Dear Valued Customer:

Thank you for your purchase of a Motorola Computer Group single board computer (SBC) CPU (68K or 88K) board product.

This letter applies to the following families of CPU boards:

MVME147
MVME147S
MVME162
MVME162FX
MVME162LX
MVME166
MVME167
MVME176
MVME177
MVME187
MVME188
MVME188A
MVME197DP
MVME197LE
MVME197SP

If you have any trouble with your board, try the basic troubleshooting steps listed in the following pages, before calling for help or sending your CPU board back for repair.

Note   **Wherever this letter mentions "this manual", refer to the *User's Manual* or *Installation Guide* that came with your board.**

Once again, thank you for purchasing Motorola products. If you have any other questions or comments, please contact your local Motorola Computer Group sales representative.

Troubleshooting CPU Boards

Troubleshooting CPU Boards: Solving Startup Problems | T

❏ Try these simple troubleshooting steps before calling for help or sending your CPU board back for repair.

❏ Some of the procedures will return the board to the factory debugger environment. (The board was tested under these conditions before it left the factory.)

❏ Selftest may not run in all user-customized environments.

Table T-1. Basic Troubleshooting Steps for _ALL_ CPU Boards

Condition	Possible Problem	Try This:
I. Nothing works, no display on the terminal.	A. If the RUN or PWR or +12V LED is not lit, the board may not be getting correct power.	1. Make sure the system is plugged in. 2. Check that the board is securely installed in its backplane or chassis. 3. Check that all necessary cables are connected to the board, per this manual. 4. Check for compliance with System Considerations, per this manual. 5. Review the Installation and Startup procedures, per this manual. In most cases, this includes a step-by-step powerup routine. Try it.
	B. If the LEDs are lit, the board may be in the wrong slot.	1. For VMEmodules, the CPU board should be in the first (leftmost) slot. 2. Also check that the "system controller" function on the board is enabled, per this manual.
	C.The "system console" terminal may be configured wrong.	Configure the system console terminal per this manual.

Table T-1. Basic Troubleshooting Steps for *ALL* CPU Boards (Continued)

Condition	Possible Problem	Try This:
II. There is a display on the terminal, but input from the keyboard and/or mouse has no effect.	A. The keyboard or mouse may be connected incorrectly.	Recheck the keyboard and/or mouse connections and power.
	B. Board jumpers may be configured incorrectly.	Check the board jumpers per this manual.

	C. You may have invoked flow control by pressing a HOLD or PAUSE key, or by typing
	    <CTRL>-S
	 Also, a HOLD LED may be lit.
		Press the HOLD or PAUSE key again.
		 If this does not free up the keyboard, type in
		    <CTRL>-Q

YOU ARE FINISHED (DONE) WITH THIS TROUBLESHOOTING PROCEDURE. PROCEED WITH THE TROUBLESHOOTING PROCEDURE FOR YOUR PARTICULAR CPU BOARD, AS GIVEN IN ONE OF THE FOLLOWING TABLES.		

Table T-2. Troubleshooting *MVME147 Series* Boards Only

Condition	Possible Problem	Try This:
III. Debug prompt `147-Bug>` does not appear at powerup, and the board does not auto boot.	A. Debugger EPROM may be missing. B. The board may need to be reset.	1. Disconnect *all* power from your system. 2. Check that the proper debugger EPROM is installed per this manual. 3. Reconnect power. ⚠ **Caution** Performing the next step will change some parameters that may affect your system operation. 4. Restart the system by "double-button reset": press the RESET and ABORT switches at the same time; release RESET first, wait five seconds, then release ABORT. 5. If the debug prompt appears, go to step IV. If the debug prompt does not appear, go to step VI.

Table T-2. Troubleshooting *MVME147 Series* Boards Only (Continued)

Condition	Possible Problem	Try This:

IV. Debug prompt
 	
   147-Bug>
 	
appears at powerup, but the board does not auto boot.
	A. The initial debugger environment parameters may be set wrong.
	
	B. There may be some fault in the board hardware.
		1. Type in
		   env;d <CR>
		This sets up the default parameters for the debugger environment.
		2. When prompted to Update Non-Volatile RAM, type in
		   y <CR>
		3. When prompted for clock speed (in MHz), change it only if it is not correct.
		4. When prompted to Reset System, type in
		   y <CR>
		After a cold start, the debug prompt
		   147-Bug>
		is displayed.
		5. Change to the diagnostic directory by typing
		   sd <CR>
		Now the prompt should be
		   147-Diag>
		6. Run selftest by typing in
		   st <CR>
		The tests take as much as 10 minutes, depending on RAM size. They are complete when the prompt returns. (The onboard selftest is a valuable tool in isolating defects.)
		7. The system may indicate that it has passed all the selftests. Or, it may indicate a test that failed. If neither happens, enter
		   de <CR>
		Any errors should now be displayed. If there are any errors, go to step VI. If there are no errors, go to step V.

