TANDBERG DATA
Securing your Information

*Tandberg LTO-2, LTO-3 and LTO-4
HH SCSI External Tape Drives*

**QUICK
START**

TANDBERG DATA
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EH918-90902

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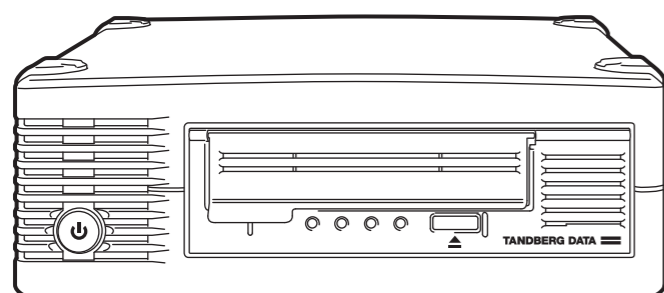
1 | *Introduction*

This poster describes how to install your Tandberg LTO-2/LTO-3/LTO-4 HH SCSI tape drive.

• Connect to an Ultra320 SCSI HBA for LTO-4/LTO-3 or Ultra160 SCSI HBA (or higher) for LTO-2 using a supported cable
• Use the correct driver

⚠️ **WARNING:** To avoid personal injury or damage to the server or tape drive, disconnect your server from the mains power supply before installing the tape drive.

2 | *Preparing the host*

📝 **IMPORTANT:** Refer to **www.tandbergdata.com** for detailed compatibility information about operating systems and software applications.

SCSI HBA

We recommend an Ultra320 host bus adapter for LTO-4/LTO-3. We recommend an Ultra160 or Ultra320 host bus adapter for LTO-2. If necessary, install a new HBA before you connect the tape drive. Ensure that you are connecting to a supported HBA running the recommended firmware version.

Your tape drive will work with lower-rated LVDS SCSI but performance may be degraded. Single-ended SCSI will degrade performance and limit cable length. **Do not** attach to narrow or HVD SCSI.

Drivers

For Windows systems, download the latest drivers from **www.tandbergdata.com**. For other operating systems, patch to the latest version of the operating system, following the instructions in the patch documentation.

Backup software

Always **upgrade** your software application to ensure it works correctly with the tape drive. We do **NOT** recommend native backup applications, such as Windows Backup, because they do not support the full features of the tape drive and may cause performance problems.

📝 **NOTE:** Some backup applications require you to use their own drivers. Refer to the documentation of your software application to ensure you are using the recommended driver.

3 | *Checking the SCSI ID*

Your Tandberg LTO HH tape drive is shipped with a default SCSI ID of 2, but it can be assigned any unused ID between 0 and 15. Do not use SCSI ID 7, which is reserved for the SCSI controller, or SCSI ID 0, which is typically assigned to the boot disk.
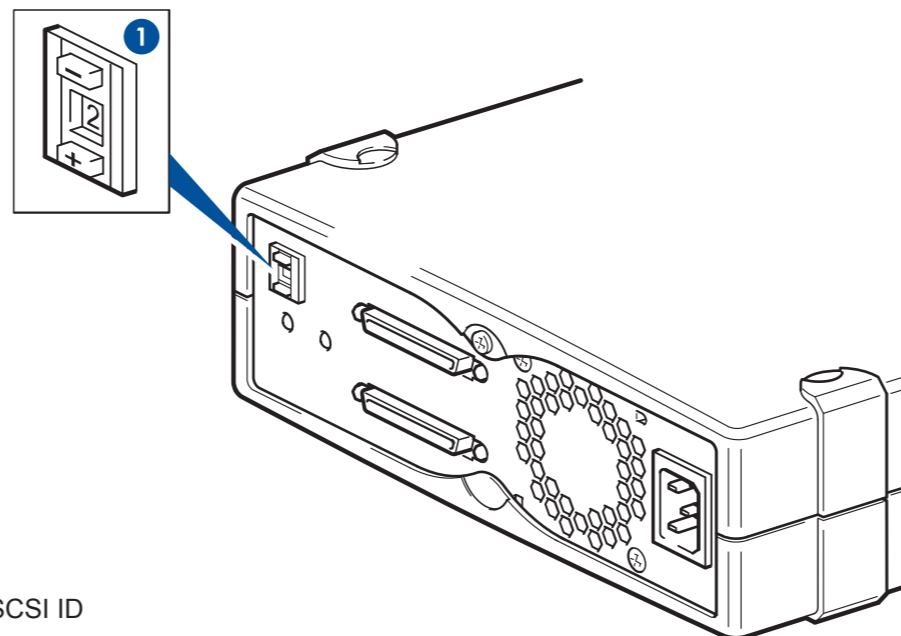
1 SCSI ID

