals) and HIOASLP0 (for printers) are the software drivers that operate the ATP hardware under the MPE V operating system.

ATP37 and ATP37/M

The Terminal Interface Controller (ATP37) and the Advanced Terminal Processor (ATP37/M) are I/O controllers for low and medium speed bit-serial asynchronous devices. Both models were designed for exclusive use with the HP 3000 Series 37 and 37XE, the Micro 3000, and the Micro 3000XE. HIOTERM1 (for terminals) and HIOASLP0 (for printers) are the software drivers that operate the ATP37 and the ATP37/M hardware. The ATP37 board can multiplex data for up to seven ports, six of which are hardwired and one which can be either a hardwired connection or modem connection. The ATP37/M can connect up to eight asynchronous workstations to the system.

ATP FOR MERIDIAN SL-1 INTERFACE

The ATP For Meridian SL-1 Interface is a separate ATP product which allows terminals to be connected to an HP 3000 through the Northern Telecom (NTI) Meridian SL-1 PBX integrated services network. The ATP For Meridian SL-1 Interface uses a four-wire connection between the HP 3000 and the Meridian SL-1 PBX. The mini boards contain two 25-pin ports through which a DB-25 to RJ-11 cable adapter is plugged. These adapters enable the use of Northern Telecom's standard six-wire telephone cable for connection. It uses the same driver (HIOTERM1) and diagnostic tool as the ATP.

ASNL

The Asynchronous Serial Network Link (ASNL) uses the Asynchronous Serial Network Protocol (ASNP) to provide reliable asynchronous data transfers between HP 3000s or between PCs and HP 3000s. The Asynchronous Serial Network Link and the Advanced Terminal Processor share the same hardware components but use different drivers. The ASNL uses a software driver called the HIOASNP0. Although the two products use different drivers, they share the same diagnostic tool set.

NOTE

In this manual, "ATP" refers to the ATP, the ATP37, the ATP37/M, the ATP For Meridian SL-1 Interface, and the ASNL, except when each is explicitly referenced.

DMI

The Digital Multiplexed Interface (DMI) provides a data communications interface between an HP 3000 computer system and an AT&T Series 75 or 85 PBX. It allows the PBX to perform data switching for 23 asynchronous connections that are multiplexed on one DS1 link. A data module is not required between the HP 3000 and the PBX.

The Digital Multiplexed Interface, in theory, is based on the ATP subsystem and consists of both hardware and software components. The hardware product includes two printed circuit cards that interface directly to the ATP's SIB. The two cards are called the MUX (Multiplexer) and the DS1 (Digital Signal level 1). The software product consists of a signaling channel program, MUX download code, and DS1 download code. Each two card DMI set provides 24 channels; 23 channels are used for terminal connections via the PBX, the other is used as a signaling channel. DMI uses the same driver as the ATP (HIOTERM1) but uses a special subset of TermDSM commands for diagnostic testing. These commands are listed in Section 4 of this manual.

ADCC

The Asynchronous Data Communications Controller (ADCC) is an I/O controller for low and medium bit-serial asynchronous devices. Data transfer rates can be as high as 9600 bps, speed sensing rates can be as high as 2400 bps, and the data is transmitted and received asynchronously. The ADCC consists of two boards. The first board is referred to as the ADCC-Main and the second board is referred to as the ADCC-Extender. The ADCC-Main multiplexes data transmission for four ports. The ADCC-Extender, when added to the ADCC-Main, provides four additional ports. If more than eight ports are needed, a second ADCC-Main must be installed in the system. The ports may be hardwired, modem connected, or a mixture of both. The software driver HIOTERM2 (for terminals) and HIOASLP2 (for printers) operates the ADCC hardware under MPE V.

SECURITY

TermDSM has three security levels, with different functionality available at each level. The security levels are associated with user capabilities in MPE V. When a user issues a command, the program checks the user's capabilities list to verify user authorization. If the capabilities of the user are insufficient, the command will not execute and an error message will be displayed on the user's terminal.

The necessary user capabilities and their associated security levels are listed in Table 1-1. The security level needed to run each TermDSM command is listed again with each command in Section 3 and in Section 4. Users without the listed capabilities can not run TermDSM.

Table 1-1. Security Levels for TermDSM

Necessary User Capabilities	Security Levels
OP (Operator)	0
OP and DI (Diagnostician)	1
OP and SF (Save Files)	2

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

A lockword may be assigned to the TermDSM program to restrict use.

REQUIRED HARDWARE

The following hardware is required:

- A minimal mainframe configuration (an HP 3000 Series 37, 37XE, 42, 48, 52, 58, 68, or 70, a Micro 3000, or a Micro 3000XE).

- Serial port connections through one of the supported controllers.

- The loopback connectors (see Appendix A).

REQUIRED SOFTWARE

The required software for operation of the TermDSM Diagnostic/Support Monitor includes:

- The HP Multiprogramming Executive (MPE) operating system (version G.00.00 or later).

- An ATP/ADCC/ASNL/DMI Driver.

- The TermDSM Diagnostic/Support Monitor.

TROUBLESHOOTING AT THE DEVICE

Some problems with devices can be diagnosed and/or resolved quickly at the terminal. You should always attempt these simple solutions prior to using the TermDSM program for more intensive diagnostics.

These troubleshooting procedures require you to ask some basic questions about the problem. For example, knowing the number of terminals with problems can provide you with a clue to the problem. If every terminal is affected, then the fault is probably with the system. If only one terminal is affected, then the fault is likely in the terminal, the cable, or the software components that serve the terminal. If only one terminal if affected, you should perform the following functions:

- If the terminal is "dead" (no power), make sure the power cord is connected and that it is powered on.

- If the terminal is "hung" (no data input/output), do the following:

  - Make sure the terminal is in remote mode.

  - Press (CONTROL)Q.

  - Attempt a soft reset.

  - Press the BREAK key.

  - Attempt a hard reset.

- If the terminal is not hung but transmission/reception is "garbled", check the speed/parity settings. Also check that the appropriate flow control protocol, either ENQ/ACK or XON/XOFF, is activated.

- If you cannot logon, make sure the terminal is configured correctly. This usually requires the assistance of the system manager.

TROUBLESHOOTING PROCESSES

Problems with terminals, serial printers, PCs (in terminal emulation mode and ASNL mode), and plotters can sometimes be resolved by the general user. More complex problems may be resolved by the system manager. If the system manager cannot decipher the problem, an Hewlett-Packard service representative will be summoned to resolve it. If the problem is beyond his or her grasp, HP factory personnel may become involved in the troubleshooting process. Each of these identified persons performs a specific role in the troubleshooting process.

General User Responsibilities

The troubleshooting process usually begins when the general user recognizes that his or her device is not working as it should. The terminal might be hung (no data input/output), transmission might be "garbled", or the terminal might not work at all (screen or printer is dead). If the general user is unable to resolve the problem, he or she will need to provide the system manager with the following:

- The ldev number of the device.

- The symptoms of the problem and when each began.

- The steps already taken to correct the problem.

- Whether the problem has occurred previously.

- The operating environment of the device when the problem began including:

  - The application running.

  - Whether the device was operating in block mode or character mode.

  - The specific function being attempted.

System Manager Responsibilities

Generally, the system manager has many troubleshooting responsibilities and is required to collect and analyze a great deal of information. It is often helpful to keep a journal that documents information about past and present problems. But most importantly, the system manager must know when to call an HP service representative. When an HP service representative is called, he or she should be provided with all the pertinent information that could aid in the problem resolution process. Specifically, when a problem occurs the system manager should:

- Collect as much information as possible from the general user.

- Check the malfunctioning devices.

- Check the configuration values for the malfunctioning devices.

- Perform a modem check, if a modem is being used.

- Run the TermDSM program to collect more information or to reset the affected ports.

CAUTION

The system manager should not perform hardware diagnostics other than the loopback tests documented in Section 3 and in Appendix A of this manual.

NOTE

It is Hewlett-Packard's responsibility to resolve problems that arise from the use of products under the warranty of a customer service contract. When support personnel are presented with complete information, the problem resolution process is made easier for all concerned.

TermDSM DIAGNOSTIC OVERVIEW

You can use TermDSM commands to :

- Test connections to devices.

- Check configuration values.

- Dump ports to disc files.

- Reset ports.

CAUTION

Proper care should be taken when entering TermDSM commands to avoid needlessly disrupting or aborting other user's sessions and/or jobs. Certain TermDSM commands will abort sessions and/or jobs. This may cause a loss of data.

TO RUN TermDSM

To run the TermDSM diagnostic program enter:

:RUN TERMDSM.PUB.SYS RETURN

After the program has verified your user capability, TermDSM will output the following message which displays your software driver version number.

```
HP32196G.uu.ff - TERMDSM - Terminal Diagnostics (C) Hewlett-Packard Co. 1983


                        ATP software version  - v.uu.ff
                        ANSL software version - v.uu.ff
                        DMI software version  - v.uu.ff
                        ADCC software version - v.uu.ff
                        Type HELP for aid

                        ->
```

<div style="text-align:center">┌──────────┐
│ **NOTE** │
└──────────┘</div>

The v.uu.ff number indicates the current version of the software driver installed on your system. The software drivers installed on your system will be the only v.uu.ff numbers displayed.

Software version numbers change regularly. The numbers displayed reflect the modifications that have been made to the software drivers. The v.uu.ff numbers will increase by one every time a fix is made. You should specify the v.uu.ff number as the current product number when you are inquiring about each driver or when you are submitting Service Requests (SR's) to Hewlett-Packard.

TO TERMINATE TermDSM

Whenever you enter //, TermDSM will terminate, EXCEPT when you are in the DIAGNOSTIC command dialog. When you are in the DIAGNOSTIC command dialog, you must first enter EXIT, and then when prompted, enter //.

TermDSM COMMANDS

This section describes in detail TermDSM commands. The commands are listed in alphabetical order, for your convenience. In the command description, upper-case letters indicate an abbreviated form for entering the TermDSM command and the underlined text represents your input. The symbol ->, used in the command description, is the TermDSM prompt. The presentation for the commands is the same throughout and appears in the following format:

- The command name.

- The purpose of the command.

- The security level to execute the command.

- A description of the command. This section describes the command's function and provides an example of its use.

ABORTIO Command

```
->ABORTIO  (RETURN)
```

Purpose

To terminate I/O pending on ports.

SECURITY LEVEL = 0

Description

The ABORTIO command is used to initiate dialog for aborting I/O on an ATP/ADCC/DMI port. Its function is equivalent to the MPE ABORTIO command, except that it allows aborting I/O only on ATP/ADCC/DMI ports.

EXAMPLE

```
->ABORTIO
ABORTIO

Enter LDEV#: ldev#
Enter LDEV#: ldev#
Enter LDEV#: (RETURN)

->
```

The ldev# is the logical device number of the ATP/ADCC/DMI port. When you enter an ldev#, the I/O pending on that port will be aborted. The prompt will appear again so that I/O on other ports may also be aborted, if required. To restore the TermDSM prompt, press (RETURN).

ABORTJOB Command

<div align="center">

->ABORTJOB (RETURN)

</div>

Purpose

To terminate one or more jobs or sessions.

SECURITY LEVEL = 0

Description

The ABORTJOB command is used to initiate dialog for aborting jobs or sessions running on devices through ATP/ADCC/DMI ports. This command's function is identical to the MPE ABORTJOB command.

EXAMPLE

```
-> ABORTJOB
ABORTJOB


Enter Job ID: #jobid
Enter Job ID: #jobid
Enter Job ID: (RETURN)

->
```

The Job ID will be either a job number or session number. When you enter either a job number or session number, that corresponding job or session will be aborted. The prompt will appear again so that you can abort other jobs or sessions. To restore the TermDSM prompt, press (RETURN).

BROKEN PORTS Command

->BROKEN (RETURN)

Purpose

To obtain a list of ATP/ADCC/DMI ports that have been identified as being in a broken state and/or an unfixable state.

SECURITY LEVEL = 0

Description

This command is used to identify ports which are considered to be in a broken state and/or an unfixable state.

