

# Data Lifeguard Diagnostic Utility





# **WD**

## **Data Lifeguard Diagnostic Utility (DLGDIAG)**

### *User Manual*

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## 1

# Introduction

The Data Lifeguard diagnostic utility (DLGDIAG) is designed to test WD hard drives for errors. If DLGDIAG reports errors, you can use the program to attempt to restore the hard drive to a defect-free status.

DLGDIAG supports WD external and SATA hard drives. It also supports EIDE hard drives installed on both primary and secondary IDE ports (either the motherboard or a controller card). DLGDIAG must be run separately to test each WD hard drive in the system.

Depending on your hard drive model and diagnostic requirements, you can use either the Windows or DOS version of DLGDIAG. Windows and DOS versions of the DLGDIAG software are available at [support.wdc.com/download](http://support.wdc.com/download).

## DLGDIAG Options

### Windows

- **Quick Test** — performs a quick S.M.A.R.T. self-test to gather and verify the Data Lifeguard information contained on the drive.
- **Extended Test** — performs a Full Media Scan to detect bad sectors. Test may take several hours to complete depending on the size of the drive.
- **Write Zeros** — writes zeros to the drive using the Full Erase or Quick Erase option. Erases all data on the drive by writing zeros to each sector – file system and data will be lost.
- **View Test Results** — displays results for the last hard drive tested.

### DOS

- **Select Drive** — selects the hard drive to test and displays status for all hard drives.
- **Quick Test** — tests the drive quickly for any major physical problems.
- **Extended Test** — checks the drive thoroughly for any major physical problems.
- **Write Zeros To Drive** — wipes any and all data off the drive. Use this option when your data is no longer usable or recoverable.
- **View Test Results** — displays results for the last hard drive tested.
- **Print Test Results** — prints results for the last hard drive tested (USB printers not supported).
- **Log File Open/Close** — stores results for all hard drives tested (DLGDIAG.LOG)
- **Enter & Print RMA Information** — enters and prints RMA information for returning a hard drive to WD.
- **Help** — brief descriptions of each option and explanations of error codes.
- **Quit** — reboot your system once you have completed the selected tasks.

## When to Use DLGDIAG

If the hard drive reports errors, if you are unable to access files on the hard drive, or if another diagnostic utility such as SCANDISK, CHKDISK, DEFRAG, or Norton Utilities reports errors on the hard drive, run DLGDIAG to determine if they are hard drive-related.

DLGDIAG does not report errors associated with the system BIOS, controller card, or motherboard of your system.

DLGDIAG can be used at any time to test for hard drive errors. If you experience problems accessing files or encounter other apparent hard drive errors, you can safely run the Quick Test option to confirm your hard drive integrity.

DLGDIAG's Repair Drive feature allows the user to restore any errors found during the Extended Test scan of your hard drive without destroying all data on the drive.

DLGDIAG does not resolve mechanical damage such as noisy drives or drives that do not spin up. Contact WD technical support (see "Service and Support" on page 19) if you have a hard drive that exhibits the above difficulties.

## Before using DLGDIAG

If used properly, DLGDIAG does not overwrite data on the hard drive during the scan and will not result in data loss. However, you should always back up your data before running any diagnostic utility. Back up all data on your hard drive(s) before using DLGDIAG.

**CAUTION:** Back up all data on your hard drive(s) before using DLGDIAG. You will erase all data if the Write Zeros To Drive option is invoked.

**2**

## DLGDIAG for Windows

DLGDIAG for Windows is a Windows version of the Data Lifeguard Diagnostics utility. The utility can perform drive identification, diagnostics, and repairs on a WD FireWire, EIDE, or USB drive. In addition, it can provide the drive's serial and model numbers.

