

Series 2040 Test Systems

**Series 2040D**  
**Installation Manual**

**Part Number 4200-0182**

**Version 1.0**

# Table Of Contents

Series 2040D Installation Manual .....	3
Block Diagram .....	4
SYSTEM INSTALLATION .....	5
Unpacking .....	5
Monitor .....	7
Keyboard .....	7
Printer .....	7
Mouse .....	8
Skirts .....	8
Oscilloscope .....	9
POWER-UP & SYSTEM UTILITIES .....	10
CONSTAT (CONSOLE STATUS) .....	10
SELFTEST .....	13
Selftest Failure Analysis .....	20
Self Test EXaminer (STEX) .....	22
Overview .....	22
Creating the Diagnostic File for STEX .....	22
Analyzing Selftest Data .....	23
TRMAN (Tester Resource Manager) .....	27
Menu Bar .....	27
SYSTEM SPECIFICATIONS (Dual Dimensions) .....	33
WARNING LABELS: .....	34
WARNING LABEL LOCATIONS: .....	35
Testhead .....	37
I/O Panel .....	37



***Series 2040D Installation Manual***



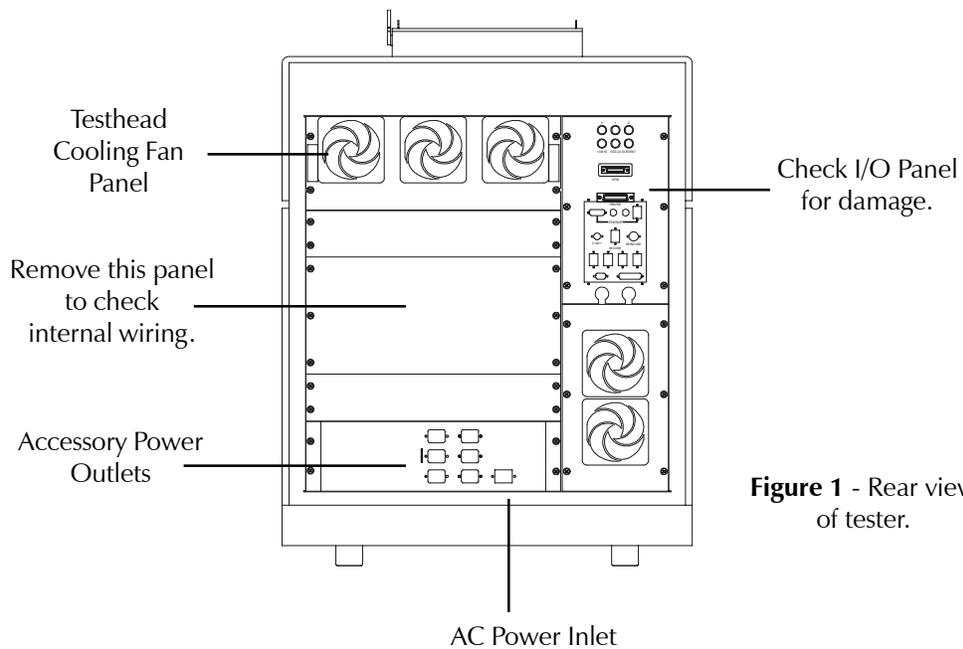
## SYSTEM INSTALLATION

### Unpacking

When the Series 2040 Windows Test System is shipped from Digalog, it is wrapped in bubble pack and shrink wrap. When removing this material, take care not to damage the console. If the unit has been exported, it is usually mounted on a skid and packed in a carton for protection. The following three pages illustrate specific areas on the console to be inspected. If any of these areas are damaged, written notification listing the damage and unit serial number should be sent to the shipper and to Digalog via FAX. For further technical assistance, contact Customer Service & Support at (414) 797-8577 (USA.)

After the unit is unpacked, it must be checked for loose connections and Testhead boards. Proceed as follows:

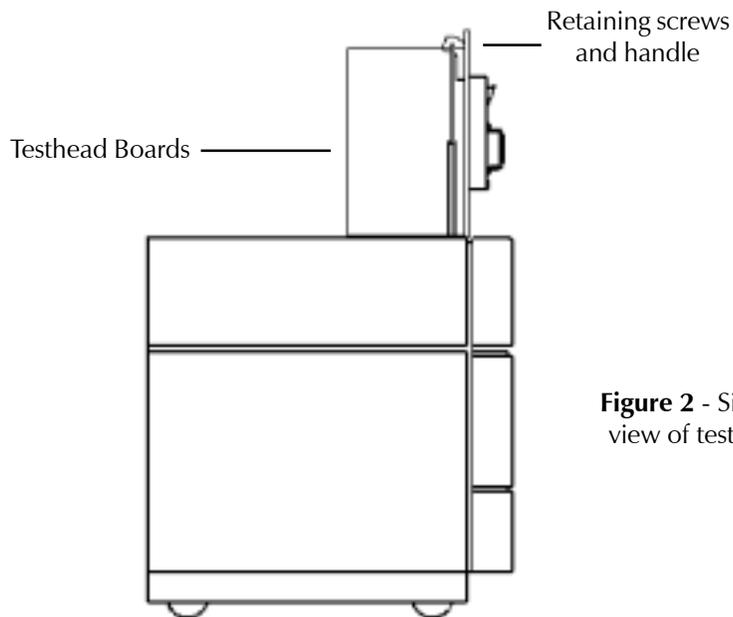
1. Loosen the four screws on the Testhead cooling fan plate and slide the panel towards you 2 to 3 inches. (See Figure 1 below).



**Figure 1** - Rear view of tester.

2. Loosen the two Testhead retaining screws located along the back of the black Testhead cover by turning them 1/4 turn counterclockwise. Using the handle, lift the Testhead into the position shown below. (See Figure 2).

3. Physically push in each circuit board using the white tabs on the edges of the boards to ensure all of the Testhead boards are secure.



**Figure 2** - Side view of tester

4. Check the UUT power supplies and controllers (if present) and Testhead Power Supply Controller for loose wiring by removing the back panel as shown in Figure 1 and physically inspecting the power and fault loop cables and connections.

5. Check all of the computer, Testhead, and accessory power cables and their connections.

6. When the above areas have been inspected, reinstall the back panel, Testhead, and cooling fan panel.

7. Check the I/O panel on the right rear corner of the unit for damage. (See Figure 1 and/or page 34.)

### Monitor

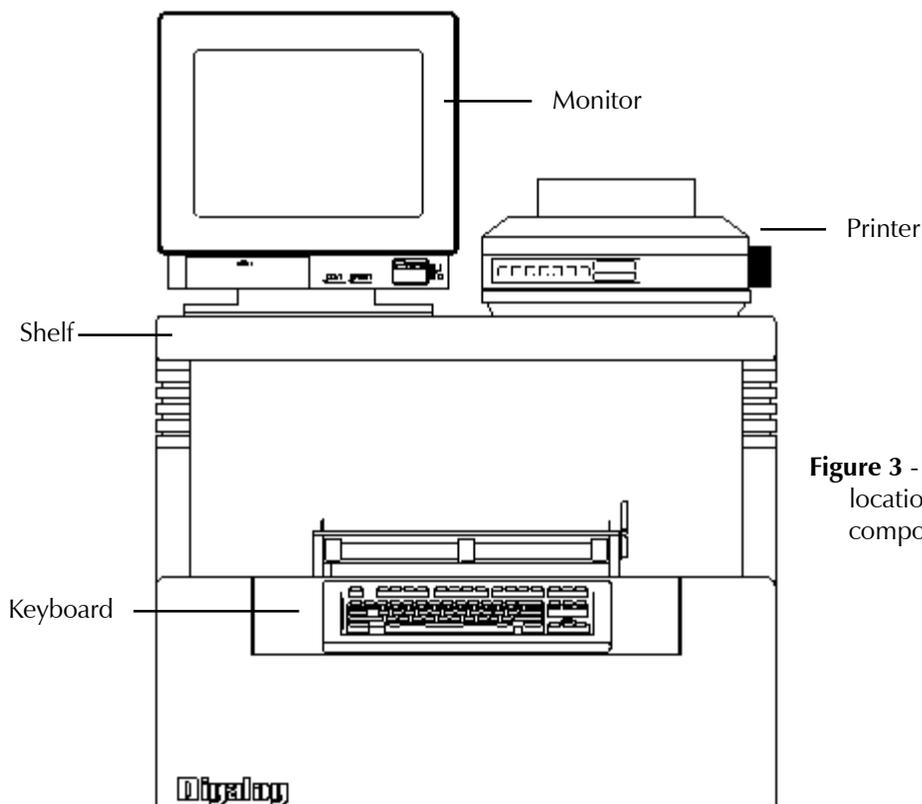
When the above inspections are complete, locate the monitor and unpack it. Make sure the monitor power switch is turned off. If the tester has the optional shelf assembly, place the monitor on the shelf as shown in Figure 3. If not, place the monitor on a convenient place close to the tester. Locate the DB15 connector on the I/O panel on the back of the unit and plug the monitor video cable into it. The power cord for the monitor plugs into any of the accessory outlets on the rear of the machine.

### Keyboard

If the console has a keyboard drawer, lift up the drawer using the inset handles and rotate the drawer towards you. The keyboard should be present. If not, unpack the keyboard, and plug its cable into the keyboard port on the I/O panel.

### Printer

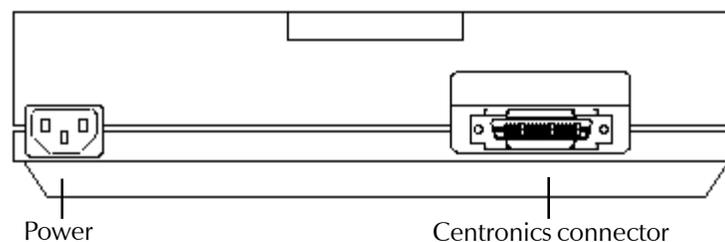
If the optional printer was shipped with the unit, unpack it and place it on the top of the unit next to the monitor (or a convenient place close to the tester).