When you enter the BROKEN command and the TermDSM software detects an error, it will indicate which devices are in a broken state and/or an unfixable state. You can try using the RESET command, explained later in this section, to restore the port's initial settings. However, if a device is in an unfixable state, it cannot be restored to a known state until whatever is causing the problem has been corrected. In other words, the RESET command will not repair an unfixable port.

There are many occurrences that may result in a port being in an unfixable state. These may include but are not limited to:

- The port was configured on a missing AIB.

- The ATP initiator cannot build the ATP data segment.

- The self-test on the Port Controller Chip (PCC) failed.

Every port configured on the system is examined by the TermDSM diagnostic when this command is executed. An asterisk will mark the condition of each device. If a device is broken but fixable, you can use the DUMP command to reset the software running on the device. Refer to the DUMP command, which appears later in this section, for further instructions.

EXAMPLE

```
                     ->Broken
                     BROKEN PORTS


        LDEV #          BROKEN       UNFIXABLE

        101               *             *
        102               *


                 ->
```

DIAGNOSTIC Command

```
->DIAGnostic (RETURN)
```

Purpose

To diagnose suspected problems with ATP/ASNL hardware and/or device connections.

SECURITY LEVEL = 1

Description

The DIAGNOSTIC command executes a series of three tests which will progressively test the data paths from the ATP hardware to the workstation.

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

The DIAGNOSTIC command does not and can not test ADCC/DMI hardware and/or device connections.

TEST ONE; INTERNAL LOOPBACK

This test verifies that the ATP's Port Controller Chip (PCC) is operating as it should. The path from the HP 3000 I/O hardware to the PCC is checked to make sure that there is not a loss of data. If it is specified in the command dialogue that all the ports on an Asynchronous Interface Board (AIB) are to be verified, then the path from the PCC to the Modem Control Chip (MCC) is also tested.

TEST TWO; EXTERNAL LOOPBACK

This test verifies that the data path from the Port Connector/Junction Panel Assembly interface to the minicomputer via the specified port is transferring data without fault. For this test, you will need to use loopback connectors. They are installed on the Port Connector/Junction Panel for the ports being tested. If you request this test, you will be prompted with the following list of questions.

```
There are two types of ATP junction panels:
     25-pin Modem panels.
     3-pin or 5-pin Direct-Connect panels.
     Does each AIB have a Modem Junction panel
     connected to it ?
```

If your response to the above question is positive, and an entire AIB is to be tested, TermDSM will attempt a modem test. If your response to the above question is negative, a modem test will not be performed. Next, the program will instruct you to attach the loopback connectors to a number of ports and ldev#s. An example follows:

```
Install the loopback connectors on the Junction Panel(s)
for ports;
     P1-0(9)    (ldev# 109)
     P1-0(10)   (ldev# 110)
Are all the connections installed?
```

A negative response will terminate the command.

TEST THREE; WRITE THEN READ

This test writes a line of data to a workstation and triggers a read of the same data from that workstation. It then compares the data sent to the data returned. This test can run on any HP terminal able to use the ENQ/ACK (Enquiry/Acknowledgement) handshake. The test can also run on PCs. The PC must be in terminal emulation mode and also support the ENQ/ACK handshake. It can be repeated as many times as you specify, between one and 32767 times. If you specify this test, the program will ask you to verify that the device is powered on. An example follows:

```
Are all the workstations powered on for the Write/Read test?
```

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

The Write Then Read test can not be executed at the same time as the other diagnostic tests.

Recommended Testing Procedures

The recommended procedure for diagnosing a suspected hardware or device connection problem is as follows:

1. Perform the diagnostic test without loopback connectors on the Port Connector/Junction Panel. This will test the port's circuitry on the AIB. If this test fails, the AIB may be at fault and you should contact your HP service representative. If this test passes, proceed to step 2.

2. Perform the diagnostic test with the appropriate loopback connectors on the Port Connector/Junction Panel. This will test the circuitry associated with the port connector interface and retest the port's AIB circuitry which was verified as properly functioning in step 1. A failing test indicates a problem with the port connector's circuitry. If there is a problem with the port connector's circuitry, contact your HP service representative. If the test passes, proceed to step 3.

3. Perform the Write Then Read test with a device strapped for the ENQ/ACK handshake. This will test the connection from the Port Connector/Junction Panel to the workstation and back again. A failing test indicates that there is a problem with the connection and you should contact your HP service representative. If this test passes, proceed to step 4.

4. At this point, the ATP hardware and workstation connections appear to be functioning properly. If the problem is intermittent, the above tests may have to be run extensively in order to pin down the problem. If the failure is of a consistent nature, a hard failure, and all the above tests have passed, the problem probably lies in the configuration of the device. Check the I/O configuration of the device.

Diagnostic Testing Options

Three options exist that limit or control the way the DIAGNOSTIC command reports the results of the testing of devices. These options exist so that you have different methods available for listing the pass or fail test information. The testing options are as follows:

- To list only devices that fail tests. This will reduce the amount of output that you must examine.

- To halt diagnostic tests temporarily when the first failure occurs. This will prevent the failure information from running off the screen.

- To stop testing a device when the device fails a test. This is useful when you want to report only failing devices.

You can identify the ports to be tested in two ways. Ports can be specified by ldev# or in the following form:

```
P<SIB#>-<list of AIB's> [(<list of ports>)]
```

When using the above form, you should first calculate the SIB# and then list the ports to be tested. If you choose to omit the list of ports to be tested, all the ports on the specified AIB will be tested. The list of AIB's and ports can be listed as individual numbers and/or in ranges of numbers. Several groups of ports can be listed on one line separated by only semicolons. You cannot specify ports by ldev# and by SIB# on the same line. However, you can use both methods during the same test dialogue, since the prompt will reappear until (RETURN) is entered. Some examples follow:

- 1,2,4/7 would be a valid list of ports.

- 20,21,99,100,101,102 would be a valid list of ldev numbers.

- P1-0,1;3(0,2/4) would specify SIB 1, all ports on AIB's 0 and 1, and the ports 0,2,3,4, on AIB 3.

```
┌─────────┐
│  NOTE   │
└─────────┘
```

The DIAGNOSTIC command runs when the system break facility is disabled. The subsystem break facility, (CONTROL)Y, will terminate any initiated command. When (CONTROL)Y is pressed, the diagnostic will prompt you for the current pass count and ask if the tests are to be aborted. If you respond positively, the diagnostic loop will be aborted. You may need to press (CONTROL)Y more than once to interrupt the execution of the DIAGNOSTIC command.

EXAMPLE

```
->DIAGnostic
DIAGNOSTIC

Enter ports to be tested:
> LDEV# (or port specification)

Enter ports to be tested:
> (RETURN)

Do you want to list failing devices only?
Do you want to stop testing all devices after one failure?
Do you want to stop testing a device after it fails?
How many times do you want to run the test? (1-32767)
Do you want to test the ports with the loopback connectors
    on the Junction Panel (Port Connectors)?
Do you want to test the ports without the loopback connectors
    on the Junction Panel (Port Connectors)?
Do you want a Write/Read test to the workstations?

->
```

Responses to above questions are either E for exit, Y for yes, N for no, or (RETURN) for no.

Diagnostic Command Limitations

The Diagnostic command does not test the modem Port Connector Assembly unless all the ports on the AIB are tested.

The Diagnostic command does not provide detailed failure information for performing component level diagnostics. This type of analysis must be performed by ATP Offline Diagnostics.

The Diagnostic command does not explicitly test SIB circuitry. It is assumed to be in working order. Should the SIB circuitry be in question, an ATP Offline Diagnostic can be used for extensive testing.

System Break is disabled during diagnostic testing.

DISPLAY

->DISplay (RETURN)

Purpose

To display ATP/ADCC/DMI tables and data areas for particular ports.

SECURITY LEVEL = 0

Description

This command is used to initiate dialog for displaying ATP/ADCC/DMI tables and data areas for the ports being tested. It allows you to visually inspect the working environment for a particular port. For example, there are a number of tables that can be inspected by you to verify configuration values, terminal types, version information, and a host of other values. This information could help you in your preliminary troubleshooting process. Because of the complexity and quantity of information contained in the tables, only limited parameters will be documented.

To display a particular table, you must first enter the ldev# and then enter the table title. At any point in the command dialog, you can enter a new ldev# and subsequent table information will be displayed for that new device. If you wish to inspect alternative tables, the program will remember which ldev# was last entered and respond with the pertinent ldev table information.

The following tables can be inspected by the DISPLAY command:

- TDS (terminal data segment).

- MONDIT (logical monitor device information table).

- PDDIT (protocol and data manager device information table), ATP, ADCC, and DMI only.

- HWDIT (physical driver-hardware device information table), ATP and ADCC only.

- CNTLPROG (control program for ATP), ATP and DMI only.

- CHANPROG (channel program for ADCC), ADCC only.

- TBUF (terminal buffers), ATP, ADCC, and DMI only.

- IOQ (ioq element).

- ILT (interrupt linkage table).

- DLT (driver linkage table).

- DRT (device reference table).

- LPDT (logical-physical device table).

- LDT (logical device table).

- PCB (process control block associated with the ioq).

- LDTPCB (process control block associated with the logical device table).

- VFC (vertical forms control information), ADCC and DMI only.

- PPDIT (port protocol device information table), ATP and ADCC only.

There are four tables from the above list that can be particularly useful to the system manager because of the information they contain. They are the TDS, the HWDIT, the PCB, and the PPDIT. For instance, the TDS lists memory allocation, the version identification number, and patch level information. The HWDIT displays the HWPCC DATE code, the last character entered, and whether or not there has been a hardware framing error. The PCB displays the following information:

- The priority of the process running.

- The wait state of the process.

- Whether the process is impeded.

- If the process is dead or alive.

- If there was a bounds violation.

Finally, if you created a term type file with the aid of Workstation Configurator, you can display the PPDIT and then compare the parameters you specified to the parameters in use.

Remember, these tables contain an enormous amount of information. Much of the data contained in the tables will be foreign to you but some of the table information can indicate the cause of the problem, and therefore, dictate an action. That action might be to reset the software or to contact an HP support representative.

EXAMPLE

```
-> DISplay
DISPLAY

Enter table name or LDEV number:  ldev#

Enter table name or LDEV number:  <table name>
     (Table information will be displayed here).

Enter table name or LDEV number: [RETURN]

->
```

DUMP Command

->DUmp (RETURN)

Purpose

To dump current ATP/ADCC/DMI tables, MPE terminal buffers, and ATP PCC memory to a disc file.

SECURITY LEVEL = 2

Description

The DUMP command is used to initiate dialog for dumping current ATP/ADCC/DMI tables, or MPE terminal buffers, or ATP PCC memory content to a disc file. Additionally, if error information exists for a specific port, this information will be placed in the same disc file.

Each controller has an area reserved in the terminal data segment for failure information. Detected failure information for a broken port is placed in this area. If error information exists for a specific port, the following message will be displayed:

An ATP/ADCC/DMI generated dump exists for ldev# nnn.
Use DUMP to format it.

This message will appear on the console when you first activate TermDSM, and again, when you enter the TermDSM DUMP command. The DUMP command will place the error information and the current state of the device into a disc file. The error information is placed in a disc file with the name TERM*nnn* in the logon group, where *nnn* is the logical device number of the device being dumped. Once the error information has been placed in a disc file, the storage area in the terminal data segment is free for logging information on other failures. A formatted sample dump is contained in Appendix B of this manual for your reference.

There are two methods for receiving hard copy of a dump.

FIRST METHOD

A file equation can be entered before you run the TermDSM program and before you enter the DUMP command. For example, the file command listed below will direct a dump for logical device *nnn* to the line printer.

:FILE TERM*nnn*;DEV=LP

SECOND METHOD

You can also use the MPE FCOPY command to copy an existing dump file to the line printer, after you have exited the TermDSM program. An example of this procedure is listed below.

```
:FILE LP;DEV=LP
:FCOPY FROM=TERMnnn;TO=*LP;CCTL
```

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

When you specify that ATP PCC memory content is to be dumped, the port will be reset upon completion of the command. The information obtained by dumping the PCC memory can be crucial to the problem resolution process, but care should be taken to assure there is no nondestructive alternative before using this command.

