

FUJITSU Storage  
ETERNUS LT260 Tape Library

User's Guide -Installation & Operation-

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# Preface

Fujitsu would like to thank you for purchasing our FUJITSU Storage ETERNUS LT260 Tape Library (hereinafter referred to as LT260).

The LT260 is designed to be connected to Fujitsu (PRIMEQUEST, PRIMERGY, Fujitsu M12/M10) or non-Fujitsu servers.

This manual describes operational management and maintenance of the LT260.

This manual is intended for use of the LT260 in regions other than Japan.

Carefully read the information that is provided in this manual to ensure correct usage of the LT260.

Tenth Edition  
December 2019

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# About this Manual

## Organization

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This manual is composed of the following seven chapters and an appendix:

- Chapter 1 Preparation  
This chapter describes the necessary preparation for installation of the LT260.
- Chapter 2 Components  
This chapter describes hardware module configurations for the LT260.
- Chapter 3 Basic Operation  
This chapter describes basic operations that are required every day.
- Chapter 4 Default Setting  
This chapter explains how to satisfy the minimum setup requirements for installation.
- Chapter 5 Monitoring the LT260 Status  
This chapter explains how to confirm the tape library status and other items.
- Chapter 6 Function Expansion Option  
This chapter explains product options that can be added as required after system operation starts.
- Chapter 7 Troubleshooting  
This chapter provides troubleshooting.

The following content is described as an appendix:

- Tape Cartridge and Barcode Label Specifications

## Warning Notations

Warning signs are shown throughout this manual in order to prevent injury to the user and/or material damage. These signs are composed of a symbol and a message describing the recommended level of caution. The following section explains the symbols, their levels of caution, and their meanings as used in this manual.



This symbol indicates the possibility of serious or fatal injury if the LT260 is not used properly.



This symbol indicates the possibility of minor or moderate personal injury, as well as damage to the LT260 and/or to other users and their property, if the LT260 is not used properly.



This symbol indicates IMPORTANT information for the user to note when using the LT260.

The following symbols are used to indicate the type of warnings or cautions being described.

Electric Shock



△ The triangle emphasizes the urgency of the WARNING and CAUTION contents. Inside the triangle and above it are details concerning the symbol (e.g. Electrical Shock).

No Disassembly



⊘ The barred "Do Not..." circle warns against certain actions. The action which must be avoided is both illustrated inside the barred circle and written above it (e.g. No Disassembly).

Unplug

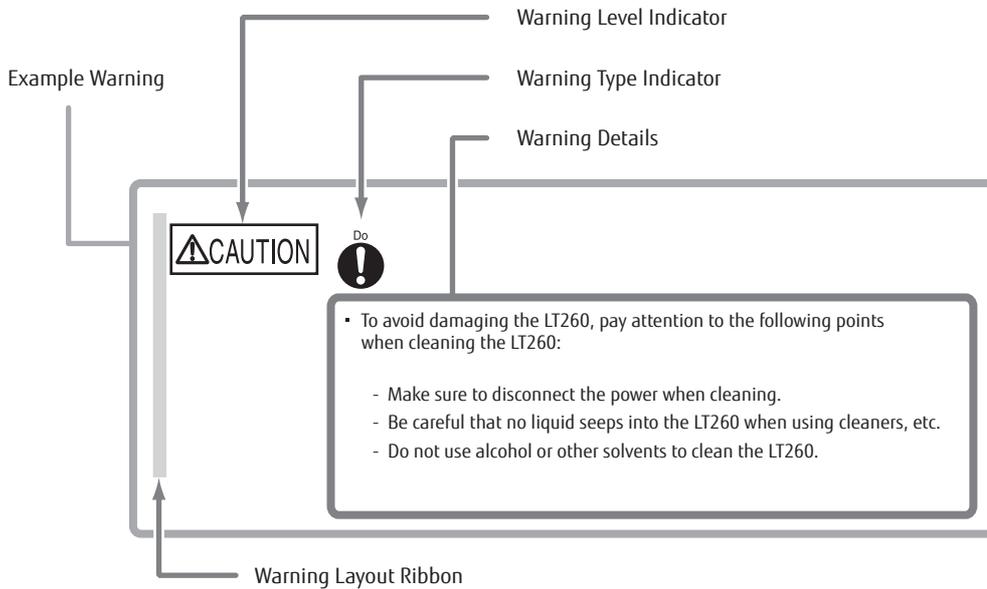


● The black "Must Do..." disk indicates actions that must be taken. The required action is both illustrated inside the black disk and written above it (e.g. Unplug).

## How Warnings are Presented in this Manual

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A message is written beside the symbol indicating the caution level. This message is marked with a vertical ribbon in the left margin, to distinguish this warning from ordinary descriptions. An example is shown here.



## Naming Conventions

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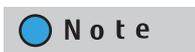
### Symbols Used in This Manual

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The following symbols are used throughout this manual:



This symbol alerts operators to particularly important information. Be sure to read this information.



Functions and know how which can be useful when setting up or operating the LT260.

### Abbreviations Used in This Manual

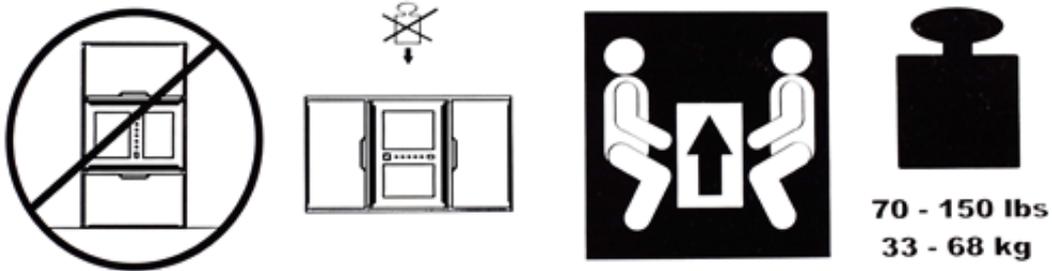
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- "LT260" refers to the FUJITSU Storage ETERNUS LT260 Tape Library.
- Trademark symbols such as <sup>™</sup> and <sup>®</sup> are omitted in this manual.

# Warning Labels and Manufacturer's Labels

Caution labels, manufacturer's labels, and a device ID label are found in various places of the LT260. Never remove these labels from the equipment or allow them to become dirty.

Note that the labels shown below are examples. The LT260 also has other labels that include important information.