### Supported Products

#### Internal Hard Drives

- WD SATA
- WD EIDE

#### External Hard Drives

- WD USB
- WD FireWire®
- WD Combo

### Supported Operating Systems

- Windows XP
- Windows 2000
- Windows Me
- Windows 98SE

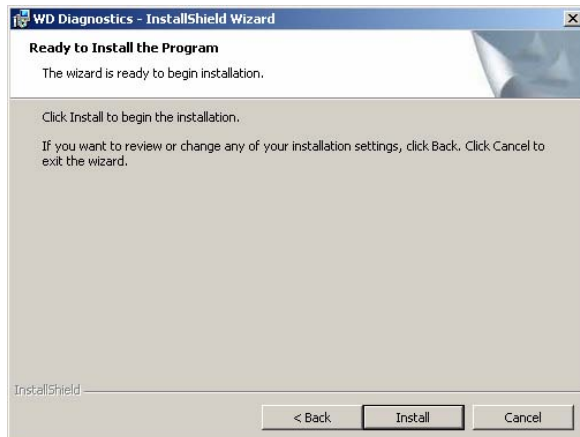
## Installing DLGDIAG for Windows

**Important:** If you have a pop-up blocker installed, you may need to disable it to download the DLGDIAG software.

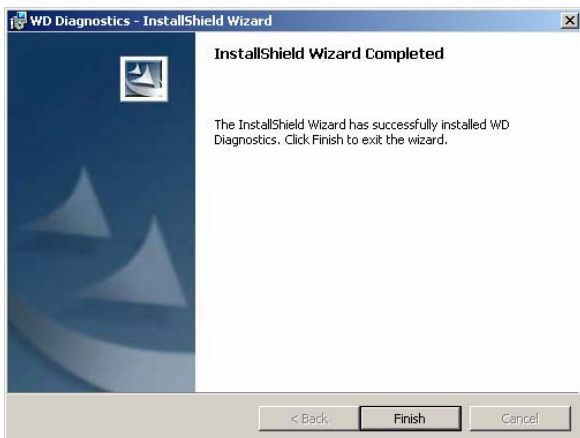
1. Go to [support.wdc.com/download](http://support.wdc.com/download) and download the Data Lifeguard Diagnostics for Windows program (WinDLG.zip).
2. Extract and run the Setup.exe program.
3. The WD Diagnostics InstallShield Wizard screen appears. Click the **Next** button.



4. Click **Install**.

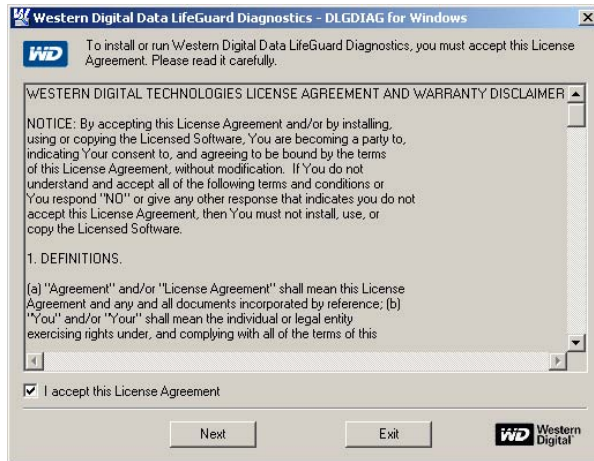


5. Click **Finish**.

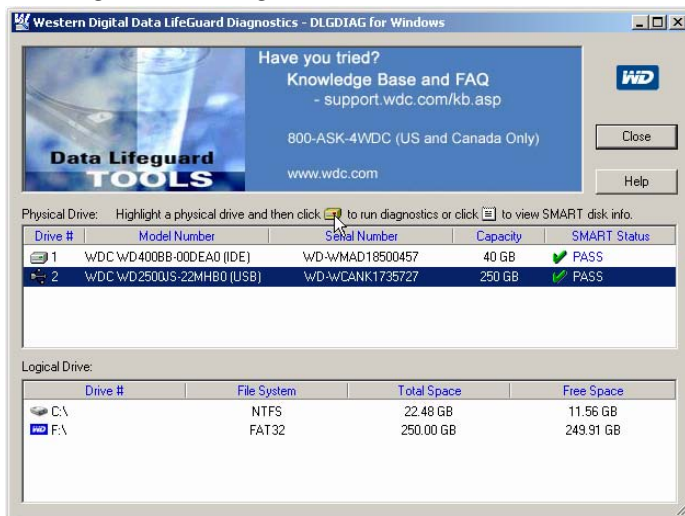


## Using DLGDIAG for Windows

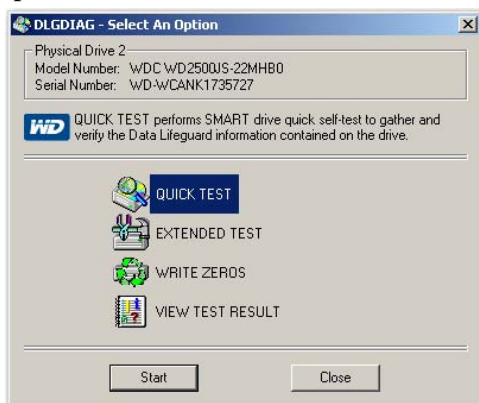
1. Click the **Start** button and point to **Programs --> WD Diagnostics- WD Diagnostics**.
2. Click **I accept this License Agreement**, then click **Next**.



3. The main program screen displays. The top window shows the drives in your system that are available for testing. The model number, serial number, and capacity of each drive are displayed. In the bottom window, the partition information for the selected drive is displayed. Highlight the drive and double-click the physical drive icon on the top row to run diagnostic testing.