EXAMPLE

```
->DUmp
DUMP

Enter LDEV#:   nnn
Do you want to dump the PCC memory? Y
```

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

The question listed in the above example will not appear if you are using an ADCC driver.

The next message that appears is somewhat different if the device is connected through an ASNL port or if the logical device specified is owned by a process. However, this should not effect your response. An example follows:

```
The device entered is currently owned.  Dumping PCC memory will result in an
automatic RESET of this port that will abort the session associated with this
device.  Be sure you have the correct logical device number!  If you wish to
dump the PCC memory, then respond with "Y", "N", or (RETURN).
```

Regardless of your reponse, the dialog continues:

```
Do you want to include a message? Y
   message-> A message explaining the reason
   message-> for generating this dump.
   message-> RETURN
Data dumped into file TERMnnn.

Enter LDEV#:   <RETURN to exit dump>

->
```

The TermDSM prompt will reappear so that you can dump multiple devices during the same session. In the above dialog, *nnn* is the logical device number for an ATP/ADCC/DMI port. The dump will be sent to the TERMnnn.group.account that you ran TermDSM from. This command can be terminated at any time by entering RETURN.

EXIT Command

->Exit (RETURN)

Purpose

To terminate execution of the TermDSM program.

SECURITY LEVEL = 0

Description

The EXIT command, when entered at the TermDSM prompt, will cause the program to terminate and you will be returned to the MPE operating system. When you enter // at any other prompt, the program will also terminate.

EXAMPLE

-> Exit

END OF PROGRAM

:

HELP Command

<center>->HELP (RETURN)</center>

Purpose

To provide information about the TermDSM program.

SECURITY LEVEL = 0

Description

The HELP command provides information about the particular section of TermDSM that is currently running. The command may be entered in response to any prompt. In the following example, the HELP command was entered at the TermDSM prompt. The program responded with a list of possible commands.

EXAMPLE

```
-> HELP (RETURN)
Valid input at this point is any one of the following:

DIAGnostics - to enter dialog for running diagnostics on one
              or more ATP/ASNL ports.
DMIdiag     - to enter dialog for running diagnostics on one
              or more DMI ports.
ABORTJOB    - to enter dialog for aborting one or more jobs.
ABORTIO     - to enter dialog for aborting I/O pending on an
              ATP/ADCC/DMI port.
RESET       - to enter dialog for resetting one or more
              ATP/ADCC/DMI ports and associated tables.
DISplay     - to enter dialog for displaying ATP/ADCC/DMI
              tables and terminal buffers.
DUmp        - to enter dialog for dumping ATP/ADCC/DMI
              tables and terminal buffers
BROKEN      - to obtain a list of ATP/ADCC/DMI ports
              considered broken and/or unfixable by the driver
              software.
Exit        - to exit TERMDSM.


    ->
```

RESET Command

->RESET (RETURN)

Purpose

To reset one or more ATP/ADCC/DMI ports to their original settings.

SECURITY LEVEL = 0

Description

The RESET command is used to reset one or more ATP/ADCC/DMI ports to their default settings. When you issue the RESET command, the sessions running on the ports will be aborted; the tables and software will be set to their original state; and, the ports will be readied for speed sensing.

CAUTION

Resetting a port will abort any job or session running on the port. Use extreme caution to ensure that the correct port is being reset.

The RESET command should only be used if you would consider an ABORTJOB of the session or job appropriate. This is because the two TermDSM commands are similar in functionality. However, while both commands abort jobs or sessions, RESET is the only command that will restore the port to its original setting. But, the RESET command does not always terminate I/O successfully. Occasionally, the command will fail to reset a port because the MPE "critical" bit is set. This setting will prevent a session or job from aborting.

NOTE

If a port is broken, dump it prior to resetting it. Please refer to the DUMP command, documented in this section, for more information. This is necessary because the RESET command will reinitialize all the information in the ATP/ADCC/DMI tables and information vital to troubleshooting may be lost.

EXAMPLE

```
->RESET
RESET

Enter LDEV#: ldev#
```

The next message that appears is somewhat different if the device is connected through an ASNL port or if the logical device specified is owned by a process. However, this should not effect your response. An example follows:

```
The device entered is currently owned.  Resetting this device will abort the
session associated with it.  Be sure that you have the correct logical device
number!  If you wish to continue with the reset process, respond with "Y",
"N", or (RETURN) .
```

If you continue with the reset and the port is not considered broken by the software, the following message will appear:

```
The DEVICE DRIVER does not consider this device broken.  However, this does
not exclude the possibility of a hung port.  If you wish to continue with the
reset process respond with "Y", "N", or (RETURN) .

Enter LDEV#: <(RETURN) to exit RESET>

->
```

The TermDSM prompt will reappear so that you can reset multiple devices during one session. This command can be terminated at any time by entering (RETURN).

DMI ports must be downloaded before they can be reset. Please reference the DMI MUX Diagnostic Test Number 5 in Appendix C of this manual for more information. If you attempt to reset a DMI port and it has not been downloaded, the following message will be displayed:

```
The DMI port must be downloaded before it can be reset.  Use
DMI MUX diagnostics test number 5 to download it.
```

DMI COMMANDS

DMI DIAGNOSTIC OVERVIEW

The DMI diagnostic tool operates as a subset of the TermDSM program. The Terminal Online Diagnostic/Support Monitor, TermDSM, was used as the base program because of the similarities between the Advanced Terminal Processor's Asynchronous Interface Board (AIB) and the DMI MUX card.

DMI diagnostic commands should be used as a tool to test DMI hardware. The program also works as a utility for handling port failures. The port testing utility allows portions of MPE tables to be "dumped" to a disc file. Thus, problem ports can be "reset" to a known state without the need to halt system operations for a memory dump and WARMSTART. The disc file can then be copied to a line printer or stored to tape and submitted to Hewlett-Packard for analysis.

DMI COMMAND STRUCTURE

The DMI command is used to initiate dialog for running diagnostics on one or more DMI ports, in order to diagnose suspected problems with DMI hardware. The DMI command must be entered at the TermDSM prompt (->). In fact, it is the only DMI diagnostic command that will execute when entered in response to the TermDSM prompt.

After the DMI command has executed, the program will prompt you to specify which board you wish to test, either the DS1 board or the MUX board. If you specified testing for the MUX board, you can instruct the diagnostic to run from one to 64 tests. If you specified DS1 testing, you can instruct the diagnostic to run from one to five tests. There are a number of testing parameters and diagnostic limitations that must be defined. For a visual perspective of the DMI command structure, reference Figure 4-1 on the next page.

The commands used to define the testing parameters and diagnostic limitations for each board are documented later in this section. For your reference, the order in which you will perform DMI diagnostics is as follows:

    1 Start the TermDSM program.

    2 Enter the DMI command at the TermDSM prompt.

    3 Specify the board upon which you wish the diagnostic to run.

    4 Define testing options and diagnostic limitations.

    5 Issue the GO command to begin the diagnostic program.

Complete DMI test explanations are documented in the *Digital Multiplexed Interface (DMI) Reference Manual* (30288-90001). Please refer to that document for detailed information.

Figure 4-1. DMI Command Structure.

TO RUN DMI DIAGNOSTICS

DMI commands are accessed from within the TermDSM diagnostic. To run TermDSM, enter:

<pre>
:RUN TERMDSM.PUB.SYS (RETURN)
</pre>

After the program has verified user capability, TermDSM will display:

```
HP32196G.uu.ff - TERMDSM - Terminal Diagnostics (C) Hewlett-Packard Co. 1983


                        ATP software version  - v.uu.ff
                        ANSL software version - v.uu.ff
                        DMI software version  - v.uu.ff
                        ADCC software version - v.uu.ff
                        Type HELP for aid

                        ->
```

```
┌─────────────┐
│    NOTE     │
└─────────────┘
```

The v.uu.ff number indicates the current version of the software driver installed on your system. The software drivers installed on your system will be the only v.uu.ff numbers displayed.

Software version numbers change regularly. The numbers displayed reflect the modifications that have been made to the software drivers. The v.uu.ff numbers will increase by one, every time a fix is made. You should specify the v.uu.ff number as the current product number when you are inquiring about each driver or when you are submitting Service Requests (SR's) to Hewlett-Packard.

TO TERMINATE DMI DIAGNOSTICS

To terminate DMI diagnostics, enter the EXIT command at the MUX> or DS1> prompt, and then when prompted, enter //.

DMI COMMANDS

This section describes DMI diagnostic commands. The commands are listed in alphabetical order for your convenience. In the command description, upper-case letters indicate an abbreviated form for entering the DMI command. Presentation for the command is the same throughout. The command presentation is as follows:

- The command name.

- The purpose of the command.

- The security level necessary to execute the command.

- A description of the command. This section describes the command's function and provides an example of its use.

NOTE

For more detailed information on DMI diagnostics, please refer to the *Digital Multiplexed Interface (DMI) Reference Manual,* (30288-90001).

DMI COMMAND

-> <u>DMI</u> (RETURN)

Purpose

To initiate diagnostic testing for DMI hardware.

SECURITY LEVEL = 1

Description

The DMI command is used to initiate dialog for running diagnostics on one or more DMI ports.

EXAMPLE

```
->DMI (RETURN)
DMI DIAGNOSTICS

MUX OR DS1 testing? [MUX/DS1] MUX (RETURN)
Loading MUX firmware.

      DMI MUX DIAGNOSTICS

      MUX DIAGNOSTIC COMMANDS

The following commands can be entered at this time:
  GO        - Starts execution of the specified tests.
  MAP       - Lists all DMI ports/signaling channels on the system.
  PORT      - Enters the port specification prompt.
  SHOWtest  - Lists all MUX tests.
```

After you enter MUX or DS1 in response to the MUX or DS1 testing ? prompt, the program will print the HELP screen (shown below). The program will then display the MUX> or DS1> prompt and wait for you to enter another command.

```
            TESTING PARAMETERS

    TEST X/X,X    - Specifies which tests to run. (1-5) Test ALL for
                    tests 1-4.
    LIST          - List All prints pass/fail messages.  LIST FAIL
                    for only failures.
    LOOP X        - The number of times to execute tests. (1-32767)
                    (0=infinite)
    NOSTOP        - Specifies testing continues when failures are
                    detected.
    STOP          - Specifies testing stops when failures are detected.
    DS1           - Use DS1 to leave MUX diagnostics and enter DS1
                    diagnostics.
    EXIT          - Use the Exit command to leave DMI diagnostics.

    MUX>
```

DS1 COMMAND

MUX> <u>DS1</u> (RETURN)

Purpose

To exit MUX diagnostics and begin DS1 Diagnostics.

SECURITY LEVEL = 1

Description

The DS1 command stops MUX diagnostic tests and prepares the DS1 card for diagnostic tests. When the command is entered, the user prompt changes from MUX> to DS1>. The MUX ports being tested when the DS1 command is entered will be reset. After the command is entered, a menu will be displayed that lists user options.

EXAMPLE

```
MUX> DS1 (RETURN)

DMI DS1 DIAGNOSTICS

NOSTOP on Errors    List ALL Messages    Loop 1
Test: 1,57

      DS1 DIAGNOSTIC COMMANDS

The following commands can be entered at this time:
     GO        - Starts execution of the specified tests.
     MAP       - Lists all DMI ports/signaling channels on the system.
     PORT      - To enter a signaling channel ldev#.
     SHOWtest  - Lists all DS1 tests.
```

After you enter DS1 in response to the MUX> prompt, the program will print the HELP screen (shown below). The program will then display the DS1> prompt and wait for you to enter another command.

```
        TESTING PARAMETERS

Test X/X,X - Specifies which tests to run. (1-58) Test ALL for
              tests 1-57.
LIST       - LIST ALL prints pass/fail messages.  LIST FAIL for
              only failures.
LOOP X     - The number of times to execute tests. (1-32676)
              (0=infinite)
NOSTOP     - Specifies testing continues when failures are
              detected.
STOP       - Specifies testing stops when failures are detected.
MUX        - Use MUX to leave DS1 diagnostics and enter MUX
              diagnostics.
EXIT       - Use the Exit command to leave DMI diagnostics.

DS1>
```

EXIT COMMAND

```
MUX> EXIT (RETURN)
        or
DS1> EXIT (RETURN)
```

Purpose

To terminate execution of DMI diagnostics.