**Figure 3** - Optional locations for components

Make sure the printer is turned off. Locate the power cord supplied with the printer. Insert the receptacle end into the printer's power inlet as shown in Figure 4, and the other end into one of the Accessory power outlets. Locate the printer's data cable. Plug one end into the 36-pin Centronics connector on the rear of the printer as shown in Figure 4, and the other end into the "Printer" port on the I/O panel. Ensure that the retention clips for each end of the Centronics connector are fully engaged. Install the paper into the printer using the tractor feed setting. Consult the printer's OEM manual for additional details.

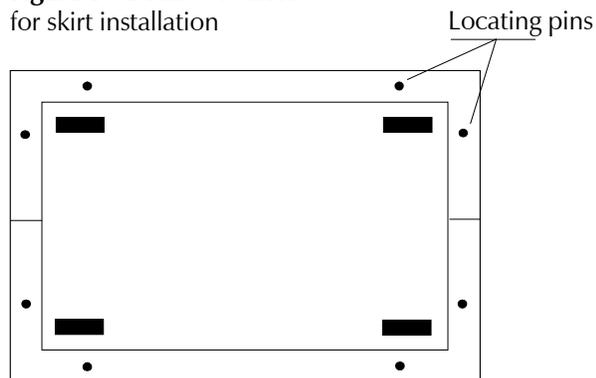
**Figure 4** - Back of printer



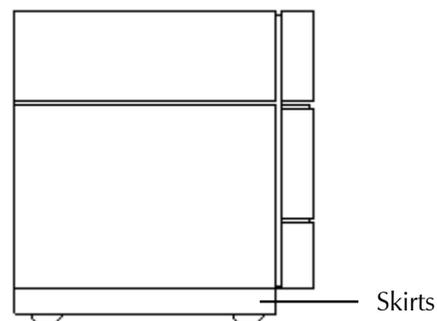
### Mouse

Locate the mouse and mouse pad. The pad is generally placed on the right side of the monitor for right-handed operators. Plug the mouse cable into the Mouse port on the I/O panel

**Figure 5** - Bottom of tester for skirt installation



**Figure 6** - Side view of tester showing skirt installation



### Skirts

The eight locating pins, shown in Figure 5, are on the bottom of the Series 2040 Test System. Lay the skirts on the ground under the tester, snap the two skirt halves together, and then snap the assembly to the bottom of the tester using the locating pins.

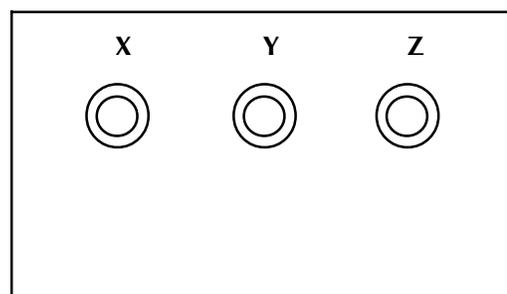
## Oscilloscope

The display oscilloscope is another optional piece of equipment. Make sure that the oscilloscope is turned off. Locate the power cord and install the receptacula end into the oscilloscope. Plug the other end into one of the Accessory power outlets,

The oscilloscope is shipped with a set of three scope cables. Fifty-ohm attenuators (PN#2100-7014) are provided for the X and Y axis cables, and a special attenuator assembly (PN#0000-0068) is provided for the Z axis cable. Connect the attenuated ends of the X, Y, and Z scope cables to the oscilloscope. The X channel corresponds to the channel 1 input, and the Y channel corresponds to the channel 2 input. The Z channel is generally located at the rear of the oscilloscope and is clearly marked.

The three signal outputs from the Series 2040 Test System originate at the Testhead and are routed out to the I/O panel as shown in Figure 7.

Connect the other end of each scope cable to its labeled connector on the I/O panel. The following front panel settings for the oscilloscope are necessary:



**Figure 7**  
Top of I/O panel

- 1) Set the Time/Division knob to X-Y (or CH3). Verify that its VAR knob is fully pushed in and set to the "Calibrated" position.
- 2) Set the Coupling switch to DC.
- 3) For both channels 1 and 2, set the switch for input coupling to DC.
- 4) For both channels 1 and 2, set the vertical range to 0.2 Volts/Division. Also verify that the VAR knobs are fully pushed in and set to the "Calibrated" position.

To adjust positioning within the display once power has been applied, ground channels 1 and 2 by setting their respective input coupling switches to GND. Rotate their vertical position knobs to move the beam to the leftmost time division and to the second voltage division from the top of the screen. Then set the input coupling switch for each channel back to DC.

## POWER-UP & SYSTEM UTILITIES

The system is now ready to be powered up. All of the accessories (monitor, printer, and oscilloscope) should be plugged into the Accessory power outlets. Turn each one on. Loosen the retaining clamp on the AC power inlet, which is located next to the Accessory power outlets as shown in Figure 1. Insert the receptacle end of the AC power cord supplied with the console into the AC power inlet, and tighten the retaining clamp. Plug the other end into the appropriate AC power source as indicated by the label above the AC power inlet.

Rotate the red “Emergency Stop” button located in front of and to the right of the Patchboard receiver clockwise one-quarter of a revolution until it pops up (approx. 3/16” or 4.8mm). This button is to be fully depressed during an emergency situation or after the three front panel power switches have been turned off during the normal shutdown process in order to turn off all power within the console. Deactivating only the three front panel switches does not remove power from the Power Distribution Box. When the “Emergency Stop” button is depressed, it breaks the AC input power connection within the Power Distribution Box, and thus all of its power outlets are inactive.

The three switches on the front panel of the 2040 computer are (from left to right) for Testhead power, accessory power, and computer power. Turn on the three power switches sequentially from left to right. The computer will boot up and execute its operating system software. You may be requested to enter a password for access. The default password setting for the Administrator account is set to “password” (without the quotes) at the factory. The unit is now ready for use.

**Note:** *If the unit does not up boot into its operating system, call the Digalog Customer Support Helpline at (414) 785-8777.*

### CONSTAT (CONSOLE STATUS)

Constat is a program designed to give the user a variety of information about the hardware modules that make up the Series 2040 Test System. It provides the user with the contents of the EEPROMs on the Testhead boards.

Every Testhead board in a Series 2040 Test System has an EEPROM which

stores that board's history. Information such as the Digalog Part Number for the board, a board description, ECO levels and installation dates, and RMA dates is contained in the EEPROM. Constat enables the user to display or print all of the information stored in the EEPROMs. This data informs the user to of the names, quantities, and locations of the boards in the Testhead (such as which slot a particular Analog Source Board occupies). It also helps in reporting troubles to Digalog Systems with a given board since its history in terms of repair and ECOs is available with only a few mouse clicks. When Constat is executed from the Digalog program group, the Console Status dialog shown in the example in Figure 8 below is displayed.

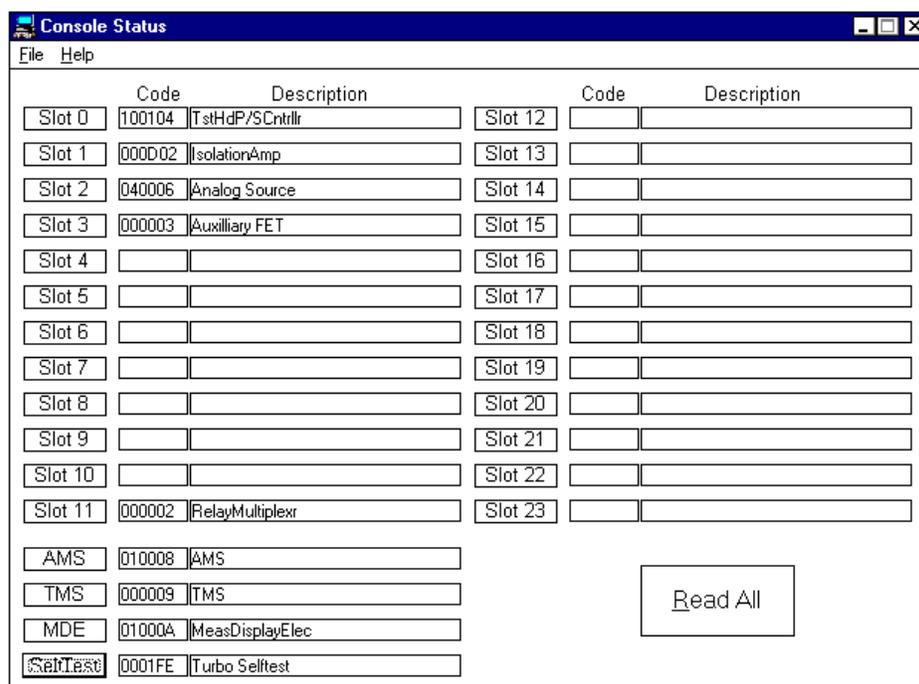


Figure 8 - Constat console status

To select a slot, simply use the mouse to select the name of the desired slot, such as Slot 4, AMS, or Selftest. Slots are numbered from 0 to 23 with the AMS, TMS, and MDE boards in the measurement section of the Testhead as shown on page 33. Although the Selftest unit is physically mounted on the Patchboard receiver, it is also read by the Constat program. After selecting a slot, the information for the selected board will be displayed using the "Board Status" dialog shown in the example in Figure 9 on page 10.

When the "Read All" button is selected, the program reads every slot in the

Testhead and displays the current contents of the Testhead in the “Console Status” dialog. This routine also reads the Selftest Assembly if it is installed. The Information can be printed by selecting the “Print Console” option from the File menu.

