20-40 Gbyte 8mm Tape Drive Installation and User's Guide

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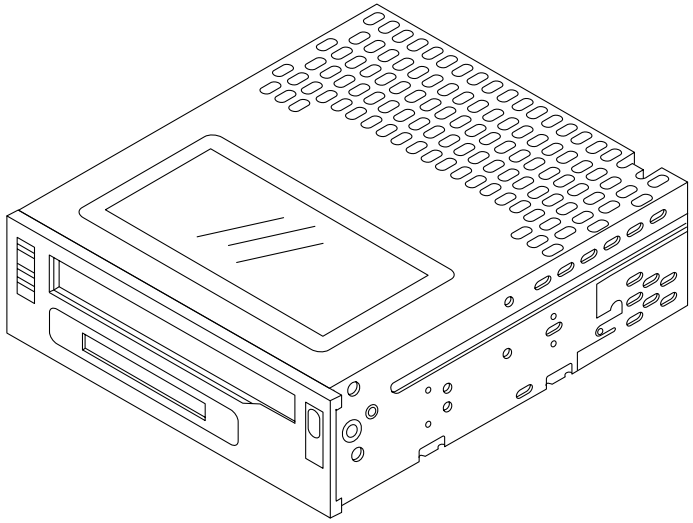
20-40 Gbyte 8mm Tape Drive Installation and User's Guide

The 20-40 Gbyte 8mm tape drive is a high-speed, high-capacity tape drive. The tape drive transfers data at a rate of up to 6 Mbytes per second with a 2:1 compression ratio. It can store up to 40 Gbytes of data on a single advanced metal evaporated (AME) data cartridge.



Physical Characteristics

Height	41.2 mm (1.6 inch)
Width	146.0 mm (5.75 inch)
Depth	203.2 mm (8.0 inch)
Weight	1.2 kg (2.6 pounds)

Power Requirements

DC Voltage	+12 Vdc +/-10%, +5 Vdc +/-7%
Current Power	2.8 amps +5V, 1.6 amps +12V 14.5 watts

Installing the Tape Drive

Installing the tape drive involves the following steps:

- Determining an available SCSI ID within your system
- Setting the SCSI ID jumpers on the tape drive
- Installing the tape drive into your system or enclosure
- Configuring the tape drive with your system

After identifying and setting the SCSI ID, refer to your enclosure or system documentation and follow the procedure for installing a tape drive.

After installing your tape drive, refer to “Software Commands” on page 4 for information about modifying the `st.conf` file and configuring your system.

Setting the SCSI ID Jumpers

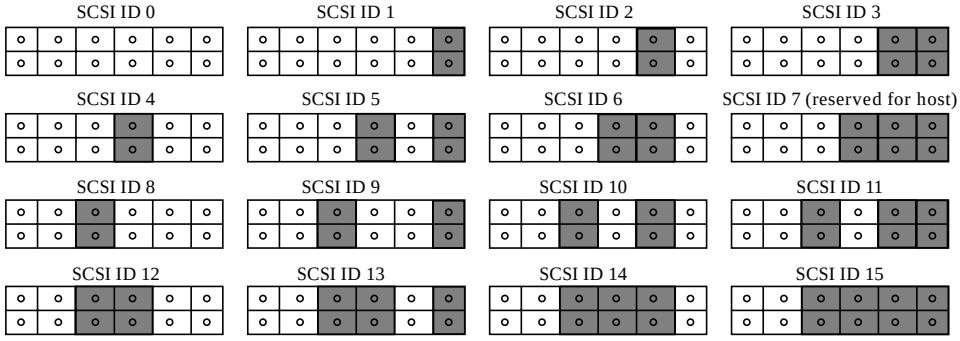
Refer to the *Solaris Handbook for SMCC Peripherals* to determine available SCSI target IDs. There are two different procedures for setting the SCSI ID depending on whether the tape drive is being installed into an enclosure with or without a target ID selector switch. After identifying an available SCSI ID, use the procedure below that applies to your system.

To set the SCSI ID for the 20-40 Gbyte tape drive being installed into an enclosure using a target ID selector switch:

1. **Remove the jumpers from the SCSI ID connector on the rear of the drive.**
2. **Connect the discrete five-wire cable from the target ID switch on the rear panel of the enclosure to the ID jumpers on the tape drive.**
3. **Set the target ID selector switch on the enclosure to an available SCSI ID address (tape drives are normally 4 or 5).**

To set the SCSI ID for the 20-40 Gbyte tape drive being installed into an enclosure without a target ID selector switch:

- **Identify an available SCSI ID (tape drives are normally 4 or 5), and then configure the jumpers on the rear of the drive according to the illustration below.**



Software Commands

For information about software commands, refer to the *Solaris Handbook for SMCC Peripherals* or the *AnswerBook* documentation for your operating system. The *Solaris Handbook for SMCC Peripherals* also describes how to determine which SCSI target IDs are available and how to configure your system after installation.

