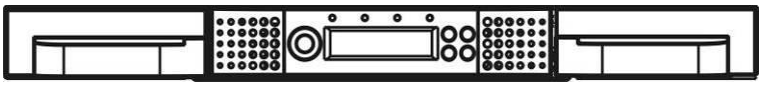
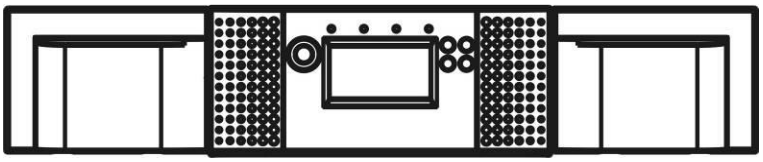
TAU/LANCET Tape Library
1U an 2U

Quick Start Guide

1U



2U



COMBACK Model Name: **TAU/LANCET Tape Library**

COMBACK Product Number: **950 xxx xxx-xx**

COMBACK Document Number: **921 750 001-01**

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Revision History

Date	Issue	Revision	Author	Description of changes
2018-05-04	Initial revision	01	T. Kühne	Quick start guide Previous documents: IUSER_303141_08

1 Preliminary remarks

1.1 General purpose

This document provides information about installing and operating a TAU/LANCET Tape Library. This document is intended for system administrators and general users who need physical and functional knowledge of the TAU/LANCET Tape Library.

2 General warnings

DANGER

High voltage

Risk of electric shock

- Do not remove cover (or back). No user-serviceable parts are inside.
- Refer servicing to qualified service personnel.

WARNING

Weight of TAU/LANCET Tape Library

Risk of personal injury

Before lifting a library:

- Observe local health and safety requirements and guidelines for manual material handling.
- Remove all tapes to reduce the weight.
- Obtain adequate assistance to lift and stabilize the library during installation or removal.

Risk of damage to devices

When placing a library into or removing the library from a rack:

- Extend the rack's leveling jacks to the floor.
- Ensure that the full weight of the rack rests on the leveling jacks.
- Install stabilizing feet on the rack.
- Extend only one rack component at a time.

CAUTION

Static sensitive

Risk of damage to devices

- A discharge of static electricity damages static-sensitive devices or micro circuitry.
- Proper packaging and grounding techniques are necessary precautions to prevent damage.

NOTE

- **Ventilation** – Place the product so that its location does not interfere with proper ventilation.
- **Heat** – Place the product so that its location is away from heat sources.
- **Power sources** – Connect the product to a power source only of the type directed in the operating instructions or as marked on the product.
- **Power cord protection** – Place the AC line cord so that it is not possible to be walked on or pinched by items placed upon or against it.
- **Object and liquid entry** – Insure that objects do not fall and liquids are not spilled into the product's enclosure.

3 Product overview and features

The TAU/LANCET Tape Library provides a compact, high capacity, low-cost solution for simple, unattended data backup.

The TAU/LANCET Tape Library is compatible with most operating systems and environments with the appropriate interface card. However, the library requires either direct support from the operating system or a compatible backup application to take full advantage of its many features.

Particular emphasis of the TAU/LANCET family includes:

- **Platform of the tape libraries -** independent of tape and drive form factors
- **Configurability -** from entry level cost optimized library to a feature rich configuration
- **Broad level of connectivity –** SCSI, FC and SAS depending upon installed tape drives
- **Technology upgrade -** customer can upgrade tape drive technologies (e.g. LTO6 to LTO7) in the field
- **Service friendly design** – following devices are accessible for quick replacement

  All unit heights: magazines, from the front of the library
  tape drives, from the back of the library
  2U, 4U and 8U library controller and power supply from the back of the library
- **Maximum up time** - through advanced error handling and recovery capability

The TAU/LANCET family includes the following features:

- The library occupies one SCSI target address and uses separate LUNs for the tape drive and library robotics.
- USB interface to enable serviceability features (library and drive firmware upgrades) and/or customized features (storage on demand) implementation
- The library can be operated via the front operator control panel (OCP) over the network via the internal remote management unit (RMU) or via the storage interface connection by the host application.
- Supports industry standard management protocols such as SNMP(SMI-S future development)
- Mail slot for import/export of cartridges during library operation
- Robotic with barcode reader
- The TAU/LANCET Tape Library encompasses rack formats for all unit highs. (1U, 2U, 4U 8U).
- The TAU/LANCET Tape Library encompasses tabletop functionality for 1U, 2U and 4U libraries.

3.1 Front panel

The front panel of the TAU/LANCET Tape Library is used to access the power button, operator control panel (OCP), left and right magazines, LED's, and the mail slots.

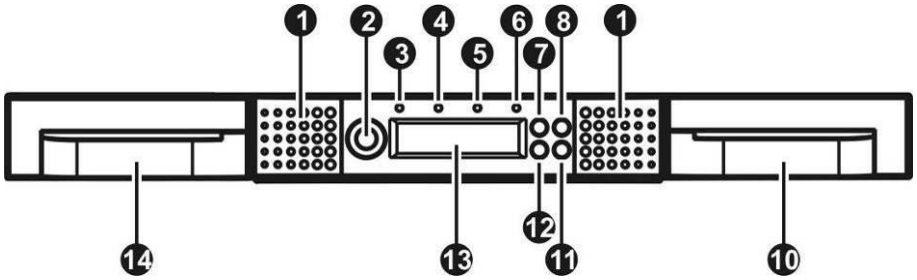


Figure 1 1U front panel

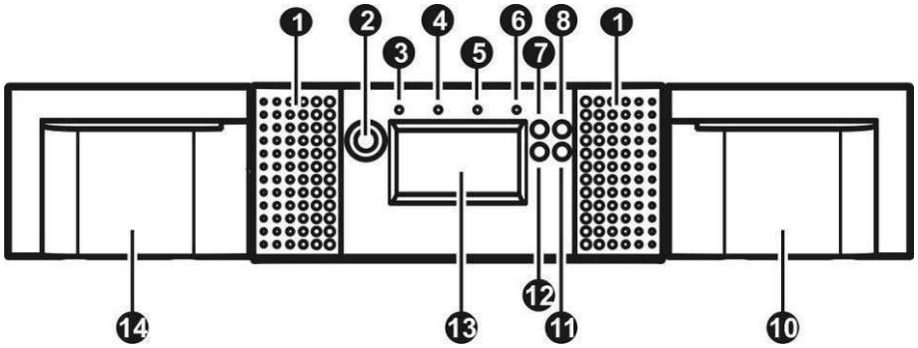


Figure 2 2U front panel

Number	Description
1	Air vents
2	Power button Pressing the button will initiate a controlled power down of the library (soft power down)
3	LED <READY> (green) is illuminated during power on; blinking during tape or library robotics activity.
4	LED <CLEAN> (amber) is illuminated when the tape drive has determined that a cleaning tape should be used. Cleaning is only necessary when the library directs to do so. Additional cleaning is not necessary.
5	LED <ATTENTION> (amber) is illuminated when the library has detected a condition that requires attention by the operator.
6	LED <ERROR> (amber) is illuminated when an unrecoverable tape drive or library error occurs. A corresponding error message is shown on the LCD screen.
7	<CANCEL> button [✕] is used to cancel a user action and return to the last menu item.
8	<PREVIOUS> button [◄] is used to navigate backward through menu items.
9	Right magazine with mail slot (only in 8U library)
10	Right magazines
11	<ENTER> button [↵] is used to enter to a sub menu or execute an action.
12	<NEXT> button [►] is used to navigate forward through menu items.
13	Operator control panel (OCP) consisting of 128 x 64 characters. The OCP displays actions and status information, menu items or error messages equivalent to the operation mode.
14	Left magazine with mail slot