4. The **DLGDIAG - Select an Option** window displays the four DLGDIAG for Windows options.



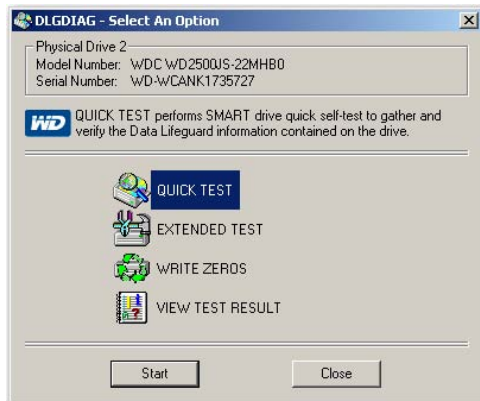


## Quick Test

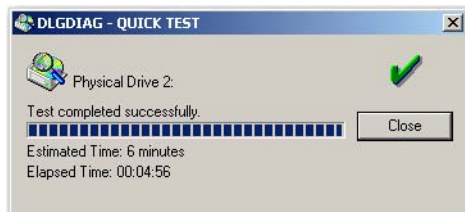
Quick Test performs a S.M.A.R.T. drive quick self test to gather and verify Data Lifeguard information on the drive.

**Note:** Quick Test will perform a S.M.A.R.T. drive self-test only if it's supported and accessible by DLGDIAG. Otherwise, it will perform a short media scan. The S.M.A.R.T. feature is not supported for external hard drives connected to the computer via the FireWire interface. Some IDE and SATA controllers do not allow S.M.A.R.T. information to be read from the hard drive. For more information, please contact the manufacturer of the controller to determine if the controller supports S.M.A.R.T. attribute reading.

1. Click **Quick Test**, then click **Start**.



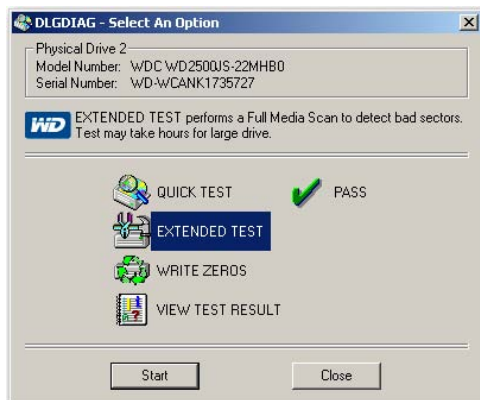
2. Close any open programs to prevent data loss, then click **OK**.
3. Quick Test begins. The test may take several minutes to complete depending on the size of the hard drive tested. When the test is complete, click **Close**.



## Extended Test

Extended Test performs a full media scan to detect bad sectors. This test may take up to several hours to run depending on the size of the drive.

1. Click **Extended Test**, then click **Start**.



2. Close any open programs to prevent data loss, then click **OK**.

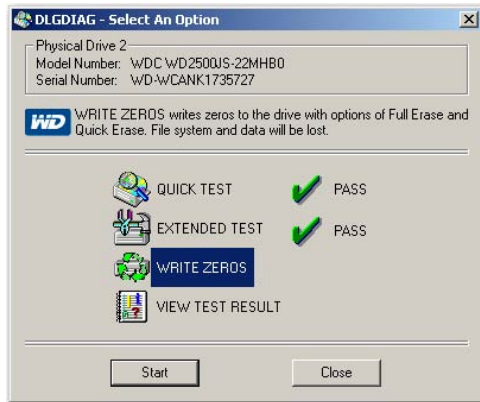
3. Extended Test begins. The test may take several hours to complete depending on the size of the hard drive tested. When the test is complete, click **Close**.

## Write Zeros

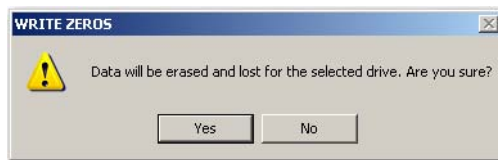
Write Zeros writes zeros to the drive with the option to perform a quick erase or full erase. Selecting the write zeros option the file system and all data on the drive being tested.

