

Quantum[®]

DLT*tools*

for

WIN32 ASPI

Product Manual

Version 0.2



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This document was prepared and published by DSSG Software Applications Engineering Quantum Corporation.

Current file name for this manual is TPMwin.doc, dated 4/99 (*MS-Word 97 document*)

Table of Contents

TABLE OF CONTENTS	3
PREFACE	4
ABOUT THIS MANUAL	4
CONVENTIONS	4
BEFORE YOU BEGIN	4
THE KEYBOARD	5
BACKING UP YOUR MASTER DISKS	5
VIRUS CHECKING	5
INTRODUCTION	6
FEATURES AND BENEFITS	6
<i>Ease of Use</i>	6
<i>System Requirements</i>	6
Hardware Requirements	6
Software Requirements	6
INSTRUCTIONS GIVEN IN THIS MANUAL	6
GETTING STARTED	7
WHERE TO GET THE SOFTWARE	7
INSTALLING THE SOFTWARE	7
PROGRAM STARTUP	9
MENUS BAR	10
<i>File</i>	10
<i>Edit</i>	11
<i>Window</i>	12
<i>Help</i>	13
<i>Functions</i>	14
BASIC OPERATIONS	15
FILE MENU, SYSTEM LEVEL CONTROL FUNCTIONS AND OPERATION	15
<i>Adapter Selection</i>	15
<i>Device Selection, Select a device by SCSI ID</i>	17
<i>Select a FUP File</i>	18
<i>Select a Log File</i>	18
<i>Program Options (PGM Options)</i>	18
<i>Print and Print Setup</i>	18
<i>EXIT</i>	18
FUNCTIONS MENU	19
<i>Update Control (FUP) – Sub-menu</i>	19
<i>SCSI Bus Update</i>	20
<i>Build FUP Tape</i>	21
<i>FUP Tape Updating on a wide bus</i>	22
INQUIRIES (MENU)	23
<i>Standard INQUIRY and Vital Product Data Page</i>	23
<i>“User Defined” VPD Page</i>	25
LOG PAGES (MENU)	26
TEST UNIT READY (TUR)	27
TAPE LOAD	27

TAPE UNLOAD.....	27
PRODUCT FOCUS, YEAR 2000 ISSUES	28

Preface

About This Manual

This product manual provides detailed information and procedures for using the *DLTtools for WIN32* package. The manual is organized into chapters that beginning with the basics and move into more advance topics.

To help you learn and use these programs, this manual is organized by tasks. Beginning with the program installation, and moving on to program features.

Before starting to use these programs, you should be aware of the hardware and software requirements that are needed to run successfully. You should have a working knowledge of the computer and its operating conventions. If you need to review these techniques, refer to the documentation that came with your DLT™ Tape Drive.

Conventions

Numbered lists (1., 2., ...) indicate steps, which imply an explicit sequential order.

If there is a continuation to the next page,

The *Continues...* icon appears in the lower right corner.

 *Continues...*

Before You Begin

Before you can use ***DLTtools for WIN32***, you must meet the following software requirements:

- Running WIN95/98 or WIN-NT Operating System with SCSI



Note: *DLTtools for WIN32* is a 32bit executable program. It is designed for WIN95 , WIN98 and WIN NT.

For MSDOS or WIN 3.X, use the DLTtools V4 package.

This software has also been development under Windows95/98 and testing under Windows95/98/NT (4.0) using the NCRC810 SCSI Host Adapter and Adaptec AHA2940UW Host Adapters. It has also been tested under other types of systems running NT.

- ASPI Device Manager or drivers are used to communicate with the SCSI host adapters and the devices on the SCSI bus. They were either supplied on the WIN95/NT CDROM used to install the operating system or from the manufactures support disks.

THE KEYBOARD

- The keys on your keyboard may not be labeled exactly as they are in this manual. All key names are shown using small capital letters. For example, the Control key is shown as CTRL; the Escape key is shown as ESC. This manual assumes default key mapping.
- If text that you are required to type on the keyboard is case sensitive, the window will state so. Normally inputs on the keyboard are always done in lower case characters. By default, DLTtools will convert to uppercase if needed.
- A single or combined keystroke will appear in angle brackets (< >). An example of this would be the enter key "<enter>" or the control c function "<CTRL-C>".

Example: <enter>, <CTRL-C>

- Keystroke combinations appear in one set of angle brackets and are joined by a plus sign (+).

Example:

<SHIFT + F1>: means to hold down the SHIFT key while pressing F1,

<ALT, F, A>: means to press and release each of these keys in order:
first ALT, then F, and then A.



Note: If you are using a mouse, the following terms are used:

<i>Click</i>	Press the mouse button once.
<i>Double- Click</i>	Press the mouse button twice (quickly).
<i>Check/Unchecked</i>	Click on the check Box (<input type="checkbox"/>) or press <Spacebar>

Backing up Your Master Disks

Before installing or upgrading any software, backup your system.

Virus Checking

Virus Scanning and protection, The DLTtools packages that is distributed from our web site has been product on a system that is running the lasts McAfee scan engine with up to date data files. It is also scanned before being posted on the site. The release notes (RN) will state the checksum for each file found in the package.

If there is any question on the purity of these files, re-calculate their checksums and match them up with the numbers in the RN

This type of attack on our computer systems is difficult to control but not impossible. You should be using a virus shield of you r chose with up-to-date data files to protect yourself. If you are not running a shield, scan the downloaded file before running them.

Chapter 1

Introduction

The *DLTtools for WIN32* program gives the user ability to view or alter various parameters and data found in the DLT tape drive. Code load functions are currently installed in the package and functions such as mode pages editor and log page viewer (installed) will be available at a later date. The user can use either a mouse or a keyboard for accessing menu options and commands. All functions found under this package have the same user interface.

Features and Benefits

Ease of Use

- Windows-based solution that includes pull-down menus, icon, buttons and hot spots. The menu allows for a controlled navigation where the buttons and hot spots allow the more experienced user a quicker alternative.
- Status line on the bottom of various windows always conveys information currently being performed by the program.

System Requirements

The following are the minimum requirements for running ***DLTtools for WIN32***.

Hardware Requirements

- A PC Compatible with a SCSI host adapter installed.
- DLT tape drive connected to a current SCSI host adapter

Software Requirements

- WIN95, WIN98 or WinNT 4.0 Operating System.
- **ASPI WIN32 device manager installed**

For Adaptec Host Adapter, E-Z SCSI 4.0 or higher must be used.