Table 1 General front panel overview

3.2 Rear panel

The rear panel of the TAU/LANCET Tape Library provides access to the drive interface connectors, the power connector, Ethernet, serial and USB ports and the magazine release holes. All libraries support parallel SCSI, SAS and Fibre channel tape drives.

The position of the appended devices on the rear panel is in all libraries common. The power supply is on the left side, tape drives are in the middle and the library controller is on the right side of the library.

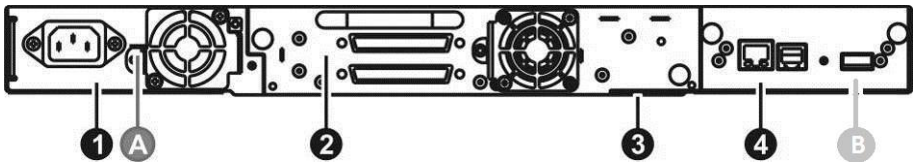


Figure 3 Library rear panel (1U)

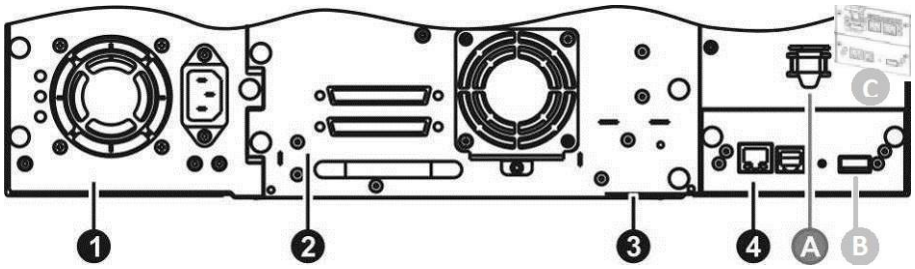


Figure 4 Library rear panel (2U)

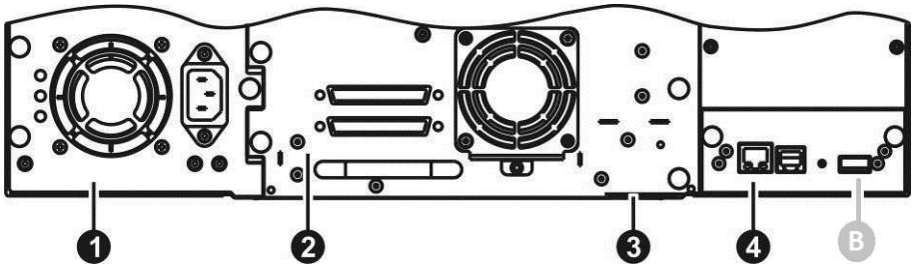


Figure 5 Library rear panel (8U)

Number	Description	Number	Description
1	Power supply	A	Storage location (for the shipping lock)
2	Tape drive(s)	B	USB port (Firmware upgrades, key storage)
3	Pull-out tab • containing the product information. (Serial Number /Model/Customer on demand)	C	iSCSI bridge (2U 1x /4U 1x or 2x) optional possible
4	Library controller		

3.2.1 Power supply

The power supply model utilized is dependent on the library model. The part# can be found in the price list.

For a 1U library, **see Figure 6.**
For a 2U library, **see Figure 9**
For a 4U or 8U library, see **Figure** Fehler! Verweisquelle konnte nicht gefunden werden**..**

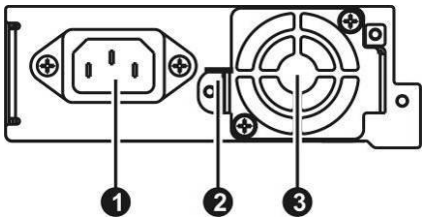


Figure 6 Power supply (1U)

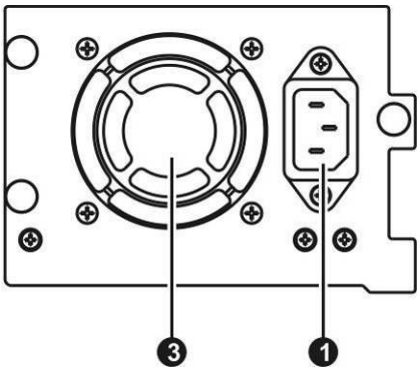


Figure 7 Power supply (2U)

Number	Description	Number	Description
1	Power connector The library requires a 110 / 220 V AC power connection.	4	LED (green) is illuminated when the power supply is producing good power for the library.
2	Storage location (for the shipping lock)	5	LED (amber) is illuminated when a fan failure occurs. The fan is running too slow or is defective.
3	Fan vent	6	LED (blue) is illuminated when the AC power is connected.

Table 2 Power supply overview

3.2.2 Tape drives

SCSI connectors till LTO 4 Generation

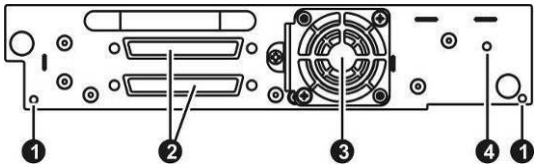


Figure 8 SCSI HH tape drive

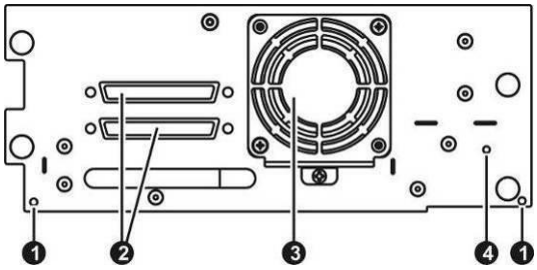


Figure 9 SCSI FH tape drive

Number		Number	Description
1	Magazine release holes	3	68-pin HD SCSI connectors
2	Fan vent	4	Tape drive LED