- Prohibition  
Putting LT260 like an above picture is forbidden  
Do not put anything on LT260
- Warning for making LT260 transferred  
More than two people are required to carry LT260
- Pay attention to LT260's weight  
LT260's weight is range of 33kg to 68kg

# Table of Contents

<b>Chapter 1</b>	<b>Preparation</b>	<b>14</b>
1.1	Host Connection .....	14
1.2	Connection to LAN for Operation Management .....	14
<b>Chapter 2</b>	<b>Components</b>	<b>15</b>
2.1	Module .....	16
2.2	Operator Panel .....	18
2.3	Magazine .....	20
2.4	Mailslot .....	21
2.5	Drive Module .....	22
2.5.1	Drive Module Back Panels .....	22
2.6	Robotic Assembly .....	24
2.7	Library Controller .....	25
2.8	Tape Drive Unit .....	27
2.9	Power Supply Unit (PSU) .....	29
<b>Chapter 3</b>	<b>Basic Operation</b>	<b>30</b>
3.1	Powering On/Off .....	30
3.1.1	Points to Note when Turning On or Turning Off the LT260 .....	35
3.1.2	Turning on the Server .....	35
3.2	Operator Panel Operation .....	36
3.2.1	Using the Library Main Screen .....	36
3.2.2	Logging into the Library .....	37
3.3	Loading and Ejecting Cartridges .....	39
3.3.1	Opening the Mailslot .....	39
3.3.2	Opening a Magazine .....	41
3.3.3	Inserting Tape Cartridges .....	42
3.4	Cleaning Drives .....	44
3.4.1	Auto-Cleaning with the Backup Software .....	44
3.4.2	Cleaning Drives Manually .....	45

<b>Chapter 4</b>	<b>Default Setting</b>	<b>46</b>
4.1	Network Settings .....	47
4.2	Configuring the Date and Time Format .....	49
4.2.1	Setting the Time Zone .....	49
4.2.2	Setting the Date and Time Format .....	50
4.2.3	Setting the Date and Time .....	51
4.2.4	Enabling Simple Network Time Protocol (SNTP) Synchronization .....	52
4.3	Configuring Passwords for User Accounts .....	53
4.4	Saving and Restoring the Library Configuration Setting File .....	54
4.4.1	Saving the Library Configuration as a File .....	54
<b>Chapter 5</b>	<b>Monitoring the LT260 Status</b>	<b>55</b>
5.1	Status LEDs .....	55
5.2	Operator Panel and Remote Panel .....	55
5.2.1	Top Banner Elements .....	56
5.2.2	Left Pane Elements .....	57
5.2.3	Center Pane Elements .....	58
5.3	Configuring Event Notification Parameters .....	59
5.4	Fault Monitoring (SNMP Report Function) .....	61
<b>Chapter 6</b>	<b>Function Expansion Option</b>	<b>62</b>
6.1	License Partitioning Option (Logical Library Function) .....	62
6.1.1	Function Overview .....	64
6.1.2	Hardware Configuration .....	64
6.1.3	Designing Logical Libraries .....	67
6.1.4	Configuring Logical Libraries .....	68
6.2	Key Management Function Option .....	72
6.2.1	Overview .....	72
6.2.2	Features of the Key Management Function Option .....	73
6.2.3	Types of Key .....	74
6.2.4	Operational Examples .....	75
6.2.5	Connectivity with Backup Software .....	78
<b>Chapter 7</b>	<b>Troubleshooting</b>	<b>79</b>
7.1	Fibre Channel Connection Problems .....	79
7.2	Detection Problems after Installing a SAS Drive .....	80

7.3	Operation Problems .....	82
7.3.1	Power Problems .....	82
7.3.2	Failure/Attention Indications Displayed on the Operator Panel .....	83
7.3.3	Tape Movement Problems .....	83
7.3.4	Media Problems .....	84
7.3.5	Attention LED is Lit .....	85
7.3.6	Turning Off the Attention LED .....	86
7.3.7	Inventory Problems .....	86
7.3.8	Remote Panel Network Connection Issues .....	87
7.3.9	Cleaning Problems .....	87
7.4	Performance Problems .....	88
7.4.1	Average File Size .....	88
7.4.2	File Storage System .....	88
7.4.3	Connection from the Backup/Archive Host Server to the Disk Storage System .....	89
7.4.4	Backup/Archive Server .....	89
7.4.5	Backup/Archive Software and Method .....	89
7.4.6	Connection from the Archive/Backup Host Server to the Library .....	89
7.4.7	Media .....	90
7.5	Finding Event Information .....	90
7.6	Unlocking the Magazine .....	90
7.6.1	Using the Operator Panel .....	90
7.6.2	Using the Remote Panel .....	92
7.6.3	Using the Manual Release .....	94
7.7	Unloading a Stuck Tape .....	94
7.8	Identifying a Failed Component .....	95
7.9	Returning the Robotic Assembly to the Base Module .....	95
7.10	Running Library Tests .....	96
7.11	Operator Panel (Touch Control) Problems .....	97
<b>Appendix A Tape Cartridge and Barcode Label Specifications</b>		<b>98</b>
A.1	Ultrium Tape Cartridge.....	98
A.1.1	Tape Cartridge Specifications.....	98
A.1.2	Tape Drive Compatibility with Tape Cartridges.....	100
A.1.3	Notes Regarding the Use of Tape Cartridges.....	101
A.1.4	Handling Tape Cartridges .....	102
A.2	Barcode Labels .....	107
A.2.1	Barcode Label Specifications .....	107
A.2.2	Notes on Affixing a Barcode Label.....	109

# List of Figures

Figure 2.1	Base Module front view .....	16
Figure 2.2	Base Module rear view .....	17
Figure 2.3	Status LEDs.....	18
Figure 2.4	Magazine mechanism .....	20
Figure 2.5	Mailslot mounting locations (base module).....	21
Figure 2.6	Mailslot mechanism .....	21
Figure 2.7	Rear view of LTO-5 HH SAS (Product ID: LT26ASHE, LT26ASHL) .....	22
Figure 2.8	Rear view of LTO-6 HH SAS (Product ID: LT26BSKE, LT26BSKL), Rear view of LTO-7 HH SAS (Product ID: LT26BSME, LT26BSML), Rear view of LTO-8 HH SAS (Product ID: LT26BSNE, LT26BSNL) .....	23
Figure 2.9	Rear view of LTO-6 HH FC (Product ID: LT26BFKE, LT26BFKL), Rear view of LTO-7 HH FC (Product ID: LT26BFME, LT26BFML), Rear view of LTO-8 HH FC (Product ID: LT26BFNE, LT26BFNL) .....	23
Figure 2.10	Overview of the robotic assembly.....	24
Figure 2.11	Library controller (Base Module) .....	25
Figure 2.12	Tape drive unit and drive power board .....	27
Figure 2.13	Relationship between the drive power board and the tape drive .....	28
Figure 2.14	Power supply unit (PSU) .....	29
Figure 3.1	Power switch (power-on) .....	31
Figure 3.2	Internal IP range selection .....	32
Figure 3.3	Internal IP range selection - select .....	32
Figure 3.4	Internal IP range selection - set and proceed .....	33
Figure 3.5	Power switch (power-off) .....	34
Figure 3.6	Window selecting the robotic assembly parked position .....	34
Figure 3.7	Library main screen .....	36
Figure 3.8	Login screen .....	37
Figure 3.9	Open Mailslot screen .....	39
Figure 3.10	How to pull the Mailslot .....	40
Figure 3.11	Open Magazine screen .....	41
Figure 3.12	Tape cartridge insertion direction.....	42
Figure 3.13	Clean Drive screen .....	45
Figure 4.1	Selecting Configuration .....	46
Figure 4.2	Network setup window.....	47
Figure 4.3	Time Zone screen .....	49
Figure 4.4	Date/Time Format screen .....	50
Figure 4.5	Set Date/Time screen.....	51
Figure 4.6	SNTP screen.....	52
Figure 4.7	User Accounts window.....	53
Figure 5.1	Main screen.....	56
Figure 5.2	SMTP screen .....	59
Figure 5.3	SNMP function.....	61
Figure 6.1	Direct connection (FC-AL connection, a multiple server connection, a shared library, and tape drives that are not shared).....	63
Figure 6.2	Example for partitioning cells: In the case that the Basic Partition Wizard is used .....	65
Figure 6.3	Example for partitioning cells: In the case that the Expert Partition Wizard is used .....	66
Figure 6.4	Key Management Function Option.....	72
Figure 6.5	Concept of automatic encryption key generation .....	75
Figure 6.6	Sharing data cartridges using a master key.....	75