- DLTtools for WIN32, latest version. The latest version can always be found on Quantum's FTP site <ftp://ftp.quantum.com/Utilities/DLTtools>

Instructions Given in This Manual

The instructions given in this manual are written to support a GUI, and assume the user is performing the operations using a mouse. If you are familiar with keyboard commands, you can perform the same operations using the keyboard.

Chapter 2

Getting Started

Where to get the Software

The software and manuals are distributed through the following resources:

1. Quantum FTP site (<ftp://ftp.quantum.com>)
2. World Wide Web (<http://www.quantum.com>)
3. Quantum BBS (BBS) (internal use)
4. and the Quantum Soft Library (QSL) (internal use)

To-date the FTP site the only place to find DLTtools for WIN32 and kept up-to-date for the latest version. You can use any web browser to access this area and download the program. All releases currently of *DLTtools for WIN32* are named "DLTTwin.exe".

Create a directory on your system disk (C:\DLTTools) move or download the package into this directory. If you are using the older DLTtools, you can install the new package in the same directory with out overwriting files form the older package. Keeping the packages in a sub-directory will help to contain the software for later cleanup and/or updating. Once the package is downloaded to you system, you can install it.

Installing the Software

To date, this packages is self-extracting program and currently has no system registration yet!. The install consists of unpacking the compressed files to any directory. The package is setup to extract the files to the current directory but you will have the option to change this default.

Once you have extracted the files to the sub directory, they can be run.

The download package (DLTTWIN.EXE) produces the following files:

WinDLTools.exe	- Main program for DLTtools for WIN32.
IBMinq.dll	- unique functions to deal with data for IBM DLT Inquiry
OEMinq.dll	- unique function to deal with all drives other then IBM based drives.
Dltnr.txt	- Release notes. Always package in ASCII text form.

There are also seven bit map files included in the package. These files are used for background. They are used to overlay the default background of each program screen but are not needed for operation, just appearances.

Main.bmp	Main screen
Selhost.bmp	Host adapter selection screen
Seldev.bmp	Device selection screen
Selinq.bpm	Inquiry selection screen
Selinq2.bmp	Inquiry selection screen
Logpage.bmp	Log page selection screen
T_path2.bmp	Firmware update window

All ".DLL" and "BMP" files need to be kept in the same directory as DLTtools.exe.

The product manual download file (DLTWPM.EXE) will produce the following files:

tpmwin.doc

- DLTtools for WIN32 product manual in MS-Word 97 document format.

If you need text format, send a request to DLTools@tdh.qntm.com.

Program Startup

1. The DLTtools can start from any directory. The directory that you start from is considered to be the “current” directory. Shortcuts can be made and the starting directories set so the program will start in a know directory ever time.
2. Once the program is started, the disclaimer screen is displayed. It will ask you to agree or not with the statement in the window area. The default is No or “Close”. The program will not continue if this is chosen. If you agree and understand the statement and want to accept, press the “Accept” button. When the Accept button is pressed the program will continue.
3. The following error reports can result during startup. For any of these reinstalling the drivers is suggested.

“Failed to load library <wnaspi32.dll>”

The “loadlibrary”command could not find the wnaspi32.dll file. Reinstall device drivers

“Failed to GET ASPI 32 SUPPORT INFO”

Function call to “ ”return a null pointer.

“Failed to get <SENDASPI 32COMMAND> function”

Function call to “ ”return a null pointer.

“Failed to initialize Host Adapter(s)”

Any one of the above have failed.

These errors are normal cause by not having the WIN32 ASPI manager installed. These four functions

Other reference documents: Adaptec “ASPI for Win32 Specification”

- **“ASPI return not TRUE”** will sometimes be displayed. This error is generated when a valid ASPI command failing at the ASPI level with no other information error but you will need to exit and restart the program.

Menus Bar

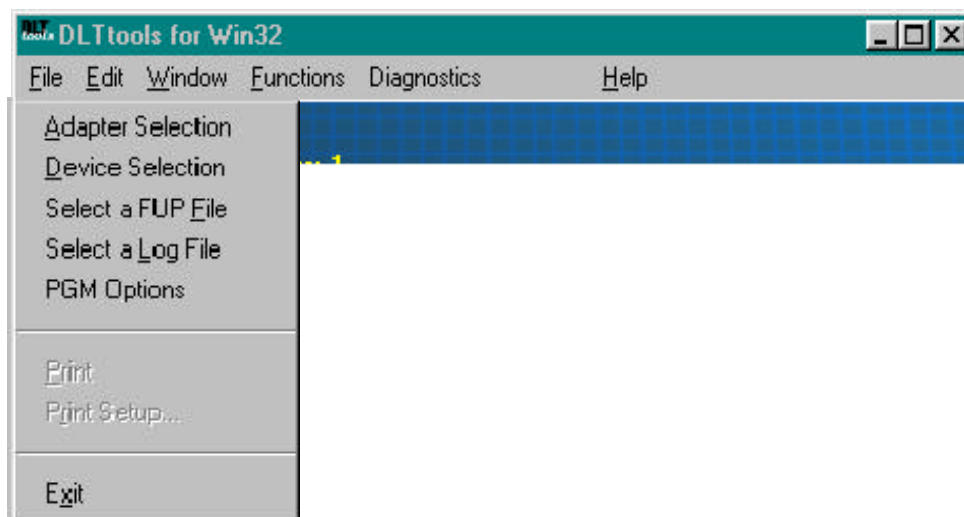
The following chapter is setup to show that under a menu selection there are sub functions. The underlined character represents the ATL key character to enter this selection. This will either run the commands or lead to other menus.

After starting the program, and working the startup windows, a menu bar will be displayed across the top portion of the main window:



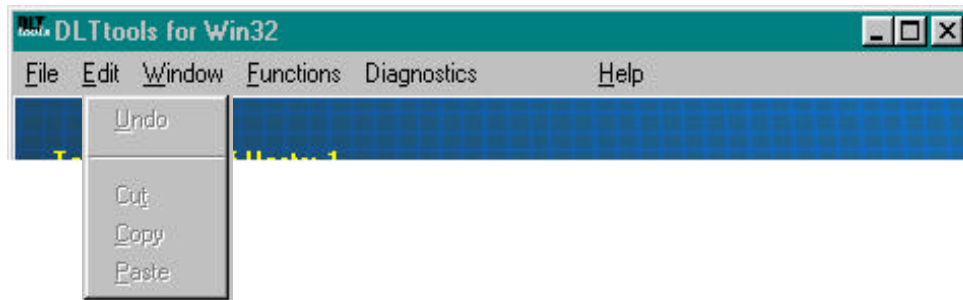
File

Allows user to configure system level functions.