SECURITY LEVEL = 1

Description

The EXIT command, when entered at the MUX> or DS1> prompt, will return you to the TermDSM prompt (->). The ports being tested will be downloaded when you enter the EXIT command. If the download is successful, the ports will be reset and released to the system from the diagnostic mode. If the download is unsuccessful, the ports will be left in a "broken" state and in diagnostic mode.

EXAMPLE

```
MUX> EXIT (RETURN)
    Attempting to download all ports specified for testing.

  DMI# PORT# 1 (1LDEV# 50) FAILED MUX RESET TO ROM
Wrong interrupt received.
Expected interrupt was 127.
Received interrupt was 3.
Press any key to continue. (RETURN)

MUX RESET FAILED, NO DOWNLOAD WILL BE ATTEMPTED.

->
```

GO COMMAND

MUX> <u>GO</u> (RETURN)
or
DS1> <u>GO</u> (RETURN)

Purpose

To start the specified diagnostic tests.

SECURITY LEVEL = 1

Description

When you enter the GO command, diagnostic testing begins. The tests, the ports, the loops, and the print options should be specified before you enter the GO command.

If you do not define the testing options or the diagnostic limitations, you can still execute the GO command. In this instance, default values would be used when the diagnostic test runs. The default testing values are:

- Test all.

- Nostop on errors.

- List all.

- Loop 1.

```
NOTE
```

For more information on default testing values, please reference the *Digital Multiplexed Interface (DMI) Reference Manual*, (30288-90001).

EXAMPLE

```
MUX> PORT (RETURN)

Enter ports to be tested:
 >51 (RETURN)
Enter ports to be tested:
 > (RETURN)
Co-port ldev# 50 acquired for diagnostics.
MUX> TEST 1 (RETURN)
MUX> GO (RETURN)
DMI # 0   PORT # 1 (ldev# 51)   FAILED MUX RESET TO ROM
    Wrong interrupt received.
    Expected interrupt was 127.
    Received interrupt was 3.
    Press any key to continue. (RETURN)
->
```

HELP COMMAND

MUX> HELP (RETURN)
                or
DS1> HELP (RETURN)

Purpose

To provide information about DMI diagnostics to the user.

SECURITY LEVEL = 1

Description

The HELP command provides information that pertains to DMI diagnostics. The HELP command can be entered at any prompt. When entered, command information will be displayed. When you enter the HELP command at the MUX> or DS1> prompt, the defined test parameters will be displayed along with the command information.

EXAMPLE


```
MUX> HELP (RETURN)
NOSTOP on Errors   List ALL Messages  Loop 1
Test: 1,4

     MUX DIAGNOSTIC COMMANDS

The following commands can be entered at this time:
     Go        - Starts execution of the specified tests.
     MAP       - Lists all DMI ports/signaling channels on the system.
     PORT      - Enters the port specification prompt.
     SHOWtest  - Lists all MUX tests.
```

After you enter HELP in response to the MUX> prompt, the program will print the HELP screen (shown below). The program will then display the MUX> prompt and wait for you to enter another command.

```
            Testing Parameters

TEST X/X,X - Specifies which tests to run. (1-5) Test ALL for 1-4.
LIST       - LIST ALL prints pass/fail messages.  LIST FAIL
               for only failures.
LOOP X     - The number of times to execute tests. (1-32767)
               (0=infinite)
NOSTOP     - Specifies testing continues when failures are detected.
STOP       - Specifies testing stops when failures are detected.
DS1        - Use DS1 to leave MUX diagnostics and enter DS1
               diagnostics.
EXIT       - Use the Exit command to leave DMI diagnostics.

MUX>
```

LIST COMMAND

<div align="center">

MUX> <u>LIST ALL</u> (RETURN)

or

DS1> <u>LIST ALL</u> (RETURN)

</div>

Purpose

To display diagnostic pass messages.

SECURITY LEVEL = 1

Description

When the LIST command is entered, either all diagnostic pass messages are displayed or none are displayed, depending on your specification. When you specify LIST ALL, diagnostic pass messages will be displayed to your screen. Specifying LIST FAIL causes them to be suppressed. The LIST command does not effect diagnostic error messages which are always displayed to your screen, regardless of your specification.

If diagnostic pass messages are to be displayed, use the following command: <u>LIST ALL</u> (RETURN)

If diagnostic pass messages are not to be displayed, use the following command: <u>LIST FAIL</u> (RETURN)

The default value is LIST ALL.

EXAMPLE

MUX> <u>LIST FAIL</u> (RETURN)

MUX>

LOOP COMMAND

MUX> <u>LOOP 100</u> (RETURN)
or
DS1> <u>LOOP 100</u> (RETURN)

Purpose

To specify the number of times a test is to run.

SECURITY LEVEL = 1

Description

The LOOP command specifies the number of times a test is to execute. A test can run from one to 32767 times or be set for infinite looping. You should indicate the number of times a test is to run in the LOOP command parameter. If a loop is to run forever, enter LOOP 0 or LOOP INFINITE. When the parameters have been entered, only the issuance of (CONTROL) Y will halt the testing procedure. The default value is LOOP 1.

EXAMPLE

MUX> <u>LOOP 100</u> (RETURN) (Run test 100 times.)

MUX>

MAP COMMAND

MUX> MAP (RETURN)
                or
DS1> MAP (RETURN)

Purpose

To list all the ports configured on the system.

SECURITY LEVEL = 1

Description

The MAP command is used to attain a list of all the DMI ports configured on the system. When you enter the MAP command, the program prints a list of all the DMI data and signaling channel ports. The information generated when the command is entered is gathered from the printed circuit assembly date codes.

EXAMPLE

MUX> MAP (RETURN)

DMI LDEVS

LDEV#	SIGNALING CHANNEL	IMB#	SIB#	LOGICAL AIB#	AIB RELATIVE PORT#
50	*	0	3 (P3)	0	0
51		0	3 (P3)	0	1
52		0	3 (P3)	0	2
53		0	3 (P3)	0	3
54		0	3 (P3)	0	4
55		0	3 (P3)	0	5
56		0	3 (P3)	0	6
57		0	3 (P3)	0	7
58		0	3 (P3)	0	8
59		0	3 (P3)	0	9
60		0	3 (P3)	0	10
61		0	3 (P3)	0	11
62		0	3 (P3)	1	0
63		0	3 (P3)	1	1
64		0	3 (P3)	1	2

MUX>

NOSTOP COMMAND

MUX > <u>NOSTOP</u> (RETURN)
or
DS1 > <u>NOSTOP</u> (RETURN)

Purpose

To specify that testing should not stop when a diagnostic error occurs.

SECURITY LEVEL = 1

Description

The NOSTOP command is used to specify that testing should not stop when a diagnostic error occurs. If this command has been specified and a diagnostic error occurs, an error message will be printed to the screen, and then, diagnostic testing will resume. With time, the error message may scroll off the screen.

EXAMPLE

MUX > <u>NOSTOP</u> (RETURN)

MUX >

PORT COMMAND

```
MUX> PORT (RETURN)
        or
DS1> PORT (RETURN)
```

Purpose

To designate which ports and ldevs are to be tested.

SECURITY LEVEL = 1

Description

The PORT command is used to specify which ports or ldevs are to be tested. You can specify the ports to be tested in two ways. Ports can be specified by ldev# or in the following form:

```
P<SIB#>-<list of DMIs> [(<list of ports>)]
```

You can obtain the SIB# from the displayed information when the MAP command executes. You cannot mix the two modes for specifying ports on the same line. However, the prompt will reappear until (RETURN) is entered, thereby allowing the use of both modes.

DMI card sets support 24 ports or ldevs. If you want to test an entire DMI set (24 ports), find the thumbwheel setting on the MUX card of that set, and then enter the following information:

```
P<SIB#>-(MUX thumbwheel setting, MUX thumbwheel setting + 1)
```

When the above information in entered, all 24 ports on the DMI set will be tested. When diagnostic messages are printed to the screen, the message will state which half of the DMI set is being tested.

When you type the ldev number, the diagnostic will try to acquire all the ports on that DMI set. If any of the ports are being used, the test will not execute. The ports that are unavailable will be printed to the screen in an error message.

EXAMPLE

```
MUX> PORT (RETURN)
Enter the signaling channel ldev - 50 (RETURN)
Checking all ports on this DMI set for availability.

MUX>
```

SHOWTEST COMMAND

```
MUX> SHOWtest RETURN
```

Purpose

To display the five available MUX tests.

SECURITY LEVEL = 1

Description

The SHOWTEST command is used to display the five MUX board tests. You can then associate a test with its test number.

EXAMPLE

```
MUX> SHOWtest RETURN

   MUX DIAGNOSTIC TESTS

      Test Number                              Test

          ALL                              TESTS 1 - 4
           1                               MUX RESET TO ROM
           2                               MUX SELF TEST
           3                               MUX Z80 LOOPBACK
           4                               MUX SCC LOOPBACK
           5                               MUX RESET/DOWNLOAD
MUX>
```

STOP COMMAND

MUX> STOP (RETURN)
or
DS1> STOP (RETURN)

Purpose

To stop test execution if diagnostic errors are found.

SECURITY LEVEL = 1

Description

The STOP command specifies that test execution will stop when diagnostic errors are found. If a self-test module returns an error condition, the diagnostic will display the error message and prompt you to press any key to continue testing. The diagnostic will sit idle until a key is pressed.

EXAMPLE

MUX> STOP (RETURN)
MUX> TEST 1 (RETURN)
MUX> PORT (RETURN)

Enter ports to be tested:
> 51 (RETURN)
Enter ports to be tested:
> (RETURN)
MUX> GO (RETURN)
DMI # 0 PORT # 1 (ldev # 51)   FAILED   MUX RESET TO ROM
Wrong interrupt received.
 Expected interrupt was 127.
 Received interrupt was 3.
Press any key to continue.

TEST COMMAND

MUX> TEST 1 (RETURN)
or
DS1> TEST 1 (RETURN)

Purpose

To specify the tests to be executed.

SECURITY LEVEL = 1

Description

The MUX card has five tests through which it performs diagnostics. The ALL parameter will initiate tests one through four. Test five is a download procedure. See Appendix C in this manual for more information on the MUX Download. If continuous testing is necessary, use tests one through four. Use test five when a download is necessary.

The DS1 card has 58 tests through which it performs diagnostics. The TEST command can be used to specify any or all of these tests.

Tests can be entered by themselves or in ranges. Individual tests are entered separated by commas. Ranges are entered by separating the first and last test of the range by a "/". Multiple ranges can be entered by separating the ranges with commas.

NOTE

Please refer to the *Digital Multiplexed Interface (DMI) Reference Manual*, part number 30288-90001, for detailed test information.

EXAMPLE

MUX> TEST 1 (RETURN)   (Specifies test 1.)

MUX> TEST ALL (RETURN)   (Specifies tests 1 through 4.)

MUX> TEST 1,3 (RETURN)   (Specifies tests 1 and 3.)