*Note, the shipping date is contained within this information. This data is used to determine whether a board is still under warranty or not. The user can easily determine if a board is still covered for warranty repair by checking the shipping date with Constat. (Digalog warrants all boards for a period of one (1) year from the date of shipment).*

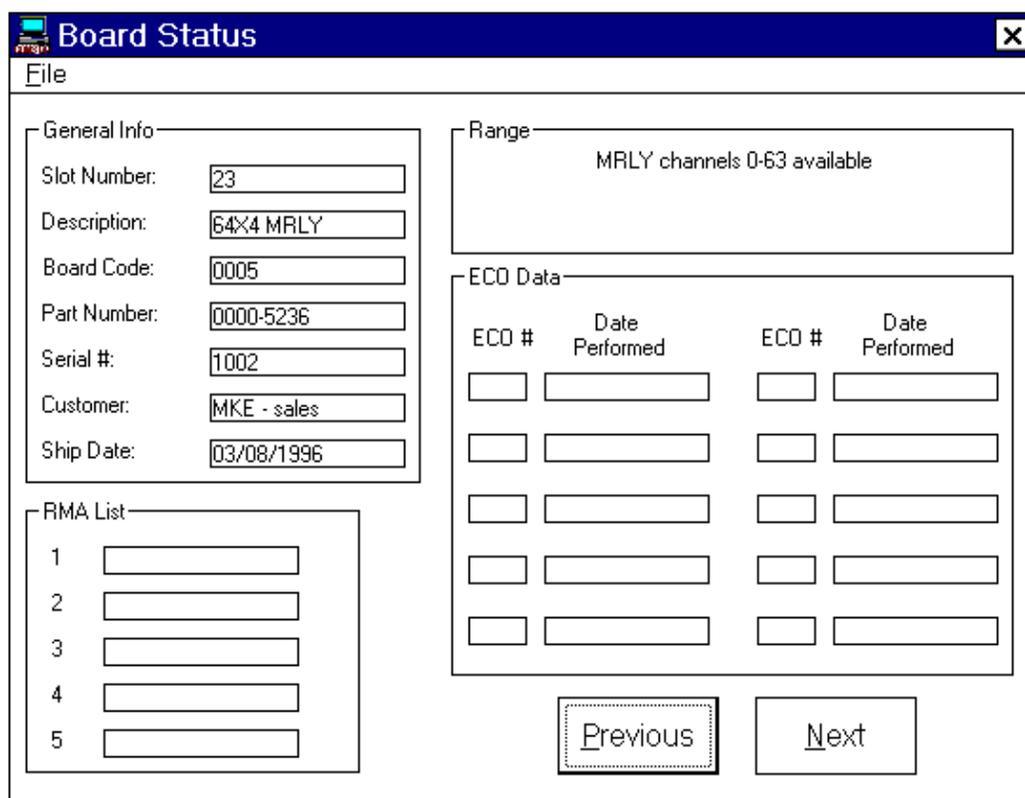


Figure 9 - Constat board status

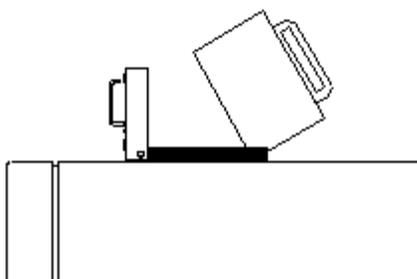
The RMA LIST is a list of Return Material Authorizations issued and processed for that board. Every time that a board is returned to Digalog for repair, this list is updated.

If the information from the “Board Status” screen (Figure 9) needs to be printed, use the “Print All Info” selection under the File menu. The “Printer Setup” option from the File menu is the standard Windows 95/NT printer setup routine that is common to all Windows 95/NT applications.

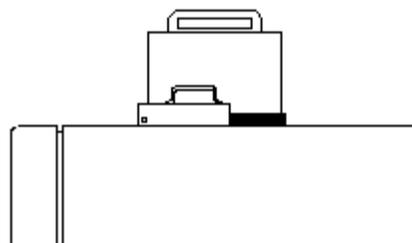
## SELFTTEST

Selftest on the Series 2040 Test System is an automated procedure. The programs that comprise Selftest are organized under the Selftest Executive in a test menu called “Functional.” These programs exercise the hardware functions available to the user through the functional calls. To perform Selftest, proceed as follows:

- 1) Install the Selftest unit on the Patchboard receiver assembly as shown below:



**Figure 10** - Selftest Installation



**Figure 11** - Selftest Installed

- A) Pull the locking handle towards the front of the unit until it is completely vertical.
- B) Slide the pins on the rear of the Selftest unit into the Patchboard receiver as shown in Figure 10, and rotate the Selftest unit forward until it is fully seated in the Patchboard receiver.
- C) Install the Selftest data cable into the receptacle behind the Selftest unit with the colored edge of the ribbon cable on the left side (opposite the locking handle).
- D) Rotate the locking handle back to a completely horizontal

position to lock the Selftest unit into place as shown in Figure 11.

2) Enter the Selftest Executive by selecting (double-clicking on) the “SelfExec” program from the Digalog program group. The Selftest Executive menu will be displayed as shown in Figure 12 below.

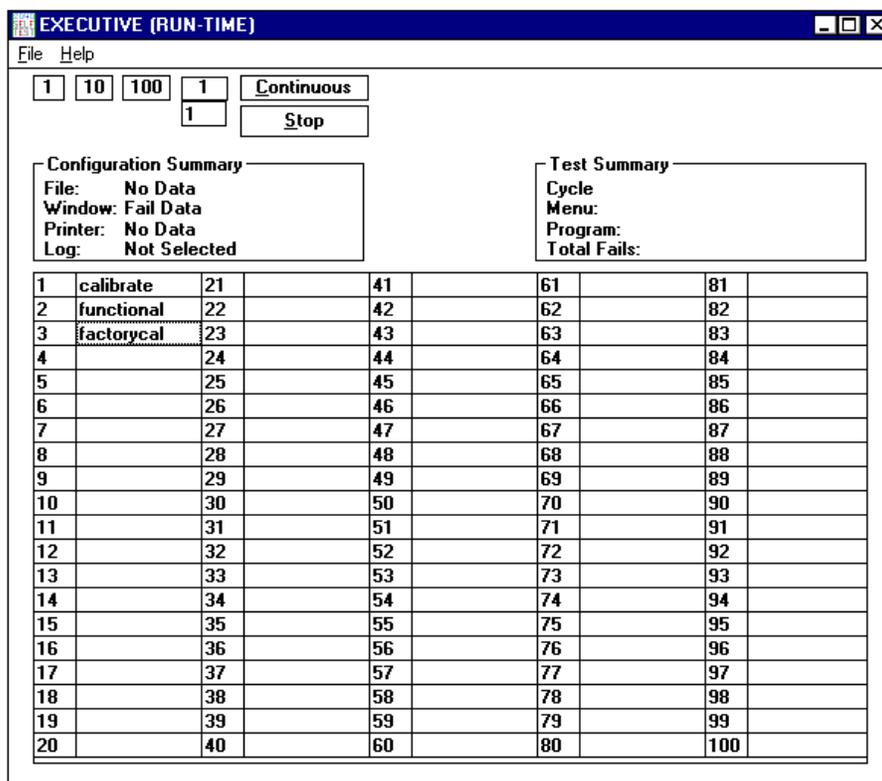


Figure 12 - Selftest Executive Menu

3) From the File menu, select Configure, and the “Report Utilities” dialog box in Figure 13 on the next page will appear. This dialog controls three separate ways of reporting the data collected during the tests. Data may be stored to a file, displayed on the screen, and/or printed.

In addition, each of these three reporting functions can report “All Data”, “Fail Data” or “No Data”. “All Data” includes all of the pass or fail sequences from the test. “Fail Data” includes only information on the tests that failed. “No Data” disables that reporting function. To

select, merely use the mouse to check or uncheck each reporting function. If a reporting device is unchecked, the options under that device appear “ghosted”, indicating that they are disabled. For the purposes of installation, enable the “Printer” and “File” options, and select the “Fail Data” option. Under the “File” section, click the “Diagnostic File” check box. Disable the Window reporting functions by selecting the “No Data” option box.

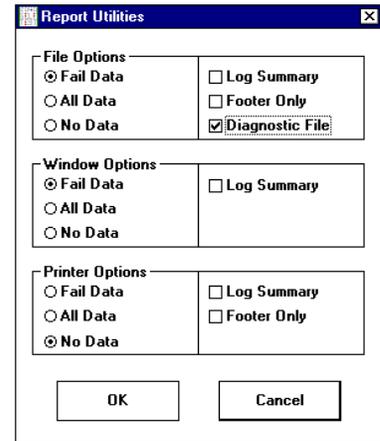


Figure 13 - Executive Configuration

4) Once the type(s) of reporting is completed, click on “OK” to return to the Selftest Executive menu. Select “Functional” from the Selftest Executive screen, and the Functional menu will appear as shown below.

