C C **PDM-99**

NOTICE

OPERATIONS MANUAL

PERIPHERAL DIAGNOSTIC MODULE

INTRODUCTION

The PERIPHERAL DIAGNOSTIC MODULE (PDM) was designed to test your Disk Controller, 32K Memory Expansion, and RS232 cards. The PDM is compatible with all CorComp and TI cards whether located in the PE-box or a stand-alone unit. The PDM allows you to very easily and quickly trouble shoot your system. Since the PDM has been designed as a cartridge you can remove all your cards except the one under test and verify its operation without any interaction from other possibly defective cards.

You should have received the PDM cartridge, manual, and loop back plug. This plug is used to test the operation of the RS232 card without a printer connected.

OPERATION

Install the PDM module into the cartridge slot and power up your system as normal. When the screen menu comes up select PERIPHERAL TEST. The following will be displayed:

```
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    PERIPHERAL DIAGNOSTIC MODULE
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        1. DISK CONTROLLER
        2. 32K MEMORY EXPANSION
        3. RS232/PIO
```

The PDM was designed for ease of use. Simply pressing FNCT 9 will return you to the previous screen. FNCT 6 will return you to the previous screen when am test has failed. The ENTER key will return you to the previous screen when the test has passed.

DISK CONTROLLER TEST

The following menu will be displayed for the DISK CONTROLLER
TEST:

                        DISK CONTROLLER

            1. SINGLE SIDED SINGLE DENSITY
            2. DOUBLE SIDED SINGLE DENSITY
            3. SINGLE SIDED DOUBLE DENSITY
            4. DOUBLE SIDED DOUBLE DENSITY
            5. SELECT DRIVE TO TEST
            6. DISPLAY HEAD STEP TIMES
            7. DISPLAY DRIVE MOTOR SPEED

1 - 4 DISK READ/WRITE TESTS

    The first four items format the selected diskette in the
indicated configuration and provide a completely initialized
diskette when complete. The name TESTER is placed on the
diskette. The test is destructive and therefore ANY
INFORMATION ON THE DISKETTE WILL BE DESTROYED. When using a
TI card, only selections 1 and 2 are usable. The test is set
to format a total of 40 tracks and during the disk format the
following message will be displayed:

                 TESTING DISK CONTROLLER/DRIVE

Once the format is complete a total of 32 randomly located
sectors are written to. The values 0 through 255 are then
written to the 256 byte locations in each sector. At this
point the display will show the following:

                     WRITING SECTOR ->____

    The sector number being tested will also be shown. Once
all the sectors are written the following message will be
shown:

                     READING SECTOR ->____

    If there are no problems found then the following
message will be shown:

                     DISK TEST COMPLETE
                   PRESS ENTER TO CONTINUE

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    If there is a problem found during this test an error
message will be displayed. If you were to catalog the
initialized disk it should indicate the following depending
on the configuration:

Single Sided Single Density	FREE	358	USED 002
Double Sided Single Density	FREE	718	USED 002
Single Sided Double Density	FREE	718	USED 002
Double Sided Double Density	FREE	1438	USED 002

IF PROBLEMS ARE FOUND

The DISK CONTROLLER test will test your disk system as a
whole. If there is a problem in either the disk controller
card or the disk drive you may get the same errors. So it is
advised if you do have an error, replace the disk drive under
test, with another disk drive, and try the test again to help
isolate the problem. Shown below are the error messages and
some of the potential causes of the problem.