Adapter Selection	- To display and select a host adapters.
Device Selection	- To displays and select all devices found on the selected host adapter.
Select a FUP File	- A function to select a Firmware update file, read only.
Select a Log File	- A function to select a Log file, write only
PGM Option	- A windowing interface for program configuration.
Print	- To select and print to a printer. Not enabled.
Print Setup	- To configure printers, Not Enabled
Exit	- Menu controlled termination.

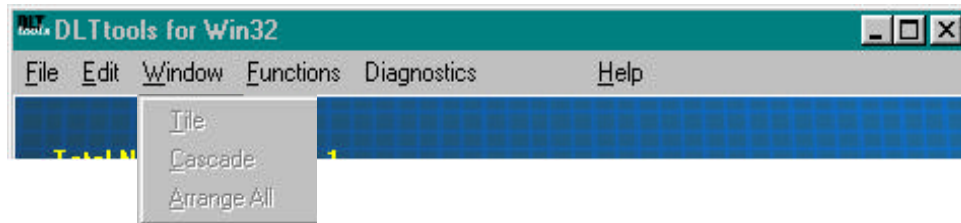
Edit



Undo
Cut
Copy (Not enabled)
- (Not enabled)

Window

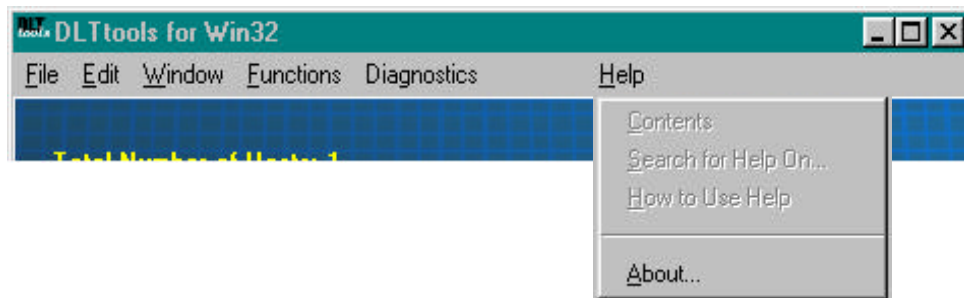
Functions found in the window menu



Tile	- (Not enabled)
Cascade	- (Not enabled)
Arrange All	- (Not enabled)

Help

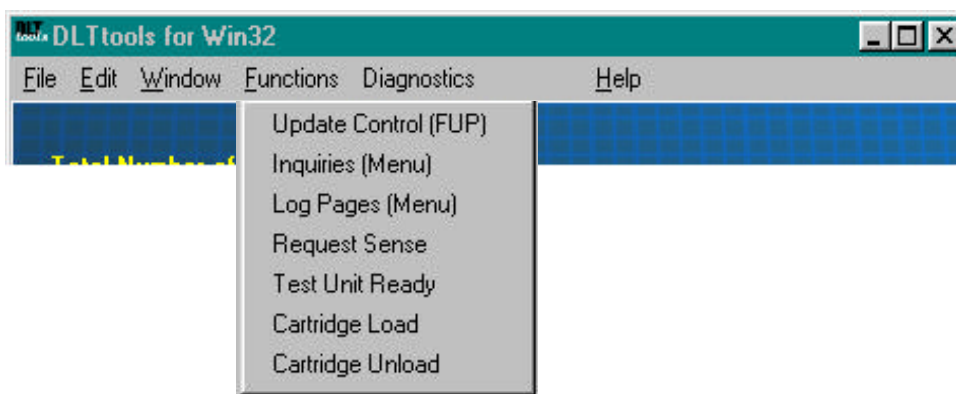
Functions found in this menu



Contents	- (Not enabled)
Search for Help On	- (Not enabled)
How to Use Help	- (Not enabled)
About	- This function will display the program name, revision and date built.

Functions

This menu contains function and sub menus that control drive functions.



Update Control (FUP)	- Sub-menu to provide support for firmware-updating a DLT tape drive.
• SCSI Bus Update	- For updating the selected drive using a disk file over the SCSI bus.
• Build FUP Tape	- Writes a firmware binary image file to tape and verifies the data.
INQUIRY (Menu)	- Displays device inquiry data in a scrolling window.
• Standard Inquiry	- all DLT drives
• Vital Product Data Pages	- Not in all models support all pages
Log Pages (Menu)	- Displays all supported log pages for the selected device
Request Sense	- Displays all information returned by the drive in a scrolling window.
Test Unit Ready	- Issues a "Test Unit Ready" command to selected devices with status.
Cartridge Load	- Allows loading tape cartridge that is currently in the selected drive.
Cartridge Unload	- Allows unloading tape cartridge in a selected device.

For any of the functions found under the "Function" menu, the initial error reporting is done with a single message screen and followed with a scrolling window. The single message is generated by the program and is in references to the command the program is trying to perform. The second, scrolling window, contains sense key information return by the device, if any.

All sense codes are followed with the ASCII test in angle brackets.

Example:

Sense Key: 2 <Not Ready>
Additional Sense Code: 3A <Media Not present>
Additional Sense Code Qualifier: 0 <Media Not present>

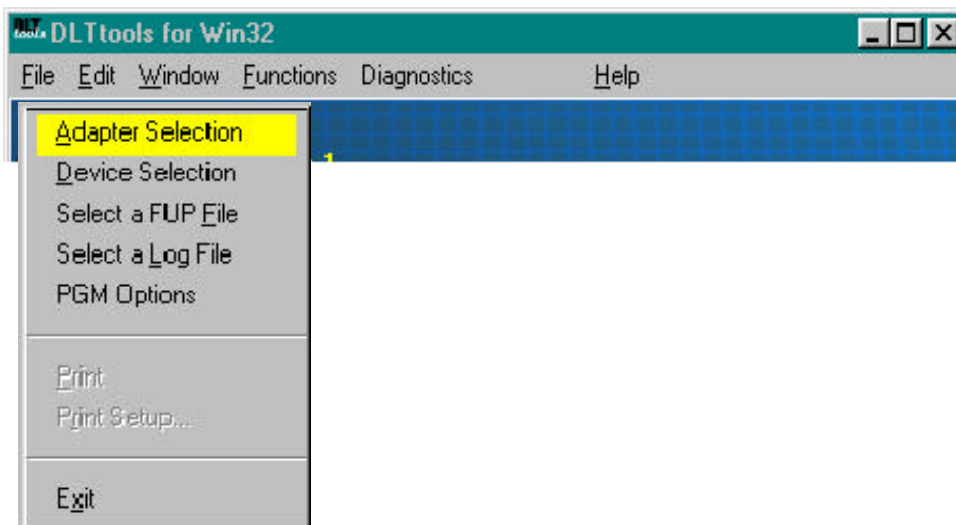
This example is the typically returned when a load command is issued without a cartridge in the drive. The program will add the English meaning of the sense keys in angle braces.