**CAUTION:** Back up all data on your hard drive(s). You will erase all data if the Write Zeros option is invoked.

1. Click **Extended Test**, then click **Start**.



2. If you are sure that you want to write zeros to the drive, click **Yes**.



3. Select Quick Erase or Full Erase, then click **OK**.

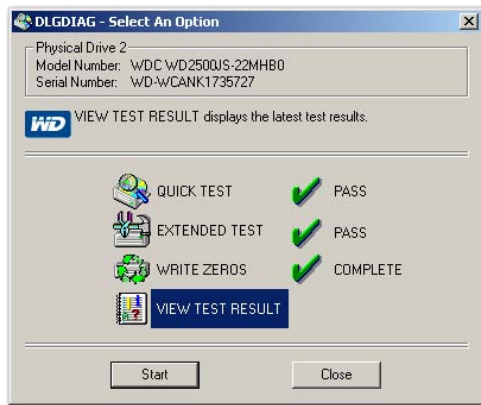


4. Write Zeros begins. When Write Zeros is complete, click **Close**.

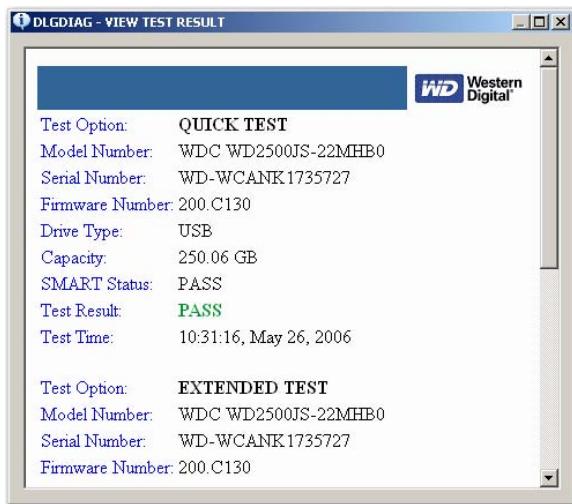
## View Test Result

View Test Result displays the results of the most recent test(s) run on your system's hard drive(s).

1. Click **View Test Result**, then click **Start**.



2. The test results display.

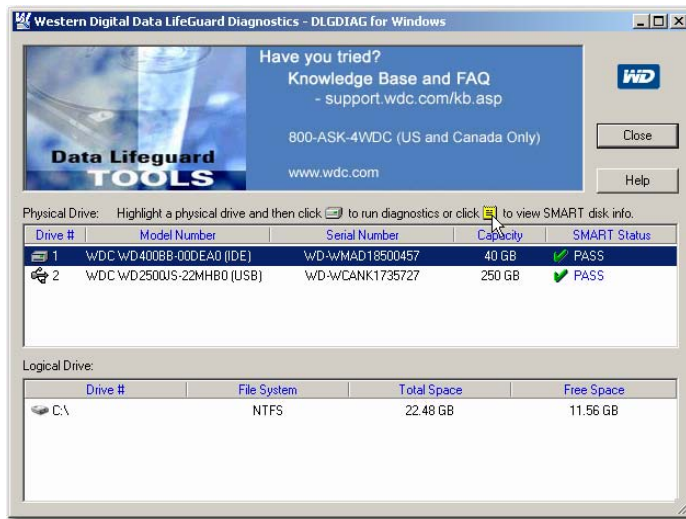


## View S.M.A.R.T. Disk Information

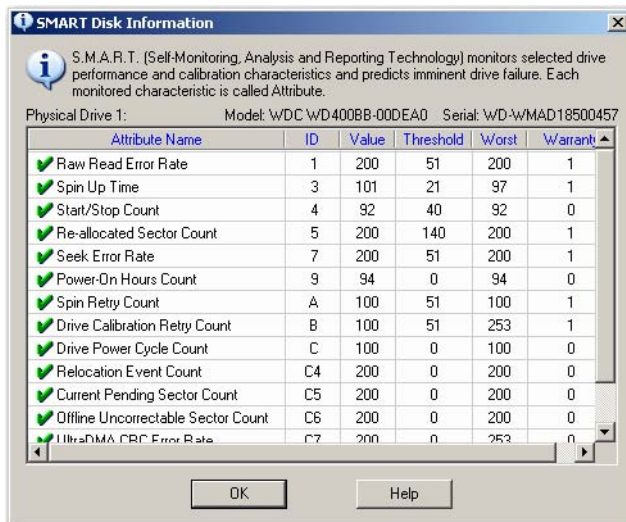
S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) monitors drive performance and calibration characteristics, and predicts imminent drive failure. Drive attributes and their associated values are listed in the **SMART Disk Information** screen.

**Note:** S.M.A.R.T. disk information is available only when the S.M.A.R.T. feature is supported and accessible by DLGDIAG. Under the **SMART Status** column, a question mark icon displays if the S.M.A.R.T. feature is not available. A red X icon displays for a specific attribute if and only if its value falls below the threshold value and the warranty value is 1. Some IDE and SATA controllers do not allow S.M.A.R.T. information to be read from the hard drive. For more information, please contact the manufacturer of the controller to determine if the controller supports S.M.A.R.T. attribute reading.

