
Subject: Using Maxtor's Power Diagnostic Utilities (PowerMax v 4.21)**Summary: Guide to diagnosing hard disk problems on Maxtor/Quantum hard drives utilizing POWERMAX**

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Overview: The POWERMAX utility performs diagnostic read/write verifications on Maxtor/Quantum hard drives. These tests will confirm hard drive integrity. Maxtor recommends this utility for troubleshooting any potential hard drive problem. These problems include, but are not limited to the following:

- Potential hard drive surface problems (e.g., bad clusters, bad sectors, partitioning/formatting problems, etc.).
- Drive recognition problems (e.g. hard drive that is not recognized by the operating system).
- Data removal for security purposes or software corruption.

Maxtor recommends that you run PowerMax on all hard drives before considering warranty replacement.

Guide to diagnosing Hard Disk problems

The first step to returning a disk drive is clear confirmation that the drive is truly defective. Many disk drives we are asked to replace are not, in fact defective. It is in your best interest to perform some basic troubleshooting first. You will avoid the inconvenience, expense, and unnecessary effort of replacing a working drive. Often a faulty cable, file corruption, virus, or wrong jumper settings can be interpreted as a drive failure.

1. Try a different cable.
2. If the disk drive is not "seen" by the motherboard's ATA/SATA hard drive controller or add in (PCI) ATA/SATA controller, isolate the offending drive as the only device on the bus. If this does not work, try the drive with another ATA or SATA controller, motherboard, or cable. Do symptoms continue? If not, the problem is with the controller, motherboard, or cable.
3. If the disk drive passes all tests, the problem remains elsewhere in your system. You could have a system Hardware problem or a corrupted file. Programs in the operating system such as Scandisk and Defrag show only corrupted file structures not true media damage. If you are receiving errors in Windows, copy and paste the error message to a Web browser search engine (Yahoo, Alta Vista, Excite, Google, et al.), and search the internet, for articles relating to the error. You may try reloading the operating system or application program software. You can also use other (third party) diagnostic utilities that test beyond the hard drive for viruses, file system issues, and registry integrity.
4. For more information diagnosing hard disk, software and system problems please visit our Knowledge Base at <http://www.maxtorkb.com>
5. PowerMax can identify defective hard drives, but may not identify drives with intermittent errors. These drives usually function well, and only occasionally report errors. If you feel the drive may be failing intermittently, run the PowerMax extended tests.
6. The best test for a drive with intermittent problems is a 'low level' format routine. **!! Warning !!** This test will erase all your data, but the drive will be restored to a 'factory re-certified' condition. Be sure to make a full backup of all critical data before proceeding. If your computer has more than one hard drive, be sure to choose the correct drive. If a drive fails this test, it usually indicates a drive failure.

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7. If PowerMax detects a hardware problem at startup, or during the installation confirmation test, the program displays a list of the most common hardware configuration problems.

Power connection: Make sure that the power connector is firmly seated in the connector. Try another power connector within the system, and make sure the drive spins when powering the system on.

Interface Cable: The interface cable (the gray one) should have a colored stripe along one side (Usually red, black, or blue in color). Ensure that it is firmly seated in the connector and that pin one (the edge of the cable with the color stripe) is closest to the power connector.

SATA Cables: SATA data cables should be checked for a full fit when connecting. If you can't feel the contact Pins clicking into place while connecting the cable to the drive, replace the cable. This also applies to the 15 pin power connector.

Jumpers: Confirm the jumpers are correctly set. If other hard drives are connected to the cable, try testing only the suspect drive alone on the cable.

System Changes: Have you made any recent changes, or added hardware that might interfere with the drive? If so, remove any recently installed device and re-test the drive. Try to restore the system to a state before the errors were seen. This includes removing any add in ATA or SATA controllers, video, game controllers, etc. Test the drive by connecting directly to the system board ATA or SATA controllers. This can help isolate a hard drive or controller issue.