Chapter 3

Basic Operations

FILE MENU, System level control functions and operation

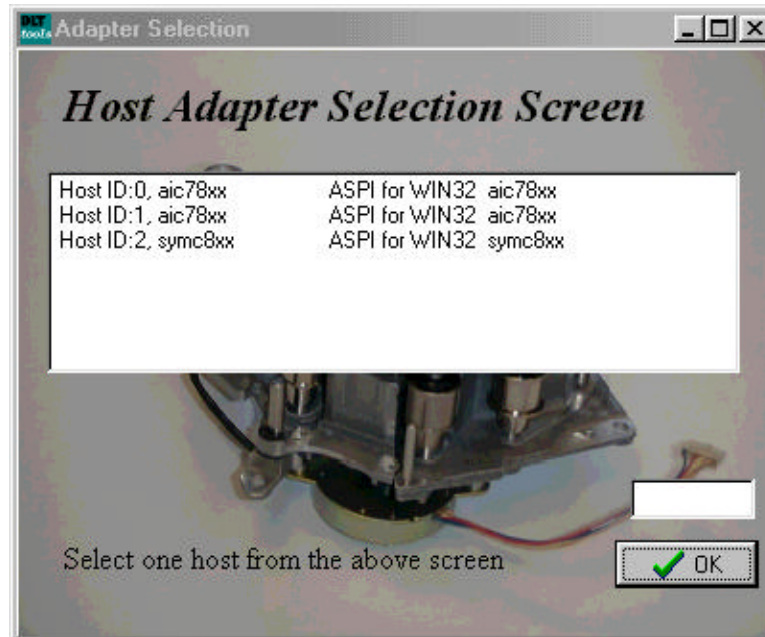
Adapter Selection



Adapter Selection - Host Adapter Selection Screen

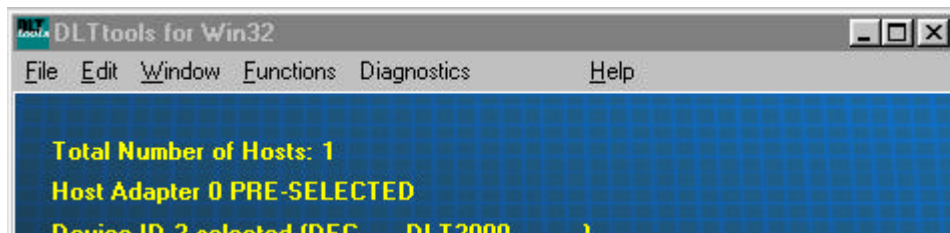
This selection will display all host adapters found on the system. The user can select one of the adapters displayed by either entering the adapter ID number in the selection box or double click on the host ID number to highlight it (ID:<NUMBER>) or highlight the entire line. When using the highlighting function, the program scans this area looking for "ID:" and will extract the number that follows. Only the first "ID:" is found and used. This number is then copied to the device selection box. Once a number is entered in the selection box, the "OK" button is pressed to select the adapter.

On the main window, you can click on the adapter status line to also enter adapter selection. Adapter status line is the second line down. The status line is updated after a host adapter is selected. Selecting a host adapter will deselect the device.

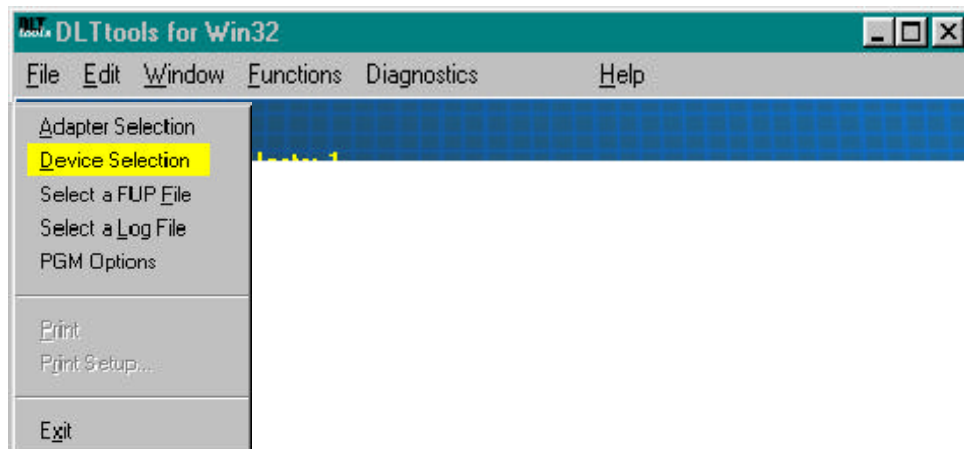


This screen shows a system that carries three host adapters. 0 and 1 are Adaptec AHA2940UW and number 3 is the Symbios 810.

On startup, the program will test the host adapters. If only one adapter is found in the system the program will pre-select this adapter. The status line on the main screen will say "Host Adapter 0 PRE-SELECTED". In this case, the adapter selection is not need. The program will not allow the user into the adapter selection screens because there is nothing to do.



Device Selection, Select a device by SCSI ID



This function that will display all devices found on the selected host adapter. There is a maximum number of 15. The user can select any one of the devices displayed by either entering the given ID



in the selection box, double clicking on the ID number to highlight it or highlighting the entire line. Like the host selection screen the program will scan the highlighted area and copy the ID number to the Selection box. Once a device is selected and the ID number is in the “Selected ID” box, the “OK” button is pressed to select the devices. Clicking on the device status line, third line that is displayed on the main screen can also enter device selection. The status line will be updated with the selection along with the vendor and product ID.

Select a FUP File

This function will bring up the standard file open screen. By using this screen, the user can select any file located on the system and if a network is supported, to any file on a network system. The primary use of this screen is for locating and opening firmware image files. The selected file is opened in a read only mode.

By clicking on the file status line, fourth line on the main screen, the “Select a File” function can also be entered..

Select a Log File

This function opens a Log file. It too is a standard file open screen. Its purpose is to locate or create a log file anywhere on the system or network. During the operations, the program looks to see if a log is open. If so, each step the program makes and all information displayed to the screen is dumped to this log. An open log file is automatically closed if “Open a log” is re-selected or the status line is clicked. This is a useful way to capture information needed until the programs print service is installed.

By clicking on the log status line, fifth line on the main screen, this function can also be entered.