NO DISK CONTROLLER PRESENT	- Defective Disk Controller - Power not applied to card - Defective interface cable
NO DISKETTE OR NO DRIVE	- Drive selected not present - Drive door open - Diskette not inserted - Drive not configured correctly - Defective Cable
DISKETTE IS WRITE PROTECTED	- Write protect tab left on diskette
SECTOR NOT FOUND OR SEEK ERROR	- Defective diskette - Defective Disk Drive - Defective Disk Controller
DATA LOST ON READ OR WRITE	- Defective Diskette - Defective Disk Drive - Drive Motor Speed not correct - Defective Disk Controller
CIRCULAR REDUNDANCY CODE ERROR	- Defective Diskette - Defective Drive - Defective Disk Controller
TESTING DISK CONTROLLER/DRIVE MESSAGE REMAINS AND DISK DRIVE LIGHT GOES OUT	- Defective Disk Controller

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5 - SELECT DRIVE TO TEST

When this option is selected the following message will
appear and show the drive currently selected:

SELECT DRIVE # TO TEST (1-4) 1

Select the drive that you want to test or press enter to
return to the DISK CONTROLLER menu. When using the TI Disk
Controller you can only test drives 1,2 or 3.

6 - DISPLAY HEAD STEP TIMES

This option will read the dip switch settings on the CorComp
Disk Controller. When using the TI Disk Controller the
default will be 20. All times are displayed as ms (milli-
seconds). The following is an example of what may be
displayed:

HEAD STEP TIMES ARE:

```
DRIVE # 1 = 15
DRIVE # 2 =  6
DRIVE # 3 =  3
DRIVE # 4 = 10
```

7 - DISPLAY DRIVE MOTOR SPEED

The following will be displayed when this option is selected:

DISK DRIVE MOTOR SPEED TEST

ACCEPTABLE SPEED BETWEEN

294 RPM AND 306 RPM

MEASURED SPEED <300> RPM

The typical speed is 300 RPM. And in many cases drive
problems can be directly related to improper motor speed
setting.

32K MEMORY EXPANSION TEST

The following display will appear:

32K MEMORY EXPANSION TESTS

1. MEMORY BIT CHECK

2. MEMORY RETENTION CHECK

If there is no memory expansion card installed then the
following message will be displayed:

ERROR! NO 32K MEMORY EXPANSION

The first test writes and then reads data to all 32,768
location in the memory. While the test is in progress the
following will be displayed:

32K MEMORY CHECK IN PROGRESS

If there are no problems the following message will be
displayed:

ZERO ERRORS IN MEMORY TEST

PRESS "ENTER" TO CONTINUE

The second test will again write data out to all 32,768
locations in the expansion memory. At this time the following
message will be shown:

MEMORY REFRESH TIMER -> 20

After the timer counts down to 0 the memory will then be read
to verify that there is no memory refresh problems and that
the memory has no problem in retaining data.

If a problem is found the value written and the value read
will be displayed as shown.

```
ERROR FOUND AT ADDRESS = > 2000
        VALUE WRITTEN = > 2000
           VALUE READ = > 2001
```

PRESS "PROCEED" TO CONTINUE

This message would indicate a defective memory card.

RS232/PIO TEST

When this option is selected and there is an RS232 card installed the following screen will be shown:

RS232/PIO TESTS

1. RS232/1 TO PRINTER

2. RS232/2 TO PRINTER

3. RS232/1 LOOP TO RS232/2

4. PIO TO PRINTER

If no RS232 card is installed then the message NO RS232 CARD PRESENT will be displayed. In order to test a card if it is selected for RS232/3 and /4 you must reconfigure the card so that it functions as an RS232/1 and /2 card. You may cancel a test by pressing FNCT 4. The message "BAD DEVICE" will be displayed. Pressing FNCT 6 will then return you to the RS232 menu.

1 - RS232/1 TO PRINTER

This test allows for the selection of the following baud rates:

```
1 -  110
2 -  300
3 -  600
4 - 1200
5 - 2400
6 - 4800
7 - 9600
```

The PDM TEST configuration is set to the standard TI default settings of 7 data, 1 stop, and Odd parity.