For optimum performance on systems running Solaris releases 2.5 and 2.5.1, you must modify the `st.conf` file.

Modifying the `st.conf` *File*

Read this entire procedure before editing the `st.conf` file.

Note – The syntax is critical. Verify the placement of commas, semicolons, and beginning and ending quotation marks. Some numerical fields are preceded by `0x`.

---

1. **Become superuser and make a copy of the original** `st.conf` **file**`/kernel/drv/st.conf` **as a backup (**`st.conf.old`**).**

```
%su
Password:

#cp /kernel/drv/st.conf st.conf.old
```

2. **Edit the** `st.conf` **file.**
   Using an editor, scroll through the `st.conf` file to the following line:

```
#tape-config-list=
```

   a. **Delete the # character that begins the line, if it hasn't already been removed. (# = comment line).**

b. Using the editor, continue to scroll until you come to the following line entry:

```
# "EXABYTE EXB8500C", "Exabyte 8500C Helical Scan", "EXB-850X",
```

c. On the next line, add the following entry exactly as shown:

```
"EXABYTE EXB-8900","Exabyte Mammoth","mam-data";
```

Note – Do not use a # character at the beginning of the line just added. The # character is used to comment-out a specific line entry.

Note – If multiple devices are enabled (lines uncommented) only the last uncommented line with this format needs to end with a semi-colon. All previous lines with this format *must* end with a comma.

d. Using the editor, continue to scroll until you come to the following line entry:

```
# "EXB-850X = 1,0x29,0,0xce39,4,0x14,0x15,0x8c,0x8c,1;
```

e. On the next line, add the following entry exactly as shown:

```
mam-data=1,0x29,0,0x1de39,1,0x7f,0;
```

Note – Do not begin this line with a # character.

Note – This should be the last line entry and *must* end with a semi-colon.

f. Save the file as `st.conf`**.**

3. **Halt the system following the normal procedure.**

4. **Reboot the system with the `-r` option to recognize the drive:**

```
%boot -r
```

   Watch the boot messages for any indications of problems with the `st.conf` entry.

   Note any indicated line numbers. If any error messages occur, edit the `st.conf` file again and then reboot.

5. **Install a tape cartridge in the tape drive and allow the drive to fully load the cartridge.**

6. **Verify that the `st.conf` entry is correct.**

```
%mt -f /dev/rmt/0 status
```

   You may need to replace the 0 with 1, 2, and so on, until you find the number that the system has identified for this drive.

   - `Exabyte EXB-8500 8-mm tape drive` indicates a 20-40 Gbyte tape drive that is correctly recognized. The EXB-8500 drive type indicates that the 20-40 Gbyte tape drive is being supported through the 8500 drive.
   - The specific Sense Key returned is usually not an issue.
   - No Additional Sense indicates that there are no error conditions.
   - Unit Attention indicates that the drive has just been powered on or that a tape has just been inserted.

Undesired Responses from the Drive

- `SCSI tape drive` indicates the `st.conf` entry is incorrect. You must edit the `st.conf` file and reboot until you no longer see `SCSI Tape Drive`.
- `No tape loaded or drive offline` indicates there is no cartridge in the drive or that the cartridge is not yet loaded. Install a cartridge or wait for the cartridge load to complete and retry the `mt status` command.
- `No such file or directory` indicates there is no tape drive attached to that rmt (remote) number. Try another rmt number.

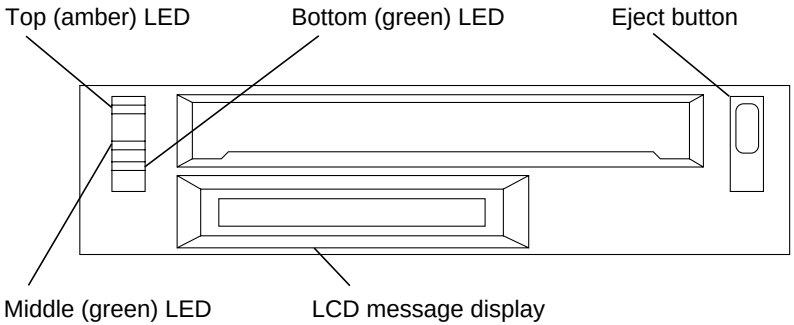
Other Sources of Information

- Check the man pages for additional information on software commands.
- The man page for the `mt` command lists numerous helpful commands. This is accessed by typing `man mt`.

Panel Descriptions

The tape drive has three LEDs and an LCD message display that indicate its operating status.

Front Panel Controls and Indicators



The LEDs indicate the following general conditions:

- When the top (amber) LED is flashing, the tape drive has an error
- When the top (amber) LED is on solid, the tape drive needs to be cleaned.
- When the middle (green) LED is on, a data cartridge is loaded and the tape drive is ready to begin operations.
- When the bottom (green) LED is flashing, tape is in motion.