Program Options (PGM Options)

This selection will allow the user to control parameters and functions that are used by this program. Updates to this are will be listed in the release notes only.

Print and Print Setup...

These two functions are currently disabled. Printer functions are currently not available to print

If you would like information displayed by this program, open a log file. The program has been setup to dump any information that is displayed to the open log file and information about where and how the program is running.

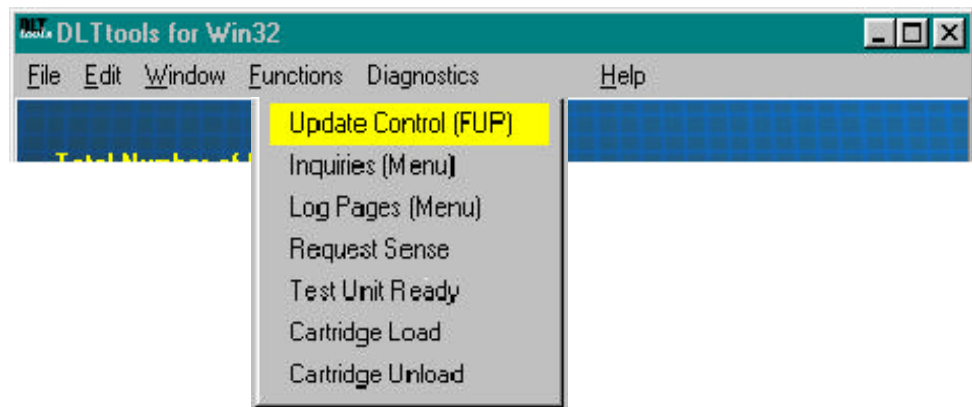
EXIT

One of two ways to terminates this program.

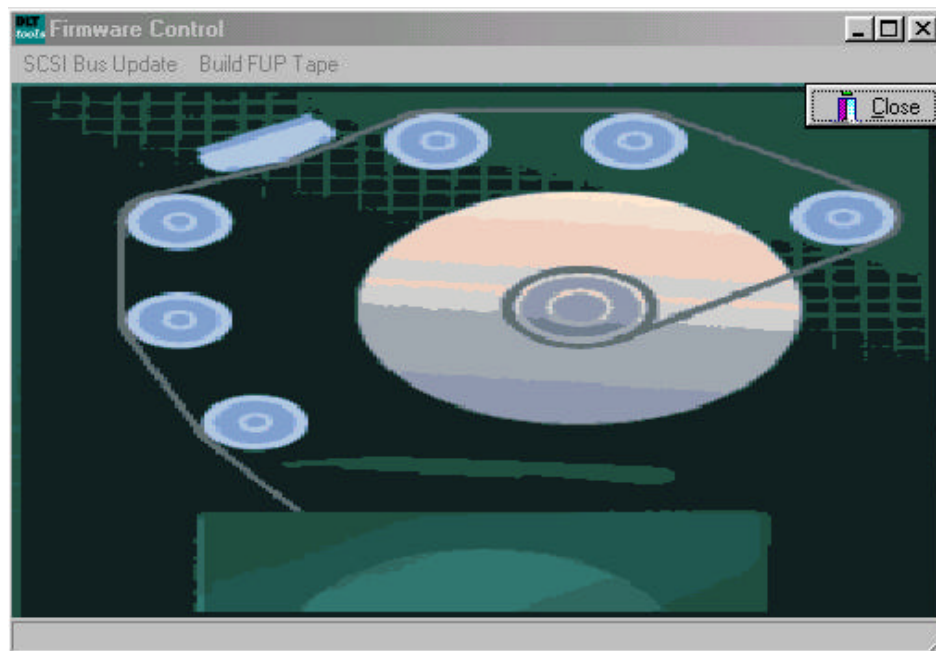
Functions Menu

This menu contains functions and sub menus that control drive functions.

Update Control (FUP) – Sub-menu



This selection will bring up a screen used to display information about the firmware operation. It has two operation that the user can pick “SCSI Bus Update” and “Build FUP Tape”. Other functions such as progress bars and status lines for these two operations will also be displayed. The “SCSI Bus Update” menu selection provides support for firmware updating a DLT tape drive over the SCSI bus. “Build FUP Tape” allows the user to make a firmware update tape (FUP tape) which allows for mass updates in an off line mode. The status bar at the bottom will display step information as the process progresses. This information will vary from function to function and from release to



release. It's purpose is to let the user know the program is still running and also give some information on where and what the program was doing.

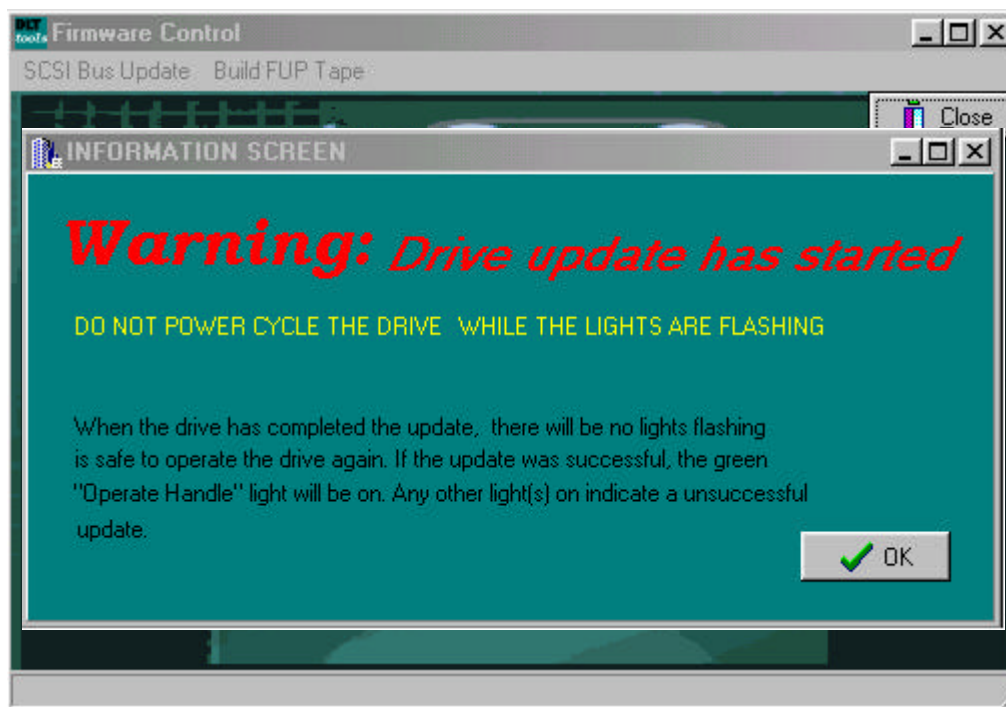
SCSI Bus Update

This is a standard SCSI-2 firmware function and is designed to update DLT drives. However, it may work on other SCSI-2 devices. The program will download the firmware image in “8K” blocks. Each write, mode 4, will subtract that amount from the file size until the size is zero. The last buffer transfer is changed to a write and save (mode 5). The program will pause for 5 seconds then start looking for the device return after the update with check conditions. The program must receive three checks before the test loop is broken. These checks are:

- Reset accord,
- Firmware Updated
- And Not Ready, Media Not Present

All firmware files must be selected through the “FILE”, “Select a File” menu selection or status line on the main screen.