Figure 6.7	External storage of data cartridges.....	76
Figure 6.8	Encryption key setting for each logical library .....	77
Figure 6.9	Interoperation among LT-series models .....	78
Figure 7.1	Main screen of operator panel.....	91
Figure 7.2	Open Magazine screen .....	91
Figure 7.3	Main screen of remote panel.....	92
Figure 7.4	Open Magazine screen .....	93
Figure 7.5	How to use the Manual Release .....	94
Figure A.1	Latched state of the leader pin (the leader pin is latched) .....	104
Figure A.2	Latched state of the leader pin (the leader pin has been removed) .....	104
Figure A.3	Fit state of clips (clips fit correctly) .....	105
Figure A.4	Fit state of clips (clips do not fit correctly (the leader pin is misaligned)) .....	105
Figure A.5	Character string on barcode label.....	107
Figure A.6	Barcode label affixing location.....	109

# List of Tables

Table 2.1	Meanings of each LED (LT260 status) .....	18
Table 2.2	Meanings of each LED (library controller) .....	26
Table 2.3	Meanings of each LED (power supply unit) .....	29
Table 5.1	Top banner elements .....	56
Table 5.2	Left pane elements .....	57
Table 5.3	Center pane elements .....	58
Table 6.1	An example of a layout for logical libraries .....	68
Table A.1	Tape cartridge specifications (1/2) .....	98
Table A.2	Tape cartridge specifications (2/2) .....	99
Table A.3	Tape drive compatibility with data cartridges.....	100
Table A.4	Tape cartridge storage environment .....	102
Table A.5	Tape cartridge transport environment.....	102
Table A.6	Characters that can be used on barcode labels.....	108
Table A.7	Cartridge type and specified string.....	108

# Chapter 1

## Preparation

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This chapter describes the necessary preparation for installation of the LT260.

This section describes the necessary information, and the devices and cables that should be prepared before you connect the LT260 to a Storage Area Network (SAN) and a LAN for operation management.

### 1.1 Host Connection

A SAN is a dedicated network for connecting a server (host) to an LT260. A Fibre Channel (FC)/Serial Attached SCSI (SAS) interface can be used for the host interface. The connection destination may be the server or the switch depending on which connection configuration is used.

The host interface cables that are used for connecting the LT260 to a SAN must be obtained separately. When a switch is used to connect the LT260 to the server, the appropriate switch for the type of host interface that is to be connected must also be prepared separately.

### 1.2 Connection to LAN for Operation Management

The LT260 must be connected to the LAN for operation management during operation management and system maintenance.

Acquire an IP address for the LT260 beforehand so that a LAN environment can be set up during installation. In addition, network devices and other items must be prepared so that the LT260 can be connected to a LAN for operation management.

# Chapter 2

## Components

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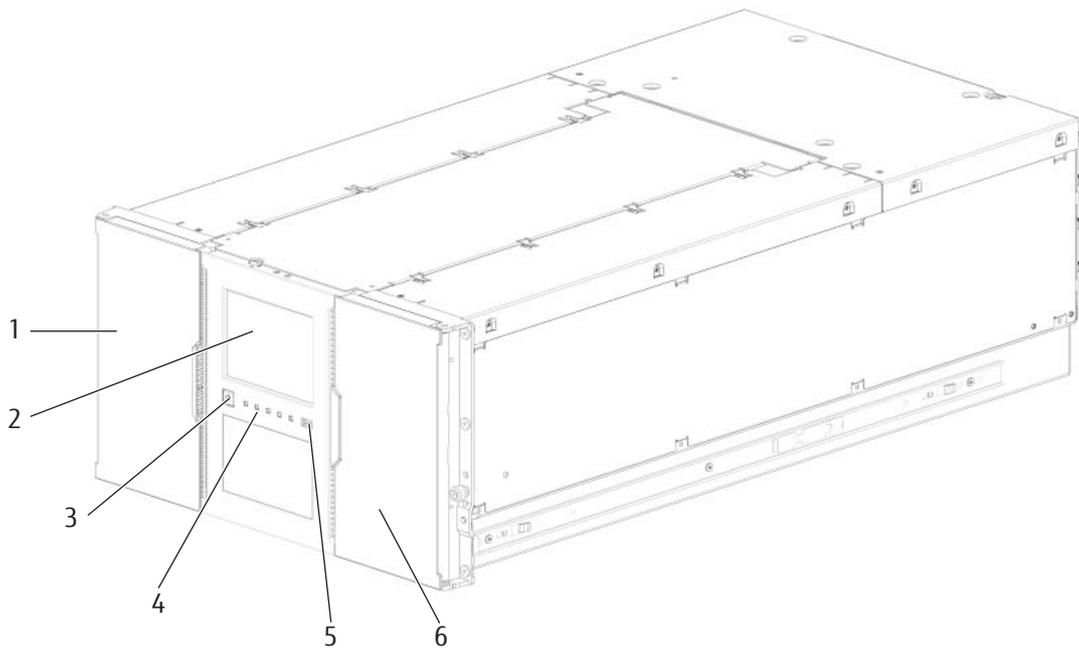
This chapter describes the hardware component configurations for the LT260. All components such as operator panels, magazines, Mailslots, drive modules, robots, library controllers, tape drives, and power supply units are installed in modules.

## 2.1 Module

Two types of Modules are available for the LT260: a Base Module and an Expansion Module. Major components are installed in each module. The following figures show various views of the LT260.