Table 1 describes the LED combinations that occur during normal tape drive operation.

Table 1 Tape Drive LED Descriptions

	POST[1] or reset	**Error or failed POST**	**Ready (no tape loaded)**	**Ready (tape loaded)**	**Normal tape motion**	**High-speed motion**	**Time to clean**	**Clean in progress**
Top LED (Error/Clean)	on	flash	n/a	n/a	n/a	n/a	on	on
Middle LED (Tape Ready)	on	off	off	on	on	on	n/a	on
Bottom LED (Tape Motion)	on	off	off	off	flash	flash fast	n/a	flash

1. POST = power-on self-test.

LCD Message Descriptions

Table 2 lists detailed messages that may appear in the LCD display.

Table 2 LCD Message Descriptions

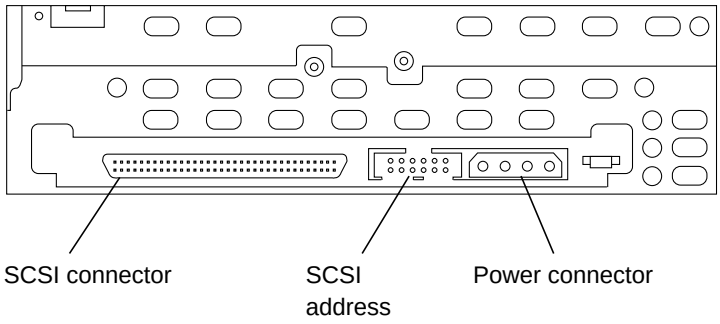
Reset Messages	
RESET	The first message to appear during the power-on sequence.
MODEL:	The model number of the tape drive.
SUBMOD:	The submodel number of the tape drive.
SN:	The serial number of the tape drive.
CODE:	The level of the tape drive's firmware.
LAST CLN: *nn* hrs	The number of hours since the tape drive was last cleaned.
COMPRESS ON *or* COMPRESS OFF	Compression is turned on (the default) or compression is turned off.
SINGLE-ENDED *or* DIFFERENTIAL	The tape drive has a single-ended or differential SCSI configuration.
WIDE *or* NARROW	The tape drive has a wide or narrow SCSI configuration.
SCSI ID: *nn*	The SCSI ID of the tape drive.
LANGUAGE:	The current language for the LCD appears when you hold the eject button after the Reset message appears. To change the language: 1. Press and hold the eject button during the reset sequence (after the RESET message appears). The LCD cycles through the available languages. 2. When the desired language is displayed, release the button.
Tape Drive Status Messages	
READY–NOTAPE	The tape drive is ready to accept a cartridge.
◯¯¯◯ LOADING	The tape drive is loading the tape.
◯¯¯◯ READY–TAPE	The tape drive has successfully loaded the tape and is ready for read/write operations.
◯¯¯◯ EJECT ■■■===	The eject button was pressed. The tape drive will eject the cartridge as soon as it has finished its current operation.
◯¯¯◯ EJECT–PREVNT	The software has disabled the eject function with the PREVENT/ALLOW MEDIA REMOVAL command. The tape drive will rewind and eject the tape, but will not eject the cartridge.
ILLEGAL TAPE	The tape drive detected an incompatible cartridge and ejected it.

Table 2 LCD Message Descriptions

Tape Motion Messages	
 READ +■■■===	The tape drive is reading or writing data. The + sign is displayed when the data is compressed. The boxes show the amount of tape used.
 WRITE+■■■===	
 PROTECTED	The tape drive cannot write data because the data cartridge is write-protected.
 ILLEGAL WRT	The tape drive cannot write to the type of data cartridge inserted. This message remains until an appropriate tape is inserted and a tape motion command is issued.
>> SEARCH ■■====	High-speed search is in progress.
<< REWIND ■■====	Rewind is in progress.
 ERASE ■■====	The tape drive is erasing data on the tape.
Cleaning Messages	
 CLEAN SOON	The tape drive should be cleaned at the next convenient time.
 MUST CLEAN	The tape drive must be cleaned after a metal particle tape has been used in the drive. If you attempt to insert a data cartridge before cleaning the tape drive, the cartridge will be ejected.
 CLEANING . . .	Cleaning is in progress.
 DEPLETED	The cleaning tape in the cartridge is depleted and the tape drive will eject it. Use a new cleaning cartridge.
Error Conditions [1]	
ERR 1: *xx yy zz* ERR 2: *xx yy zz* ERR 3: *xx yy zz*	In the error display, *xx* indicates the fault symptom code, and *yy* and *zz* indicate secondary errors (if any). If an error appears, contact Exabyte Technical Support.