1. Highlight the drive and click the S.M.A.R.T. disk info icon on the top row to view S.M.A.R.T. disk information.



2. The S.M.A.R.T. disk information for the selected drive displays.



# 3

## DLGDIAG for DOS

DLGDIAG for DOS is a DOS version of the Data Lifeguard Diagnostics utility that determines the physical condition of a WD hard drive. If you are having computer problems that you suspect are hard drive related, you can test your drive with this tool. This diagnostic utility is designed for WD hard drives larger than 8.4 GB with a model number starting with “WD.”

### Supported Products

#### Internal Hard Drives

- WD SATA
- WD EIDE

### Creating Bootable DLGDIAG for DOS Disks

**Important:** If you have a pop-up blocker installed, you may need to disable it to download the DLGDIAG software. A 3.5-inch floppy or CD-RW drive is required to create a bootable DLGDIAG for DOS disk.

#### Floppy Disk

1. Go to [support.wdc.com/download](http://support.wdc.com/download) and download the Data Lifeguard Diagnostics for DOS (Floppy) program (DlgDiagvXXXx.exe or DlgDiagvXXXx.zip) to your desktop. Extract the DlgDiagvXXXx.exe file from DlgDiagvXXXx.zip if you download the Zip file.
2. Double-click the DlgDiagvxxx Diskette Creator icon on your desktop, follow the instructions in each screen to create your DLGDIAG floppy disk.

You can now boot to your DLGDIAG floppy disk. Make sure the boot order in your system BIOS is set to boot from the floppy drive first.

#### CD-ROM

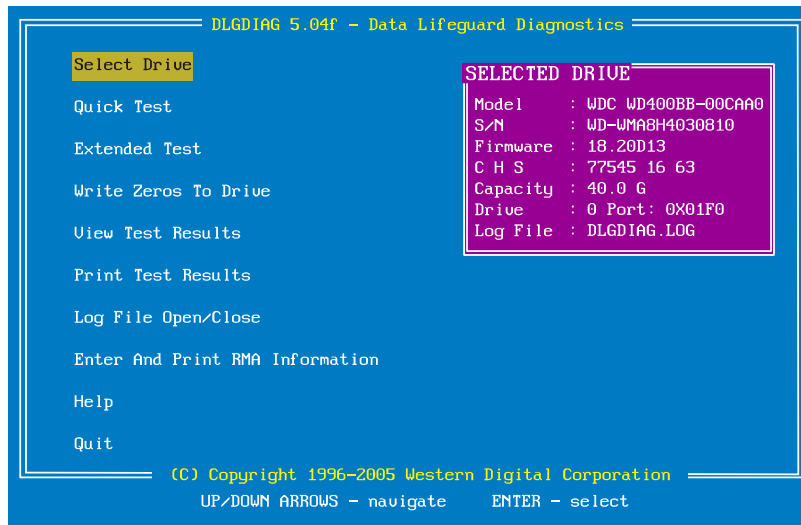
1. Go to [support.wdc.com/download](http://support.wdc.com/download) and download the Data Lifeguard Diagnostics for DOS (CD) program (DiagXXXxCD.iso or DiagXXXxCD.zip) to your desktop. Extract the DiagXXXxCD.iso file from DiagXXXxCD.zip if you download the Zip file.
2. Use a CD burning program to burn a CD from the DiagXXXxCD.iso image. Refer to your CD burning program Help or user manual for details.

You can now boot to your DLGDIAG CD. Make sure the boot order in your system BIOS is set to boot from the CD-ROM drive first.

## Using DLGDIAG for DOS

**CAUTION:** Back up all data on your hard drive(s) before using DLGDIAG. This utility may write to the drive. As with all utilities that write to a drive, it is recommended that you back up your data before proceeding.

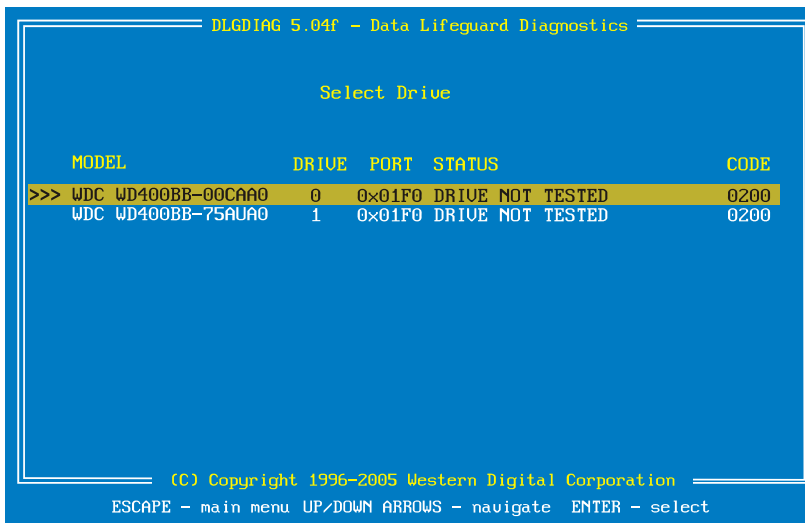
1. Boot your computer to the DLGDIAG for DOS CD or floppy disk (see “Creating Bootable DLGDIAG for DOS Disks” on page 10).
2. The DLGDIAG license agreement displays. Use the down arrow key to read through the entire licence. Press **Esc**.
3. Press **Y** to start the program.
4. The DLGDIAG main menu displays. Use the up/down arrow keys to navigate the options and the **Enter** key to select an option.