### ■ Front view

Figure 2.1 Base Module front view

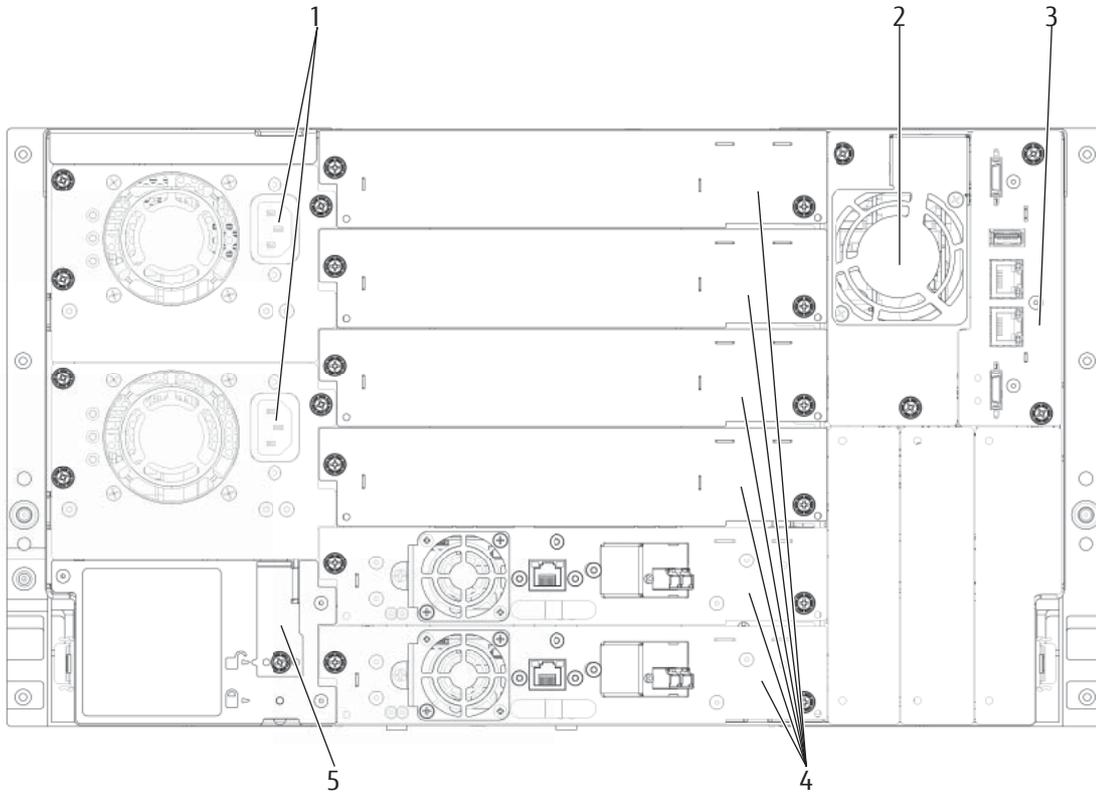


- 1 Magazine Access Door
- 2 Operator Panel
- 3 Power Button
- 4 LED Panel
  - Error LED, Amber
  - Attention LED, Amber
  - Clean LED, Amber
  - Ready LED, Green
  - Unit Identification LED, Blue
- 5 USB Port (not used)
- 6 Mailslot/Magazine Access Door

An expansion module doesn't have Operator Panel, Power Button, LED Panel and USB Port.

■ Rear view

Figure 2.2 Base Module rear view



- 1 Power Supplies
- 2 Chassis Fan
- 3 Library Controller
- 4 Half-Height Tape Drive Bays
- 5 Module Alignment Mechanism

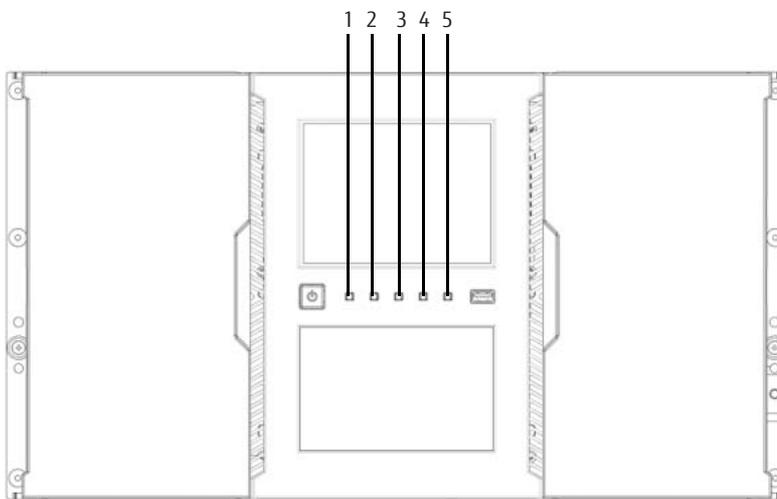
## 2.2 Operator Panel

The operator panel is positioned on the front center of the Base Module. It is possible to perform operations such as referencing/setting the library and drive status and opening the Mailslot from the operator panel. By selecting the buttons on the operator panel, operations such as window transition, function selection, and setup value input can be performed.

### ■ Status LEDs

Status LEDs are mounted on the front panel. Use these LEDs to check the status of the LT260.

Figure 2.3 Status LEDs



The states of LEDs are listed below.

Table 2.1 Meanings of each LED (LT260 status)

No.	LED status		Meaning
1	Unit Identification LED	Blue	Blue when activated. The unit identification (UID) LEDs are controlled by the user through the operator panel and remote panel <b>Maintenance &gt; UID LED Control</b> screen. The UIDs on the operator panel and back panel UID are activated and deactivated together. The UIDs are helpful for locating the library in a data center.
2	Ready LED	Green	Green, turning on when power is on, blinking with tape Ready drive or library robotic activity.
3	Clean LED	Amber	Amber when a tape drive cleaning operation is recommended.

No.	LED status		Meaning
4	Attention LED	Amber	<p>Amber, turning on or blinking if the library detects a condition for which user attention is required. The library can still perform most operations. The following examples indicate the difference between an Attention LED that is blinking and an Attention LED that is constantly on.</p> <p>Blinking</p> <ul style="list-style-type: none"> <li>• Blinking For example, this indicates cleaning related events (Event code: 4002, 4008, 4067, 4068, and 4072).</li> <li>• Turning on For example, this indicates Tape Alert Flag related events (Event code: 4005, 4065).</li> </ul> <p>If the Attention LED is on, a manual operation may be required to turn it off. Refer to "<a href="#">7.3.6 Turning Off the Attention LED</a>" (<a href="#">page 86</a>) for details.</p>
5	Error LED	Amber	<p>Amber if an unrecoverable tape drive or library error occurs. A corresponding error message is displayed on the operator panel screen. User intervention is required; the library is not capable of performing some operations.</p>

 **Note**

The operator panel screen may be initialized if time elapses without logging in or during the logout process. As a feature, the operator panel turns white for a few seconds during the initialization of the screen and then login screen appears.