Table T-2. Troubleshooting *MVME147 Series* Boards Only (Continued)

Condition	Possible Problem	Try This:
V. The debugger is in system mode and the board auto boots, or the board has passed selftests.	A. No problems - troubleshooting is done.	No further troubleshooting steps are required. **Note** Even if the board passes all tests, it may still be bad. Selftest does not try out all functions in the board (for example, SCSI, or VMEbus tests).
VI. The board has failed one or more of the tests listed above, and can not be corrected using the steps given.	A. There may be some fault in the board hardware or the on-board debugging and diagnostic firmware.	1. Document the problem and return the board for service. 2. Phone 1-800-222-5640.
YOU ARE FINISHED (DONE) WITH THIS TROUBLESHOOTING PROCEDURE.		

Table T-3. Troubleshooting *MVME162 Series* Boards Only

Condition	Possible Problem	Try This:
III. Debug prompt 162-Bug> does not appear at powerup, and the board does not auto boot.	A. Debugger EPROM/Flash may be missing B. The board may need to be reset.	1. Disconnect *all* power from your system. 2. Check that the proper debugger EPROM is installed per this manual. 3. Remove jumper from J22, pins 9 and 10. This enables use of the EPROM instead of the Flash memory. 4. Reconnect power. Restart the system. 5. If the debug prompt appears, go to step IV or step V, as indicated. If the debug prompt does not appear, go to step VI.

IV. Debug prompt
 	
162-Bug>
 	
appears at powerup, but the board does not auto boot.
	A. The initial debugger environment parameters may be set wrong.
	
	B. There may be some fault in the board hardware.
		1. Start the onboard calendar clock and timer. Type
		    set *mmddyyhhmm* <CR>
		where the characters indicate the month, day, year, hour, and minute. The date and time will be displayed.
		
		⚠ **Caution** Performing the next step will change some parameters that may affect your system operation.
		
		2. Type in
		    env;d <CR>
		This sets up the default parameters for the debugger environment.
		3. When prompted to Update Non-Volatile RAM, type in
		    y <CR>
		4. When prompted to Reset Local System, type in
		    y <CR>
		After a cold start, the debug prompt
		    162-Bug>
		is displayed. (continues>)

Table T-3. Troubleshooting *MVME162 Series* Boards Only (Continued)

Condition	Possible Problem	Try This:

		5. Change to the diagnostic directory by typing
		   sd <CR>
		Now the prompt should be
		   `162-Diag>`
		6. Run selftest by typing in
		   st <CR>
		The tests take as much as 10 minutes, depending on RAM size. They are complete when the prompt returns. (The onboard selftest is a valuable tool in isolating defects.)
		7. The system may indicate that it has passed all the selftests. Or, it may indicate a test that failed. If neither happens, enter
		   de <CR>
		Any errors should now be displayed. If there are any errors, go to step VI. If there are no errors, go to step V.

V. The debugger is in system mode and the board auto boots, or the board has passed selftests.	A. No problems - troubleshooting is done.	No further troubleshooting steps are required. **Note** Even if the board passes all tests, it may still be bad. Selftest does not try out all functions in the board (for example, SCSI, or VMEbus tests).
VI. The board has failed one or more of the tests listed above, and can not be corrected using the steps given.	A. There may be some fault in the board hardware or the on-board debugging and diagnostic firmware.	1. Document the problem and return the board for service. 2. Phone 1-800-222-5640.
YOU ARE FINISHED (DONE) WITH THIS TROUBLESHOOTING PROCEDURE.		

Table T-4. Troubleshooting *MVME166/167/176/177/187/188/188A* Boards Only

Condition	Possible Problem	Try This:
III. Debug prompt `1xx-Bug>` does not appear at powerup, and the board does not auto boot.	A. Debugger EPROM/Flash may be missing B. The board may need to be reset.	1. Disconnect *all* power from your system. 2. Check that the proper debugger EPROM or debugger Flash memory is installed per this manual. 3. Reconnect power. 4. Restart the system by "double-button reset": press the RESET and ABORT switches at the same time; release RESET first, wait seven seconds, then release ABORT. 5. If the debug prompt appears, go to step IV or step V, as indicated. If the debug prompt does not appear, go to step VI.

Table T-4. Troubleshooting *MVME166/167/176/177/187/188/188A* Boards Only (Continued)

Condition	Possible Problem	Try This:

IV. Debug prompt
 	
    `1xx-Bug>`
 	
 appears at powerup, but the board does not auto boot.
	A. The initial debugger environment parameters may be set wrong.	1. Start the onboard calendar clock and timer. Type
		    set *mmddyyhhmm* <CR>
		where the characters indicate the month, day, year, hour, and minute. The date and time will be displayed.
		
		⚠️ **Caution** Performing the next step will change some parameters that may affect your system operation.
		