### Select Drive

The Select Drive option shows a list of all drives installed and the current status of each drive.

1. For each drive that shows a status of 'DRIVE NOT TESTED', select the drive by using the up/down arrows until the desired drive is highlighted and press **Enter**.

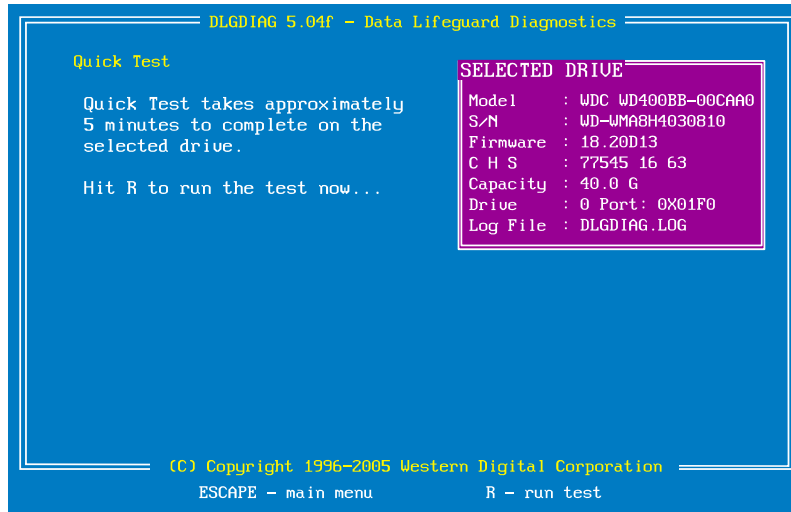


2. Press **Esc** to return to the main menu and test the drive.

## Quick Test

The Quick Test is designed to intelligently gather and verify all of the Data Lifeguard information contained on the drive. The Quick Test can determine with a high level of confidence that a drive is defect-free in a short amount of time. For maximum confidence, the Extended Test is recommended. The Quick Test option may not be available on earlier hard drives.

1. In the Quick Test option screen, press **R** to run the Quick Test.

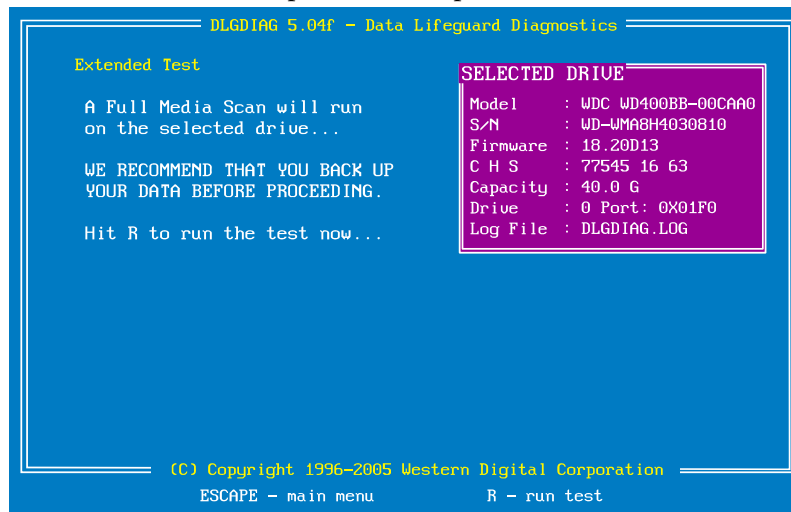


2. DLGDIAG reports the status of the hard drive. A status message such as “Test Completed Without Errors” displays along with a corresponding error/status code. Press Esc to return to the main menu. See the list of error/status codes on page for more information.

## Extended Test

Extended Test checks the drive thoroughly for any major physical problems. For most computers the Extended Test takes 5-20 minutes to test one drive. Larger drives take longer to test. The performance of the computer also affects the test time.