Just before the “write and save” command is sent to the drive, the window below is displayed. This is to inform the user that the update has started and if power is removed before it is finished the unit will need to be sent to one of Quantum’s repair facilities so the memory can be reloaded. This is because the update process is overlaying the non-volatile memory re-loading. This is because the firmware is overlaying itself. If the process has not completed the task, then part of the memory will have old code and the other part will have new. If this happens the drive is unsafe to store data with.



As the program waits for the drive to return from the update, status is displayed in the status bar of the first screen. Depending on the firmware type depends on how the program displays status. With OEM based firmware you will see status change about ever five seconds. With some firmware the status will not change for some time. All firmware update will return the three checks after the update.

There is no software time out for this function. Depending on what the firmware need to do will set the time the drive need for the update.

The firmware files are binary image and must have one of the following sizes.

FILE SIZE (Kbytes)	DEVICE TYPE
256	THZ01(DLT260, THZ02(DLT600)
576	DLT2000, DLT4000 DLT7000
1160 2K	SDLT DLTstor



Note: You MUST wait until the Update is completed. A popup screen will prompt the user “firmware update successfully completed.” You can damage the drive if you power cycle during the update. If the program never ends and the green light on the drives front panel is on (ready) it is OK to kill the program and refresh or reboot the system.

Build FUP Tape

This selection allows the user to build a DLT Firmware update tape by writing a pre-selected firmware file to the tape. This function expects that the tape is loaded and the drive is ready to write. This tape can now be used to update other similar DLT drives without having them attached to a system.

The DLT drive must be in uncompressed mode to properly make the firmware update tape.

DLTtools will try to turn off compression automatically, provided the user has not selected the density from front panel. If the user has selected the density from front panel then he must manually select an uncompressed density. If the tape is not formatted then the drive will format it when it is issued a SCSI write command (this is part of the Make FUP Tape process). The write protection on the cartridge must be off.

Under this function, the program will try to change the media density to the default value of the cartridge.

- DLTtape III - 10 Gigabyte
- DLTtape IIIXT - 15 Gigabyte
- DLTtape IV - 20 Gigabyte

In the case of the DLT7000 and 8000, using a DLTtape IV will cause the program to default to the DLT4000 density (20Gb uc) instead of the DLT7000 default of 35 Gigabyte and DLT8000 default of 40 Gigabyte.

Once the density has been changed, the program will write a binary firmware file. Once completed, the program will rewind the tape and check the data from the tape with the data from the file. If the compare is good the tape is unloaded. If the compare fails, the tape is not unload. In either case, status is displayed.

FUP Tape Updating on a wide bus

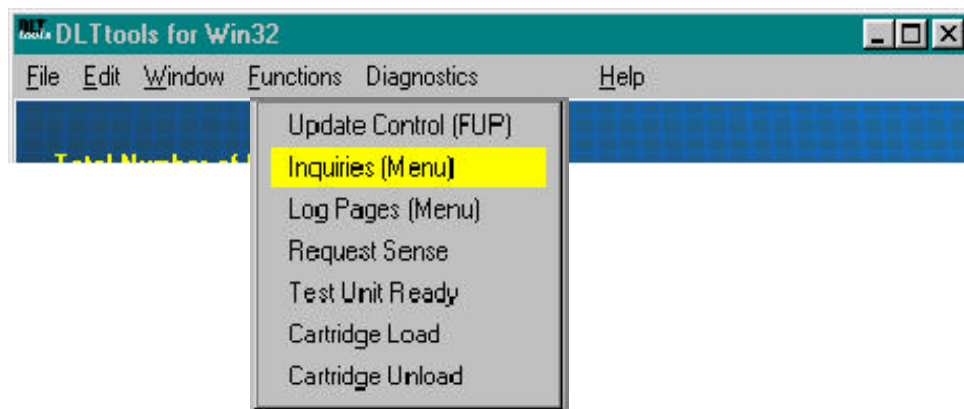
If you update the drive using a FUP tape and it is attached to a wide (16bit) host adapter you must follow the procedure below:

1. Start DLTtools and select the drive to be update.
2. Start and complete the update using the tape. Follow the procedure in the DLT Product Manual.
3. Once green light on the drive comes on, select "Test Unit Ready" under "Function" menu 3 time.

This will allow the host adapter to re-establish communication with the drive in wide mode. If you do not follow these three steps you may not regain communication with the drive and the system will need to be re-started.

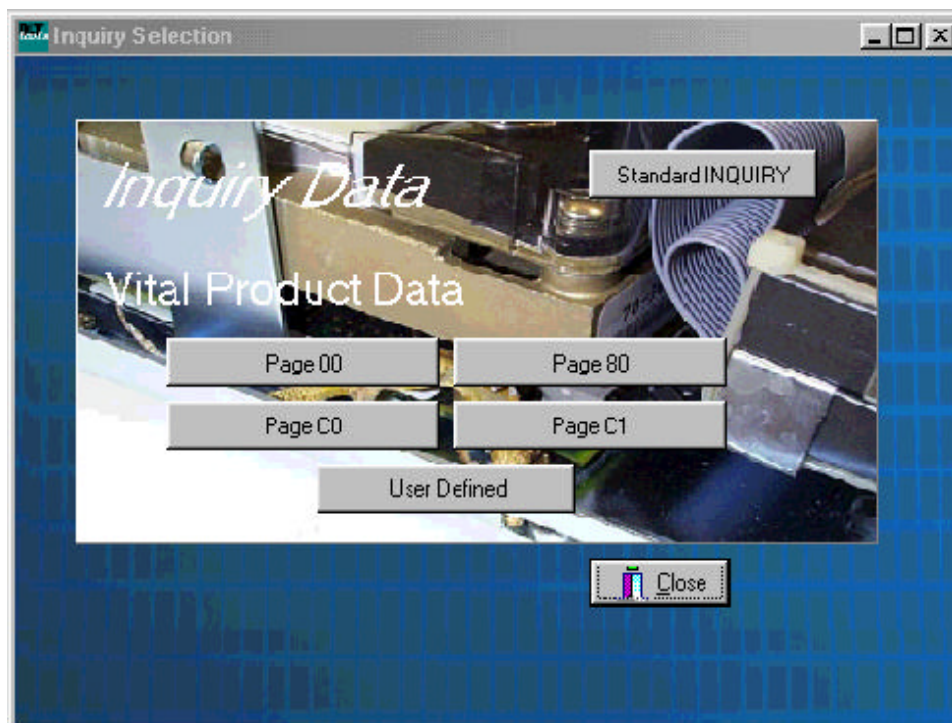
When updating the firmware over the SCSI bus the drive will remember that it started the update in wide mode. When the drive resets after the update it returns to wide mode. This is not the case when a "FUP tape" is used. When using the tape, the drive assumes off-line mode and will not remember that it was in wide mode after resetting. SCSI default mode is narrow (8bit). If you do not issues a "test unit ready" command, the host will not be able to talk to the device. In some case, not doing the TUR command will cause the adapter to error, and then the system will need to re-started (booted). If the drive is attached to a narrow bus this is not a problem and the above will not need to be done.