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4 | *Connecting the tape drive*

⚠️ **CAUTION:** Turn off and remove the power cords from the server and all attached accessories.
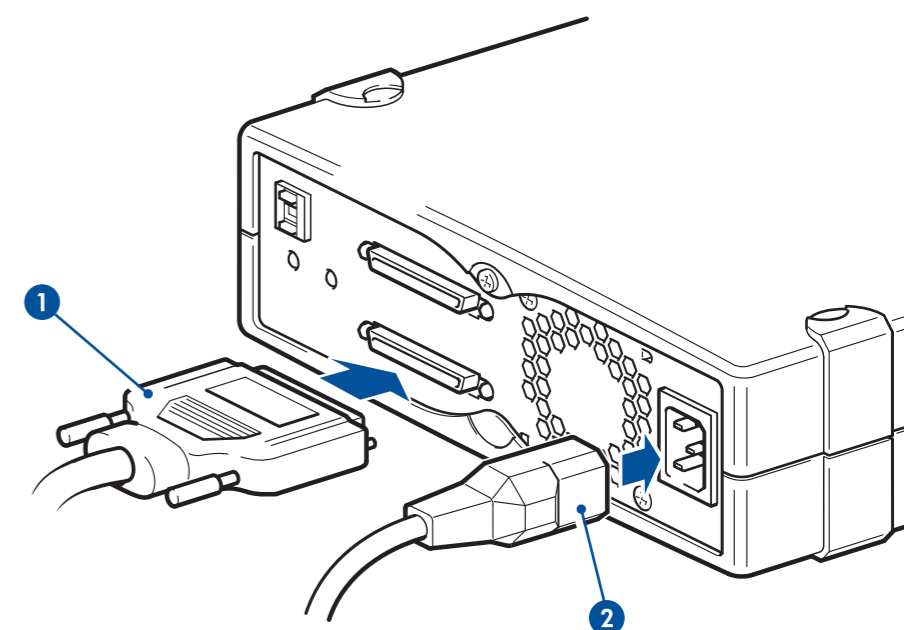
**1** SCSI cable   **2** Power cable

SCSI cable and termination

Use the 68-pin, wide, VHDCI-to-HD SCSI cable (1) supplied with the tape drive. The tape drive provides active termination; it does not require a terminator, if it is the only or the last device on the SCSI bus. If not, use an LVD or multimode terminator on the last device. Daisy-chaining multiple devices is not recommended. If you do so, do not mix drive families (only daisy-chain with other Ultrium tape drives) and attach no more than two devices to the same SCSI bus. The last device on the SCSI chain must be terminated correctly.

Power cord

Use the supplied, approved power cord (2). This cord is appropriate for your specific geographic region.