Install the printer cable between the RS232 card and the printer as you would normally do. While the test is in progress the message "PLEASE WAIT. TESTING" will be shown. In addition, the display will show the characters that are being transmitted through the port. The same characters should be printed. The following are the characters:

```
!"#$%& ()*+'-./0123456789:;<=>?@ABCDEFGH
IJKLMNOPQRSTUVWXYZ[±]°_ °abcdefghijklmnop
qrstuvwxyz±§¶
!"#$%& ()*+'-./0123456789:;<=>?@ABCDEFGH
IJKLMNOPQRSTUVWXYZ[±]°_ °abcdefghijklmnop
qrstuvwxyz±§¶
```

2 - RS232/2 TO PRINTER

Same as RS232/1 TO PRINTER except you will need a Y-cable to get access to the second channel.

3 - RS232/1 LOOP TO RS232/2

This test requires that you install the LOOP-BACK plug onto the RS232 connector. This test will verify the operation of both RS232 ports without the use of a printer. The data from one port will be sent out and then received through the other port. The display will show the characters that are being received. The program will then verify that these are correct. If a problem is found then the error message INCORRECT DATA DETECTED will be displayed.

4 - PIO TO PRINTER

This test requires that a parallel printer is properly connected. The display will show the characters that are being sent out to the printer. The characters are the same as shown in the RS232/1 TO PRINTER section above.

IF PROBLEMS ARE FOUND

If you are using a TI Disk Controller Card you may notice that the characters that are being sent out to either the PIO or the RS232 are printed as both upper and lower case characters while only the upper case characters will be displayed on the screen. When using a CorComp Disk Controller both upper and lower case characters are displayed and printed.

If a problem is found during either test 1 or test 2 disconnect the printer cable and try the test again. If the test passes then there may be a problem with the cable to the printer. If the loop back test does not pass then there is most likely a problem with the RS232 card. There is still a chance that test 1 and 2 will pass without a printer connected while failing test 3. In this case there is a problem with the RS232 card.

If the system "hangs" during a test this indicates a problem and simply press FCTN 4 then FCNT 6 to return to the RS232 menu.

The following is a list of problems and the possible cause.

NO RS232 CARD PRESENT
- Power not turned on to RS232 card
- Defective RS232 card.

INCORRECT CHARACTERS PRINTED ON RS232/1 OR RS232/2
- Baud rate, parity, word length, or stop bits not set correctly on printer.

NO CHARACTERS PRINTED ON RS232/1 OR /2 BUT LOOP BACK TEST PASSES
- Defective or incorrectly wired cable.
- Defective printer

NO CHARACTERS PRINTED ON RS232/1 OR /2 AND LOOP BACK TEST FAILS
- Defective RS232 card

SUMMARY

It is advisable in some cases to remove all cards except the one under test since there may be interaction between cards. You must wait at least two minutes after power is turned off before you remove or install cards. In the event that no cards function in the PE-Box the problem may be with the interface cable to the console.

Loop-Back Connector

- Male 25-PIN D-Type
- Pin 3 to Pin 14 Loop

LIMITED WARRANTY
CorComp warrants the PERIPHERAL DIAGNOSTIC MODULE which it manufactures to be free from defects in materials and workmanship for a period of 120 days from the date of purchase.

During the 120 days warranty period CorComp will repair or replace, at its option any defective products or parts at no additional charge, provided the product is returned, shipping pre-paid to CorComp. The Purchaser is responsible for insuring any product so returned and assumes the risk of loss during shipping, all replaced parts and products become the property of CorComp.

RETURN MATERIAL AUTHORIZATION (RMA) NUMBER
Any CorComp product which is returned to CorComp for any reason must reference a RMA number. A RMA number will be issued to a customer after the following information has been given to the Customer Service Department:
1. CorComp product model number.
2. Product serial number or date code.
3. Description of system configuration.
4. Name and telephone number of technical contact in case additional information is required.

All products shall be returned to CorComp freight prepaid. Note: If the customer does not contact the Customer Service Department for a RMA number, and the package arrives at CorComp, the package will be returned to the sender, freight collect and the product not repaired.

SHIP TO:
1255 N. Tustin Ave.
Anaheim, CA 92807

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