Table 3 SCSI tape drive overview only till LTO 4 Gen

SAS connectors all LTO Generations

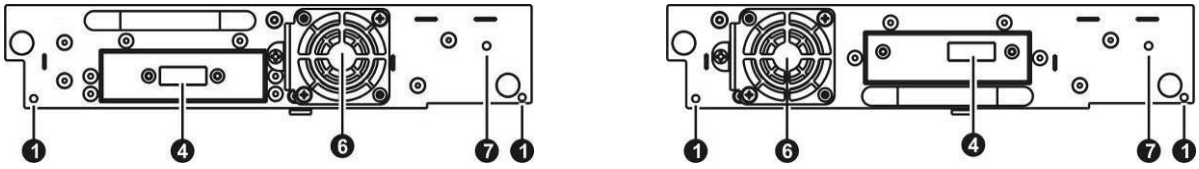


Figure 10 SAS HH tape drive

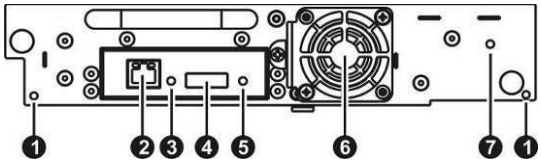


Figure 11 SAS HH tape drive with Ethernet port

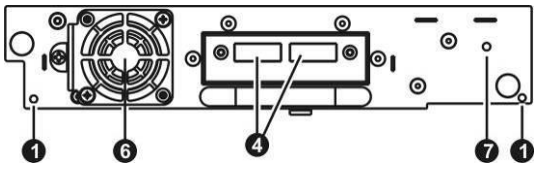


Figure 12 SAS HH tape drive with two SAS connectors

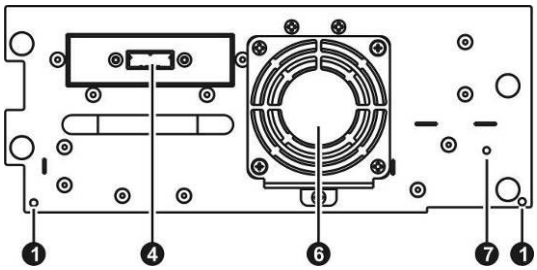


Figure 13 SAS FH tape drive

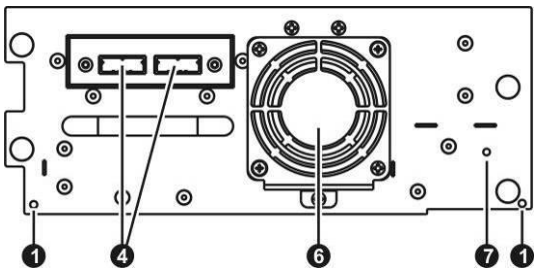


Figure 14 SAS FH tape drive with two SAS connectors

Number		Number	Description
1	Magazine release holes	5	LED <ERROR> (amber)
2	Ethernet port (service/diagnostics not used)	6	Fan vent
3	LED <READY> (green)	7	Tape drive LED
4	SAS connector(s)		

Table 4 SAS tape drive overview

Further details can be found on the Internet searching for HP / IBM drive.

FC connectors all LTO Generations

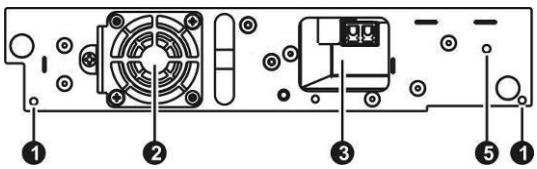


Figure 15 FC HH tape drive

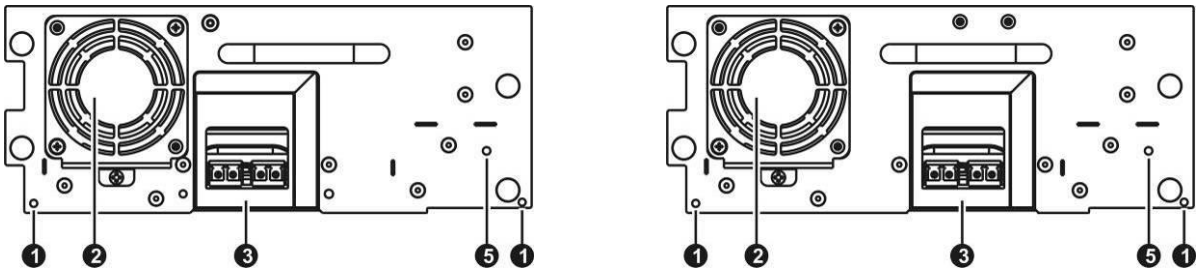


Figure 16 FC FH tape drive

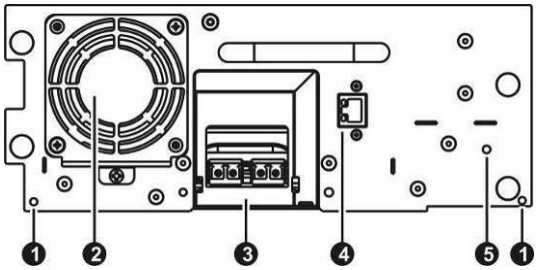
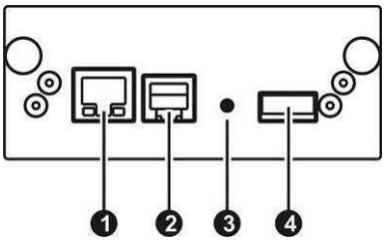


Figure 17 FC FH tape drive with Ethernet port

Number		Number	Description
1	Magazine release holes	4	Ethernet port (service/diagnostics not used)
2	Fan vent	5	Tape drive LED
3	FC connectors		

Table 5 FC tape drive overview

3.2.3 Library controller



Number	Description
1	Ethernet port (RMU connection)
2	Serial port (Engineering Diagnostics)
3	Controller LED blinking ok; if not failure
4	USB port (Firmware upgrades, key storage)

Figure 18 Library controller

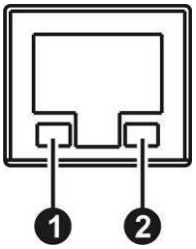
3.2.4 iSCSI bridge (not supported for Mainline)

The iSCSI bridge creates an interface between a network, which utilizes the Ethernet protocol, and peripherals which utilize a SAS bus architecture. The internal circuitry of the Bridge acts as a two-way interface converting the data packets, received from the network, into data transfers and electrical signals that storage devices such as tape drives understand on the SAS bus. Details see iSCSI User Manual.

The iSCSI bridge supports:
* 2U TAU/LANCET Tape Library with up to two SAS drives.
* 4U TAU/LANCET Tape Library with up to four SAS drives. To support three or four drives the library requires two iSCSI bridges!
* User management interface via network.
* NTP
* iSNS
* Multi path

3.2.5 Ethernet port

The Ethernet port is only available on the library controller drives and will connect the library to a network / PC for working with the RMU. On some LTO5/6 tape it is available for service/diagnostics (not used).



Number	Description
1	LED (amber) is illuminated when a connection is in place
2	LED (green) is illuminated when the connection is ready / in use

Figure 19 Ethernet port

4 Installing

This chapter provides instructions for installing the TAU/LANCET Tape Library.