5 | *Power on the tape drive and verify connection*
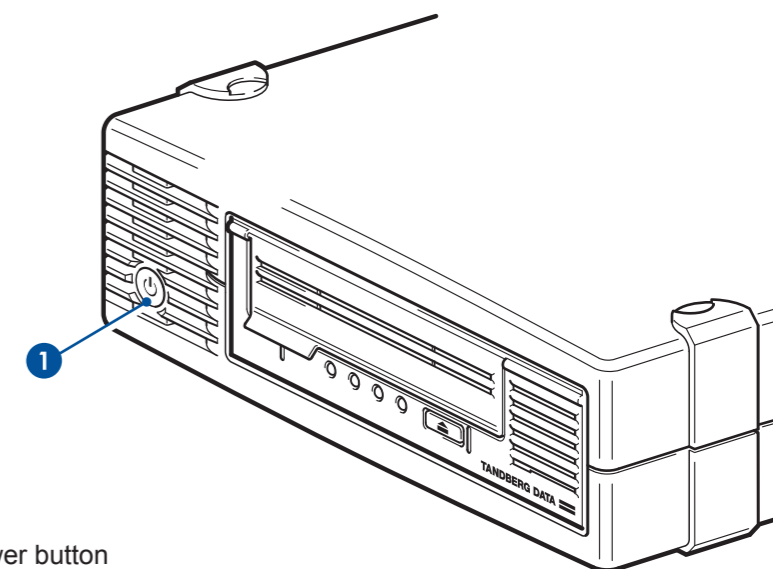
1 Power button

• Plug in the host server or workstation and all attached devices.
• Power on the tape drive using the power button located at the front of the tape drive.
• Check the Ready LED on the front panel to make sure the tape drive is ready for use.
• Turn on any other devices you turned off earlier. Turn on the server.
• Verify the connection.

6 | Checking the performance of your product

If performance is not meeting expectations and you are not meeting your backup window, check for bottlenecks in your system architecture.

NOTE: See www.tandbergdata.com for recommended backup applications, SCSI HBAs and for software configuration and performance advice.

What causes bottlenecks?
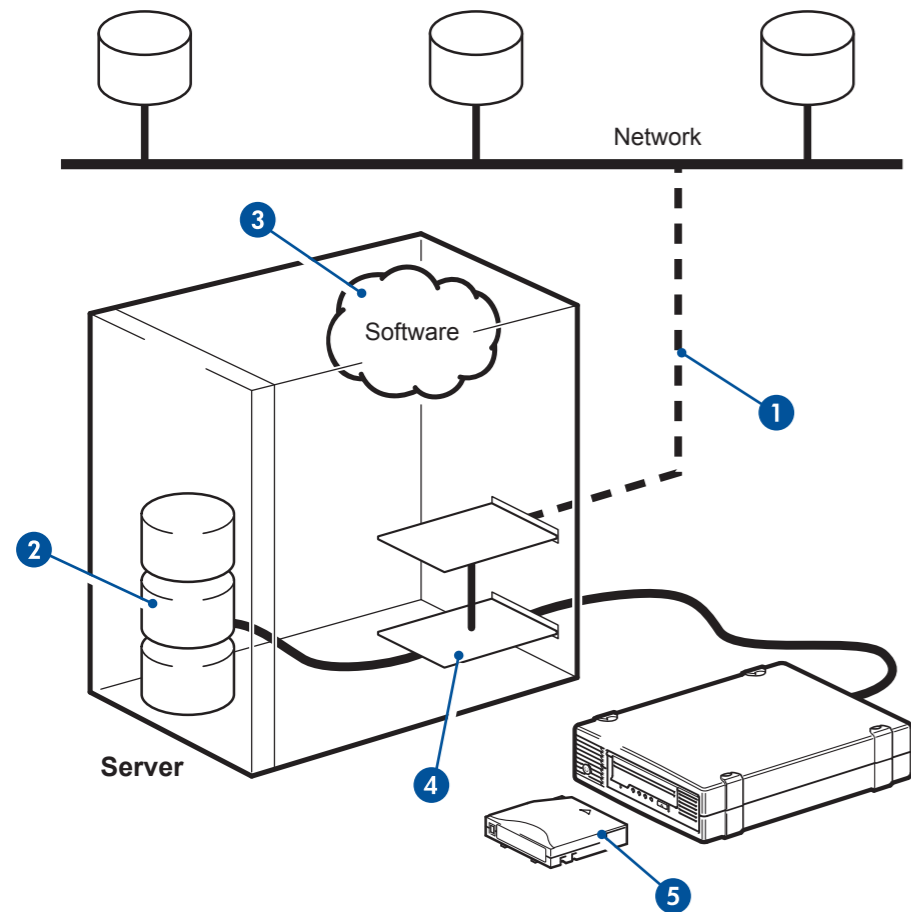
1. Tandberg Data recommends direct attach for LTO-4 and LTO-3 tape drives. If you back up over a network, anything less than Gigabit Ethernet may limit performance.