INQUIRIES (Menu)

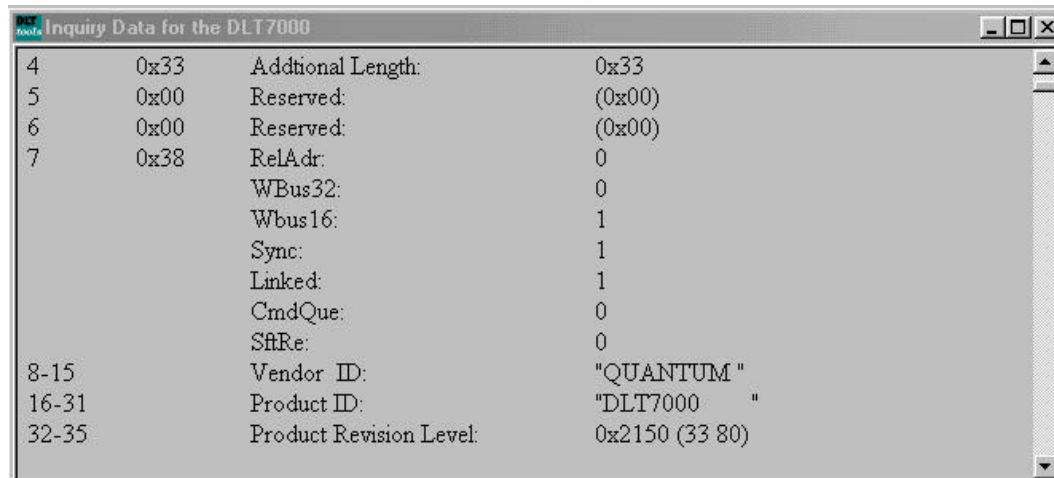


Standard INQUIRY and Vital Product Data Page

This selection will bring up the Inquiry Selection Window. On this window you will find the “standard INQUIRY” button along with four pre-defined “Vital Product Data Page” buttons. There is also a button for “User defined” pages. All except the “user defined” page is covered in the drives



Once a selection is made, information is retrieved from the drive, processed according to the data layout for the firmware type and displayed in a scrolling window. This window is fully re-sizeable to allow for more or less information to be displayed depending on the user's needs.

