FCO TSV05-I002 (DAS), Does not provide optimum perf on VAX 3300 and up

FIELD CHANGE ORDER

APPLICABILITY: This FCO applies to all TSV05-Sx (-SA Thru -SN) subsystems configured on MicroVAX 3300 and later CPU’s.

PROBLEM & SYMPTOM: The TSV05_Sx mag Tape subsystem does not provide optimum performance on MicroVAX 3300 and later systems due to a change in the way these systems handle data transfers on the QBUS.

SOLUTION: The new Revision (TSV05-SX-B1) of the TSV05-Sx Controller from a single word DMA to a Block Mode DMA transfer QBUS device. This change optimizes the MagTape’s performance on the newer MicroVAX systems (MicroVAX 3300 and later).

QUICK CHECK: Check the controller module in the CD kit. The upgraded kit should contain a M7530-PA module. The non-upgraded kit contains a M7206-PA module.

PRE/COREQUISITE FCO:

None

TOOL/TEST EQUIPMENT:

N/A

FCO PARTS INFORMATION

<table>
<thead>
<tr>
<th>FCO KIT NO.</th>
<th>DESCRIPTION OF CONTENTS</th>
<th>EQ KIT VARIATION</th>
</tr>
</thead>
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<tr>
<td>EQ-01557-02</td>
<td>1 See Page 2 for Description of Contents.</td>
<td></td>
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<tr>
<td>FA-04867-02</td>
<td>1 FA Document</td>
<td></td>
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FCO CHARGING INFORMATION

<table>
<thead>
<tr>
<th>WARRANTY/CONTRACT</th>
<th>NONWARRANTY/NONCONTRACT</th>
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<tbody>
<tr>
<td>ON-SITE TRAVEL/INSTALL EQ KIT</td>
<td>ON-SITE ORDER-ADMIN, HANDLING PKG, SHIPPING &amp; EQ KIT</td>
</tr>
<tr>
<td>OFF-SITE TRAVEL/INSTALL EQ KIT</td>
<td>OFF-SITE CUS</td>
</tr>
<tr>
<td>n/a DEC</td>
<td>CUS CUS DEC</td>
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</tbody>
</table>

APPROVALS

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FS PRODUCT SAFETY
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EP-CSVDC-LB VAXDOC

FCO RELEASE DATE
5 FEB 1990
Contents of the EQ-01557-02: (Continued from Page 1)

QTY: Part Number: Description:

1 20-32011-01 M7530-PA Controller Module
2 17-02487-01 16 Ft. Cable Assemblies
1 EK-TSV05-IN TSV05 Installation/Owner’s Manual
1 EK-TSV05-PG TSV05 Pocket Service Guide
1 FA-04867-02 FCO Document

FIELD INSTALLATION AND TEST PROCEDURE FOR FCO TSV05-I002

**************************************************************************************************
* NOTE *
* The following reference material and tools should be available prior to FCO installation: *
* TSV05-S Installation/Owners Manual, EK-TSV05-IN (Chapter 2, TSV05 Installation) *
* TSV05 Tape Transport Subsystem Pocket Service Guide, EK-TSV05-PG *
* MDM diagnostic REV. 129 or later *
* Medium Phillips Screwdriver *
**************************************************************************************************
I. INSTALLATION

Reference Figures 1 and 2.

---

**CAUTION**

Shut the operating system down and turn the power off for both the TSV05 and the CPU and remove the power cord from the Power Source.

---

1. Locate the new set of cables part number 17-02487-01. Locate and remove the M7530-PA TSV05 Controller from its shipping box. The switch settings on the Controller are set to the default. No additional set-up is needed.

2. Remove the front cover from the CPU enclosure by lowering the door and pulling out the tab. Apply pressure upward and the front door will slide up and off the CPU enclosure. (See Figure 2)

3. Remove the M7206-PA module and Cables.

4. Install the new 17-02487-01 cable assemblies. Dress the cables under and up through the front of the CPU Cabinet. (See Figure 1)

5. Plug the 17-02487-01 cables into P1 and P2 of the TSV05 M7530 controller board.

6. Install the new M7530-PA controller in slot 4 of the CPU backplane.

7. Insure that the connectors are seated into the controller board connectors before proceeding. Lock the connectors in place by pushing the tabs down.

8. Using a Phillips screw driver, lock the top and bottom screws in place. Turning 1/4 turn should be sufficient. Do not force the screws.
9. Connect the other end of the 17-02487-01 cables J1 and J2 on the tape drive (Refer to Figure 1). The keyed mark should always go to the right when viewed from the rear. Dress and tie wrap the cables as necessary to complete the installation.

10. Plug the TSV05 into the power source and turn it on. Install a scratch tape with a write ring (minimum length 600 feet).