MUX> TEST 1/3 (RETURN)   (Specifies tests 1 through 3.)
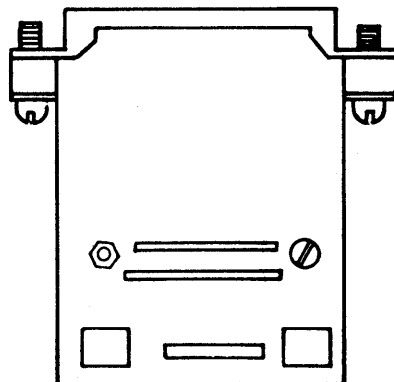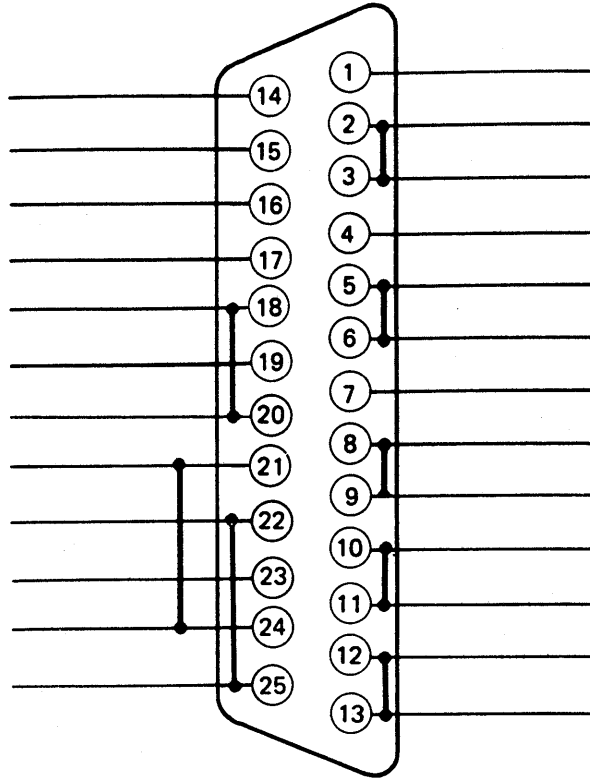
MUX>

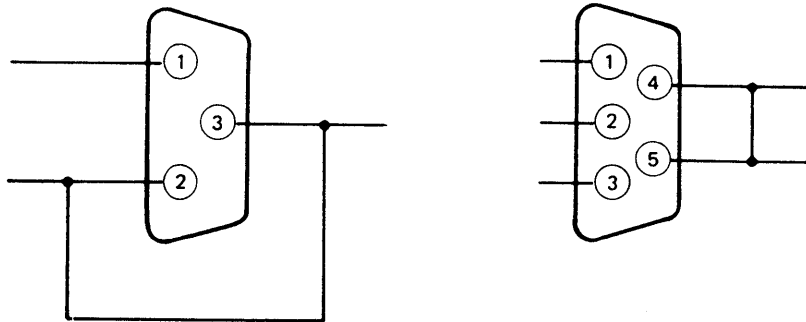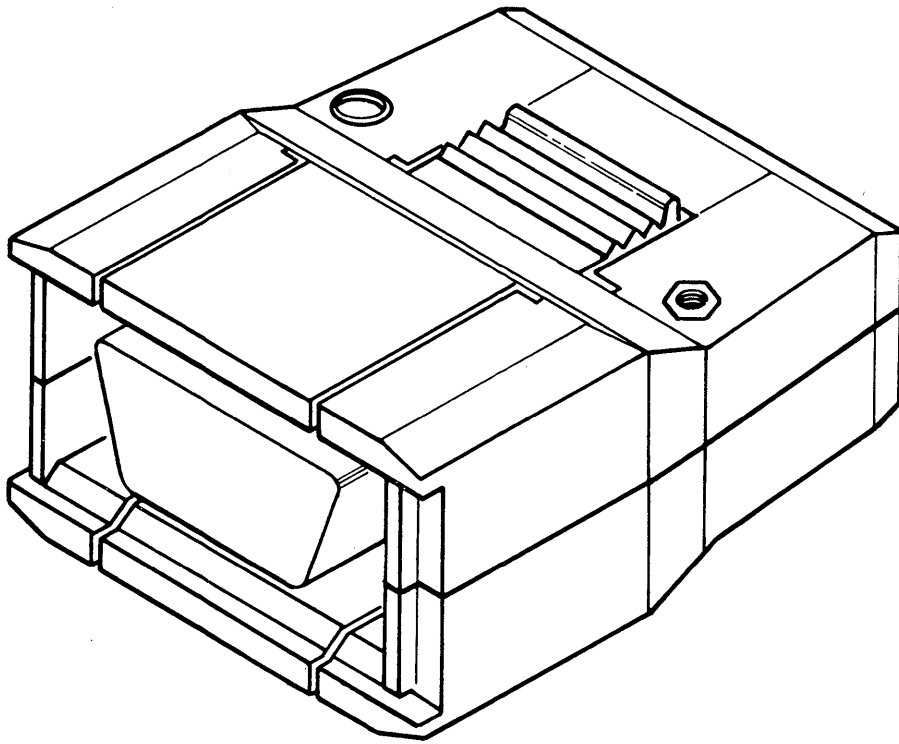# LOOPBACK CONNECTORS

Figure A-1. HP-Modem B Loopback Connector.

Figure A-2. HP-DC A and HP-DC B Loopback Connectors.

SAMPLE DUMP

This appendix contains a sample dump for your reference. The DUMP command, documented in this manual, is used to initiate dialog for dumping the current state of ATP/ADCC/DMI tables, or MPE terminal buffers, or ATP PCC memory. The DISPLAY command, also documented in this manual, is used to initiate dialog for displaying the current state of ATP/ADCC/DMI tables, or MPE terminal buffers, or ATP PCC memory.

There are two methods for receiving hard copy of a dump. First, a file equation may be entered prior to running TermDSM and entering the DUMP command. Secondly, FCOPY may be used to copy the dump file to the line printer device after exiting TermDSM.

| NOTE |

Please reference the DUMP and DISPLAY commands in Section 3 of this manual and the *ATP/TIC/ADCC Tables Reference Manual*, (84061-1500), for more detailed information.

```
HP32196G.05.05 - TERMDSM - Terminal Diagnostics (C) Hewlett-Packard Co. 1983
DUMP


DUMP OF LDEV#21 ON TUE, SEP 15, 1987,  1:26 PM
***** ATP Terminal Data Segment Header *****

    AIBS'NOTRESPOND= 0      HIGH'DRT'LDEV  = 276    PORTDUMP'P      =%021452
    BSTATUS'WRD     =%000000 HIGHLDEV'WRD   = 276    SELFTEST'FAILED= 0
    CHAN'NOTRESPOND= 0      ISTATUS'WRD    =%000000  TBUFS'INCREASED= 0
    CONSOLE'FAILED = 0      LDEV'SPECS'CHGD= 0       TBUFTBL'P       =%024076
    DEFAULTS'USED  = 0      LDEVS'IO'FAILED= 0       TDS'VER         = 2
    DRT'WRD        = 8      LDEVS'SHUT'DOWN= 0       UNIT'CANBEFIXED= 0
    DSTATUS'WRD    =%177777 LOW'DRT'LDEV   = 6       UNITS'SHUT'DOWN= 0
    DUMPBUF'P      =%020777 LOWLDEV'WRD    = 20      VFCAREA'P       =%000247
    EXC'CNF'DSEGSIZ= 0      MSGTBL'P       =%021377  WAITHEAD'P      =%000000
    HDDIT'P        =%000043 PMASK'WRD      =%000000  WAITTAIL'P      =%177777
    HDWRSTATE'UNKWN= 0      PORTAREA'P     =%000647
***** Software Versions *****
 SOFTWARE LEVEL  G.51.04
 ATPDRIVR        G.04.20
 ATPINIT         G.04.20
 IHANDLER        G.04.36
 IMANAGER        G.04.72
 LPMON           G.04.19
 TDS'VER         2
 TERMDSM         G.05.05.0
 TERMMON         G.04.28
 TERMUTIL        G.04.27
```

***** ATP Terminal Data Segment Header *****

```
WORD
0      000002 000043 024076 000247 000647 000000 177777 000010
10     000024 000424 000000 021377 020777 021452 000006 000424
20     000000 000000 177777 000001 011423 000001 011434 000001
30     011424 000001 011444 000001 011424 000001 011510 000001
40     011433 000001 022540
```

***** Terminal Monitor DIT *****

DL'ACK'TO	= 0	DL'LDEV	=%000025	DL'READ'TIME	= 0
DL'ACTIVE	= 0	DL'LOG	=%000000	DL'READ'TO	= 0
DL'BINARY	= 0	DL'LOG1	=%000000	DL'READ'TVAL	= 0
DL'BRK'MOD	= 0	DL'LOGN'TRLX	=%000000	DL'REQUEST	= 0
DL'BROKEN	= 0	DL'LOGON'TO	= 0	DL'RESET	= 0
DL'CFAIL'TO	= 0	DL'LOGON'TYP	= 1	DL'SAVE'PF	= 0
DL'CONSOLE	= 0	DL'MCC'STAT	=%000000	DL'SPD'SNS	= 0
DL'CONTROLLER	= 1	DL'MCC'VER	= 2	DL'SSTO	= 0
DL'DATE'CODE	=%010203	DL'MISC	=%000100	DL'START'SS	=!0000
DL'DEVTYPE	= 16	DL'MISC3	=%040150	DL'TBUFAVAIL	= 0
DL'DLTP	=%070350	DL'MSC'STAT	=%000000	DL'TEMP	=%000000
DL'DMI'STATE	=!0000	DL'MSC'VER	= 1	DL'TERM	= 1
DL'DONT'CAT	= 0	DL'NEXT	=%000000	DL'TICK	=%000000
DL'ERROR'CODE	= 0	DL'PCC'STAT	=%000000	DL'TIME	=%000000
DL'FLAGS	=%140001	DL'PCC'VER	= 2	DL'TIME'FLAG	= 0
DL'FLUSH	= 0	DL'PD'DITP	=%001243	DL'TRUEUNIT	= 1
DL'HANGUP'TO	= 0	DL'PF'REC	= 0	DL'UNFIXABLE	= 0
DL'ILTP	=%177040	DL'PREEMPT	= 0	DL'UNIT	=%000001
DL'INT'MAN	=!0000	DL'PRESPACE	= 0	DL'UP	= 1
DL'INT1	= 0	DL'PRP'LEVEL	= 0	DL'VERSION	= 3
DL'IOQP	=%003674	DL'QPARM	= 3	DL'WAIT'RSN	= 0

***** Terminal Monitor DIT *****

```
WORD
0      140001 000000 003674 000025 070350 177040 000000 000000
10     000100 001243 000001 010203 040150 000000 000000 000000
20     000000 000003 000000 000000 000000
```

***** Port Protocol DIT *****

Last termtype file name : none
Current term type : 10

PP'2631B'FIX	= 0	PP'ENQACK	= 1	PP'ODD'ENAB	= 0
PP'ACKCHAR	= ACK	PP'ENQBLOCK	= 80	PP'ODD'PARITY	= 0
PP'BLOCK'TRIG	= DC1	PP'ENQCHAR	= ENQ	PP'PARITY'ENAB	= 0
PP'BLOCKMODE	= 3	PP'EVEN'ENAB	= 1	PP'STAT'WAIT	= 0
PP'BSRESP	= 1	PP'EVEN'PARITY	= 2	PP'STATUS'RETRY	= 0
PP'CHARSIZE	= 6	PP'FF'NEWCHAR	= NUL	PP'SW'XONXOFF	= 0
PP'CONS'STRIP	= 0	PP'FFOK	= 1	PP'TAILTBUF	=%000000
PP'DC3'CCTL	= 0	PP'FOPEN'PARITY	= 0	PP'TBUFS'IN'USE	= 0
PP'DELAY	= 0	PP'HEADTBUF	=%000000	PP'TRIGGER'CHAR	= DC1
PP'DELAYCR	= 0	PP'INIT'DEV	= 0	PP'VFC	=%000000
PP'DELAYFF	= 0	PP'LAST'SSBRK	= NUL	PP'VFC'OK	= 0
PP'DELAYLF	= 0	PP'MIN'SR	= 0	PP'WRITESTATUS	= 0
PP'DO'XON'TIMER	= 0	PP'NAME'VALID	= 0	PP'XFLOW	= 1
PP'DTR'LOW'TIME	= 0	PP'NETWRK'DEV	= 0	PP'XOFF'DC1	= 0
PP'ECHO	= 1	PP'NETWRK'WAIT	= 0	PP'XON'TIME	= 60
PP'EMSTRIP	= 1	PP'NOACKACTION	= 1	PP'XSTRIP	= 1
PP'ENQ	=%050005				

*** Special Characters ***

Console attention	:	SOH
Cancel 1 character	:	BS
Linefeed	:	LF
Type 1 EOR	:	CR
Block-mode alert	:	DC2
Cancel line	:	CAN
Subsystem break	:	EM
Strip and ignore	:	NUL, DEL