1. In the Extended Test option screen, press **R** to run the Extended Test.



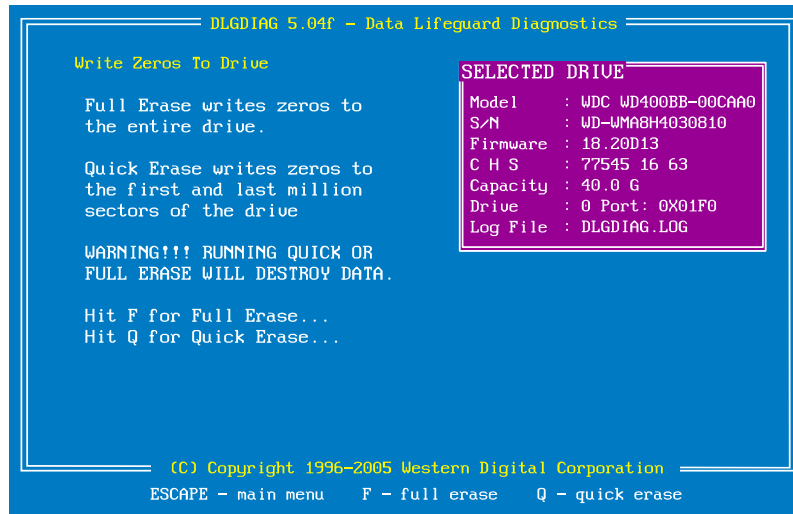
2. DLGDIAG reports the status of the hard drive. A status message such as “Test Completed Without Errors” displays along with a corresponding error/status code. Press Esc to return to the main menu. See the list of error/status codes on page for more information.

## Write Zeros To Drive

If you tested the hard drive, checked all hardware in the system, and verified that the BIOS is correctly set up, and are still experiencing problems, you might want to reinstall the software on your system. Before reinstalling the software, you can use the Write Zeros To Drive option to erase the entire hard drive, including the MBR (master boot record), all partition tables, and all data.

**CAUTION:** Back up all data on your hard drive(s). You will erase all data if the Write Zeros To Drive option is invoked.

1. Press **F** for Full Erase or **Q** for quick erase.



2. Press **Esc** to return to the main menu.

## View Test Results

View Test Results displays the results of the most recent test run on your currently selected hard drive including results messages and error/status codes.

## Print Test Results

Print Test Results prints the results of the most recent test run on your currently selected hard drive including results messages and error/status codes. You must have a printer properly connected to your computer to use this option.

## Log File Open/Close

The DLGDIAG.LOG file stores results for all drives tested.

1. To open the log file, select **Log File Open/Close** from the main menu.
2. Press **O** to open the log file. To close the log file, select **Log File Open/Close** from the main menu and press **C**.



## Enter & Print RMA Information

If the hard drive is under warranty and DLGDIAG determines that the hard drive is unrepairable, obtain an RMA (Return Material Authorization) number and instructions for product return from WD Technical Support at [support.wdc.com/warranty](http://support.wdc.com/warranty).

To complete the RMA information, select **Enter and Print RMA Information** from the DLGDIAG main menu, then fill out all fields in the **Enter and Print RMA Information** screen. You must have a printer properly connected to your computer to print RMA information.

## Help

1. Select **Help** from the main menu to access the DLGDIAG.txt Help file.
2. Use the up and down arrow keys to read through the text Help file.
3. Press **Esc** to return to the main menu.

## Quit

1. To close DLGDIAG, select **Quit** from the main menu. A message displays prompting you to reset the system to reinitialize the BIOS and hard drive(s).
2. Press **Ctrl-Alt-Delete** or turn the power off to restart the system.
3. Remove the floppy disk from the drive and reboot the system.

## Command Line Switches

DLGDIAG supports the following command line options:

Command Line	Description
-A	Disable error code for SMART failures
-B	Check SMART status without menus
-C	Enable output to comma file
-Dx	Select drive x only, where x is 0-15 or ? to show drive info
-E	Run extended test without menus - with drive repair
-FWRITE	Write zeros to the first and last million sectors
-G	Show test history on the SMART log area
-H	Enable appending of log to history log file
-L	Disable output to log file
-Ox	Specify log file location, where x is the full path
-Px	Access drives at baseport x (hex address) only
-Q	Run Quick Test without menus
-R	Run performance test without menus
-S	Skip rebooting after a run of the program
-V	Run extended test without menus - without drive repair
-WRITE	Write zeros to the entire drive

## Error/Status Codes

Go to [support.wdc.com](http://support.wdc.com) for further information on many of the error codes listed below as well as error codes from previous versions of Data Lifeguard Diagnostics.

If you encounter the same error code more than once after retesting, create an RMA (see “Enter & Print RMA Information” on page 14).