11. Continue on to Section II, ACCESSING M7530 BUILT-IN CONTROLLER DIAGNOSTICS For MICROVAX CPU’s or Section III, ACCESSING M7530 BUILT-IN CONTROLLER DIAGNOSTICS PDP LSI-11 CPU’s.

12. Insure after the BUILT-IN CONTROLLER DIAGNOSTICS are run that SW1-4 is off.

NOTE: Reference Page 12 of 12 of this FCO for switch settings and definitions.

FIGURE 1
TSV05 Cable Configuration.
TSV05 Back View.
FIGURE 2

TSV05 Cabling to MICROVAX 3000 Series CPU

TSV05 M7530 CONTROLLER
Plugs into the CPU Backplane
II. ACCESSING M7530 BUILT-IN CONTROLLER DIAGNOSTICS FOR MICROVAX CPU’S.

NOTE: A ball point pen can be used as a tool to change switch settings.

1. Set SW1-1 Off

2. Plug the CPU and TSV05 Cabinet back into the power source.

3. Connect the Power Power Cord to the Power source and Power up the CPU. Do not allow the operating system to boot. Enter a Control P on the console terminal or push the halt button.
4. Set SW1-3 and SW1-4 on. This selects the HOST console and CPU processor.

5. Set SW1-2 ON to select Diagnostic mode.
   Note: LED 1 and 2 will illuminate briefly.

6. At the console Prompt ( >>> ) enter the following:

   >>> D/P/W 20001F40 20 Return
   >>> D/P/L 20088000 80000000 Return
   >>> D/P/L 20088004 80000001 Return

7. Toggle switch SW-1 from OFF (Run) to ON (Reset) to OFF. All 3 LEDs come on. LED 3 then goes off followed by LED 1 and 2.

8. At the console prompt ( >>> ) enter:

   >>> ST 80 Return

   Note: LED 1 goes on then off. LED 2 goes on and stays on. The revision information, Digital Logo ETC. will appear on the terminal.

III. ACCESSING M7530 BUILT-IN CONTROLLER DIAGNOSTICS For PDP LSI-11 CPU’s.

1. Perform a system reset, either from power-up or reset.

2. Set SW1-3 ON to select the Host console and SW1-4 Off to select the PDP LSI-11 processor.

3. Halt the system and enter OG in response to the ODT prompt.

4. Set SW1-2 ON to select Diagnostic Mode.

5. Set SW1-2 ON to select Diagnostic mode.
Note: LED 1 and 2 will illuminate briefly, indicating that the drive is being uploaded.

6. Load 200 (octal) in Register 7:

R7/xxxxxx 200 Return

7. At the system prompt, enter:

P

IV. RUNNING THE BUILT-IN M7530 CONTROLLER DIAGNOSTICS

*******************************************************************************
* NOTE *
* The Controllers On Board Diagnostic will now start. The initial Diagnostic *
* screen shows the revision level of the diagnostic firmware being used, drive *
* online or offline status, and CSR address location. You are prompted to specify *
* whether a video or hardcopy terminal will be used to run the diagnostics. *
* Video display mode supports VT1XX/VT2xx or compatible terminals. Use hardcopy *
* mode for non-VT100/VT200 terminals. *
*******************************************************************************

1. After you specify the type of terminal and enter "Return", the Main Menu is displayed.

2. The Main Menu for a video display is shown in the figure 3 that follows. This menu present choice for running diagnostic tests, configuring the subsystem for tape transport characteristics, and for displaying the switch settings. For the purpose of checking out the controller we only need to be concerned with A, Q and X.

2.1 Select Q and press <CR> "Enable quick test" will appear and you will be prompted to enter <CR> to continue. Enter <CR>, you will return to the main menu.

2.2 Select A and press <CR>. Another message will appear warning you
to use a scratch tape or the data will be lost. You will also be prompted "Are your sure?  (Y/N, def=n): Enter Y only if data on the tape can be lost. Your then will be prompted "Enter number of loops to execute (0-255, def=1 dec) :". Select the default by entering <CR>. The test now starts. The following will appear:
(Each test will appear before it starts)

Retry Limit of 10

Quick Test

--> Start of pass 1
BOT/Rewind test
Write/Read test
File Mark test
Space forward/reverse test
Position test
Erase test
Host memory DMA test
-->End of pass 1

Executing pass 1

Test Summary:
Total # of errors = 0 (0 Hard, 0 Soft, 0 Device, 0 DMA)

The test should complete without any errors. If it does not, consult the TSV05 Users Manual EK-TSV05-UG for trouble shooting instructions.

2.3 Enter return if you have not already returned to the main menu. Select X to exit the diagnostics and halt the system. Boot the operating system.
3. To follow is a brief description of the functions of the switches. As already stated, the controller set up for the standard default configuration. Only a quick check is needed for a trouble free installation. If additional trouble shooting is required please reference the TSV05 Users Guide EK-TSV05-UG.