## 2.3 Magazine

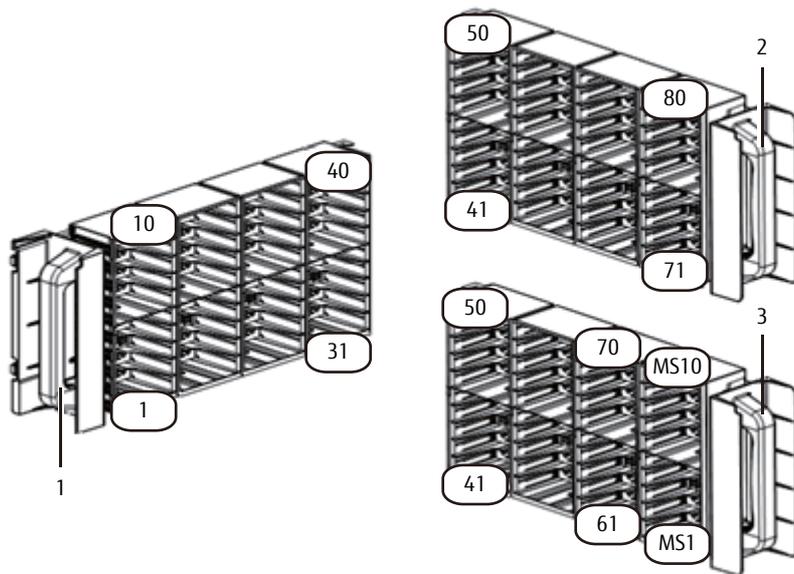
Magazines are used to store tape cartridges for saving user data. Left and right magazines can hold 40 volumes of tape cartridges (30 volumes can be installed in the right cartridge when using the Mailslot). Each slot number is described in [Figure 2.4](#). Use the remote panel or the operator panel to eject magazines.

**Note**

For the base and expansion cabinets, the LT260 magazines can store up to 70 cartridges when the Mailslot is enabled. If the Mailslot is disabled, up to 80 cartridges can be stored because the Mailslot can be used as a part of the magazine.

A magazine consists of the following mechanisms:

Figure 2.4 Magazine mechanism



- 1 Left magazine
- 2 Right magazine (Mailslot is disabled)
- 3 Right magazine (Mailslot is enabled)

## 2.4 Mailslot

The Mailslot is a mechanism through which the operator inserts or ejects tape cartridges when the LT260 is being operated.

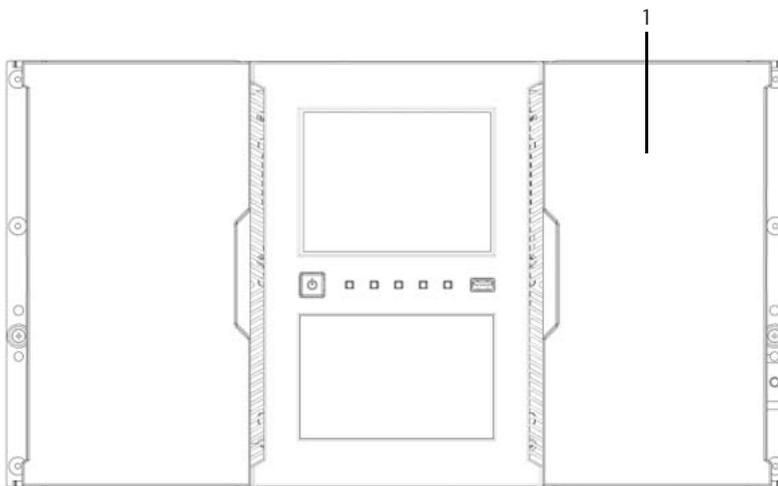
The Mailslot can be unmounted when unlocked from the Operation Panel or the Remote Panel. Refer to "[3.3.3 Inserting Tape Cartridges](#)" (page 42) for details.

A Mailslot has a 10-level shelf to store tape cartridges and up to 10 volumes of tape cartridges can be inserted or ejected at a time.

**Note**

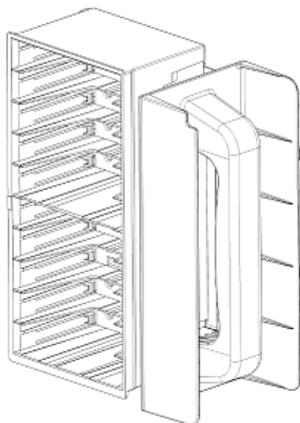
Mailslots are attached to the right magazines for the base and expansion modules.

Figure 2.5 Mailslot mounting locations (base module)



1 Mailslot

Figure 2.6 Mailslot mechanism



## 2.5 Drive Module

The drive module is a module unit that contains the drive for recording data and external interface. For installation location of drive modules, refer to ["2.8 Tape Drive Unit" \(page 27\)](#). When, for example, a drive fails, maintenance replacement is carried out in units of drive modules. The host interface supports the Fibre Channel (FC) and the Serial Attached SCSI (SAS).



### Malfunction

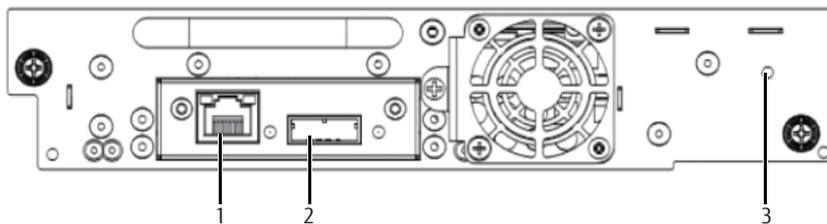
Do not pull out the drive module. If necessary to pull out a faulty drive module for replacement, contact your maintenance engineer.

### 2.5.1 Drive Module Back Panels

This section describes back panels for each drive module.

#### ■ LTO-5 HH SAS

Figure 2.7 Rear view of LTO-5 HH SAS (Product ID: LT26ASHE, LT26ASHL)

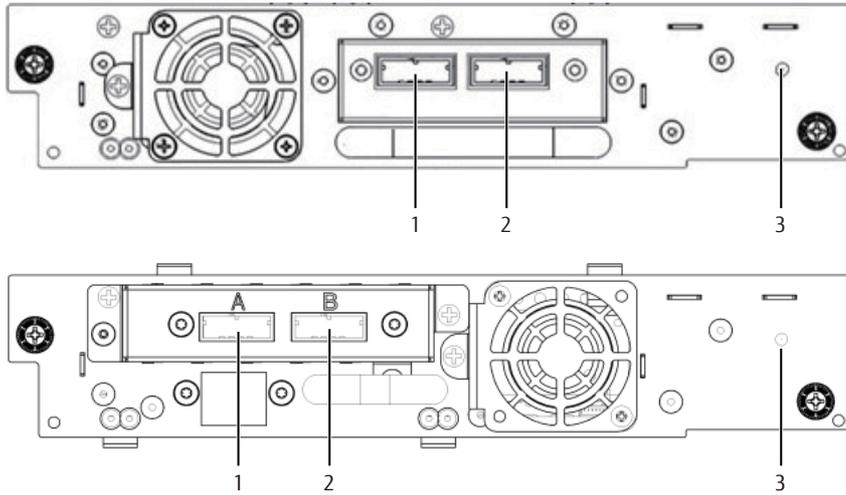


- 1 Tape Drive Ethernet Port (not used)
- 2 SAS Port A
- 3 Tape Drive Power LED (Green)

■ LTO-6 HH SAS, LTO-7 HH SAS, LTO-8 HH SAS

There are two types of rear panels for the SAS interface.