Note: PowerMax displays an 8 digit diagnostic code in a popup window on failed drives, please write down the code and select the Contact Maxtor option in the test selection window for further instructions on returning your drive.

Overview of tests using POWERMAX

PowerMax is a keyboard menu driven diagnostic. Choices and options are displayed at the bottom of the screen. Further instructions are displayed at the bottom of the popup window display when a test completes.

Available Tests:

1. Installation Confirmation
2. Basic Quick (90 Second) Test
3. Advanced Test (Full Scan Test)
4. Burn In Test
5. Low Level Format (Quick)
6. Low Level format (Full)

Note: PowerMax will identify drives connected to most Promise, CMD, and Highpoint ATA or SATA controllers. PowerMax v 4.21 will not detect ATA or SATA hard disks connected to embedded or add in RAID controllers, NVIDIA Force 3, or Force 4 chipsets. If the hard disk is connected to an unsupported controller, it will have

to be moved to an alternate system or controller for diagnosis.

Installation Confirmation Test:

In the “Select Test” window Highlight “**Installation Confirmation**” and press [Enter]. The “Test Status” window identifies each test and its results. Before and during the test, the “Current Drive” window displays information about the Maxtor drive selected for testing. If the drive passes the “Installation Confirmation” tests, a results window will display:

Congratulations! Your Maxtor Hard drive is correctly installed. Press any key to continue. Press any key to return to the “Select Test” window.

Basic Quick (90 Second) Test:

In the “Select Test” window highlight “**Basic Quick (90 Second) Test**” and press [Enter]. The “Test Status” window identifies the test and displays the results of each test. At the conclusion of the “Basic Quick (90 Second)Test” a window displays the test results. If the “Basic Quick (90 Second) Test” passes, a results window will display: **Congratulations! Your drive has passed the Basic (Quick) Test. If you are still experiencing problems, please run the Advanced Test to re-certify your drive.** Press any key to return to the “Select Test” window

Advanced Test (Full Scan Test):

The Maxtor PowerMax Advanced test runs the basic 90 second quick test, then scans the entire drive (sector by sector) to find errors. This can be a long test (20 – 30 minutes) depending on drive capacity. Perform this test only if the drive has passed the first two tests but the drive is still not performing properly.

In the “Select Test” window, highlight “**Advanced Test (Full Scan Test)**” and press [Enter].

If the drive passes the “Advanced Test (Full scan Test)” a results window will display:

Congratulations! Your drive is certified error free

Press any key to continue and return to the PowerMax Main Menu.

Burn In Test:

This test performs a full drive read sector by sector and allows numerous passes. This can be time consuming depending on how many cycles (20-30 minutes each) you choose. Perform this test only if the drive has passed the first three tests and the drive is still not performing correctly. In the “Select Test” window Highlight “**Burn In Test**” and press [Enter]. A window appears with a brief explanation. You must specify how many times to run the test. Example: “How Many passes (1-60) (hit ESC to Cancel)?” Enter the number of passes (1-60) and press [Enter]. Two to five passes is usually sufficient. If the “Burn In Test” completes without error, the program returns to the “Select Test” window. Near the bottom of the “Current Drive” screen a message will be displayed, Test Results: **PASSED**

Low Level Format, Quick or Full Test:

!! Warning!! These tests are data destructive, all user information on the hard drive is removed. Maxtor recommends you backup all critical data and remove other hard drives before performing this test. Perform this test only if all other tests have passed (or by direction of Maxtor Technical Support) but the hard drive is still not performing correctly. The quick option is most useful for removing a computer virus, or you are rebuilding the information on your hard drive, and you need a quick erase of the operating system without taking the time involved to perform a full LLF. The quick LLF overwrites a pattern of zeros to the first 300 megabytes, and the last 100 megabytes of the drive. The full LLF overwrites a pattern of zeros to all sectors on the drive. High capacity hard drives take longer to complete. Allow sufficient time to complete the test. Several hours to overnight may be needed. A full Low Level Format remains the most effective test for a drive with intermittent problems.