2. A single disk may limit backup performance. Have disks in parallel (e.g. RAID5) if possible or, if your backup application supports interleaving of data, back up streams from multiple sources.

3. Use the latest version of your backup application. Native backup applications, such as Windows backup, may limit performance.

4. Connect the tape drive to a dedicated SCSI bus.
   SCSI card: Use a PCI-express or a 64-bit PCI expansion slot. Use an Ultra320 SCSI HBA in a 64-bit/66MHz or better expansion slot for LTO-4/LTO-3. Use an Ultra160 or higher for LTO-2.

5. For optimum performance use LTO-4 1.6 TB R/W and WORM for Tandberg LTO-4 tape drives, LTO-3 800 GB and 800 GB WORM with Tandberg LTO-3 tape drives, LTO-2 400 GB cartridges with Tandberg LTO-2 tape drvies.

7 | Hardware encryption and your Tandberg LTO-4 tape drive

Your Tandberg LTO-4 tape drive provides the ability to hardware encrypt your data, applying the strongest level of AES industry-standard encryption and protecting the data from unauthorized access and use. Encryption is supported only on Tandberg LTO-4 1.6 TB media; media encrypted on a Tandberg LTO-4 drive can only be read on a compatible Ultrium tape drive that supports hardware encryption.

Hardware encryption can be used with or without compression and without speed or capacity penalties.

IMPORTANT: Hardware encryption is a powerful feature, but should be used with care. If you need to import your media onto another machine or to recover after disaster you will be required to enter an encryption key.

- Hardware encryption is turned off by default and is switched on by settings in your backup application, where you also generate and supply the encryption key.
- Your backup application must support hardware encryption for it to work. The software supplied with the tape drive provides this support. See www.tandbergdata.com for an up-to-date list of backup software.
- You should keep a record or backup of your encryption keys and store them in a secure place separate from the computer running the backup software.
- If you are unable to supply the key when requested to do so, neither you nor Tandberg Data Support will be able to access the encrypted data.

8 | Choosing and looking after media

Your high-performance tape drive works best with high-performance Tandberg LTO media. For optimum performance always use a data cartridge that matches the specification of your tape drive (see table).

Table: Tandberg LTO data cartridge compatibility

	LTO-1 200 GB*	LTO-2 400 GB*	LTO-3 800 GB*	LTO-3 800 GB* WORM	LTO-4 1.6 TB*	LTO-4 1.6TB* WORM
Tandberg LTO-4 HH	No	Read only	Read/Write	Write Once Read Many	Read/Write (Recommended)	Write Once Read Many (Recommended)
Tandberg LTO-3 HH	Read only	Read/Write	Read/Write (Recommended)	Write Once Read Many (Recommended)	No	No
Tandberg LTO-2 HH	Read/Write	Read/Write (Recommended)	No	No	No	No

* Capacity assumes 2:1 compression.

The recommended cleaning cartridge is the Tandberg LTO universal cleaning cartridge. This cartridge is designed to work with any Ultrium drive and may be used for up to 50 cleans.

It pays to look after your media

Many tape drive and backup failures are caused by damaged or badly handled tape media.

- Keep media in the case provided.
- Follow the temperature, humidity and acclimitization guidelines on the media packaging.
- Avoid dropping it or rough handling, as this is likely to damage the cartridge.
- Inspect it regularly for damage.
- Do not exceed normal cartridge life (260 full volume backup or restore operations).