***** Port Protocol DIT *****

```
WORD
0      020040 020040 020040 020040 020040 020040 020040 020040
10     020040 020040 020040 020040 000000 147013 003000 000000
20     050005 000406 010421 000001 015543 015510 000000 000000
30     000000 000000 000000 000000 000000 000000 000000 000000
40     000000 000000 000000 000000 000252 000074 000000 000000
50     000000 000000 150400 000000 021500 002400 003611 120000
60     136016 000000 000000 000000 000000 000000 000000 000000
70     000000 000000 000000 000000 000000 000000 000000 000000
100    000000 000000 000000 000000 000000 000000 000000 000000
110    000000 000015 000000 000001
```

***** VFC Table SIR's *****

OWNER'PCB	= 0	HEAD'PCB	= 0	TAIL'PCB	= 0
QUEUE'LENGTH	= 0				

***** VFC Table SIR's *****

```
WORD
0      000000 000000 000000 000000
```
No VFC entry associated with LDEV #21

***** Protocol and Data-Level DIT *****

***** Fixed Area *****

PD'ALL'PARITY	=%000000	PD'DSRTIMER	= 0	PD'PORTSTATE	= 1
PD'ALTCHARSET	= 0	PD'DTRTIMER	= 0	PD'POWERFAIL	= 0
PD'BROKEN	= 0	PD'HARDWARE'TYP	=%010203	PD'PPENTRYNUMB	= 10
PD'CF'CNT	= 0	PD'IODITP	=%001137	PD'PPROTOCOL	=%001260
PD'CFTIMER	=%000000	PD'LINETYPE	= 0	PD'RPARITY	= 0
PD'CHARSIZE	= 0	PD'MODEM'SIGNAL	= 0	PD'RWPORTSTATE	= 1
PD'CLEARF	= 0	PD'MODEM'STATE	= 0	PD'SPEED'SPECIF	= 0
PD'CONNECTTYPE	= 0	PD'PARITYENAB	= 0	PD'TERMTYPE	= 10
PD'CONTROLLER	= 1	PD'PENDING'STAR	= 0	PD'WPARITY	= 0
PD'DC'MODEM	= 0	PD'PORTSPEED	= 960	PD'XONTIMER	=%000000
PD'DPORTSPEED	= 960				

***** Variable Area *****

PD'2631B'RESET	= 0	PD'ESCPAIR	= 0	PD'READFLAGS	=%000003
PD'ABSOFFSET	=%000002	PD'FILLING	= 0	PD'READLOC	= 1
PD'ALTCHARS	=%000000	PD'HEADOFFSET	=%000002	PD'READTIME	= 0
PD'ALTEOR	= NUL	PD'HEADTBUF	=%033645	PD'READTYPE	= 1
PD'ALTSSBREAK	= NUL	PD'IOQEOR	= NUL	PD'SBUF1	=%033645
PD'BANKNUMB	=%033645	PD'LAST'STATUS	= 0	PD'SBUF1'STAT	= 0
PD'BANKOFFSET	=%033645	PD'LASTEOR	= NUL	PD'SBUF2	=%033645
PD'BINARY'MODE	= 0	PD'LBLOCKMODE	= 0	PD'SBUF2'STAT	= 0
PD'BINARYREAD	= 0	PD'LDMDIT	=%053154	PD'SBUFREADCOMP	= 0
PD'BLOCKMODE	= 0	PD'LDMOPCODE	= 6	PD'SPDSENSE	= 1
PD'BREAK	= 0	PD'LLDMC	= 2	PD'SSBREAK	= 0
PD'BREAKENAB	= 1	PD'LOGONDEV	= 1	PD'SSBRKENAB	= 0

```
PD'BREAKMODE    = 0      PD'LOPCOMPLETE = 0      PD'STAT'COUNT'2= 0
PD'BRKTBUF      =%000000 PD'LOPSTATE    = 1      PD'STATUS      =%000000
PD'BROKRCNT     = 0      PD'NETWK'SR'MOD= 0      PD'STATUS'RETRY= 0
PD'BTANKED      = -1     PD'NETWRK'WAIT = 0      PD'STATUS'WCNT = 0
PD'CHARSET      = 1      PD'NEWLINE     = 0      PD'SUSPLOPSTATE= 0
PD'CNTRLX       = 1      PD'NEWTOP      = 0      PD'TAILOFFSET  =%000002
PD'CONSENAB     = 0      PD'NO'READECHO = 0      PD'TAILTBUF    =%033645
PD'CONSMODE     = 0      PD'NOLF        = 0      PD'TBUFS'IN'USE= 0
PD'CRITICALW    = 0      PD'OLDXFERCNT  = 0      PD'TBUFWAIT    =%000000
PD'DC2READ      = 0      PD'OWNREAD     = 0      PD'TIMINGREAD  = 0
PD'DEVLINK      =%000000 PD'PCC'XON'XOFF= 1      PD'TRANSPARENT =%000000
PD'DISCNCT'DEV  = 0      PD'PENDLOPSTATE= 0      PD'VIEWREAD    = 0
PD'DO'STATREQ   = 0      PD'PREADTIMING =%000000 PD'WAITFORTBUF = 0
PD'EOF          = 3      PD'PRINTER     = 0      PD'WWC         = 0
PD'EOFCNT       = 0      PD'RDTIMEOUTVAL= 0      PD'XFERCNT     = 0
PD'EOFTBUF      =%000000 PD'RDTIMERINDEX=%000000 PD'XON'RETRYS  = 0
PD'ERROR        = 0      PD'READCNT     = 279    PD'XONWAIT     = 0
PD'DISCADDR     = (D)%00000000000  PD'RDSTARTIME  =%(D) 00000000000
```

***** Protocol and Data level DIT *****

***** Fixed Area ****

```
WORD
0      001137 012000 000000 000000 000000 000000 000000 001700
10     001260 000000 001700 005012 010203
```

***** Variable Area *****

```
WORD
0      053154 010000 033645 033645 000002 000002 177777 000427
10     000003 000000 000000 004220 000000 000000 000000 000000
20     000000 000000 000000 000000 060001 012106 000000 000000
30     000000 000000 000000
```

***** ATP Hardware-level DIT *****

```
HW'8'BIT'MODE   = 1      HW'MCC'DATE     = 2      HW'RD'RIGHT'LEF= 0
HW'BROKEN       = 0      HW'MCC'PF       = 0      HW'READ'ADDR   =%124276
HW'CLEAR'E02    = 0      HW'MCC'SETUP'WA= 0      HW'READ'BANK   =%000003
HW'CONTROLLER   = 1      HW'MODEM'CTL    =%000000 HW'READ'BUFR   =%000000
HW'CP'P         =%001223 HW'MODEM'OUTPUT=%000000 HW'READ'CNT    = 134
HW'DELAY'ENAB   = 0      HW'MODEM'REF    =%000000 HW'RESET'DIT   = 0
HW'DIAG'INTERRU= 0      HW'MODEMPANEL   = 0      HW'SAVE'PF     = 0
HW'DIAG'REASON  = 0      HW'MSC'DATE     = 1      HW'SEC'SCHRS   =%014401
HW'DIAGNOSTIC   = 0      HW'MSC'PF       = 0      HW'SELFTEST    =%010203
HW'DIRECT'COMMA= 4      HW'NEXT'STATE   = 0      HW'SET'PROTOCOL= 1
HW'DMI'STATE    = 0      HW'NON55        = 0      HW'SPDS        = 0
HW'ECHO         = 1      HW'OLD'DIRECT'C= 8      HW'SPEC'CHAR   = CR
HW'EDIT'SCHRS   =%000000 HW'OLD'WAIT'REA= 1      HW'STATE       = 1
HW'FF'ENAB      = 1      HW'PARITY'CHECK= 0      HW'TRACE       =%100401
HW'FLAGS'3      =%101607 HW'PARITY'GEN   = 0      HW'UNIT'NUM    = 1
HW'FLAGS'4      =%007022 HW'PCC'DATE     = 2      HW'UNUSED'3    =%000000
HW'FRAMMING'ERR= 0      HW'PCC'PF       = 0      HW'WAIT'REASON = 0
HW'IDLE'WRT     = 0      HW'PDIT'P       =%001243 HW'WRI'SCHRS   =%000431
HW'INTERRUPT'CO= 18     HW'PENDING'STAR= 0      HW'WRITE'ADDR  =%071635
HW'JUNCTION'TYP= 1      HW'POWERFAIL    = 0      HW'WRITE'BANK  =%000003
HW'LAST'INTERRU= 14     HW'PP1          = 20485 HW'WRITE'BUFR  =%010400
HW'LDIT'P       =%053154 HW'PP2          = 1536  HW'WRITE'CNT   = 1
HW'LINE'SPEED   = 7      HW'PRI'SCHRS    =%001447 HW'WT'RIGHT'LEF= 0
HW'LSTSTATE     = 12     HW'PRISPCL      = 1      HW'XONENAB     = 1
```

```
HW'READ'ABS'ADD= (D)%00000724276  HW'WRITE'ABS'AD= (D)%00000671635
HW'MODEM'TIME  = (D)%00000000000
```

***** ATP Hardware-Level DIT *****

```
WORD
0     053154 001243 001223 040001 141401 101607 007022 000206
10    000003 124276 000003 071635 000001 100401 000015 010203
20    000000 000000 001447 017013 000000 000000 000000 000000
30    000000 000200 014401 011000 000000 000000 000431 000000
40    000000 000000 000000 000000 000000 000000 010400 000000
50    000000 000000 000000 000000 000000 000000 000000 000000
60    000000 000000 050005 003000
```

***** ATP Control Program *****

```
WORD
0     000716 000001 000206 177777 000000 000000 000000 000000    ................
10    000000 000000 000000 000000 000000 000000 000000 000000    ................
```

***** ATP Control Program *****

```
PERFORM I/O
SAVE'FLUSH'FLAG        : flush           ABORT'WAIT'FLAG       : abort
HANDSHAKE              : disabled        ECHO                  : enabled
READ'SPECIAL'SET       : primary         WRITE'READ'TYPE       : trigg.w/r
WRITE'BYTE'COUNT       : 1               READ'BYTE'COUNT       : 134
```

***** Terminal IOQ *****

```
Q'ABORT         = 0         Q'FUNC        = 0         Q'RPLEVEL       = 0
Q'ACCESS        = 0         Q'GEN'STAT    = 0         Q'SET'RESET     = 3
Q'ADDR          =%000001    Q'ITEM        = 3         Q'SPEED1        = 3
Q'BINARY        = 0         Q'LDEV        = 21        Q'SPEED2        = 0
Q'BLOCKED       = 1         Q'LINK        =%000000    Q'STAT'WORD     =%000000
Q'COMPLETED     = 0         Q'LOGON'TYPE  = 3         Q'STATE         = 0
Q'CONTINUE      = 0         Q'MISC        =%000001    Q'STATUS        =%000000
Q'COUNT         = -279      Q'OLD         = 1         Q'SUBSYS'BRK    = NUL
Q'CRITICAL      = 0         Q'OWN'READ    = 0         Q'SUPRESS'LF    = 0
Q'CTRL'RTRN     =%177351    Q'PARITY      = 3         Q'SYS'BUF       = 0
Q'DATA'SEG      =%101542    Q'PARM1       =%000003    Q'SYSBF'PTR1    =%101542
Q'DB'BASED      = 1         Q'PARM2       =%000000    Q'SYSBF'PTR2    =%000001
Q'DSTN          = 866       Q'PCBN        = 91        Q'SYSBUF'PTR    =%000001
Q'EOF'COND      = 3         Q'PRESPACE    = 0         Q'TERM'TYPE     = 3
Q'EOR'CHAR      = ETX       Q'QUALIFIR    = 0         Q'TOKEN         =%000003
Q'FLAGS         =%006000    Q'RD'TO'VALU  = 3         Q'V3000'READ    = 0
Q'FLUSH         = 0         Q'READ'EOR    = NUL       Q'WAKE          = 1
QD'SPOOL'ADR    = (D)%00000600000
```

***** Terminal IOQ *****

```
WORD
0     006000 000000 000025 000001 101542 000001 000000 177351
10    000003 000000 000000 000133
```