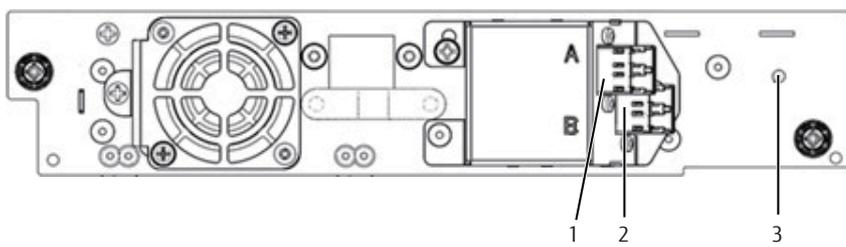
Figure 2.8 Rear view of LTO-6 HH SAS (Product ID: LT26BSKE, LT26BSKL),  
Rear view of LTO-7 HH SAS (Product ID: LT26BSME, LT26BSML),  
Rear view of LTO-8 HH SAS (Product ID: LT26BSNE, LT26BSNL)



- 1 SAS Port A
- 2 SAS Port B (unavailable)
- 3 Tape Drive Power LED (Green)

■ LTO-6 HH FC, LTO-7 HH FC, LTO-8 HH FC

Figure 2.9 Rear view of LTO-6 HH FC (Product ID: LT26BFKE, LT26BFKL),  
Rear view of LTO-7 HH FC (Product ID: LT26BFME, LT26BFML),  
Rear view of LTO-8 HH FC (Product ID: LT26BFNE, LT26BFNL)



- 1 FC Port A
- 2 FC Port B (unavailable)
- 3 Tape Drive Power LED (Green)

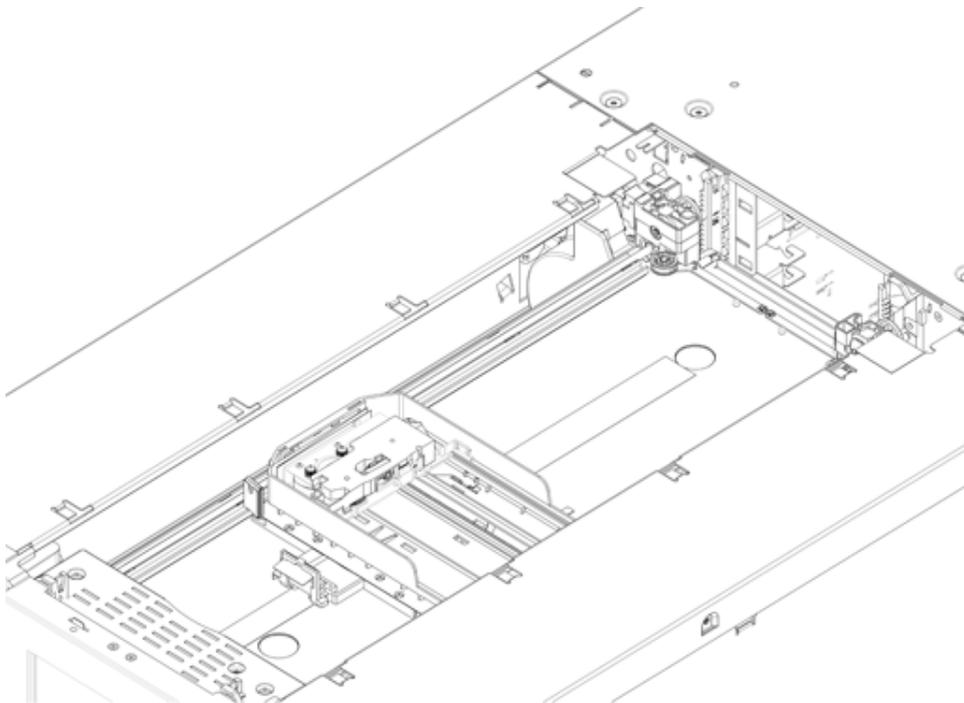
## 2.6 Robotic Assembly

The robotic assembly is used for transporting a tape cartridge from slot or Mailslot to slot or drive (refer to "[2.4 Mailslot](#)" (page 21)).  
A faulty robot can be replaced or repaired.

**Caution**

Only maintenance engineer should replace or repair a robot.

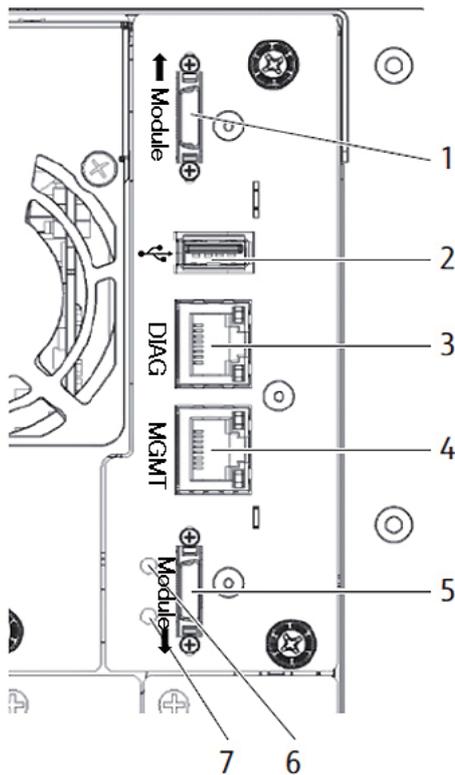
Figure 2.10 Overview of the robotic assembly



## 2.7 Library Controller

The library controller is located in the rear upper part of each module.  
This part hosts the library controller as well as the main management controllers for the system.  
The library controller of the Expansion Modules will not provide LAN ports and a USB port.

Figure 2.11 Library controller (Base Module)



- 1 Module Interconnect (to top)
- 2 USB Port (service) (not used)
- 3 LAN Port (DIAG) (service) (not used)
- 4 LAN Port (MGMT) (remote panel)
- 5 Module Interconnect (to bottom)
- 6 Controller Health Status LED
- 7 Unit Identifier LED

The states of LEDs are listed below.