For detailed information on media care and best practice and to order online, refer to www.tandbergdata.com.
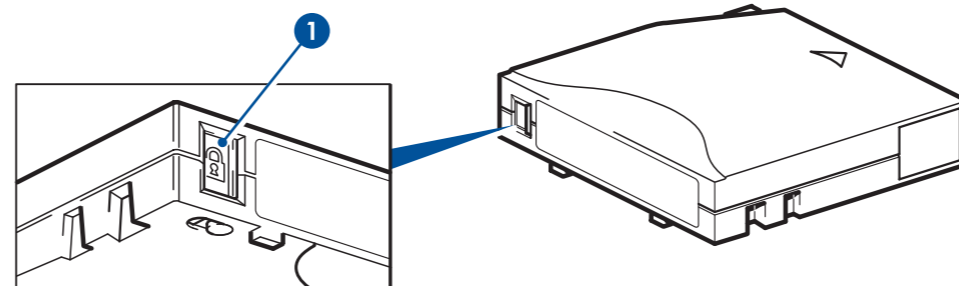
1 Write-protect switch

9 | Understanding the LEDs
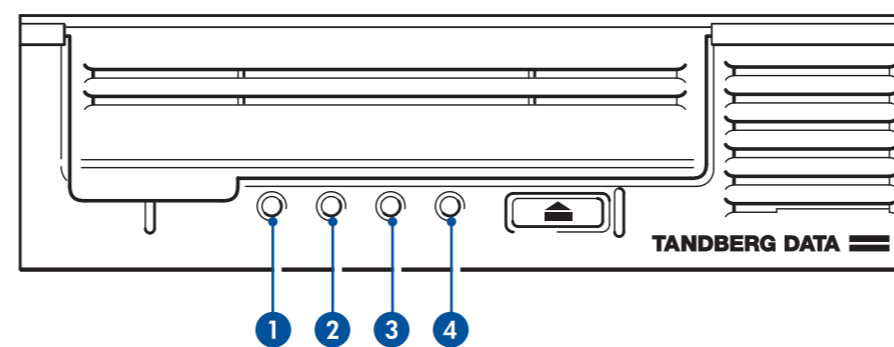
1 Clean – amber
- On: cleaning cartridge in use
- Off: the drive does not require cleaning
- Flashing: the drive needs cleaning