4.1 Location requirements

Choose a location that meets the following criteria:

Criteria	Definition
Rack requirements	Standard 19-inch rack with an appropriate # of U's (unit high) of clearance
Room temperature	10-35º C (50-95º F)
Power source	▪ AC power voltage: 100-127 VAC; 200-240 VAC ▪ Line frequency: 50-60 Hz ▪ Place the library near to an AC outlet. The AC power cord is the libraries main AC disconnect device and must be easily accessible at all times.
Air quality	▪ Place the library in an area with minimal sources of particulate contamination. ▪ Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, printers, and smoke-filled rooms. ▪ Excessive dust and debris can damage tapes and tape drive.
Humidity	20-80 percent RH non-condensing
Clearance	▪ Back: Minimum of 15.4 cm (6 inches) ▪ Front: Minimum of 30.8 cm (12 inches) – for mail slot Minimum of 60 cm to remove magazines (24 inches) ▪ Sides: Minimum of 5.08 cm (2 inches)

Table 6 Location requirements

For further information, see the user and service guide.

4.2 SCSI requirements

The TAU/LANCET Tape Library incorporates a wide SCSI low-voltage differential (LVD) SCSI bus, but may also be attached to a single-ended (SE) SCSI bus.

Make sure your SCSI host adapter or controller supports these standards.

NOTE

- Do not connect any LTO SCSI device to a SE SCSI bus, as it will severely degrade performance.
- The TAU/LANCET Tape Library is not compatible with a standard differential (Diff) or a high-voltage differential (HVD) SCSI bus.
- The library is compatible with a narrow (50-pin) SCSI bus using a 68-pin to 50-pin adapter that terminates the unused 18 pins. This adapter is not included with the library and sometimes labeled high-byte termination.

4.2.1 SCSI host bus adapter (HBA)

To get optimum performance from your TAU/LANCET Tape Library you need a SCSI bus that can transfer data at a rate that supports the libraries maximum burst transfer speed.

For further information, see the user and service guide**.**

If the host computer will have multiple parallel SCSI devices, you must decide how they will be configured into one or more parallel SCSI busses.

A parallel SCSI bus consists of the host bus adapter (HBA), the parallel SCSI devices, the parallel SCSI cables, and the terminators. The HBA and devices are connected in a chain, with each device connected to the next. The last device must have a SCSI terminator. Each device in the chain must have a unique SCSI address (SCSI ID).

An HBA might have one or two channels, with each channel supporting one parallel SCSI bus. Check to see how many channels the HBA has and what devices are already connected to the HBA. Some devices, such as parallel SCSI disk drives, could be inside the server.

The devices on a parallel SCSI bus share bandwidth so be careful about which devices you put together on a bus.

NOTE

- If you connect the library to an SE SCSI bus, or if there are SE devices attached to the same SCSI bus, the libraries performance is limited to the maximum data transfer speed and maximum cable lengths of the SE SCSI bus. For these reasons, do not use a SE SCSI bus with the library.
- If there is any SE devices on the same SCSI bus, the entire SCSI bus will negotiate down to SE speed, severely degrading performance.
- The HBA also has a SCSI address that is typically 7. Verify that each device on the bus has a unique SCSI address. If the pre-configured SCSI address will not be unique on a bus, you will need to change the SCSI address of one or more of the tape drives during the installation process.

4.2.2 LUN scanning

The TAU/LANCET Tape Library uses a single SCSI ID per tape drive to control the tape drive (LUN 0) and library robotic (LUN 1).

NOTE

- The library requires an HBA that supports LUN scanning. If LUN scanning is disabled, your host system will not scan beyond LUN 0 and will fail to discover the library. It will just see the tape drive.
- Some HBAs, such as RAID controllers do not support LUN scanning.

4.2.3 Serial attached SCSI (SAS)

Serial Attached SCSI (SAS) is a computer bus technology mainly used to transfer data to and from storage devices, including disk drives and tape drives. SAS is designed to transfer data at up to 6 gigabits per second.

SAS uses serial connections, with a direct connection between the host server and each of the storage devices. This eliminates the need to configure SCSI busses and assign SCSI IDs, as is required for parallel SCSI devices.

Most SAS HBA ports have four SAS channels. A tape drive uses one channel, so each HBA port can support up to four tape drives. You can use a cable with one connector on each end, but only one channel will be used.

NOTE

- The library has a mini-SAS connector on each SAS tape drive. Mini-SAS connectors are keyed.

A SAS tape drive is identified by a unique identifier called a World Wide Name (WWN) or World Wide Identifier (WWID). The library assigns the WWID to the drive bay. When a tape drive is replaced, the WWID is re-assigned to the new tape drive.

The operating system tracks the WWID for the tape drive on each HBA channel. Each of the drive connectors on the fan-out cable is associated with an HBA channel. Once a tape drive has been plugged in, it should remain on the same channel to retain the association between the HBA channel and WWID.

4.3 Fibre channel requirements

Fibre channel (FC) allows an active intelligent interconnection scheme, called a Fabric , to connect devices. Everything between the ports on FC is called the Fabric. The Fabric is most often a switch or series of switches that takes the responsibility for routing.

The library allows the selection of the following Fibre Channel port behaviors:

- LN Port (default setting) – an automatic configuration that tries arbitrated loop first, then switched Fabric.

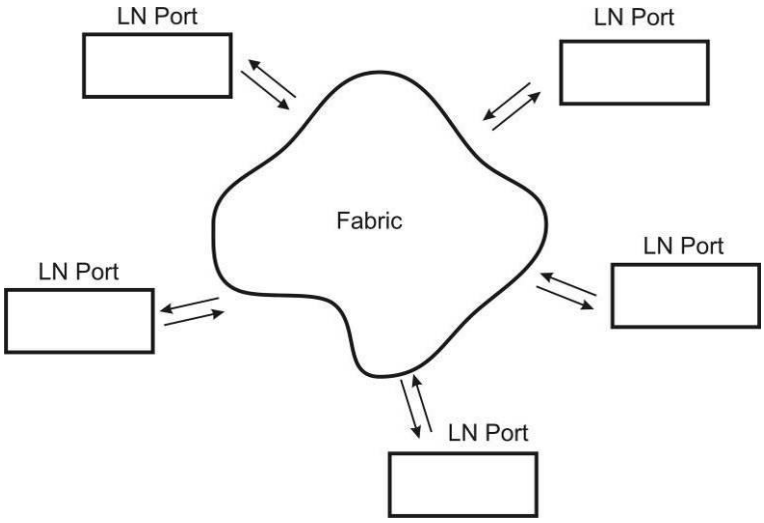


Figure 20 Fibre channel topology (LN Port)