		2. Type in
		    env;d <CR>
		This sets up the default parameters for the debugger environment.
		3. When prompted to Update Non-Volatile RAM, type in
		    y <CR>
		4. When prompted to Reset Local System, type in
		    y <CR>
		5. After clock speed is displayed, immediately (within five seconds) press the Return key
		     <CR>
		or
		    BREAK
		to exit to System Menu. Then enter a 3 "Go to System Debugger" and Return
		    3 <CR>
		Now the prompt should be
		    `1xx-Diag>` (continues>)

	B. There may be some fault in the board hardware.	

Table T-4. Troubleshooting *MVME166/167/176/177/187/188/188A* Boards Only (Continued)

Condition	Possible Problem	Try This:

		6.You may need to use the **cnfg** command (see your board Debugger Manual) to change clock speed and/or Ethernet Address, and then later return to
		
		    env <CR>
		
		and step 3.
		7. Run selftest by typing in
		
		    st <CR>
		
		The tests take as much as 10 minutes, depending on RAM size. They are complete when the prompt returns. (The onboard selftest is a valuable tool in isolating defects.)
		8. The system may indicate that it has passed all the selftests. Or, it may indicate a test that failed. If neither happens, enter
		
		    de <CR>
		
		Any errors should now be displayed. If there are any errors, go to step VI. If there are no errors, go to step V.

V. The debugger is in system mode and the board auto boots, or the board has passed selftests.	A. No problems - troubleshooting is done.	No further troubleshooting steps are required. **Note** Even if the board passes all tests, it may still be bad. Selftest does not try out all functions in the board (for example, SCSI, or VMEbus tests).
VI. The board has failed one or more of the tests listed above, and can not be corrected using the steps given.	A. There may be some fault in the board hardware or the on-board debugging and diagnostic firmware.	1. Document the problem and return the board for service. 2. Phone 1-800-222-5640.
YOU ARE FINISHED (DONE) WITH THIS TROUBLESHOOTING PROCEDURE.		

Table T-5. Troubleshooting *MVME197 Series* Boards Only

Condition	Possible Problem	Try This:

III. Debug prompt
  197-Bug>
does not appear at powerup, and the board does not auto boot.
	A. Debugger EPROM/Flash may be missing
	
	B. The board may need to be reset.
		1. Disconnect *all* power from your system.
		2. Check that the proper debugger EPROM or debugger Flash memory is installed per this manual.
		3. Reconnect power.
		4. Restart the system by "double-button reset": press the RESET and ABORT switches at the same time; release RESET first, wait seven seconds, then release ABORT.
		5. You will get a prompt asking if you want to continue in debugger with double button reset (N/Y)? Type in
		  y <CR>
		6. If the debug prompt appears, go to step IV or step V, as indicated. If the debug prompt does not appear, go to step VI.

Table T-5. Troubleshooting *MVME197 Series* Boards Only (Continued)

Condition	Possible Problem	Try This:

IV. Debug prompt
 	
    197-Bug>
 	
appears at powerup, but the board does not auto boot.
	A. The initial debugger environment parameters may be set wrong.	1. Start the onboard calendar clock and timer. Type
		    set *mmddyyhhmm* <CR>
		where the characters indicate the month, day, year, hour, and minute. The date and time will be displayed.

	B. There may be some fault in the board hardware.	⚠ **Caution** Performing the next step will change some parameters that may affect your system operation.
		
		2. Type in
		    env;d <CR>
		This sets up the default parameters for the debugger environment.
		3. When prompted to Update Non-Volatile RAM, type in
		    y <CR>
		4. When prompted to Reset Local System, type in
		    y <CR>
		5. After clock speed is displayed, and the line
		    Idle MPU(s): xxxx
		is displayed, immediately (within five seconds) press the Return key
		    <CR>
		or
		    BREAK
		to exit to System Menu. Then enter a 3 "Go to System Debugger" and Return
		    3 <CR>
		Now the prompt should be
		    197-Diag> (continues>)

Table T-5. Troubleshooting *MVME197 Series* Boards Only (Continued)

Condition	Possible Problem	Try This:

		6. You may need to use the **cnfg** command (see your board Debugger Manual) to change clock speed and/or Ethernet Address, and then later return to
		
		   env <CR>
		
		and step 3.
		7. Run selftest by typing in
		
		   st <CR>
		
		The tests take as much as 10 minutes, depending on RAM size. They are complete when the prompt returns. (The onboard selftest is a valuable tool in isolating defects.)
		8. The system may indicate that it has passed all the selftests. Or, it may indicate a test that failed. If neither happens, enter
		
		   de <CR>
		
		Any errors should now be displayed. If there are any errors, go to step VI. If there are no errors, go to step V.

V. The debugger is in system mode and the board auto boots, or the board has passed selftests.	A. No problems - troubleshooting is done.	No further troubleshooting steps are required. **Note** Even if the board passes all tests, it may still be bad. Selftest does not try out all functions in the board (for example, SCSI, or VMEbus tests).
VI. The board has failed one or more of the tests listed above, and can not be corrected using the steps given.	A. There may be some fault in the board hardware or the on-board debugging and diagnostic firmware.	1. Document the problem and return the board for service. 2. Phone 1-800-222-5640.
YOU ARE FINISHED (DONE) WITH THIS TROUBLESHOOTING PROCEDURE.		