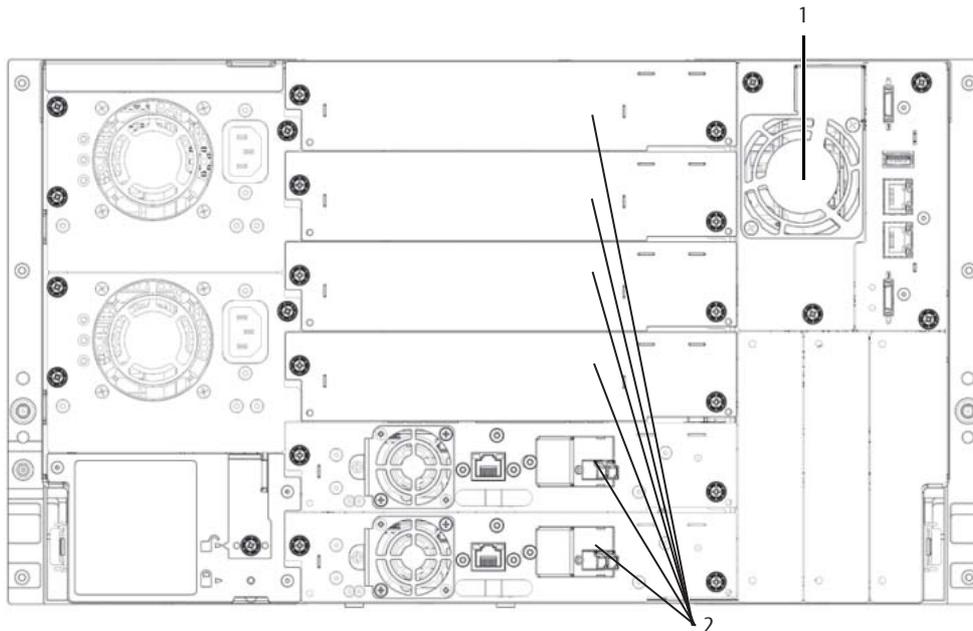
Table 2.2 Meanings of each LED (library controller)

No.	LED status		Meaning
6	Controller Health Status LED	Amber	Amber when the controller is not working.
		Green	Blinks green if the library controller is in the normal state.
7	Unit Identifier LED	Blue	Blue when activated. The unit identifier (UID) LED is controlled by the user on the <b>Maintenance &gt; UID LED Control</b> screen in the operator panel and remote panel. The UIDs on the operator panel and back panel are activated and deactivated together. The UIDs are helpful for locating the library in a data center.

## 2.8 Tape Drive Unit

Up to 6 half height drives can be installed in the tape drive unit. Power is supplied to the drive with a drive power board.

Figure 2.12 Tape drive unit and drive power board



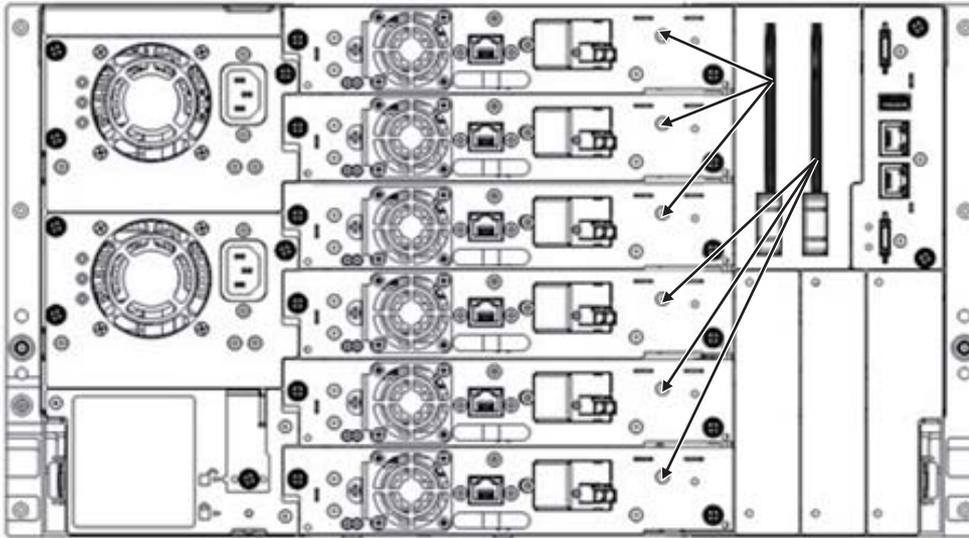
- 1 Drive power board (behind chassis fan)
- 2 Half-Height Tape Drive Bay

● Drive module

For details on the drive module, refer to ["2.5 Drive Module" \(page 22\)](#).

Up to two drive power boards can be mounted for each module. As shown in [Figure 2.13](#), the right board supplies power to the bottom three half height drives, and the left board supplies power to the top three half height drives.

Figure 2.13 Relationship between the drive power board and the tape drive



## 2.9 Power Supply Unit (PSU)

The power supply unit distributes the power that is supplied from an external power source to the LT260.

Figure 2.14 Power supply unit (PSU)

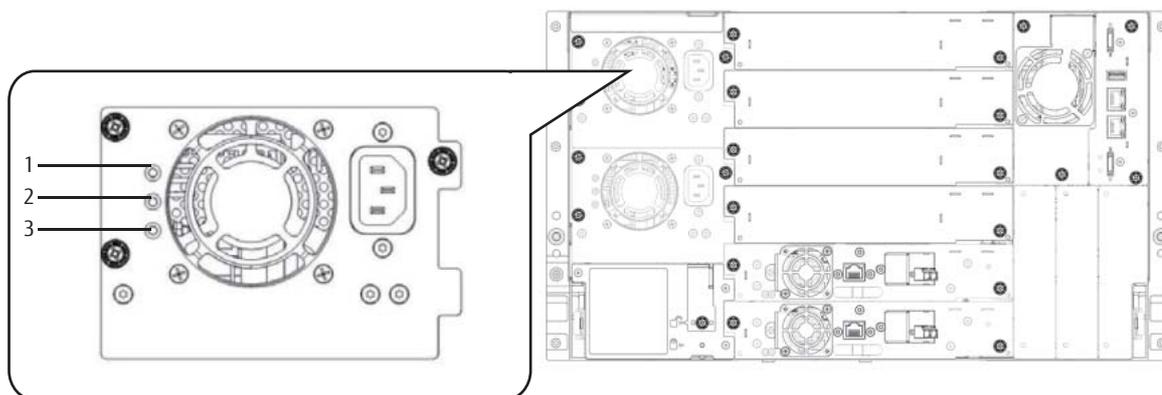


Table 2.3 Meanings of each LED (power supply unit)

No.	LED status	Meaning
1	White	AC power connected
2	Amber	Power Supply Fault Condition, such as fan not running, too hot or producing power outside of specification
3	Green	Module Powered On

### ● Power supply unit (PSU)

Each PSU receives 100VAC – 240VAC. It converts AC power to DC power for the internal component, such as Backplane, drive power board and library controller. Each unit can supply power to all of the drives and the robots module. The LT260 Base Module is equipped with two PSUs as standard, and can operate using one PSU should the other PSU fail.