- L Port – arbitrated loop

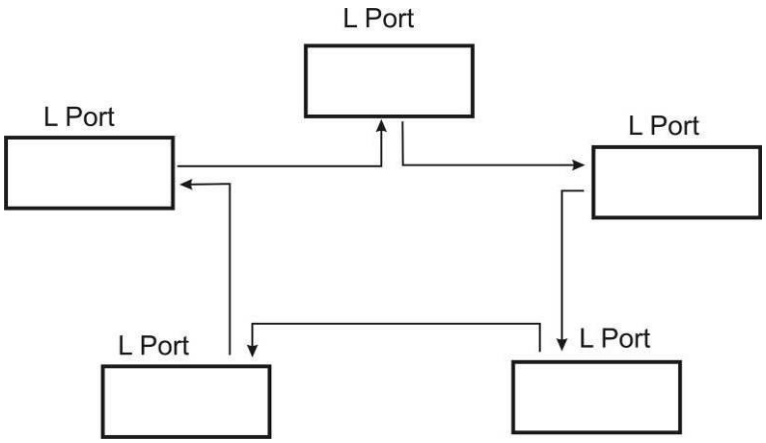


Figure 21 Fibre channel topology (L Port)

- N Port – point to point protocol in a switched Fabric topology

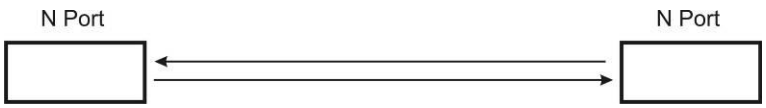


Figure 22 Fibre channel topology (N Port)

The Fibre channel tape drive can be connected directly to the server with a host bus adapter (HBA) or through a storage area network (SAN).

NOTE

- Use an appropriate HBA for your tape drive due to performance requirements.

  A lower Gb HBA might result in performance degradation when backing up highly compressible data to a higher Gb tape drive.

- In a SAN installation, all switches between the host and the must be of the appropriate type.

  A lower Gb switch in the path may result in performance degradation. Configure zoning so only the backup servers may access the library.

4.4 Preparing the host

CAUTION

Static sensitive
Risk of damage to devices

- A discharge of static electricity damages static-sensitive devices or micro circuitry.
- Proper packaging and grounding techniques are necessary precautions to prevent damage.
- See **Chapter** Fehler! Verweisquelle konnte nicht gefunden werden.**, at the user and service guide.**

Follow these general guidelines:

- Make sure that your backup application supports the selected HBA and tape drive interface type HBA.
- Check with a system administrator, if the host server is connected to a network, before power off.
- Install a suitably rated HBA.
- Make sure that LUN scanning is enabled on the SCSI host adapter.

4.5 Installing precautions

Adhere strictly the following steps to install the TAU/LANCET Tape Library:

WARNING

Weight of TAU/LANCET Tape Library
Risk of personal injury

Before lifting a library:

- Observe local health and safety requirements and guidelines for manual material handling.
- Remove all tape cartridges to reduce the weight.
- Obtain adequate assistance to lift and stabilize the library during installation or removal.

Risk of damage to devices

When placing a library into or removing the library from a rack:

- Extend the rack's leveling jacks to the floor.
- Ensure that the full weight of the rack rests on the leveling jacks.
- Install stabilizing feet on the rack.
- Extend only one rack component at a time.

NOTE

- Do not expose the library to moisture.
- Use the library on a firm level surface free from vibration.
- Do not place anything on top of the library.

4.6 Unpacking the library

Before unpacking the library, clear a work surface to unpack the library. Select an open rack location allowing easy access to the host server and an easily accessible power outlet.

NOTE

If the temperature in the room where the library will be installed varies by 15º C (30º F) from the room where the library was stored, allow the library to acclimate to the surrounding environment for at least 12 hours before unpacking it from the shipping container.

Unpacking the TAU/LANCET Tape Library:

1. Before opening and removing the tape library from the box, inspect the container for shipping damage. If you notice any damage, report it to the shipping company immediately.
2. Open the box.
3. Carefully remove the shipping materials from the top of the library.
4. Remove the accessory package and set aside. (if included)
5. Remove the two rack rails and set aside. (if included)
6. Lift the library out of the carton and remove the bag from the loader.
   Save the packaging materials for future use.

NOTE

Do not place the library on either end or sides as this may damage the library.

4.7 Identifying the product components

Confirm that you received the following:

1. TAU/LANCET Tape Library
2. Library documentation

Optional components, depending on the ordered configuration:

1. Terminator (Only parallel)
2. Cables, for instance SCSI, SAS and / or Ethernet cables
3. Power cord
4. Rack mount kit:
   - 2 rack mount rails
   - 1 bag of eight M6 screws for the rack mounting (9.5 mm square holes in the rack column)
   - 1 bag of eight M6 screws for rack mounting (6.85 mm round holes in the rack column)
   - 2 mounting brackets
   - M3x6 torx screws to fix the mounting brackets (amount depending on the unit form factor)
   - M5 screws to secure the mounting brackets to the rack (amount depending on the unit form factor)

Required additional equipment for a successful installation:

1. Ethernet cable(s)
2. SCSI, SAS or FC cable(s) depending upon drives selected
3. Terminator(s)
4. Power cord to match main connector
5. #2 Phillips screwdriver

4.8 Removing the shipping lock

NOTE

The shipping lock, which prevents the robotic transport mechanism from moving during shipment, must be removed before the library is powered on.

You may skip this step for an 8U library, no shipping lock is utilized on the 8U.

To remove and store the shipping lock:

1. Remove the yellow label that is securing the shipping lock on the top of the library.

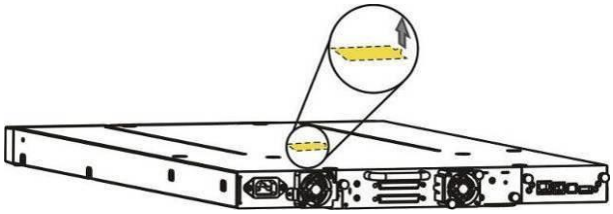


Figure 23 Remove the yellow label

2. Remove the shipping lock.

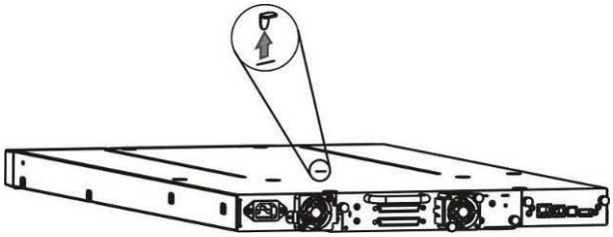


Figure 24 Remove the shipping lock

3. Store the shipping lock (in case of returning the unit see user and service guide).
4. Replace the yellow label on the top of the library.

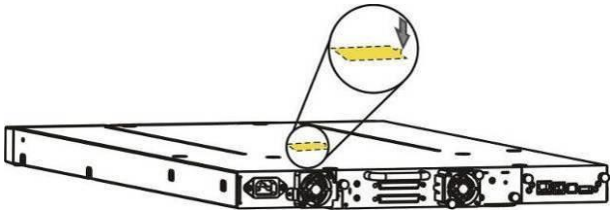


Figure 25 Replace the yellow label

4.9 Rack mounting the library

NOTE

First, read the **Chapter Installing precautions**.