A - All tests. All onboard firmware installation diagnostic test are executed and any errors reported.

R - Retry limit value. Allows the operator to specify the number of retries to be performed on Write Errors. The program defaults to 10. Errors that occur within the limits set by this parameter are reported as soft errors. The Default limit is set each time the test is restarted from the Main Menu.

N - NOVRAM maintenance. Current configuration value are displayed and any errors are reported. You can make changes to the NOVRAM through this option.

T- Test selection menu. This option lets you selectively run any of the six onboard diagnostics tests. A loop count selection lets you determine how many times the tests are run.

S - Display switch settings. The switchpack ON/OFF settings are portrayed on this screen to verify that the firmware has interpreted your settings correctly. The specific configuration option represented by the switch settings is also identified.
Q - Quick test on positioning erase. Causes the Erase and Position Test to terminate after 256 records instead of running all the way to EOT. Once set, the option remains in effect until reset by the operator in the Main Menu.

X - Exit Maintenance Mode after resetting switches. After resetting the Operational/Diagnostics and Loop/Continue switches, "X" will return you to the operation mode. If you have not reset any switches, "X" will return you to the initial diagnostic screen.

CAUTION

Ensure that SW1-3 and SW1-4 are set before SW1-2, or data corruption may result. Also, ensure that SW2-6 and SW2-7 are never ON or OFF simultaneously.

<table>
<thead>
<tr>
<th>Switch</th>
<th>OFF(0)</th>
<th>ON(1)</th>
<th>Factory</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1-1</td>
<td>Run</td>
<td>Reset</td>
<td>OFF(0)</td>
<td>M7530-PA Tape Controller Reset</td>
</tr>
<tr>
<td>SW1-2</td>
<td>Operational</td>
<td>Diagnostic</td>
<td>OFF(0)</td>
<td>Mode Select</td>
</tr>
<tr>
<td>SW1-3*</td>
<td>Disable</td>
<td>Enable</td>
<td>OFF(0)</td>
<td>Record Buffering</td>
</tr>
<tr>
<td>SW1-4</td>
<td>Continue</td>
<td>Loop</td>
<td>OFF(0)</td>
<td>Loop on Self-Test Error</td>
</tr>
<tr>
<td>SW1-4*</td>
<td>Continue</td>
<td>MicroVAX</td>
<td>OFF(0)</td>
<td>Host Type Select</td>
</tr>
<tr>
<td>SW2-1</td>
<td>Address Sel</td>
<td>-</td>
<td>OFF(0)</td>
<td>Q-Bus Address Select (1 of 8)</td>
</tr>
<tr>
<td>SW2-2</td>
<td>Address Sel.</td>
<td>-</td>
<td>OFF(0)</td>
<td>Q-Bus Address Select</td>
</tr>
<tr>
<td>SW2-3</td>
<td>Address sel</td>
<td>-</td>
<td>OFF(0)</td>
<td>Q-Bus Address Select</td>
</tr>
<tr>
<td>SW2-4</td>
<td>-</td>
<td>-</td>
<td>Not Used</td>
<td></td>
</tr>
<tr>
<td>SW2-5</td>
<td>Disable</td>
<td>-</td>
<td>ON(1)</td>
<td>22-bit addressing</td>
</tr>
<tr>
<td>SW2-6</td>
<td>Edge Select</td>
<td>-</td>
<td>OFF(0)</td>
<td>WDS Leading/Trailing Edge Select</td>
</tr>
<tr>
<td>SW2-7</td>
<td>Edge Select</td>
<td>-</td>
<td>ON(1)</td>
<td>EDS Leading/Trailing Edge Select</td>
</tr>
<tr>
<td>SW2-8</td>
<td>--</td>
<td></td>
<td>OFF</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

ON(1) = ON  
OFF(0) = OFF  
* = Dual Purpose Switch  
WDS = Write Data Strobe

M7530-PA Jumper Functional/Factory Configuration
<table>
<thead>
<tr>
<th>Jumper</th>
<th>Function</th>
<th>Factory</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC</td>
<td>Clock</td>
<td>IN</td>
</tr>
<tr>
<td>DE</td>
<td>Factory Test</td>
<td>OUT</td>
</tr>
<tr>
<td>FG</td>
<td>Monitor IRQ Level 6</td>
<td>OUT</td>
</tr>
<tr>
<td>GH</td>
<td>Monitor IRQ Level 5</td>
<td>In</td>
</tr>
<tr>
<td>JK</td>
<td>IRQ Level 5 Request</td>
<td>OUT</td>
</tr>
</tbody>
</table>

For additional information refer to the TSV05 Tape Transport Subsystem Pocket Service Guide Paragraph 3 Board Configuration Pages 15 - 24; or refer to the TSV05 Tape Transport Subsystem Installation/Owner’s Manual Paragraph 2.5.4.1 Switch Configuration on pages 56 - 59.