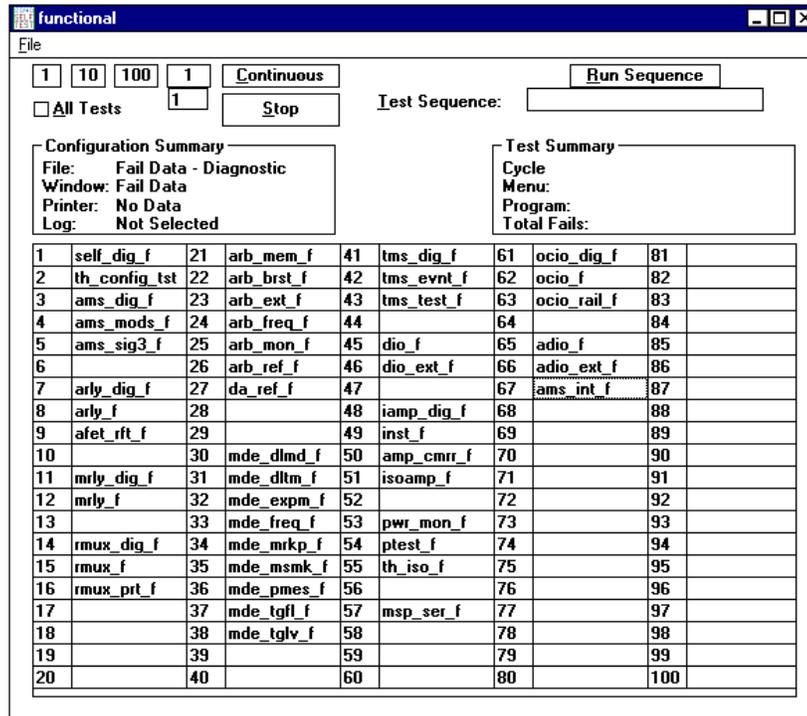


Figure 14 - Functional Tests (Typical Configuration)

The Functional test menu has been organized so that tests closely related to each other are blocked together in groups. If only one test is to be run, use the mouse to select that particular test. If a related group of tests is to be run, they may be selected using only the mouse. For example, if the Measurement Display Electronics group is to be selected, place the mouse pointer on test #30 and hold the left button down, and drag the mouse down to test #38. The entire MDE group is now selected. If a random series of tests is desired, place the mouse pointer on the box labeled "Test Sequence". When the Windows text tool appears, click the left mouse button. At the blinking cursor, any sequence of tests can be entered. The test numbers, however, must follow this syntax:

'E' (Execute) signifies the beginning of a sequence or acts as a separator between sequences.

":" (Colon) signifies that the following number indicates the amount of iterations to perform of the previous sequence.

',' (Comma) shares the definition of 'E' as a separator between sequences.

'-' (Dash) signifies inclusive or 'through'.

**EXAMPLE: E1-3:5,6-100:2,1-5**

This sequence executes tests 1 through 3 five times, tests 6 through 100 two times, and tests 1 through 5 once. Click on the "Run Sequence" button to execute the sequence entered in the textbox.

If a single test or a group of selected tests is to be run once, 10 times, or 100 times, use the mouse to select the appropriate button on the upper left. If the test or group is to be run at some other number, place the mouse pointer in the box to the direct left of the stop button, and the Windows text tool will appear. Click the left mouse button while text tool is displayed in the box. A blinking cursor appears, and the user can enter any number from 1 to 999 for the number of times a test should run.

For the purposes of installation, click the mouse button on the check box in the upper left corner of the menu next to "All Tests". Select the "1" button, and the program will run all of the functional tests once,

while reporting the data to wherever it was directed from the "Report Utilities" box. For installation, this path should include the "File" and "Printer" categories, and the "Fail Data" and "Diagnostic File" options.

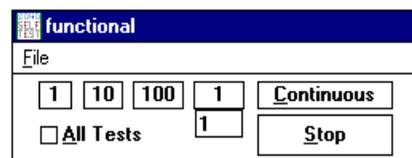


Figure 15 - All tests

5) If any of the Functional programs fail, check these common problems:

SELFTEST ASSEMBLY IMPROPERLY INSTALLED - Check to make sure the assembly is properly installed on the Patchboard receiver. Also, check the Selftest assembly's cable for damage.

UUT POWER SUPPLIES OFF - Make sure the UUT Power Supplies are on.

TESTHEAD POWER SUPPLY FAULT - Check the Testhead Power Supply Controller's indicator LEDs. If any of the LEDs are not lit, reset the system by cycling the Testhead power switch off and on and recheck.

MISALIGNED PINS ON PATCHBOARD RECEIVER - Remove the Selftest Assembly and carefully inspect the alignment of the Patchboard receiver pins. Adjust any pins that are misaligned, remount the Selftest Assembly, and retest.

After the common problems have been eliminated, a failure in Functional Selftest can indicate a hardware problem. Since a failure in Functional Selftest could also be caused by calibration, recalibrate the unit and run Functional Selftest again. If calibration or Functional Selftest fails now, a hardware problem most likely exists.

**NOTE: Refer to the Selftest Failure Analysis sheet and the STEX routine at the end of the calibration section.**

6) Whenever a Testhead board is replaced, or anytime that Selftest determines a failure, a calibration must be performed. If a unit passes the complete Functional Selftest routine, a calibration is not necessary. When "Calibrate" is selected from the Selftest Executive, the screen shown in Figure 16 on the next page is displayed.

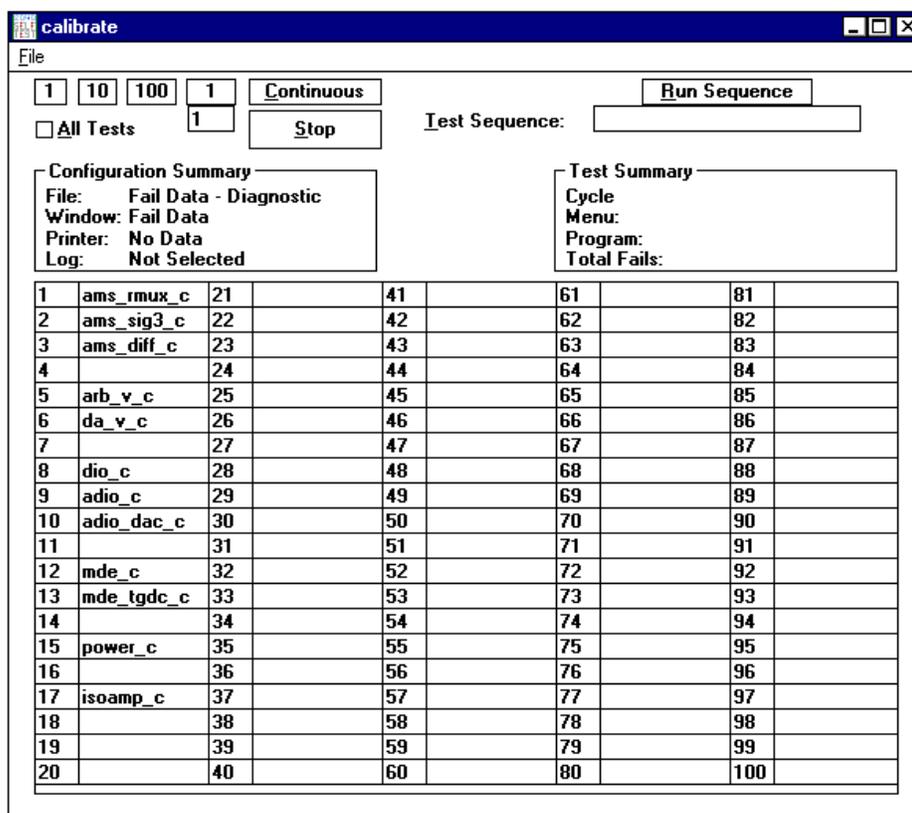


Figure 16 - Selftest Calibration

The Calibrate menu operates under the same basic rules as the Functional menu. For installation purposes, use the mouse to select the "All Tests" check box, and select the "1" button for the number of times to be run. (See page #14). Since the Printer and Fail Data were selected previously, any failures from the calibration routines will be printed automatically.

The following is a list of the calibration programs located in the Calibrate menu in the Selftest Executive along with the three most likely boards or assemblies that could cause failures:

Test Name	#1	#2	#3
#1 AMS_RMUX_c	AMS	RMUX	MSP/ISO
#2 AMS_SIG3_c	AMS	MSP/ISO	RMUX
#3 AMS_DIFF_c	AMS	RMUX	ICAM

---

#4 DMS_c	DMS		
#5 ARB_v_c	ASB	MSP/ISO	AMS
#6 DA_v_c	ASB	MSP/ISO	AMS
#8 DIO_c	DIO	TH CONT/CPU	Selftest
#9 ADIO_c	ADIO	TH CONT/CPU	Selftest
#10 ADIO_dac_c	ADIO	AMS	RMUX
#12 MDE_c	MDE	TMS	AMS
#13 MDE_TGDC_c	MDE	TMS	AMS
#15 POWER_c	UUT Cont	AMS/RMUX	Selftest
#17 ISOAmp_c	MSP/ISO	AMS	RMUX

Any type of failure during calibration could indicate a hardware problem. If a failure during Functional was the reason that a calibration is being run, refer to the Selftest Failure Analysis sheet on the next page.