Description	Error/Status Code
COMPLETED WITHOUT ERRORS	0
ABORTED BY HOST	1
INTERRUPTED BY DRIVE RESET	2
INCOMPLETE DUE TO ERROR	3
UNKNOWN ELEMENT FAILURE	4
ELECTRICAL ELEMENT FAILURE	5
SERVO/SEEK ELEMENT FAILURE	6
READ ELEMENT FAILURE	7
HANDLING FAILURE	8
UNKNOWN TEST STATUS	9
UNKNOWN TEST STATUS	10
UNKNOWN TEST STATUS	11
UNKNOWN TEST STATUS	12
UNKNOWN TEST STATUS	13
UNKNOWN TEST STATUS	14
TEST IN PROGRESS	15
ERRORS FOUND	100
UNKNOWN ERROR	101
SEEK TIMEOUT	102
WRITE FAULT ERROR	103
DRIVE NOT READY	104
BUSY GLITCH	105
TRACK 0 ERROR	106
CHECK SUM ERROR	107
SEEK NOT COMPLETE	108
DRQ WAS SET	109
DRQ NOT EXPECTED	110
DIAG COMMAND ERROR	111
IRQ TIMEOUT	112
DRIVE TABLE ERROR	113
TRANSFER RATE ERROR	114
ICRC ERROR	115
IDNF ERROR	116
UNCORRECTABLE ECC ERROR	117
DAM ERROR	118
NO MULTI	119
NO DRIVE FOUND	120
SERVO ERROR 121	121
UNKNOWN ERROR	122
UNKNOWN ERROR	123

Description	Error/Status Code
CORRECTED DATA	124
BAD TRACK	125
UNKNOWN ERROR	126
UNKNOWN ERROR	127
BUFFER MISCOMPARE	128
G-LIST ERROR	129
INVALID SERIAL	130
SERIAL RETRY	131
COMMAND ERROR	132
ILLEGAL ID	133
BUSY TIMEOUT	134
DRQ TIMEOUT	135
BAD SECTOR	136
RELOCATED SECTOR	137
STILL BUSY TIMEOUT	138
DRQ NOT EXPECTED	139
DRQ TIMEOUT ECC	140
UNKNOWN ERROR	141
TK-TK SEEK ERROR	142
RANDOM SEEK ERROR	143
THIRD STROKE ERROR	144
FULL STROKE ERROR	145
SEEK OVERHEAD ERROR	146
BAD ID PARAMETERS	147
NOT SELECTED	148
MASTER SLAVE ERROR	149
UNKNOWN ERROR	150
PARK ERROR	151
WRITE PROTECT ERROR	152
MEDIA ERROR	153
MEDIA CHANGE ERROR	154
MEDIA CHANGE REQ ERROR	155
NO MEDIA ERROR	156
SET MAX ERROR	157
Q DMA SERVICE ERROR	158
SMART ERROR	159
UNKNOWN COMMAND	160
RESET SIGNATURE	161
READY EXPECTED	162
UNKNOWN ERROR	163
DRIVE NOT TESTED	200
NON-WD DRIVE	201
DRIVE NOT SUPPORTED	202
WRITE LOG ERROR	203
MISSING LOG FILE	204
ABORTED BY USER	205
MEMORY ALLOCATION ERROR	206

Description	Error/Status Code
CRITICAL RESOURCE ERROR	207
FATAL ERROR	208
SELF TEST FAILED TO RUN	209
SELF TEST INCOMPLETE	210
2-9 UNCORR ECC ERRORS	211
10+ UNCORR ECC ERRORS	212
2-9 DAM ERRORS	213
10+ DAM ERRORS	214
2-9 IDNF ERRORS	215
10+ IDNF ERRORS	216
2-9 SERVO ERRORS	217
10+ SERVO ERRORS	218
DRIVE CABLE ERROR	219
DRIVE IS LOCKED	220
TEST NOT SUPPORTED	221
DRIVE FAILED THE TEST	222
ERRORS REPAIRED	223
ERRORS NOT REPAIRED	224
TOO MANY ERRORS FOUND	225
SECTOR RELOCATION ERROR	226
SMART NOT SUPPORTED	227

## 4

## Service and Support

If you need additional information or help during installation or normal use of this product, visit our product support Web site at [support.wdc.com](http://support.wdc.com) or send an e-mail message to WD Technical Support using the online form.

You may also call the phone numbers listed below. When calling for support, have your WD hard drive serial number, system hardware, and software versions available.

	USA/Canada/Outside USA (Central Time)	Europe (Central European Time)
Telephone Numbers	800.ASK.4WDC	+31.20.4467651
Monday – Thursday	9:00 am – 7:00 pm	9:30 am – 12:00 noon 1:00 pm – 5:30 pm
Friday	9:00 am – 5:00 pm	9:30 am – 12:00 noon 1:00 pm – 4:00 pm
Saturday	8:00 am – 5:00 pm	