The rack rail components are optional accessories depending on the ordered configuration.

Skip this chapter, when the rack rail components not available.

Required tools:

- #3 Phillips screwdriver
- T10 torx screwdriver

Rack mounting the library:

The steps to install a library in a rack are for all unit highs common. In the following figures, a 1U library is shown as an example.

1. Determine the location and in the rack for the library to be installed.
2. Use a pencil to mark the location on each vertical rail in the rack.
3. In the rack mount kit are two sets of eight M6 screws. Determine the type of rack then choose the appropriate type of M6 screws.
4. Secure one rail to each side of the rack in your chosen rack location with a #3 Phillips screwdriver. Insure the rails are mounted level and at the same rack height on each side.
5. Secure both the front and back of each rack rail to the rack.

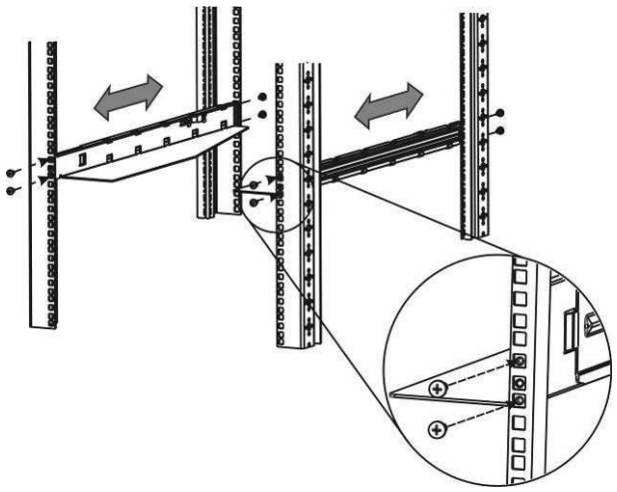


Figure 26 Install the rack rails (1U)

6. Install the mounting brackets of the library using the Torx screwsT10 included in the rack mount kit**.**

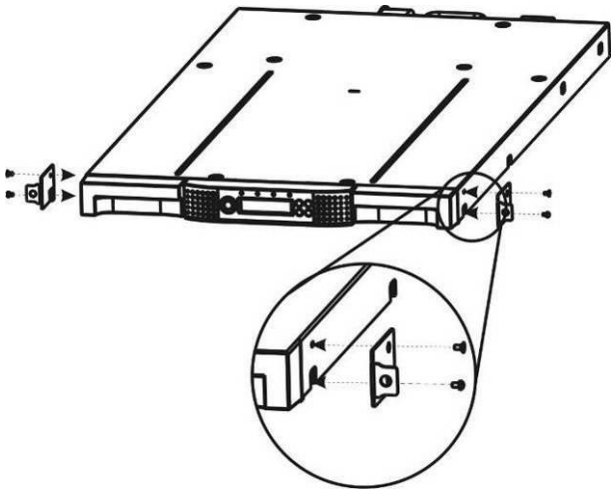


Figure 27 Install the mounting brackets (1U)

7. Slide the library onto the rack rails.
8. Secure the library to the rack using a 3# Phillips screwdriver placed through the small holes in the mounting bracket to tighten the M5 screw(s) on each side of the library.

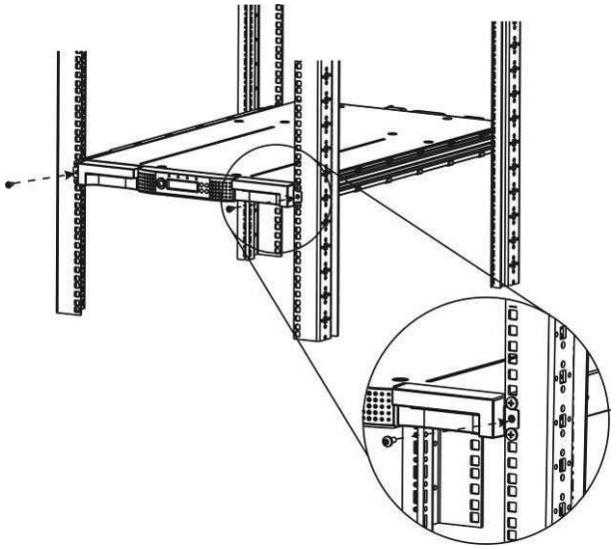


Figure 28 Secure the library to the rack (1U)

4.10 Installing a tape drive

A tape drive is installed from the rear of the library.

If the library does not already have the tape drive(s) installed, install the tape drive(s) now. If the library already has tape drives installed additional tape drives may be added after the installation of the library is complete.

Required tool:

- #2 Phillips screwdriver

To install tape drives:

1. Locate an appropriate vacant drive bay on the rear panel of the library.
   - 1U library:
     There is only one bay for 1 half-high tape drive.
   - 2U library:
     There is only bay space for either 1 full-high or 2 half-high tape drives. Always install the first tape drive in the bottom drive bay. If the first device is a half-high tape drive, you may install an additional half-high tape drive in the top bay. If only one half height drive is installed you must install the block off plate over the upper empty drive position.
   - 4U and 8U library:
     Install the first tape drive in the bottom drive bay. Install each additional tape drive in the drive bay directly above the existing tape drives.
2. If available, loosen the screws of the drive bay cover and remove the screws by holding the cover in place.
3. Remove one drive bay cover to install a half-height tape drive; remove two drive bay covers to install a full-height tape drive.
4. Slightly pull out the pull-out tab for the product ID label so it does not interfere with the tape drive, see **Figure 29**

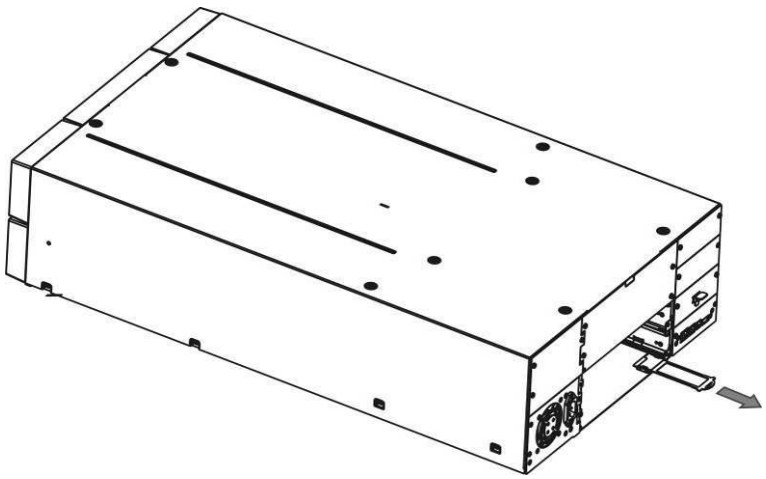


Figure 29 Pullout tab for product ID (4U)

5. Before installing the tape drive, inspect the connectors on the tape drive. Ensure that the connectors are intact, free of any foreign objects, and have no cracks or deformed or bent contacts.