## Selftest Failure Analysis

	Test Name	#1	#2	#3
1)	SELF_dig_f	Selftest	TH Cont/CPU	TH P/S Cont
2)	th_config_tst	Testhead configuration does not match the stored configuration.		
3)	ams_dig_f	AMS	TH Cont/CPU	TH P/S Cont
4)	ams_mode_f	AMS	MSP/ISO	ASB
5)	ams_sig3_f	AMS	MSP/ISO	TH P/S Cont
6)				
7)	arly_dig_f	Arly/AFET	TH Cont/CPU	TH P/S Cont
8)	arly_f	Arly/AFET	RMUX	AMS
9)	afet_rft_f	AFET	RMUX	AMS
10)				
11)	mrly_dig_f	MRLY	Selftest	TH Cont/CPU
12)	mrly_f	MRLY	RMUX	AMS
13)				
14)	rmux_dig_f	RMUX	TH Cont/CPU	TH P/S Cont
15)	rmux_f	RMUX	AMS	Selftest
16)	rmux_prt_f	RMUX	AMS	MDE
17)				
18)				
19)				
20)				
21)	arb_mem_f	ASB	TH Cont/CPU	TH P/S Cont
22)	arb_brst_f	ASB	AMS	MDE
23)	arb_ext_f	ASB	AMS	MDE
24)	arb_freq_f	ASB	AMS	MDE
25)	arb_mon_f	ASB	AMS	MSP/ISO
26)	arb_ref_f	ASB	AMS	MDE
27)	da_ref_f	ASB	AMS	MSP/ISO
28)				
29)				
30)	mde_dlmd_f	MDE	TMS	AMS
31)	mde_dltm_f	MDE	TMS	AMS
32)	mde_expm_f	MDE	TMS	AMS
33)	mde_freq_f	MDE	TMS	AMS
34)	mde_mrkp_f	MDE	TMS	AMS
35)	mde_msmk_f	MDE	TMS	AMS
36)	mde_pmes_f	MDE	TMS	AMS
37)	mde_tgfl_f	AMS	MDE	TMS
38)	mde_tglv_f	AMS	MDE	TMS
39)				
40)				
41)	tms_dig_f	TMS	TH Cont/CPU	TH P/S Cont
42)	tms_evnt_f	TMS	MDE	AMS
43)	tms_test_f	TMS	MDE	TH P/S Cont
44)				

45)	dio_f	DIO	Selftest	TH P/S Cont
46)	dio_ext_f	DIO	Selftest	TH P/S Cont
47)				
48)	iamp_dig_f	INST	TH Cont/CPU	TH P/S Cont
49)	inst_f	INST	ASB	AMS
50)	amp_cmrr_f	INST	RMUX	AMS
51)	isoamp_f	MSP/ISO	ASB	AMS
52)				
53)	pwr_mon_f	Power Supply	TH P/S Cont	MSP/ISO
54)	ptest_f	UUT Controller	AMS/RMUX	Selftest
55)	th_iso_f	Scope Connected?	Internal coax short?	
56)				
57)	msp_ser_f	MSP	TH Cont/CPU	TH P/S Cont
58)				
59)				
60)				
61)	ocio_dig_f	OCIO	TH Cont/CPU	TH P/S Cont
62)	ocio_f	OCIO	Selftest	TH Cont/CPU
63)	ocio_rail_f	OCIO	Selftest	TH Cont/CPU
64)				
65)	adio_f	ADIO	Selftest	TH Cont/CPU
66)	adio_ext_f	ADIO	Selftest	TH Cont/CPU
67)	ams_int_f	AMS	MDE	TH Cont/CPU
68)				
69)	dms_dig_f	DMS	Selftest	TH Cont/CPU
70)	dms_mem_f	DMS	TH Cont/CPU	TH P/S Cont
71)				
72)	psc_dig_f	PSC	Any other Trigger Matrix board.	

## Self Test EXaminer (STEX)



### Overview

The STEX program may be used to help graphically interpret the results of any diagnostic output file generated by the Selftest Executive program run on the Series 2040D testers. STEX uses the results of the diagnostic output file to show the configuration of the tester and evaluate possible problems with the tester resources based on failed test data and/or system errors encountered during testing. STEX will use these results to determine what the top three most likely resource problems are in the tester, based on Selftest output information. These results will be shown graphically on the STEX interface.

STEX can be very useful in aiding an operator who is troubleshooting possible problems in the Digalog testers by providing a graphical depiction of the location of potentially faulty tester resources. These resources include all Testhead boards, the Testhead power supplies, the UUT power supplies and their controller modules, GPIB devices, the computer with its Testhead interface card, and the Selftest assembly itself.

### Creating the Diagnostic File for STEX

To use STEX to analyze Selftest data, the proper information must first be recorded in the Selftest output file. To obtain a diagnostic file for use in STEX, follow these steps when running the Selftest Executive:

- 1) Under the 'File' menu, select 'Configuration'.
- 2) On the configuration form under 'File Options', select either 'Fail Data Only' or 'All Data' and select 'Diagnostic File'.
- 3) Run the desired calibration and function tests.

Selection of the 'Diagnostic File' option for file output will create a file with all the information required by STEX to analyze the system. This information includes the tester type being run, a listing of the Testhead resources as recorded in the

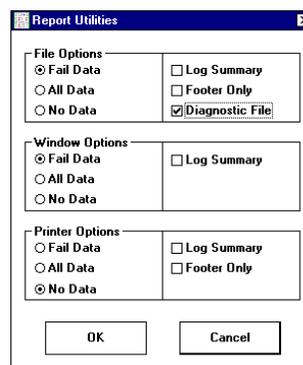


Figure 17 - Configuration

'resource.ini' file or the Registry, and a listing of all tests run along with any problems encountered during the tests. These results will be written into a file in the 'digalog\bin\' directory. The filename is the date on which the test was run with the file extension '.dxx', where 'xx' is an incrementing number starting at '01' and going through '99'. For example, if the diagnostic file was written on January 20, 1997, the file name would be 'jan2097.d01'. If a second file were created on the same day, its name would be 'jan2097.d02', and so on. The first diagnostic file written each day would carry the extension '.d01'. If the file option is not set to 'Diagnostic File' and the 'File' reporting function is still enabled, the file extension would not contain a 'd' such as '.001', '.002', and so on. These files do not contain the configuration information required by STEX and will not be accepted as proper files for analysis by STEX.

### Analyzing Selftest Data

When starting the STEX program, the graphics show the Testhead as being empty. Under the menu item 'File' are the selections: **O**pen for EXam, **V**iew Log File, **R**eport Details, **C**lose, and **E**xit.

**Open for EXam** - Selecting this menu item opens up a file selection window showing the files available in the 'digalog\bin\' directory with the '.dxx' file extension. Highlight the desired filename and Click on the 'Open' button to select for analysis under STEX. STEX will then open that file, and examine it to see if it is a valid file for this program. If the file is not valid for STEX, a message box will inform the user of this, and the graphics will return to their default condition. If it is valid, the tester resource information will be read in for analysis. The boards listed in the Registry will be placed in the proper slots in the Testhead graphic and the file will be inspected for any fail data from the tests listed. If fail data or system errors are found, the program will analyze those results using information about the tests located in the STEX database — 'digalog\include\stex.mdb'. The program will then use this information to calculate the three most likely tester resources that could cause the problems found in this diagnostic file.

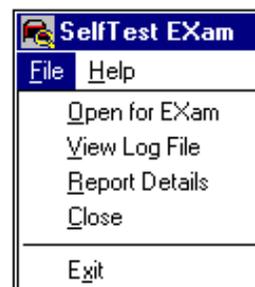
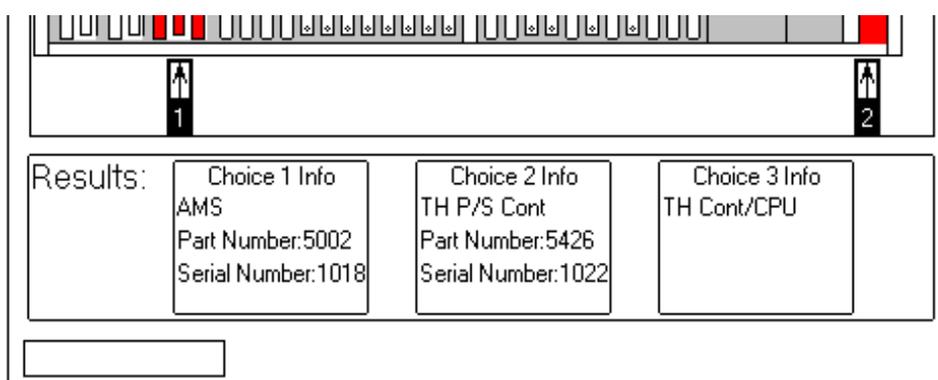


Figure 18 - File Menu

All tester resources by default are displayed either in gray or on gray background. The one to three resources calculated to be most likely causing

the fault(s) will be highlighted in red. Also, the 'Results:' box on the lower portion of the form displays the available information regarding these three tester resources as shown in the example of Figure 18. If the resource is a board in the Testhead, an arrow with a number 1-3 according to its level of



**Figure 19** - Results Window

probability (1 being greatest) will point to the location of the board. An information box with the same number will display the board's description, Digalog part number, and serial number (if this information is available in the diagnostic file.) If the tester resource is not a board in the Testhead, the resource's graphic will be highlighted in red with a label indicating which 'Choice #' it is in relative importance. The information box with the 'Choice #' information will have the resource's description and other optional information regarding that resource.

If the functional test 'TH\_config\_test' has logged any failures in the current diagnostic file, a message box will be shown informing the user that this fault exists. Also, the 'Results:' box will display the message: "Config problems found" on a red background. The configuration of the Testhead will be displayed, but no specific tester resources will be tagged as being at fault as a result of this file's analysis. The test 'TH\_config\_test' examines and compares the contents of the Testhead to the recorded listing in the Registry. If a discrepancy exists, it cannot be automatically known where the source of the problem is without further investigation. Therefore, the user should refer to the Tester Resource Manager (TRMAN) section of this manual to proceed in troubleshooting this problem.

If any failure(s) or problem(s) are found in a valid diagnostic file, the menu item 'Report Details' will be enabled to show some details about those tests. See the section entitled 'Report Details' for more information.

If the diagnostic file is examined, and no failures or other problems were found with this test, the 'Results:' box will display the message: "No Problem Found" on a green background. The proper configuration for the Testhead will be displayed, but the menu item 'Report Details' will be disabled, since there are no failing tests on which to display information.

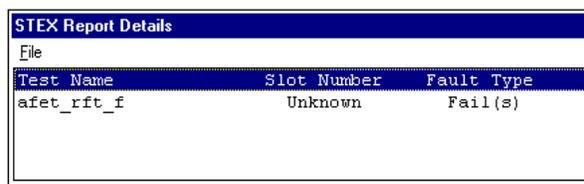
**View Log File** - Choosing this menu item opens a file selection window showing all of the available files in the Digalog\bin directory with the ".dxx" file extension. Selecting a filename here will start the Microsoft Windows text editor program 'WordPad' and open the diagnostic file for viewing. This allows individual test results to be viewed to provide further possible insight into any problems with the tester.