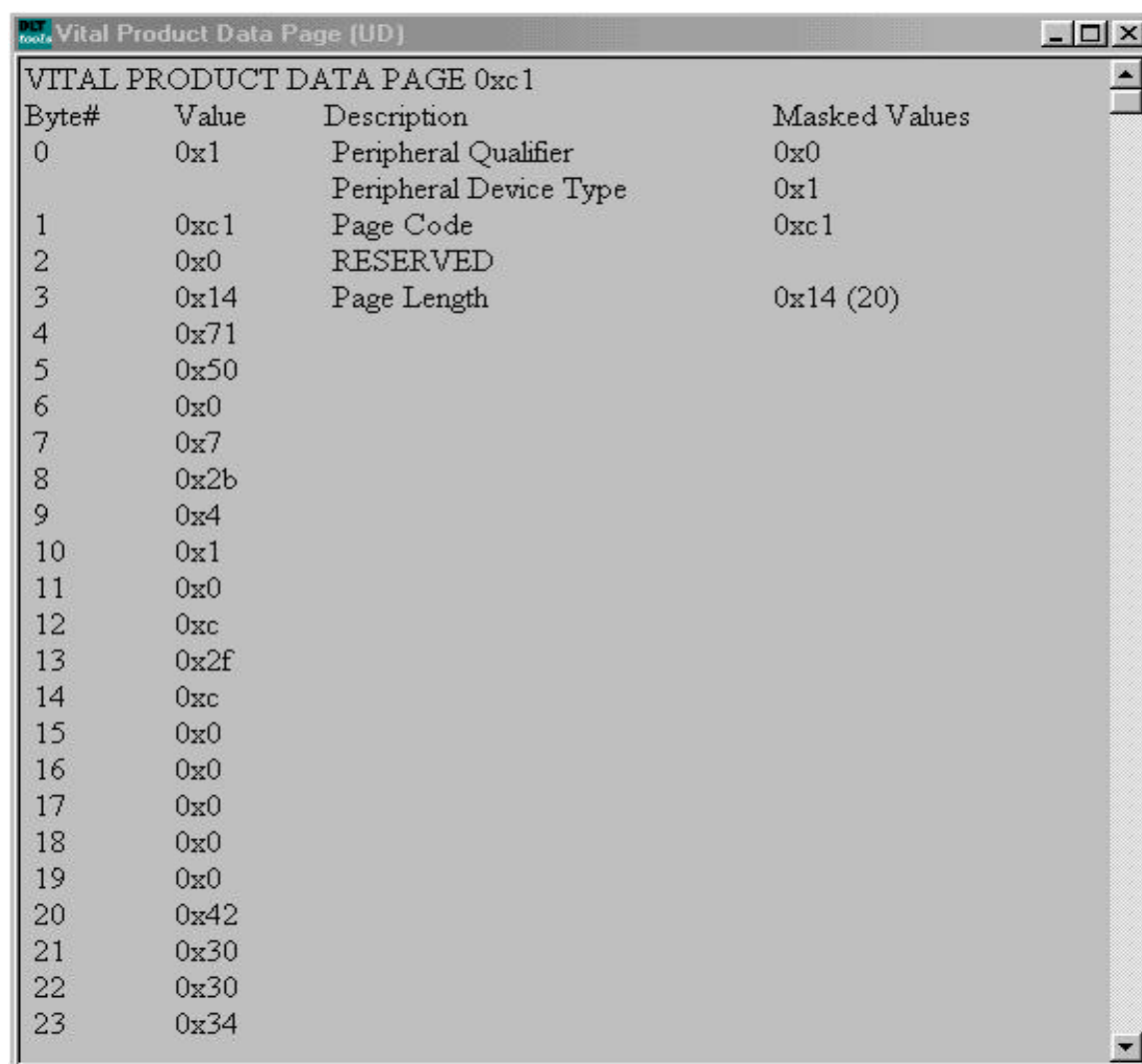


4	0x33	Additional Length:	0x33
5	0x00	Reserved:	(0x00)
6	0x00	Reserved:	(0x00)
7	0x38	RelAdr:	0
		WBus32:	0
		Wbus16:	1
		Sync:	1
		Linked:	1
		CmdQue:	0
		SftRe:	0
8-15		Vendor ID:	"QUANTUM "
16-31		Product ID:	"DLT7000 "
32-35		Product Revision Level:	0x2150 (33 80)

An attempt has been made to display data so that a human can understand it without having the product manual at hand. In this example of the scrolling display window, bites 32 through 35 are the firmware revision levels. Their values are returned in ASCII Hexadecimal. The function will display the values as it is returned by the drive (0x2150) and also convert to decimal value and displayed in parenthesis "(33 80)". In the above display, the firmware level for this drive is V80 (HEX 50).

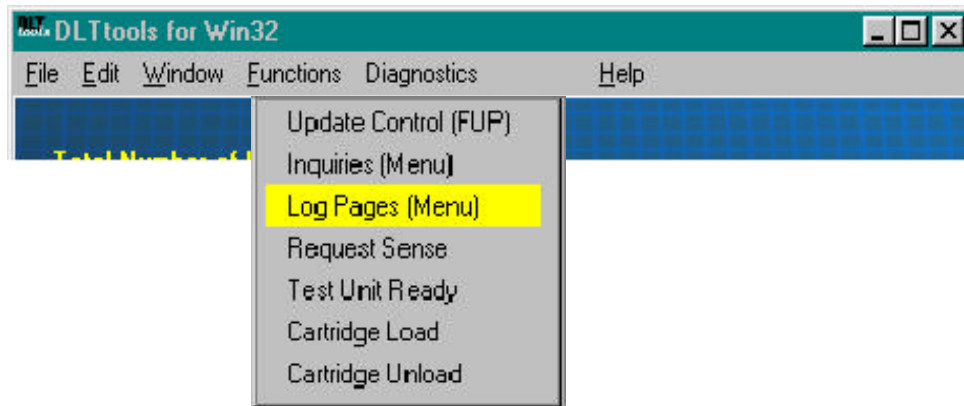
“User Defined” VPD Page

If the “User Defined” is selection the program can not do formatting past byte 3. Under this selection, the program will not know how to format the information returned by the drive. Only bits 0 through 3 will have labels in the display window. All data past byte 3 will be displayed one byte at a time, with the byte count.

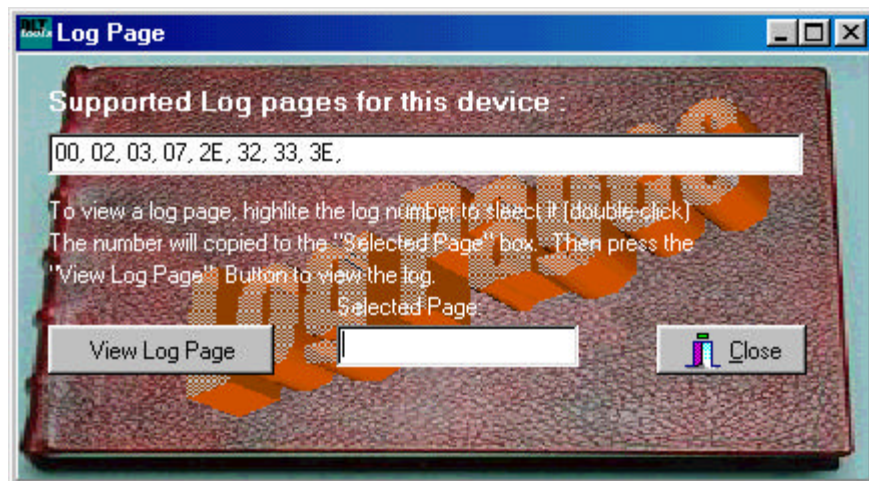


Byte#	Value	Description	Masked Values
VITAL PRODUCT DATA PAGE 0xc1			
0	0x1	Peripheral Qualifier	0x0
		Peripheral Device Type	0x1
1	0xc1	Page Code	0xc1
2	0x0	RESERVED	
3	0x14	Page Length	0x14 (20)
4	0x71		
5	0x50		
6	0x0		
7	0x7		
8	0x2b		
9	0x4		
10	0x1		
11	0x0		
12	0xc		
13	0x2f		
14	0xc		
15	0x0		
16	0x0		
17	0x0		
18	0x0		
19	0x0		
20	0x42		
21	0x30		
22	0x30		
23	0x34		

Log Pages (Menu)



This selection brings up the Log Pages Selection Window. This window is setup to retrieve a list of pages the drive supports and displays them in the first edit box. The user can either enter the page number in the selection box, or when using a mouse highlight the page number and the program will move the number to the selection box automatically. Once the page number has been entered the “View Log Page” button will bring up a scrolling window that will display all information the drive returns for that log page.



Test Unit Ready (TUR)

“Test Unit Ready” Checks the state of the selected device. If there is a tape in the drive and it is loaded the status from this command will be ready, else the status of its condition is displayed.

If the drive is “Not Ready”, the screen will give the text description on the returned check condition along with the Hex values.



In this case, this is a normal response for a DLT drive without a tape in it.

Tape Load

Tape Load is the SCSI command START. It will load a tape cartridge that is currently in the selected drive. This means the tape is moved from the cartridge to the drive and the tape after calibration is position at BOT.

Tape Unload

Tape Unload is the SCSI command STOP. It will move the tape back into the cartridge and enable the user to remove the cartridge from the drive.

Product Focus, Year 2000 Issues

In an effort to address this issue, DLTtools for WIN32 is written for compliance with regard to the Y2K computer bug. The functions supplied in DLTtools do not depend on any date for decision making.