6. Insert the tape drive into the drive bay, and align the connectors on the library while supporting the drive.

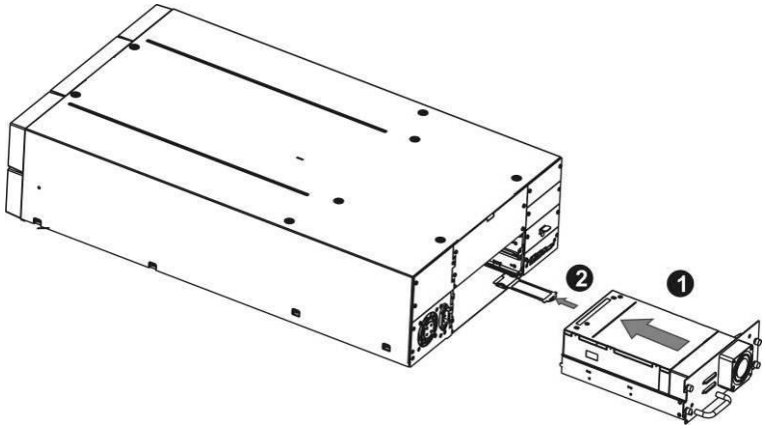


Figure 30 Install a tape drive (4U)

7. Push the tape drive into the drive bay until the tape drive seats itself against the back of the library.
8. Slightly push the pull-out tab for the product ID label back into library.
9. Tighten the blue captive screws with your fingers to secure the tape drive to the library.

4.11 Connecting the cables

4.11.1 Connecting the power cord

DANGER

High voltage
Risk of electric shock

- Use only approved power cords.
- Observe local health and safety requirements and guidelines for manual material handling.

WARNING

Usage of not approved power cords
Risk of personal injury
Risk of damage to devices

Before connecting a power cord to the library:

- Ensure that the power cord meets individual country specific safety.
- Use a sufficient conductor amp capacity to avoid overheating the library.

The manufacturer disclaims all liability in the event a non-manufacturer approved power cord is used.

To connect the power cord to the library:

1. Plug the power cord into the power connector (AC connector) on the rear panel of the power supply, see **user and service guide.**
2. Plug the power cord into the power outlet of the power supply.

4.11.2 Connecting the parallel SCSI cable

NOTE

Use only cables and terminators specified for your LTO SCSI tape drive or labeled as multimode.

To connect the parallel SCSI cable to the tape drive:

1. Power down the host server before attaching new devices to the library.
2. Attach one end of the parallel SCSI cable to one of the connectors on the rear panel of the tape drive.

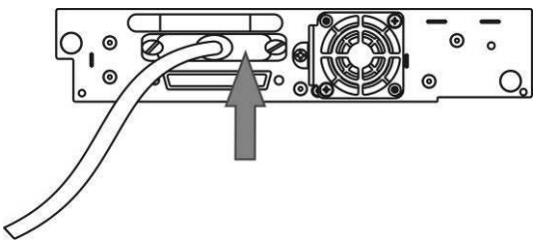


Figure 31 Connect the SCSI cable

3. Attach the terminator to the remaining parallel SCSI connector on the back panel of the tape drive if the library is the last or only device on the parallel SCSI bus. Otherwise, attach one end of a parallel SCSI cable to the remaining port and the other end to the next device on the parallel SCSI bus.

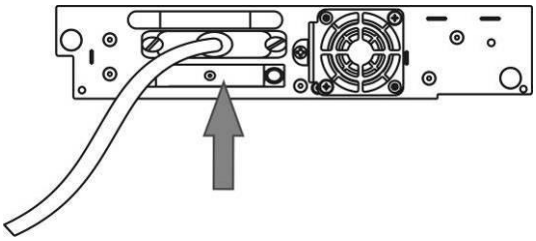


Figure 32 Connect the terminator

4. Make sure the last device on the parallel SCSI bus is properly terminated.

4.11.3 Connecting the FC cable

NOTE

Use only cables specified for your LTO FC tape drive.

Each FC tape drive has two FC ports.

- Cable <Port A> only.
- Configure <Port B> for <Auto Detect> on <Fibre Speed> and <Port Type>.

To connect the FC cable to the tape drive:

1. Remove the FC port caps if necessary. Attach one end of the FC cable to <Port A> on the tape drive.

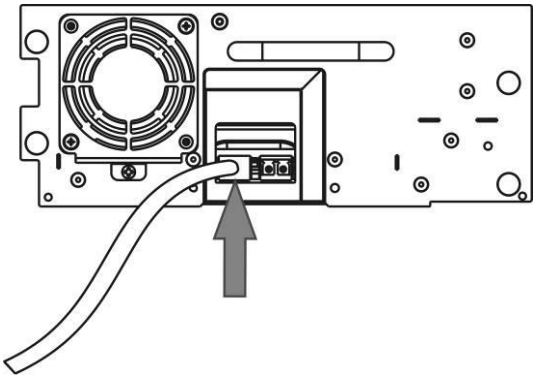


Figure 33 Connect the FC cable

2. Attach the other end of the FC cable to a switch or HBA.

4.11.4 Connecting the SAS cable

NOTE

Use only cables specified for your LTO SAS tape drive.

Each SAS tape drive has a mini-SAS connector.

- Mini-SAS connectors are keyed.
- Do not force a SAS cable's mini-SAS connector into the tape drive mini-SAS connector because it might be keyed differently.

SAS signal rates require clean connections and a minimum number of connections between the HBA and the library.

- Do not use adapters or converters between the HBA and the library.
- A maximum SAS cable length of six meters is recommended.

To connect the SAS cable to the tape drive:

1. Plug the HBA end of the SAS cable into the connector on the HBA.
    - If you have a SAS fan-out cable, the end of the cable with only one connector, should be plugged into the connector on the HBA.
    - If you are using a cable with a single connector on each end, plug the other end into the connector on the tape drive.
    - If you are using a SAS fan-out cable, plug one mini-SAS connector into the connector on each tape drive. The unused ends of the SAS fan-out cable are single channel and not suitable for use with disk arrays. Use the other ends to connect tape drives, or coil and secure them to the rack to minimize stress on the connectors.

4.11.5 Connecting the Ethernet cable and a USB device

To connect the Ethernet cable to the library:

The connection to the Ethernet network is via an industry stand RJ45 copper interface on the rear panel of the library. The Ethernet connection is used to access the library RMI over the network.

To connect the library to the Ethernet network, inset the Ethernet cable into the Ethernet port of the library, see **user and service guide**. When the plug is in the correct position, a click should be heard.

To connect the USB device to the library:

The USB port is on the rear of the library. It can be used for FW upgrades / Skin file updates via OCP see **user and service guide.**

4.12 Verifying the host

Depending on the server configuration, you may need to change the SCSI ID of the library.

When the host server is powered on, install the software and/or driver(s) that are compatible with the library. Backup software packages may require additional software or licensing to communicate with the library robotics.