Viewing the individual failures of a test may aid in troubleshooting an individual board. Examining all system error messages and referring to documentation for the source and/or meaning of the error may also help in resolving the problem with the tester resources. While viewing this file, the user may elect to print the file contents.

**IMPORTANT:** The file being examined **SHOULD NOT** be edited. Changing any information in these files will render the information inaccurate or useless for diagnosing any problems with the tester.

**Report Details** - This menu item is only available while there is a valid diagnostic file with fail information opened for examination.

Selecting this menu item will bring up a separate window with a list of the failed test programs as shown in Figure 20. This list gives the name of the Selftest program which detected the problem, the slot number of the board being examined by that test, and whether the problem was a test failure or a system error. If a test result does not contain any slot



STEX Report Details		
File		
Test Name	Slot Number	Fault Type
afet_rft_f	Unknown	Fail(s)

**Figure 20** - Report Details

information, the slot value will be listed as 'Unknown'. To view the details of each individual failure or system error number, select the 'View Log File' menu item. Refer to the Selftest documentation to aid in interpreting these test results.

**Close** - Selecting this menu item closes the current diagnostic file and clears all information from the program's windows. This returns all tester resources to their default condition, clears the Testhead board configuration, and removes any individual test results from the 'Report Details' window. This menu item is provided only for the convenience of the user. It is not mandatory to 'Close' one diagnostic file before opening another for examination.

**Exit** - Selecting this menu item closes the current diagnostic file and terminates the program.

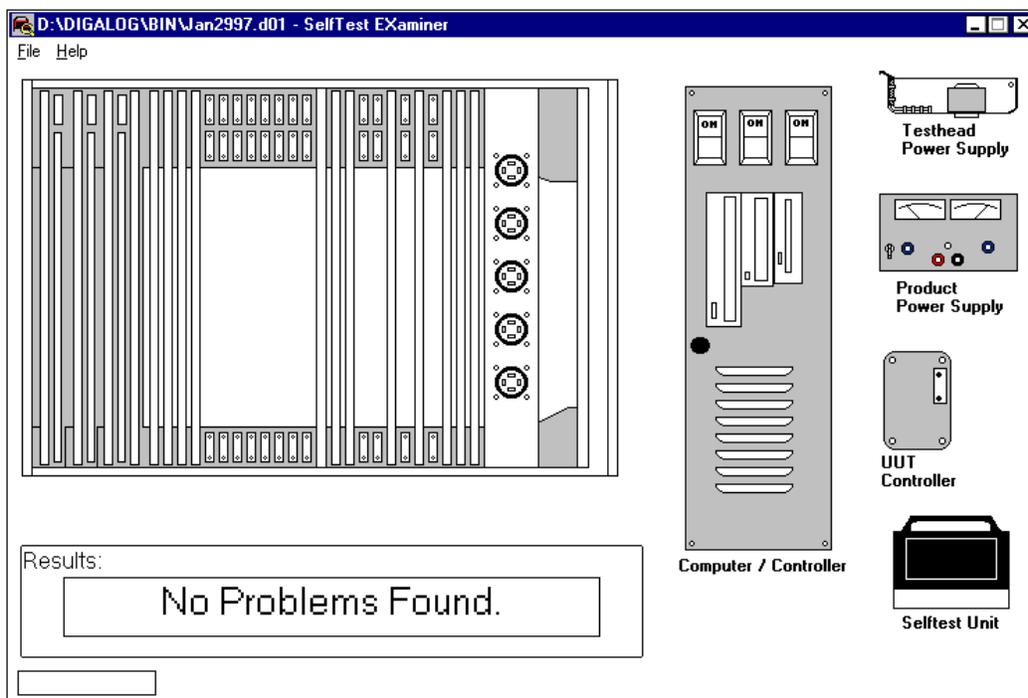


Figure 21 - STEX Interface

## TRMAN (Tester Resource Manager)

The Tester Resource Manager is used to track and manage the tester resources including all the boards in the Testhead and the UUT power supplies. Information about these resources can be automatically generated or manually defined, and is used to generate a Patchboard Interface Map and define the pin locations of these resources at the Patchboard. This information can be saved to a project specific file called resource.ini and can be used by other Digalog System's applications.

Specifically, the software is capable of printing out a "Patchboard Map" containing Patchboard pin mnemonics by either automatically interrogating the tester for its resources, or by asking the programmer to define the tester's resources. When the configuration is performed manually, it allows the programmer to configure additional resources beyond what the tester physically contains. In this manner, a programmer has the additional resources to generate programs and fixtures for any tester.

### Menu Bar

**File Menu** - The TRMAN File menu is similar to the standard Windows file

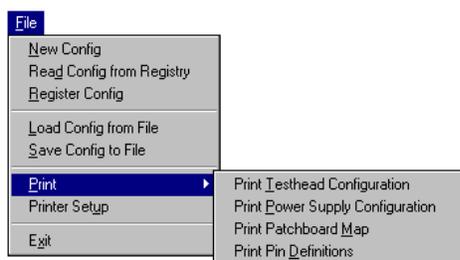


Figure 22 - File Menu

menu. It has selections for a **N**ew configuration, **L**oad an existing configuration, **S**ave a configuration, **S**ave an existing configuration **A**s another file, and **E**xit. The **P**rint Utility will be discussed later in this section. For the purposes of this explanation, the file being used for illustrations is the standard resource.ini file in the \Digalog\include\ directory.

**Options Menu** - When the Options menu is selected, a pull-down menu will be displayed prompting for a choice of the following: **A**utomatic generation, **L**ink to tester, **M**anual Generation, **V**iew pin **D**efinitions, and **V**iew Testhead configuration. Each of these options, along with the **P**rint utility from the **F**ile menu, will be briefly discussed.

**Link to Tester** - This item will toggle the link between the application

and a tester. When checked, the application assumes a Testhead is present and enables Automatic generation. When using Tester Resource Manager on a development computer that is not connected to a Digalog tester, this item should never be checked as it could lead to corruption of certain memory locations.

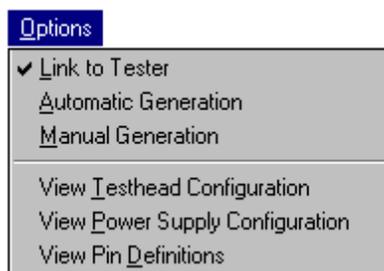


Figure 23 - Options

**Automatic Generation** - If Automatic Generation is selected, the program scans the tester for its resources, and then updates the map of the Patchboard as shown in Figure 24 below. Tester resources required to generate the Patchboard map plus any other tester resources can also be saved to a resource file on the hard drive (resource.ini) stored in the Registry, or printed out.

All programmers writing code for the system should be familiar with this map, since it is the actual physical configuration of the Patchboard.

The screenshot shows a window titled "(Registered Config) - Tester Resource Manager" with a menu bar (File, Options, Help). The main area contains a table representing the patchboard map. The table has columns for Board (0-5) and rows (Row 1-15). Each cell contains a resource name or value.

Board	0	0	1	1	2	2	3	3	4	4	5
	A	B	C	D	E	F	G	H	J	K	L
Row 1	POS0	POS0	+IA0	+OA0	AGND	DA0	A32	A32	DGND	DCLK	
Row 2	POS0	+S00	-IA0	AGND	AGND	DA1	A33	A33	D0	D16	
Row 3	NEG0	NEG0	+IA1	+OA1	AGND	DA2	A34	A34	R0	R16	
Row 4	NEG0	-S00	-IA1	AGND	AGND	DA3	A35	A35	D1	D17	
Row 5			+IA2	+OA2	AGND	DA4	A36	A36	R1	R17	
Row 6			-IA2	AGND	AGND	DA5	A37	A37	D2	D18	
Row 7	POS1	POS1	+IA3	+OA3	AGND	DA6	A38	A38	R2	R18	
Row 8	POS1	+S01	-IA3	AGND	AGND	DA7	A39	A39	D3	D19	
Row 9	NEG1	NEG1			AGND	DA8	A40	A40	R3	R19	
Row 10	NEG1	-S01			AGND	DA9	A41	A41	D4	D20	
Row 11					AGND	DA10	A42	A42	R4	R20	
Row 12					AGND	DA11	A43	A43	D5	D21	
Row 13					AGND	XR4	A44	A44	R5	R21	
Row 14					AGND	XR6	A45	A45	D6	D22	
Row 15					AGND	XRR	A46	A46	R6	R22	

Figure 24 - Patchboard Map

**Manual Generation** - If Manual generation is selected, the screen below will be displayed. Note that the Power Supply Distribution board is always in slot 0 and therefore does not show in the Testhead configuration table. From this utility, any system configuration may be generated. It is the users responsibility to make sure the generated configuration is valid.

**Product Power Supply Resources**

Channel Number: 0

Patchboard Connection: 0

PPS Type:

- None
- Variable
- HPIB
- GPIB

Hi limit: Voltage 55, Current 10

Lo limit: Voltage 0, Current 0

Serial Loop Position (0-4):  0  1  2  3  4

**Testhead Resources**

Slot Number: Slot 0

Description: Testhead P/S Cont. with Trigger Matrix

Board Number:

	Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot
Board Code	1A4	D07	6						
Board Switches	150	4	4						

**Tester Information**

Tester Serial Number: None

Tester Description: DLINT2

OK Cancel Clear All

**Figure 25** - Manual Generation

The Programmable variable power supplies (maximum of five) may be defined in terms of maximum voltage and current once a Programmable Power Supply is selected (up/down button). With Volts or Amps selected, the jog shuttle located to the right modifies the selected value. The option buttons under the jog shuttle control determine what position in the serial loop that the supply being defined occupies. However, the variable supplies must be filled in a contiguous manner from #0 to #4. The spin control on the upper left corner of the dialog is used to determine which programming channel is being configured.