***** Logical-to-Physical Device Table *****

```
LPDT'BREAK      = 1         LPDT'DV'INFO  =%000000    LPDT'SSBREAK    = 0
LPDT'DATA       = 1         LPDT'EOR      = 0         LPDT'ST'INFO    =%073040
LPDT'DITP       =%053154    LPDT'INTR     = 1         LPDT'SUBTYPE    = 0
LPDT'DRSTATE    = 1         LPDT'JOBDATA  = -1        LPDT'VIRT       = 0
LPDT'DUP        = 1
```

***** Logical-to-Physical Device Table *****

```
WORD
0     000000 073040 053154 000000
```

***** Logical Device Table (LDT) *****
```
   AVAIL'TO'DIAG   = 0        DFT'OUTPUT'DEV = 21      SPECIAL'FORMS  = 0
   AVAIL'TO'SYS    = 1        DFT'TO'CLASSIDX= 0       SPOOL'STATE    = 0
   BAUD'RATE'CODE  = 8        DOWN'REQUESTED = 0       SPOOLING'ENAB  = 0
   CHANNEL'ID      =!500F     FILE'USE'CNT   = 2       TERM'TYPE'DFT  = 10
   CS'DEVICE       = 0        HEADER'ON      = 0       TRAILER'ON     = 0
   CTL'Y'PIN       = 0        MAIN'PIN       = 91      VDD'INDEX      =%000011
   DEVICE'TYPE     = 16       RECD'WIDTH     = 40
```
***** Logical Device Table (LDT) *****
```
WORD
0     000002 000133 024020 020012 000011 000000 000025 000010
10    177777 050017 000000 000000
```
***** Device Reference Table (DRT) *****
```
   SIOP'ABS'ADDR  =%000000   INT'HNDLR'PLAB =%113053   ILT'ABS'ADDR   =%000040
   CHANNEL'FLAGS  =%000000
```
***** Device Reference Table (DRT) *****
```
WORD
0     000000 000040 113053 000000
```
***** Driver Linkage Table (DLT) *****
```
   CORERES         = 0        DINTP          =%000000   DRVRTYPE       = 2
   CS'PLAB         =%000000   DITSIZE        = 21       DTYPE          =%012420
   DCOMP           =%000000   DMNTR          =%105120   INIT'PLAB      =%114453
   DEVTYPE         = 16       DPROC          =%001002   MAMERRORC      = 0
   DINIT           =%000000   DRVRFRZN       = 0        QNUMB          = 2
```
***** Driver Linkage Table (DLT) *****
```
WORD
0     001002 105120 000000 000000 000000 012420 000000 114453
```
***** Interrupt Linkage Table (ILT) *****
```
   ILT'CHAN        = 1        ILT'ICPVA04    =%000000   ILT'SHARED'RSRC= 0
   ILT'CHANQUE     = 0        ILT'ICPVA05    =%000000   ILT'SIOPSIZE   = 9
   ILT'CQUEN       = 4        ILT'IFLAG      =%000137   ILT'WAITPROG   = 0
   ILT'DEV         = 0        ILT'IGNORE'HI  = 0        ILTX'CHANNEL'ID=!500F
   ILT'DRT         = 8        ILT'IMB        = 0        ILTX'IHDLR'PLAB=%113053
   ILT'HCUNIT      = 95       ILT'IQUEUE     =%004404   ILTX'NONICF55  = 0
   ILT'ICDP        =%000000   ILT'ISIOP      =%177216   ILTX'OFFSET    = 14
   ILT'ICNTRL      =%000010   ILT'ISRQL      =%000000   ILTX'TDSBANK   =%000003
   ILT'ICPVA00     =%000000   ILT'ISTAP      =%000000   ILTX'TDSDSEGNUM= 85
   ILT'ICPVA01     =%000000   ILT'IUNIT      =%000000   ILTX'TDSMISC   =%000000
   ILT'ICPVA02     =%000000   ILT'RUNWAIT    = 0        ILTX'TDSOFFSET =%070430
   ILT'ICPVA03     =%000000
```
***** Interrupt Linkage Table (ILT) *****
```
WORD
0     000000 000000 000000 000000 000000 000000 000000 000010
10    177216 000000 000000 000000 004404 000137
```
***** Interrupt Linkage Table Extension (ILTX) *****
```
WORD
0       000125 000003 070430 000000 050017 113053
```
***** TBUF Table *****
```
   TBUF'BUFSIZE    = 69       TBUF'LISTHEAD'P=%033221   TBUF'NUM'WRD    = 180
   TBUF'DENIED'WRD= 0         TBUF'LISTTAIL'P=%047747   TBUF'READ'SAVED= 7
   TBUF'INUSE'WRD = 25        TBUF'MAXUSED   = 38       TBUF'SIZE'WRD  =%003505
   TOTALREQUESTS  = (D) 81626
```

```
***** TBUF Table *****
WORD
0     000264 003505 033221 047747 000046 000031 000001 037332
10    000000 000000
***** Terminal Buffer (TBUF) *****
WORD
0     000000 015446 060440 020060 041433 032002 072150 071157    ...&a  0C.4.thro
10    072547 064040 072167 067440 062151 063146 062562 062556    ugh two differen
20    072040 072563 062562 020151 067164 062562 063141 061545    t user interface
30    071440 024040 047115 046507 051040 060556 062040 072150    s ( NMMGR and th
40    062440 042124 041440 061557 067146 064547 072562 060564    e DTC configurat
50    064557 067040 015446 060461 071066 041440 030465 030065    ion .&a1r6C 1505
60    015446 060461 071061 034503 020061 032471 030433 023141    .&a1r19C 1591.&a
70    031063 071060 041433 045433 023141 031063 071060 041433    23r0C.K.&a23r0C.
100   045567 060562 062163 027051 000000                         Kwards.)..
***** Process Control Block *****
```

ALLOW'SOFT'INT	= 0	PI'PENDING'CRIT=	0	STACK'DST'INDEX=	%001542
AWAKE'SOFT'OK	= 0	PPC	= 0	STACK'OVF'ABORT=	0
BLKIDX	= 0	PREEMPT'CAPABLE=	0	STACK'OVF'ALLOC=	0
BMS	= 0	PREV'IMPED'PIN =	0	STOV	= 0
BOUNDS'FLAG	= 0	PREV'Q'PTR	=%000000	SYS'CODE'EXEC =	1
BPTLINK	= 0	PRIORITY	= 152	WAIT'BLOCKED'IO=	1
BROTHER'PIN	= 4977	PROCESS'ALIVE	= 1	WAIT'FATHER =	0
CORE'RESIDENT	= 0	PROCESS'DEAD	= 0	WAIT'FOR'TIMER =	0
CRITICAL	= 1	PROCESS'TYPE	= 2	WAIT'FOR'TIMOUT=	0
CST'MAP'DST	= 0	PSEUDO'BREAK	= 0	WAIT'GLOBAL'RIN=	0
CSTX'MAP'INDEX	=%000000	PSEUDO'HARDKILL=	0	WAIT'IMPEDED =	0
DB'IS'ABSOLUTE	= 1	PSEUDO'HIBERNAT=	0	WAIT'IO =	0
DELAYED'SOFT	= 0	PSEUDO'INT'MODE=	7	WAIT'JUNK =	0
EVENTFLAGS	=%000000	PSEUDO'SOFTKILL=	0	WAIT'LOCAL'RIN =	0
FAC	= 0	PSEUDO'SSBREAK =	0	WAIT'LONG =	1
FATHER'PIN	= 189	PSEUDO'STOP	= 0	WAIT'MAIL =	0
HAS'SIR	= 0	QUANTUM'USED	= 0	WAIT'MEMORY =	0
HOLD'IMPED'PRI	= 0	QUEUE'CQ	= 1	WAIT'MESSAGE =	0
HOLD'SIR'PRI	= 0	QUEUE'DISPQ	= 0	WAIT'MOURNING =	0
INCORE'PROT'EXP=	0	QUEUE'DQ	= 0	WAIT'SHORT =	0
INTERACTIVE	= 1	QUEUE'EQ	= 0	WAIT'SIR =	0
LASTSWAPSEG'CST=	%000000	QUEUE'LQ	= 0	WAIT'SON =	0
LASTSWAPSEG'NUM=	%000000	RITBK	= 0	WAIT'TERM'READ =	1
LASTSWAPSEG'TYP=	%000000	SCHED'ATTN'REQD=	0	WAIT'UCOP =	0
NEXT'IMPED'PIN =	0	SI	= 0	WS	= 0
NEXT'Q'PTR	=%000000	SLL'PTR	=%014264	XDS'DST'INDEX	=%000000
OA	= 2	SON'PIN	= 0		

```
***** Process Control Block *****
WORD
0     020120 014264 100000 041542 004000 000275 000000 011561
10    164000 100400 000000 000000 000000 022230 000000 000000
20    000000 000000 000000 000000 000000
```

***** LDT Process Control Block (LDTPCB) *****

ALLOW'SOFT'INT = 0	PI'PENDING'CRIT= 0	STACK'DST'INDEX=%001542
AWAKE'SOFT'OK = 0	PPC = 0	STACK'OVF'ABORT= 0
BLKIDX = 0	PREEMPT'CAPABLE= 0	STACK'OVF'ALLOC= 0
BMS = 0	PREV'IMPED'PIN = 0	STOV = 0
BOUNDS'FLAG = 0	PREV'Q'PTR =%000000	SYS'CODE'EXEC = 1
BPTLINK = 0	PRIORITY = 152	WAIT'BLOCKED'IO= 1
BROTHER'PIN = 4977	PROCESS'ALIVE = 1	WAIT'FATHER = 0
CORE'RESIDENT = 0	PROCESS'DEAD = 0	WAIT'FOR'TIMER = 0
CRITICAL = 1	PROCESS'TYPE = 2	WAIT'FOR'TIMOUT= 0
CST'MAP'DST = 0	PSEUDO'BREAK = 0	WAIT'GLOBAL'RIN= 0
CSTX'MAP'INDEX =%000000	PSEUDO'HARDKILL= 0	WAIT'IMPEDED = 0
DB'IS'ABSOLUTE = 1	PSEUDO'HIBERNAT= 0	WAIT'IO = 0
DELAYED'SOFT = 0	PSEUDO'INT'MODE= 7	WAIT'JUNK = 0
EVENTFLAGS =%000000	PSEUDO'SOFTKILL= 0	WAIT'LOCAL'RIN = 0
FAC = 0	PSEUDO'SSBREAK = 0	WAIT'LONG = 1
FATHER'PIN = 189	PSEUDO'STOP = 0	WAIT'MAIL = 0
HAS'SIR = 0	QUANTUM'USED = 0	WAIT'MEMORY = 0
HOLD'IMPED'PRI = 0	QUEUE'CQ = 1	WAIT'MESSAGE = 0
HOLD'SIR'PRI = 0	QUEUE'DISPQ = 0	WAIT'MOURNING = 0
INCORE'PROT'EXP= 0	QUEUE'DQ = 0	WAIT'SHORT = 0
INTERACTIVE = 1	QUEUE'EQ = 0	WAIT'SIR = 0
LASTSWAPSEG'CST=%000000	QUEUE'LQ = 0	WAIT'SON = 0
LASTSWAPSEG'NUM=%000000	RITBK = 0	WAIT'TERM'READ = 1
LASTSWAPSEG'TYP=%000000	SCHED'ATTN'REQD= 0	WAIT'UCOP = 0
NEXT'IMPED'PIN = 0	SI = 0	WS = 0
NEXT'Q'PTR =%000000	SLL'PTR =%014264	XDS'DST'INDEX =%000000
OA = 2	SON'PIN = 0	

***** LDT Process Control Block (LDTPCB) *****

```
WORD
0    020120 014264 100000 041542 004000 000275 000000 011561
10   164000 100400 000000 000000 000000 022230 000000 000000
20   000000 000000 000000 000000 000000
```

***** Port Registers *****

DMA'WRITE'ADDR =%071635	DMA'CTRL'ADDR =%071656	DMA'READ'ADDR =%124276
DMA'WRITE'BANK =%040003	DMA'CTRL'BANK =%000003	DMA'READ'BANK =%100003
INTERRUPT'CODE =%011003		