1. When a hardware error occurs, the LCD cycles through the current error code and the previous three error codes.

Back Panel Connections



Tape Drive Service Information

Resetting the Tape Drive

- **To reset the tape drive, press and hold the eject button for at least 10 seconds, or power the drive off and back on again.**

Note – If you reset the tape drive while a cartridge is loaded, it rewinds the tape to the beginning after the reset is complete. The reset may take as long as two minutes if the tape is positioned near the end.

Cleaning the Tape Drive

When the tape drive requires cleaning, the top (amber) LED turns on. You should clean the tape drive as soon as possible after this LED turns on. The tape drive's cleaning requirements depend on the number of tape motion hours and the type of tape being used (MP or AME).

If you insert an AME cartridge after an MP tape has been read, the top LED turns on and the cartridge is ejected. Before you can use the AME tape, you must clean the tape drive.

To clean the tape drive, insert an Exabyte Mammoth 8mm Cleaning Cartridge (or a cleaning cartridge approved by Exabyte for use with Mammoth). When finished, the tape drive turns off the top LED and ejects the cleaning cartridge.

Tape Cartridge Information

This tape drive uses 8mm 170m AME tape cartridges, which have a typical storage capacity of 40.0 Gbytes. The cartridges do not require preformatting.

Storage Capacity

Length	Native Capacity	Compressed Capacity
22m	2.5 Gbytes	5 Gbytes
170m	20.0 Gbytes	40.0 Gbytes

Caution – Never use video-grade media. Always use AME computer-grade media.

Thermal Conditioning

To assure proper thermal conditioning, keep the cartridge at the same temperature as the drive for 24 hours before using.

Handling and Storage

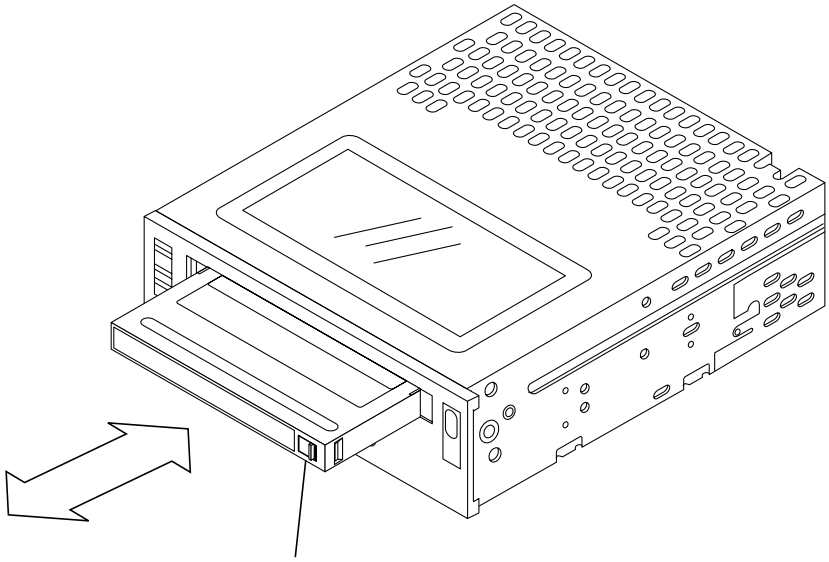
- Keep cartridges away from anything magnetic.
- Store cartridges in a dust-free environment.
- Keep cartridges away from direct sunlight and sources of heat, cold, or humidity. Constant room temperature and 50% humidity is best.
- Do not open the cartridge door and touch the surface of the tape.

Inserting a Tape Cartridge

1. **Make sure all tape drive LEDs are off.**
   Do not insert a cartridge if the tape drive is still performing its power-on self-test.

2. **Set the write-protect switch on the tape cartridge (see illustration) for the desired operation.**

3. **Insert the cartridge face up into the drive (see illustration).**



4. **Push gently on the tape until the unit pulls the cartridge into the drive.**

Removing a Tape Cartridge

♦ **To remove a cartridge, press the eject button.**

Caution – Do not press and hold the eject button for more than 10 seconds; this will cause a reset.

If the tape drive is free of errors, it performs the following actions in about one minute:

- Completes any command in process
- Writes any buffered information to tape
- Rewinds the tape to the beginning
- Unloads the tape and ejects the cartridge

Note – If an error occurs before or during the unload procedure, the tape drive suspends the unload sequence. To clear the error, press the eject button again. The tape drive reattempts the unload sequence, but does not write data in the buffer.

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Belgium	02-720-09-09	02-725-88-50
Luxembourg	32-2-720-09-09	32-2-725-88-50
Germany	01-30-81-61-91	01-30-81-61-92
The Netherlands	06-022-34-45	06-022-34-46
Sweden	020-79-57-26	020-79-57-27
Switzerland	155-19-26	155-19-27
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