Appendix C
UPDATING THE FIRMWARE

This chapter explains how to update the tape drive's PCBA-resident firmware.

C.1   OVERVIEW

Using the tape drive's front panel and a tape with the updated firmware image, you can update the tape drive's PCBA-resident firmware.

CAUTION

If a powerfail occurs during the firmware update process (when the new image is actually being programmed into the FLASH EEPROMs), the tape drive's PCBA will be rendered unusable. When performing a firmware update, take all possible precautions to prevent power failure to the tape drive.

C.2   CREATING A FIRMWARE UPDATE TAPE

To update the tape drive's PCBA firmware, you need a tape cartridge with a copy of the new firmware image. The firmware image must be byte-written without compression onto the tape using the appropriate block size as defined in Table C-1. The image must be "copied" onto the tape instead of using the backup utility.

Table C-1 Block Size Used for Firmware Update Tape

Tape Format	Density	Upgrade Tape Block
DLTtape III	2.6 GB 6.0 GB 10.0 GB	4 Kbytes Multiple 4 Kbytes Multiple 4 Kbytes Multiple
DLTtape IIIxt	15.0 GB	4 Kbytes Only
DLTtape IV	20.0 GB 35.0 GB	4 Kbytes Only 8 Kbytes Only

> **NOTES**
>
> On UN*X systems, use the FTP utility to transfer the binary firmware image. Be sure to specify "type image" before using the "get" or "put" commands, otherwise extra characters may be added to the file, causing it to be invalid. The image file should be exactly 1286 * 512 bytes in size.
>
> When making the update tape, copy the image file to the tape media using an appropriate block size as shown in Table C-1, that is, dd, ltf, and so on. The tape must be uncompressed.

C.3 FIRMWARE UPDATE PROCEDURE

This section describes the procedure to update the firmware of the tape drive's PCBA. The update requires a cartridge that holds the update firmware image. Firmware updates from a host are also supported (see the section on the SCSI command WRITE BUFFER in Chapter 5).

> **CAUTION**
>
> If a powerfail occurs during the firmware update process (when the new image is actually being programmed into the FLASH EEPROMs), the tape drive's PCBA will be rendered unusable. When performing a firmware update, take all possible precautions to prevent power failure to the tape drive.

Make sure you have a DLTtape that bears the firmware image of the required revision level copied to it.

1. Put the tape drive into the firmware update mode. To do this:

    a) Remove any cartridge in the target tape drive and close the handle (down position).

    b) Press the UNLOAD button on the drive front panel and hold the button until the WRITE PROTECT indicator begins blinking (approximately six seconds). This indicates that the tape drive has recognized your request for firmware update mode and is waiting for the sequence to complete.

> **NOTE**
>
> If the WRITE PROTECT indicator does not blink, check that:
> 1. The Power-On Self Test passed.
> 2. The drive is unloaded.
> 3. The drive handle is in its down position.

    c) Release the UNLOAD button, then press the UNLOAD button again within four (4) seconds. The second press should take less than one (1) second.

    d) The TAPE IN USE and the WRITE PROTECT indicators will blink. This indicates that the tape drive recognizes that the firmware update mode has been selected.

If you are unsuccessful in selecting the firmware update mode (if, for example, pressing the UNLOAD button the second time requires longer than one [1] second), the WRITE PROTECT indicator will stop blinking within several seconds. Try the procedure again. If the drive and controller PCBA are not communicating properly, you cannot select the firmware update function.

Once the firmware update mode has been successfully selected, insert the cartridge with updated firmware image into the drive. The drive then:

- Automatically reads the cartridge. The tape will move for a few minutes performing calibration and directory processing before any data is read.

- Examines the data

- Verifies that the data is a valid firmware image for the tape drive.

At this point, the firmware update mode is automatically cleared. One of the following conditions will occur:

- If the firmware image is valid and the drive code is up-to-date, the drive code does not go through an update.

- If the firmware image is valid and the drive code is NOT up-to-date, the code in the drive is updated. This will take 2 - 3 minutes.

While the drive code is being updated, the WRITE PROTECT and TAPE IN USE indicators flash alternately.

When the drive code update is complete, the drive resets, and runs its Power-On Self Test (POST). The process waits until the tape is reloaded at the beginning of tape (BOT).

If the firmware image is valid, the tape drive's PCBA controller's FLASH EEPROM is updated with the new firmware image. The WRITE PROTECT and TAPE IN USE indicators flash again during the controller firmware update.

C.4 INTERPRETING THE RESULTS OF A FIRMWARE UPDATE

Following a firmware update procedure, two possible results can occur:

- The firmware update cartridge is unloaded. This signals a successful update. The tape drive rewinds the cartridge, the door is unlocked, and the green OPERATE HANDLE indicator illuminates.

- The firmware update cartridge is NOT unloaded. This signals an unsuccessful update. The tape drive subsystem may still be usable. Failure may be a result of:

    - Power failure

    - Bad firmware image on the tape

    - Non-functioning FLASH EEPROMS.

Table C-2 provides troubleshooting information.