***** READ-Active Registers *****

INT'STAT'NOFLSH=%004201	ERROR'STATUS =%157400	CHANNEL'CONFIG =%050017
INT'STAT'FLSH =%004201	BUS'DIAG'DATA =%057001	

***** WRITE-Active Registers *****

PORT'POINTER =%004201	INTFC'BD'DISABL=%004201	DIAGNOSTIC'CTRL=%157400
RSVD'REG'12 =%000000		

***** Port Registers *****

```
WORD
0    071635 040003 071656 000003 124276 100003 011003 000000
10   004201 004201 157400 057001 000000 000000 050017 000000
```

Port-Controller Memory *****
 Stack pointer: 00 F6   Pcc version : pass 3
Low Memory:
 BYTE
 0   FF FF 87 FB FB FF FF 38   C4 E1 F4 FF FF 7C 91 3F   ....8.....|.?
 10   FF 3A 06 FF 7F   .:...
PCC INTERNAL REGISTERS
    (DDR1)   =!00FF   (DDR2)   =!00FF   (DDR3)   =!00FB
    PORT'1   =!0087   PORT'2   =!00FB   PORT'3   =!00FF
    (DDR4)   =!00FF   TIMER1'STATUS1 =!00C4   PORT3'STATUS =!003F
    PORT'4   =!0038   (RATE'CONTROL) =!00FF   UART'STATUS   =!003A
    TIMER1   =!E1F4   OUT'COMP'REG1 =!FFFF   INPUT'COMP'REG =!7C91
    RX'REGISTER   =!0006   (TX'REGISTER) =!00FF   RAM'CONTROL   =!007F
UART STATUS FLAGS
  TRANSMIT'LINE'STATUS : enabled   RECEIVE'LINE'STATUS : enabled
  TX'DATA'REGISTER   : available   RX'DATA'REGISTER   : available
  RECEIVE'DATA'IRQ   : enabled   RECEIVE'DATA'STATUS : valid
High Memory:
 BYTE
 80   BA 77 BA 06 BA 06 BA 06   BA 06 BA 06 BA 06 BA 06   .w..............
 90   BA 06 BA 06 BA 06 BA 06   BA 06 BA 0D BA 65 BA 6D   ....e.m
 A0   00 80 00 80 03 27 1E 0B   00 00 00 00 00 00 00 00   .....'..........
 B0   00 00 00 80 19 01 12 00   00 00 00 00 01 19 00 00   ....
 C0   00 00 00 00 00 00 00 00   00 00 00 00 21 50 05 06   ....!P..
 D0   00 86 00 00 00 00 44 88   CF 00 00 90 00 39 4F 11   ......D......90.
 E0   00 07 00 00 00 00 00 00   00 00 00 00 00 00 00 00   ....
 F0   C5 30 34 30 30 FF 77 38   CF C0 00 12 00 86 F9 09   .0400.w8........
PCC INPUT SAVE BUFFER
received data not transfered in memory

|ASCII |

|HEXA |

|STATUS |
 ----
received data transfered in main memory

|ASCII | 'w' 'm' 'e' CR ACK ACK ACK ACK ACK ACK ACK ACK ACK ACK ACK ACK |

|HEXA | 77 6D 65 0D 06 06 06 06 06 06 06 06 06 06 06 06 |

|STATUS | ok ok ok ok ok ok ok ok ok ok ok ok ok ok ok ok |

PCC STATUS INFORMATION
  READ PRIMARY SPECIAL CHARACTER SET: NUL SOH BS HT LF CR DC1 DC2 DC3 DC4
                                      CAN EM ESC DEL
  READ SECONDARY SPECIAL CHARACTER SET: EM SOH DC2
  WRITE CONTROL CHARACTER SET: SOH EM

```
BUFFER'POINTER = 0        SEND'POINTER    = 0        BUFFER'COUNT    = 0
READ'COUNT     = 134      WRITE'COUNT     = 0        OUT'CHAR'COUNT = 79
CONTROL'ORDER  =!0039     OUTPUT'CHAR     = DC1      INTERRUPT'CODE =!0000
ACK'CHARACTER  = ACK      ENQ'CHARACTER   = ENQ      ENQ'CHAR'COUNT = 80
WAIT'TIMER     = 0        BREAK'TIMER     = 0


READ'SPECIAL'SET      : primary        LINE'SPEED           : 9600 b/s
TTY'DELAY             : disabled       REPLACE'FF           : disabled
WAIT'FOR'XON          : no             WAIT'FOR'ACK         : no
XON-XOFF'AT'READ      : disabled       XON-XOFF'AT'WRITE    : enabled


ECHO                  : enabled        CHARACTER'SIZE       : 8 bits
PARITY'GENERATE       : disabled       PARITY'TYPE          : none
PARITY'CHECKING       : disabled


PCC'STATUS            : idle           MCC'STATUS           : idle
BREAK'STATUS          : no break
```

```
MPE V   G.A3.00            63 JOBTABLE (165)         146 COMSYS1 (270)         231 PX
   1 ININ                  64 DEBUG'UTIL (166)       147 SNAUTIL (360)         232 NM
   2 KSAM04 (32)           65 NURSERY (167)          150 CSUTILTY (361)        233 NM
   3 MODCAL'LIB (11)       66 SPOOLING (171)         151 SNAINTR (366)         234 NM
   4 KSAM02 (33)           67 SPOOLCOMS2 (172)       152 IOMONITOR3270 (413)   235 NE
   5 KSAM01 (34)           70 SPOOLCOMS1 (173)       153 IMFFSM (434)          236 HI
   6 CLIB'03 (35)          71 PVSYSD'M (175)         154 IMFDFC (435)          237 CS
   7 CLIB'02 (36)          72 PVCOMSEG (176)         155 IMFPS (436)           240 HI
  10 CLIB'01 (37)          73 UDC (177)              156 IMFSESSION (441)      241 HI
  11 PASCAL'LIBRARY3 (57)  74 USER (200)             157 NMBFMRES (471)        242 HI
  12 PASCAL'LIBRARY2 (60)  75 HELPUSER (201)         160 NMBFMNONRES (472)     243 IO
  13 PASCAL'LIBRARY1 (61)  76 OPHI (202)             161 NMSEGB (525)          244 IO
  14 KSAM3'5 (73)          77 OPMED (203)            162 TRANSPORT (247)       245 IO
  15 NLS02'3 (74)         100 OPLOW (204)            163 IPU (500)             246 IO
  16 NLS01'4 (75)         101 LABSEG (205)           164 NI (501)             247 IO
  17 FILESYS4'6 (116)     102 SDISC (206)            165 PD (502)             250 IO
  20 FILESYS1'8 (117)     103 PORT (210)             166 PXP1 (504)           251 IO
  21 FILESYS7 (120)       104 NLIO'1 (212)           167 NMACSEG1 (524)       252 IO
  22 FILESYS6A (121)      105 NLIO'2 (213)           170 SM4 (526)            253 IO
  23 FILESYS5 (122)       106 NLIO'3 (214)           171 TCP1 (527)           254 IO
  24 CRYPT (123)          107 LOGSEG0 (215)          172 TCP0 (530)
  25 DIRC (124)           110 LOGSEG1 (216)          173 COMSYS2 (267)
  26 ALLOC'UTIL (125)     111 KERNELC (217)          174 DSSEG5 (271)
  27 HARDRES (126)        112 KERNELD (220)          175 DSSEG4 (272)
  30 DFS (127)            113 MISCSEGC'CHECK (222)   176 DSSEG2 (274)
  31 MESSAGE (130)        114 FILESYS3 (223)         177 DSSEG1 (275)
  32 CIFILEB (131)        115 FILESYS2 (224)         200 DSMISC (465)
  33 CIFILEM (132)        116 FILESYS1A (225)        201 DSIOM (466)
  34 CILISTF (133)        117 TERMHANDLR (227)       202 DSSEG3 (273)
  35 CIPREPRUN (134)      120 TERMONITOR (230)       203 SNAFMTSEG (365)
  36 CISUBS (135)         121 TERMINIT (231)         204 DSRTECALLS (367)
  37 CIERR'UTIL (136)     122 CACHESEG (242)         205 SNATC (371)
  40 CIMISC (137)         123 TIMAGE01 (56)          206 SNAPC (400)
  41 CIINIT (140)         124 TIMAGE02 (62)          207 ASCXSEG (437)
  42 CIORG'COMSYS (141)   125 TIMAGE03 (63)          210 ASUTIL (442)
```

43 CISYSMGR (142)	126 TIMAGE04 (64)	211 ASENVSEG (443)
44 CIALTORG (143)	127 TIMAGE05 (65)	212 ASVTSEG2 (467)
45 PROCSEG (145)	130 TIMAGE06 (66)	213 ASVTSEG1 (470)
46 SOFTIO (146)	131 TIMAGE07 (67)	214 SOCKETMISC1 (516)
47 NRIO (150)	132 TIMAGE08 (70)	215 SOCKETIO (517)
50 PCREATE (151)	133 TIMAGE09 (71)	216 SOCKETACCESS (520)
51 MORGUE´ABORT (152)	134 TIMAGE10 (76)	217 MPMONCMD (440)
52 BIPC´IPC (153)	135 TIMAGE11 (77)	220 AS´RFA (445)
53 TERMDRIVER (154)	136 KSAM6´7 (72)	221 ASNP (446)
54 JOBSCHED (156)	137 FIRMWARESIM (170)	222 MRJEMISC2 (447)
55 UTILITY2 (157)	140 MIO´MEASSEG (207)	223 MRJEMISC1 (450)
56 UTILITY1 (160)	141 IMFINTR (241)	224 ASPROCESS (474)
57 TERMANAGER (161)	142 NMSEGA (250)	225 ASRPMSEG (475)
60 SEGUTIL (162)	143 COMSYS5 (264)	226 DIAL (476)
61 LOADER1 (163)	144 COMSYS4 (265)	227 IP (477)
62 RINS (164)	145 COMSYS3 (266)	230 PROBE (503)

The MUX channel processor can run in two different modes, PROM mode or MODE 2 firmware. PROM mode will run at power-up or when the MUX RESET to PROM command is issued. To run MODE 2 firmware, the firmware must first be downloaded from the host to the MUX channel processor. Test Number 5 – MUX Download – will download the MODE 2 firmware from the host to the MUX channel processor.

The MODE 2 firmware originally resides on disc. When MUX testing begins, the firmware is read from the disc into a data segment. The download code is sent to the MUX channel processor via the DMA (direct memory access) write path. The firmware will stay in the data segment until the tests are complete. If an error occurs when the firmware files are read to memory, the program will abort.

When a download control order is sent to the MUX channel processor, the address of the firmware is given to the SIB. Because of this action, the data segment that contains the download code must be locked into memory. If the data segment cannot be locked, an error will occur and the port will be kept in a broken state until it is downloaded. When the port has been successfully downloaded, it will be released to the ATP driver.

When a download command is sent to the MUX channel processor, it may or may not execute. If the download command executes successfully, an interrupt is received with a cause code of 126. Unfortunately, there are many instances when a download command cannot be completed. For example, a download command can not execute if an interrupt is not received by the diagnostic. This may be because:

- The MUX channel processor never received the control order.

- The MUX channel processor received the control order but was unable to process it.

- The LYNX bus was unable to process either the sending of the control order or the sending back of the interrupt.

- The firmware processing the control order is faulty.

- A hardware problem exists somewhere in the data path.

On the other hand, the MUX channel processor may receive a wrong interrupt. In other words, an interrupt is received but it is not equal to 125 or 126. There are a number of instances that may result in this occurrence. For example, this might occur if the MUX channel processor receives a corrupt control order, or if the firmware processing the control order is faulty, or if a hardware problem exists somewhere in the data path.

And still, a control order will not process when a download failed interrupt is received. The download failed interrupt is equal to 125. This interrupt is sent to the MUX channel processor that failed while processing the download control order. There may be a number of reasons for this, including:

- The firmware download file has been corrupted.

- The firmware processing the download is faulty.

- The LYNX bus lost a byte.

- A hardware problem exists in the data path.

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SPECIAL CHARACTERS

HEWLETT
PACKARD