2 Tape – amber
- Off: no fault has been detected
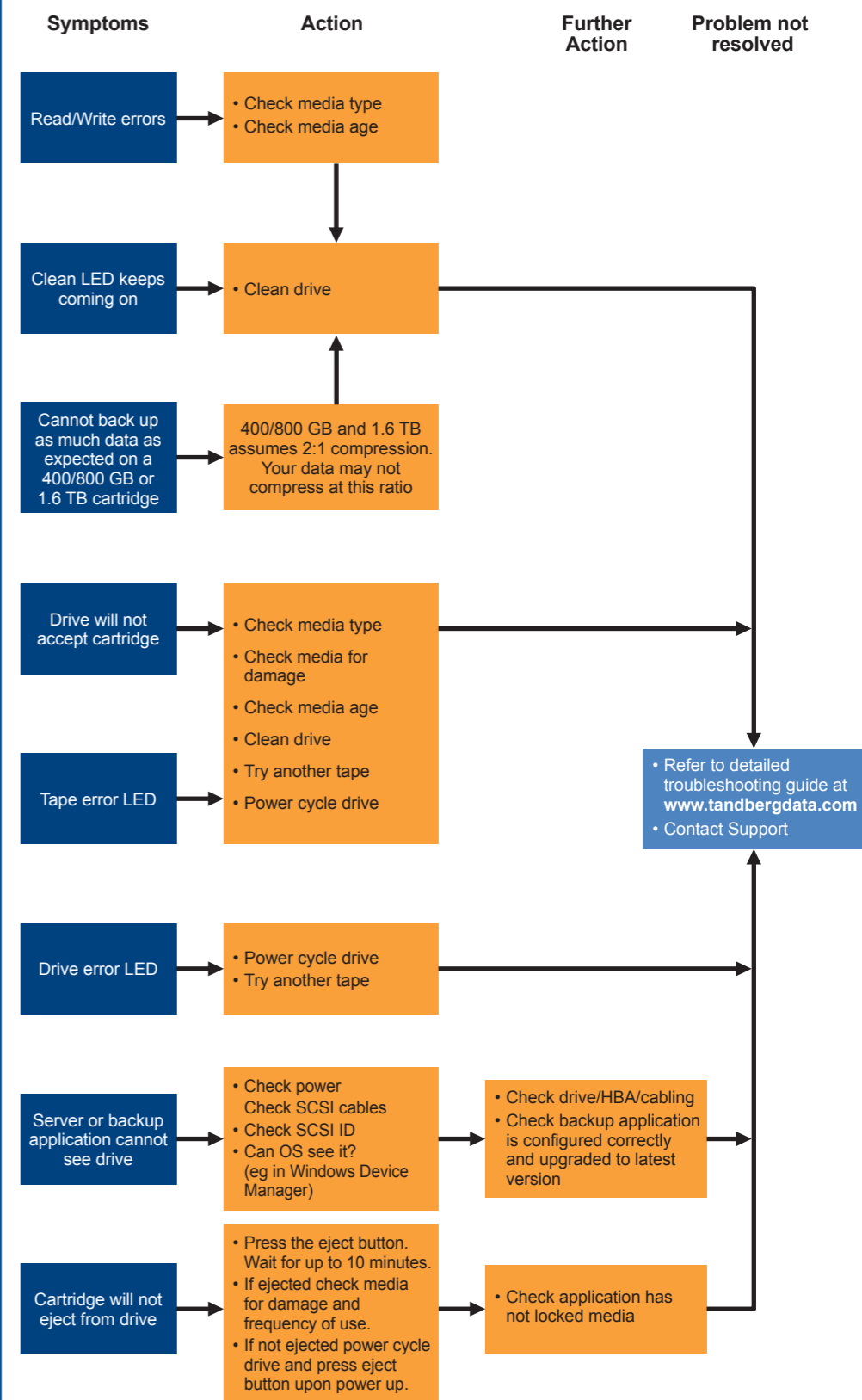- Flashing: the cartridge currently in the drive is faulty (damaged or unsupported). Discard the cartridge.

3 Drive – amber
- Off: no fault has been detected
- Flashing: the drive mechanism has detected a hardware error

4 Ready – green
- On: the drive is ready for use
- Off: the drive power is off or there was a failure during self-test
- Flashing: the drive is busy

10 | Troubleshooting

Symptoms	Action	Further Action	Problem not resolved
Read/Write errors	• Check media type • Check media age		
Clean LED keeps coming on	• Clean drive		
Cannot back up as much data as expected on a 400/800 GB or 1.6 TB cartridge	400/800 GB and 1.6 TB assumes 2:1 compression. Your data may not compress at this ratio		
Drive will not accept cartridge	• Check media type • Check media for damage • Check media age • Clean drive • Try another tape • Power cycle drive		• Refer to detailed troubleshooting guide at www.tandbergdata.com • Contact Support
Tape error LED			
Drive error LED	• Power cycle drive • Try another tape		
Server or backup application cannot see drive	• Check power Check SCSI cables • Check SCSI ID • Can OS see it? (eg in Windows Device Manager)	• Check drive/HBA/cabling • Check backup application is configured correctly and upgraded to latest version	
Cartridge will not eject from drive	• Press the eject button. Wait for up to 10 minutes. • If ejected check media for damage and frequency of use. • If not ejected power cycle drive and press eject button upon power up.	• Check application has not locked media	

11 | Other sources of information

There is a more detailed "User Guide" on www.tandbergdata.com.

If you need technical support or have any problem with your LTO-2 HH, LTO-3 HH or LTO-4 HH tape storage solution, phone, fax and addresses can be found under www.tandbergdata.com SUPPORT.