To confirm the host server's operating system recognized the library, consult the operating system documentation.

4.13 Powering up/down the library

Press the power button on the front bezel to power up/down the TAU/LANCET Tape Library. The powering up can take a few minutes including scanning the inventory and configuration (e.g. drives installed).

4.14 Magazines

The TAU/LANCET II Tape Library makes use of removable magazines in each model. Tape cartridges are stored in magazines. Magazines may be removed and inserted individually. Magazines are locked to prevent unauthorized removal when inserted in the library and unlock Magazine access may become password protected. For safety reasons, the robotic motion is stopped whenever when a magazine is removed from the library.

The magazines can be unlocked using the Operator Control Panel (OCP) or the Remote Management Unit (RMU).

OCP, see **Chapter** Fehler! Verweisquelle konnte nicht gefunden werden..
RMU, see user and service guide.

In case the OCP or RMU initiated process has failed or the library no longer has power a manual emergency release is available, see **in the user and service guide.**

4.14.1 Slot numbering scheme

NOTE

In the following figures an asterisk (*) and the red circle indicates the mail slots.

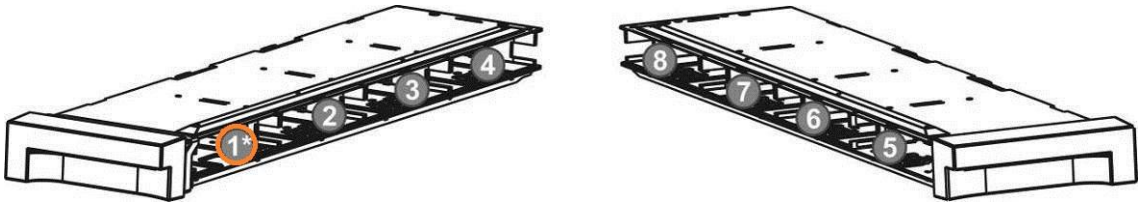


Figure 34 Slot numbering scheme (1U)

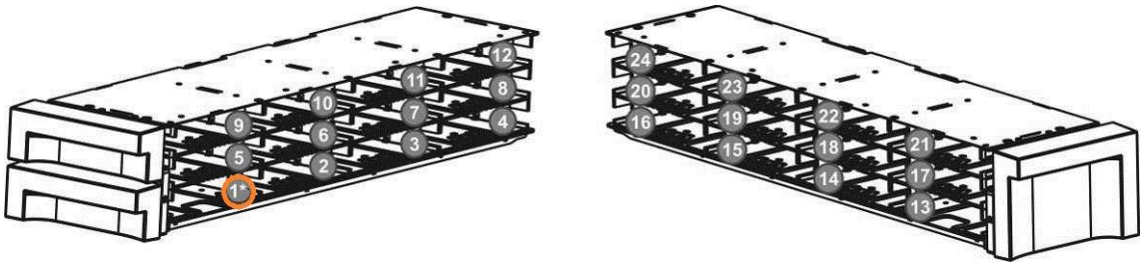


Figure 35 Slot numbering scheme (2U – Single mail slot)

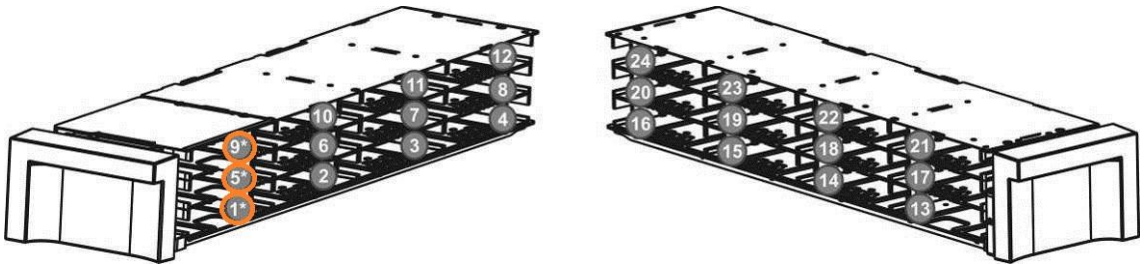


Figure 36 Slot numbering scheme (2U – Triple mail slot)

4.14.2 Mail slot

Mail slots are used to import/export individual tape cartridges without interrupting the library operation. The command to open the mail slot may be denied if the robotics is busy with some operation. In that case “Busy“ is displayed on the OCP and the command has to be repeated once the robotics operation is finished.

The 1U library provides in the bottom left position a single mail slot magazine (slot 1).

The 2U library provides in the bottom left position a single (slot 1) or triple (optional hardware; slot 1,5,9) mail slot magazine.

The 4U library provides in the bottom left position a triple mail slot magazine (slot 1,5,9).

The 8U library provides in the bottom left position a triple mail slot. In the top right position a normal magazine can be reconfigured to 12 mail slots (slot 85…96).

5 Operating

This chapter provides information about the operation and configuration of the TAU/LANCET Tape Library.

5.1 Operator control panel (OCP)

5.1.1 Operating Modes

The OCP operates in two basic modes:

1. User interaction mode
   This mode is employed when a user is pushing buttons on the operating panel.
2. System driven mode
   This is the normal mode of operation. In this mode, the operating panel displays status associated with the actions that were caused from commands issued from the host software application. Actions like loading, rewinding or moving tape cartridges will be displayed.

Whenever an operating button is pressed and released, the operating panel automatically transitions to user interaction mode. The user interaction mode will be active until 3 minutes after the user stops pushing buttons, or the requested robotic action stops – whichever is longer. At this time, the operating panel will return to the system driven mode.

In case of administrator programed user security feature the user interaction mode is restricted to the information and login menu item, until a login with correct PIN is done.

5.1.2 OCP Philosophy

OCP operation must obey some basic rules. These rules of operation constitute a philosophy:

1. Any operational conflict between commands received over SCSI or RMU and those entered via the front panel will be avoided with a reservation mechanism on a ‘first-come, first-served’ basis.

   Any reservation by OCP is cancelled by an OCP logout or the timeout, which cancels the User Interaction Mode.
2. The library firmware will not allow a user to select an impossible request. Those situations will include, but are not limited to:
   - Moving a tape cartridge from any source to a full magazine slot
   - Moving a tape cartridge from an empty magazine slot
   - Loading a tape cartridge from any source to a full tape drive
   - Unloading a tape cartridge from an empty tape drive
3. Any error detected by the library or drive controller and not recoverable through predetermined firmware algorithms will be considered as fatal. An error code will be displayed on the LCD and the error LED will become illuminated. The error code will remain on the OCP until a push button is pressed, which will cause the OCP to return to the home screen.
4. Numeric error codes are only used for unrecoverable, fatal errors (see user and service guide**)**, otherwise text status messages are provided.

6 Get help

The TAU/LANCET Tape Library User and Service Guide provided with your unit will give you more details

- how to install, configure and use your Tape library
- to Specifications of your interest