If a GPIB or HPIB power supply is being defined or added, the channel and type can be selected and the upper right of the dialog changes to allow the programmer to select a power supply type, a GPIB/HPIB Device number, and what Relay Control board will be used. The spin control on the middle left of the dialog (Patchboard Connection) is used to define which of the five Patchboard connections are connected to which supply, or if a GPIB/HPIB supply will use an external output (i.e. the supply's output does not physically appear on the Patchboard.)

The rest of the Testhead is displayed in table format by slot number. The Description and Board Number drop-down menus are directly linked to, and will modify the table. The Clear All button will clear all configuration items.

Board Codes are specific identifiers for the particular type of board selected for that slot. Board Numbers are used to define the resources of that particular board. For example, if there are two of the same type of board in the system, board numbers zero and one, the resources of board one will be numbered over and above those of board number zero. In other words, for a Relay Multiplexer Board containing sixty-four channels, board zero channels would be labeled zero through sixty-three and board one channels would be labeled sixty-four through one hundred and twenty-seven.

The table is directly linked to the slot drop-down menu, therefore any slot changes in either place will be reflected in the other.

**View Testhead Configuration** - This utility displays the entire Testhead configuration in an organized format. An example of a typical Testhead configuration is shown in Figure 26 to the right.

**View Pin Definitions** - This utility from the Options menu explains the mnemonics used in the Patchboard map as shown in Figure 27.

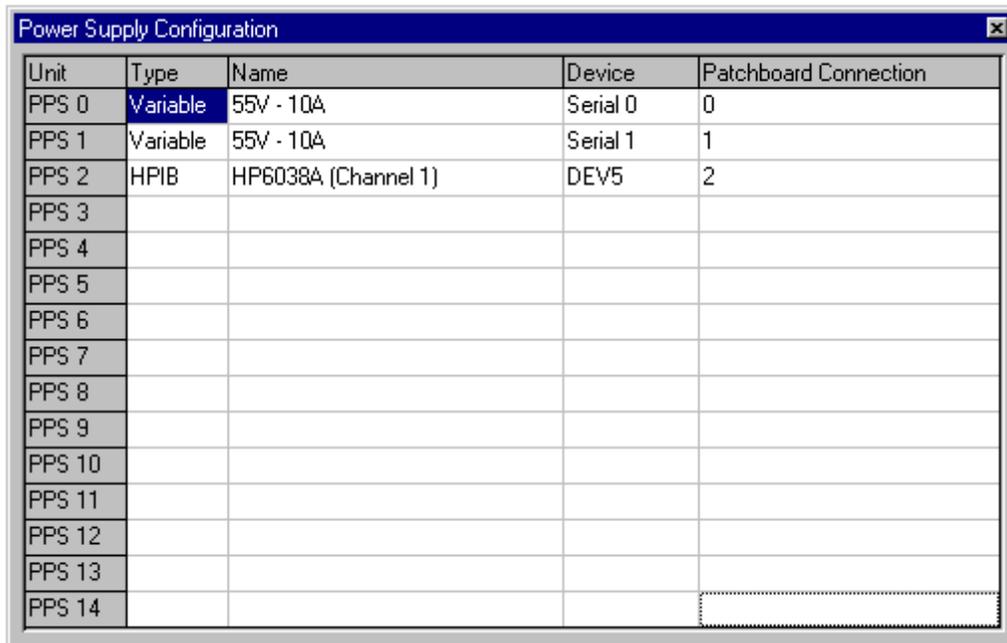
SLOT	Code	Number	Board description	Description of pins
slot 0	104	00	TestHd P/S Conn.	
slot 1	B	00	Instrumentation Amp	Amps 0-3
slot 2	6	00	Analog Source Board	DA 0-11 and ARB 0-1
slot 3	C	00	Auxiliary Relay	Relay 0-31
slot 4	6	01	Analog Source Board	DA 12-23 and ARB 2-3
slot 5	7	00	Digital I/O	Bytes 0-3
slot 6	193	02	Adjustable Level DI/O	Bytes 8-11
slot 7	3	02	Auxiliary FET	FET 64-95
slot 8	C	01	Auxiliary Relay	Relay 32-63
slot 9				
slot 10	2	01	Relay Multiplexor	Mux channels 64-127
slot 11	2	00	Relay Multiplexor	Mux channels 0-63
slot 12	14	00	VI Source	Channel 0-1
slot 13				
slot 14	D08	01	Open Collector I/O	Bytes 8-15
slot 15				
slot 16				
slot 17				
slot 18				
slot 19				
slot 20	5	03	Matrix Relay	Mrlry chan 192-255
slot 21	5	02	Matrix Relay	Mrlry chan 128-191
slot 22	5	01	Matrix Relay	Mrlry chan 64-127
slot 23	5	00	Matrix Relay	Mrlry chan 0-63
slot 24	8	00	Amplitude Measurement	No pin definitions
slot 25	9	00	Time Measurement	No pin definitions
slot 26	A	00	Measurement display	No pin definitions

Figure 26  
Testhead Configuration

Patch Board Map Pin Definitions	
<p> Wiring notes:</p> <p>(1) AGND = Analog ground, DGND = Digital ground. Wire all product digital signal low's to DGND. Wire all product analog signal low's to AGND. AGND and DGND are tied in the tester, do not tie on the PatchBoard. If the UUT has analog and digital grounds tied, it cannot be helped.</p> <p>(2) On ASBs, XRnn are the External Reference inputs for the DAs. DAs are paired and only the first channel of the pair is listed. (PR04 is external ref input for DA 4 and DA 5, etc.)</p> <p>(3) On DIOs, Drnn are drivers and Rnn are receivers.</p> <p>(4) Mnnn = Relay Mux Channel nnn.</p> <p>(5) Annn = Aux Relay Channel nnn.</p> <p>(6) Annn = Aux Fet Channel nnn.</p> <p>(7) Xnnn = Relay Matrix Channel nnn. X prefix will be omitted if channel exceeds 999.</p> <p>(8) Bn-m = Relay Matrix Bus n, Board m.</p> <p>(9) Cbbd = OCIO byte bb, data bit d.</p> <p>(10) Knnn = OCIO bank nnn external rail reference.</p> <p>(11) Annn = Power32 Relay Channel nnn.</p>	

Figure 27 - Pin Definitions

**View Power Supply Configuration** - If this option is selected, a grid is displayed showing all of the power supplies present, along with the type, name, device designation, and Patchboard connection for each supply as shown in Figure 28.



Unit	Type	Name	Device	Patchboard Connection
PPS 0	Variable	55V - 10A	Serial 0	0
PPS 1	Variable	55V - 10A	Serial 1	1
PPS 2	HPIB	HP6038A (Channel 1)	DEV5	2
PPS 3				
PPS 4				
PPS 5				
PPS 6				
PPS 7				
PPS 8				
PPS 9				
PPS 10				
PPS 11				
PPS 12				
PPS 13				
PPS 14				

**Figure 28** - Power Supply Configuration

**Print Utility** - When this utility is selected from the File menu, a small inputbox is displayed prompting for a specific serial number for the printout to be generated. If a specific tester's configuration is to be generated, enter the serial number in the textbox. If not, merely select the OK command button, press <Enter> on the keyboard, or select Cancel. After this inputbox is satisfied, select an individual printout to be generated, or select all three options.

## SYSTEM SPECIFICATIONS (Dual Dimensions)

### Dimensions:

Width .....	30.6 in/77.7 cm
Depth .....	36.5 in/92.7 cm
Height .....	50.375 in/127.95 cm
Height to table top .....	38.25 in/97.16 cm

### Product Power Supply Weights:

Kikusui PAD L Type 13 Series .....	52 lb/23.6 kg
Kikusui PAD L Type 0 Series .....	23 lb/10.4 kg
Hewlett Packard Series 664xA .....	31.4 lb/14.2 kg
Sorenson LHP Series .....	approx. 12.4 lb/5.6 kg

### System Operating Environment:

Operating temperature .....	10 - 35° C/50 - 95° F
Humidity .....	20% to 80% relative humidity

### System Power Requirements:

Voltage .....	120VAC - 50-60Hz
Current .....	3.5 A

### Oscilloscope:

Voltage .....	120VAC - 50-60Hz
Current .....	0.5 A

### Monitor:

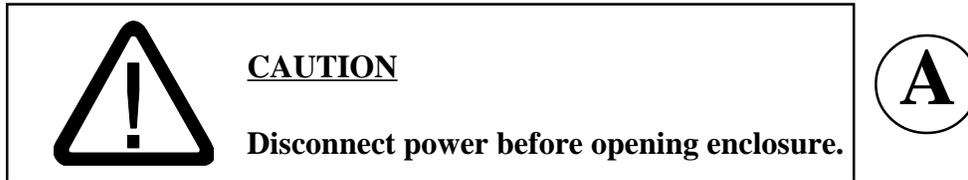
Voltage .....	120VAC - 50-60Hz
Current .....	0.66 A

### Printer:

Voltage .....	120VAC - 50-60Hz
Current .....	0.4 A

### Product Power Supply Power Requirements:

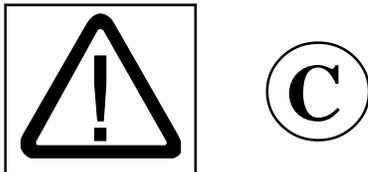
The Series 2040 Test System can be equipped with many different types of UUT programmable power supplies including GPIB and HPIB supplies. For the power requirements of a specific power supply, consult the manufacturer's documentation.

**WARNING LABELS:**

This label means that all power to the unit must be disconnected before the power distribution box is opened.

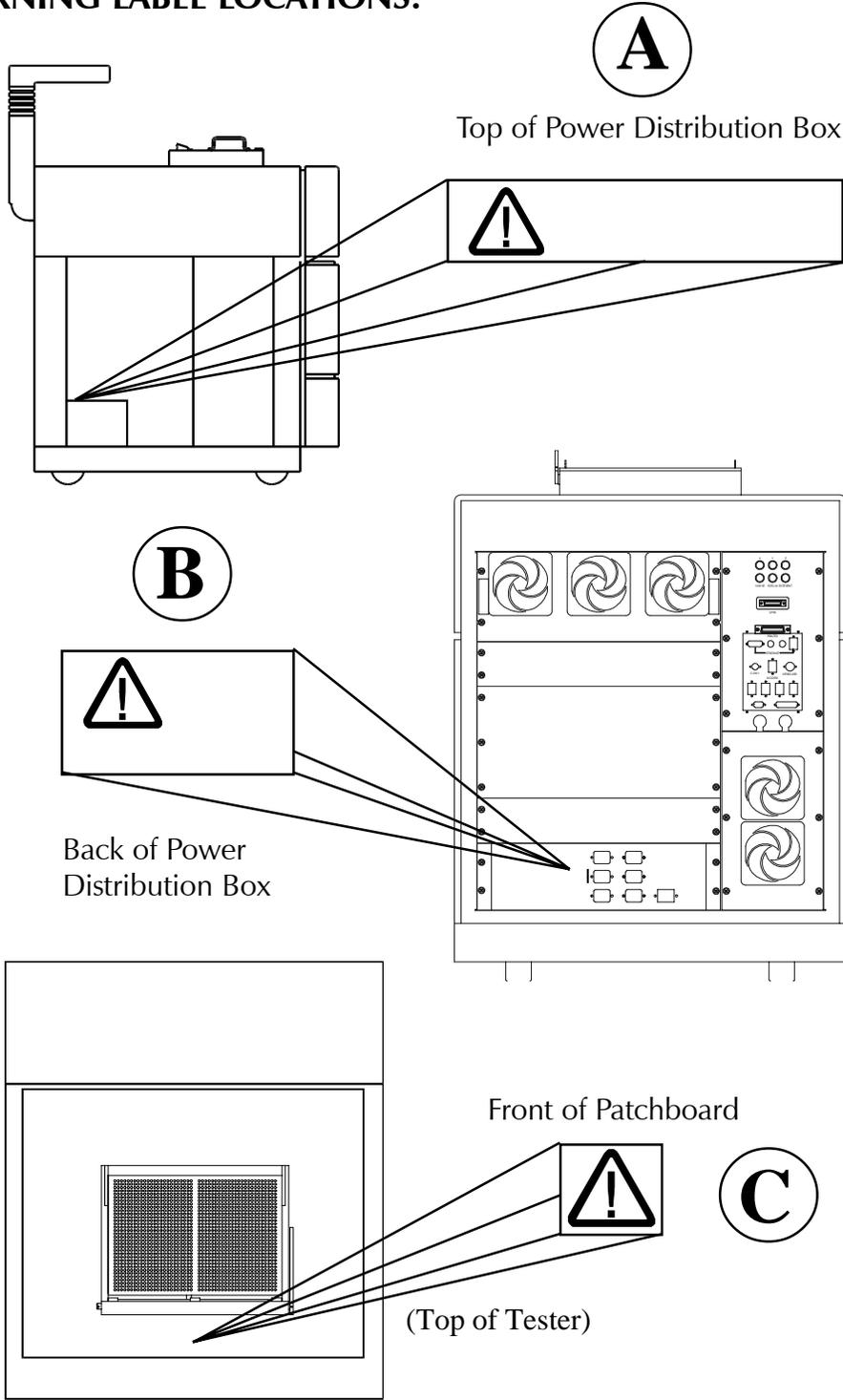


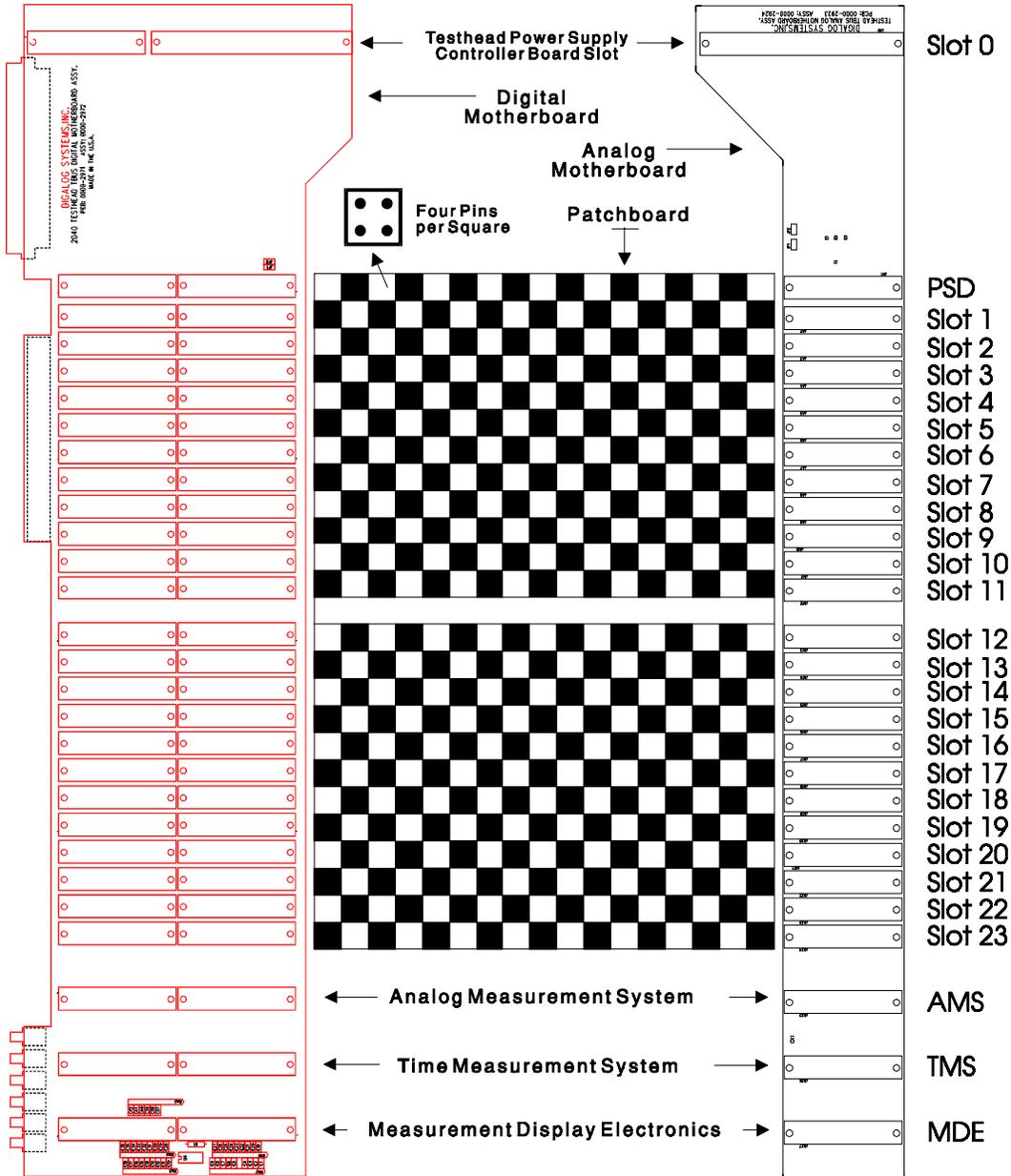
This label means that the outlets on the rear of the tester are for the tester accessories only and should not be used for miscellaneous shop tools or appliances.



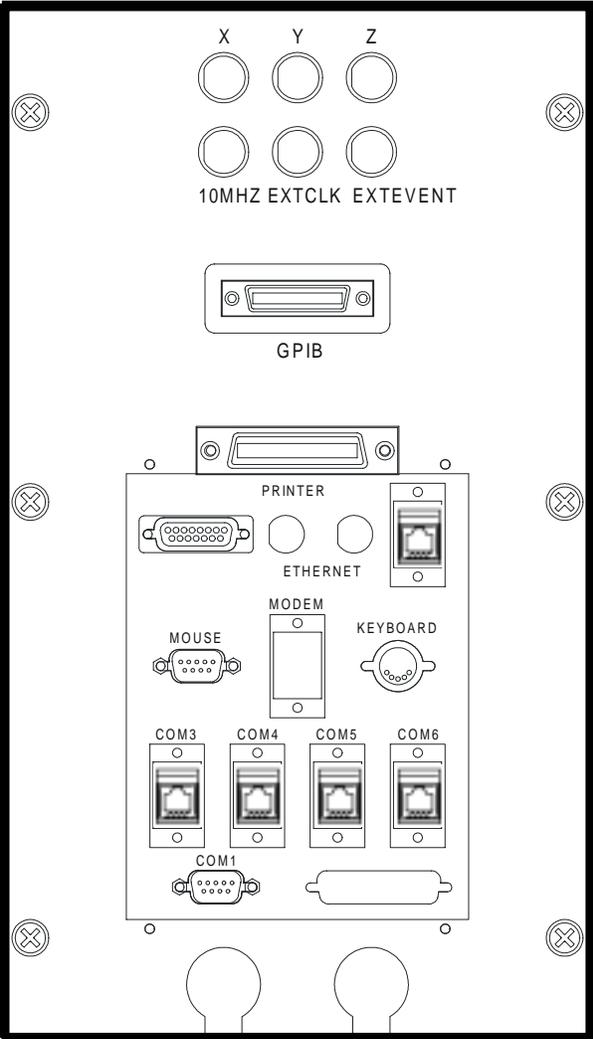
This label means that power is exposed whenever the Patchboard and/or power supplies are on and no fixture is installed on the Patchboard receiver.

**WARNING LABEL LOCATIONS:**





### Testhead



**I/O Panel  
(Rear Of Tester)**