The Expansion Module has a power supply unit as standard. To double the power supply unit for the Expansion Module, add a Power Supply Option.

# Chapter 3

## Basic Operation

This chapter explains how to perform basic daily operations.

### 3.1 Powering On/Off

This section explains how to turn on and off the LT260.



#### **Injury or fire hazard**

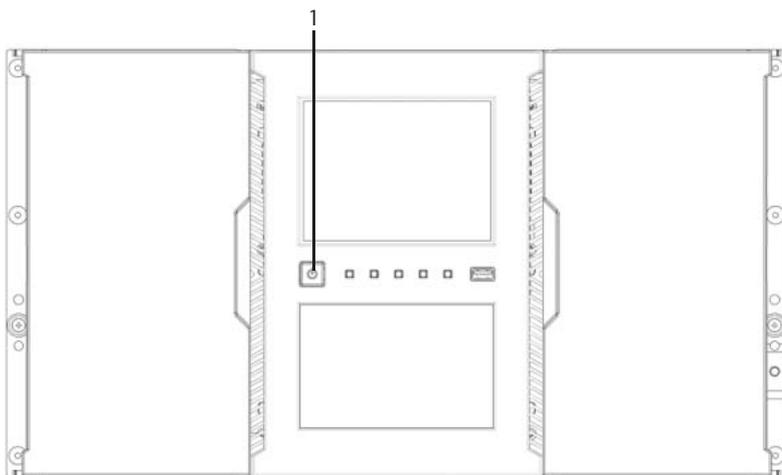
If the LT260 supports multiple power supply units and the associated power cords are connected to a single power strip, high leakage current might flow through the grounding conductor of the power strip.

Be sure to connect the ground conductor before connecting the power cords. If the power cords are not wired directly to a power distribution board, use industrial grade power strips.

## ■ Powering On

Plug the power cables into the power connectors on each PSU and insert power plugs into the power outlets. Power on the library by pressing the power button on the Base Module; the green light will illuminate. When the library is powered on, it inventories the tape cartridges in the magazines, checks the firmware version on all modules, configures the tape drives, confirms the presence of the existing modules, and searches for any new modules.

Figure 3.1 Power switch (power-on)



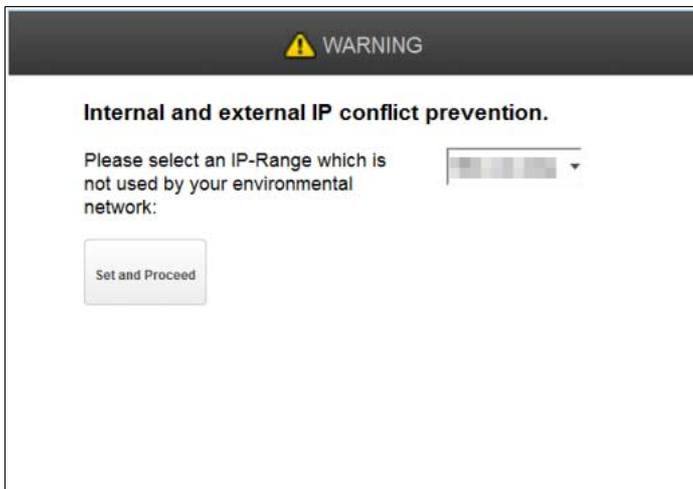
1 Power Button

### ■ Internal IP Range Selection

The "Internal IP Range Selection" will be displayed in Operator Panel when the LT260 starts for the very first time or if the unit was reset to "Manufacturing Defaults / Reset" via Operator Panel / Remote Panel. Internal IP range selections can also be set in the **Configuration > Network > Reset internal IP Range (in case of conflict)** screen.

For internal communication between modules the tape library uses an Ethernet connection with an internal IP address range. To prevent any conflict between the internal IP address range and the external IP addresses it is required to select the internal IP range before the tape library gets connected to the external Ethernet port.

Figure 3.2 Internal IP range selection



Please note: the last section of the IP address is not set because it will be set internally.

Figure 3.3 Internal IP range selection - select

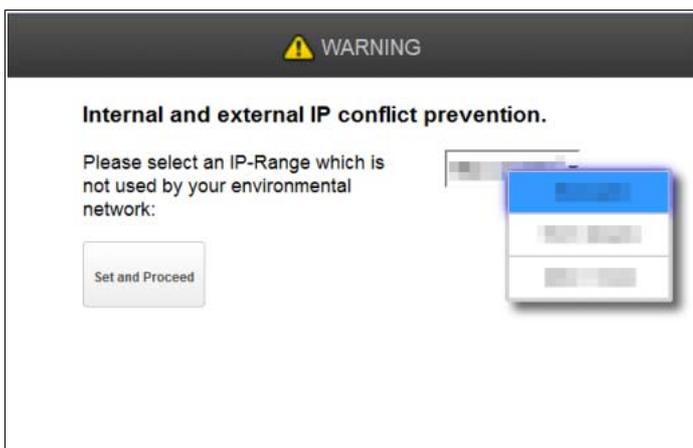
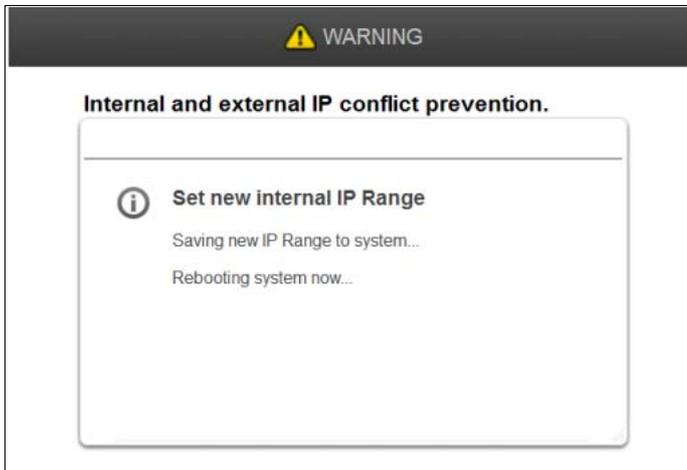


Figure 3.4 Internal IP range selection - set and proceed



#### ■ Power-off method

Power off the library from the operator panel. Depress the power button and hold it for 3 seconds to display a popup window for selecting the park position of the robotic assembly. For normal operation, do not select any options, or select "The default parked position". If 10 seconds pass before making a selection "The default parked position" is selected automatically. To relocate or carry the LT260, select "The shipping position" within 10 seconds. If the library does not perform a soft shutdown, depress and hold the power button for 10 seconds.

If "The default parked position" is selected, the robotic assembly moves behind the operator panel.

If "The shipping position" is selected, the robotic assembly moves underneath the Base Module.

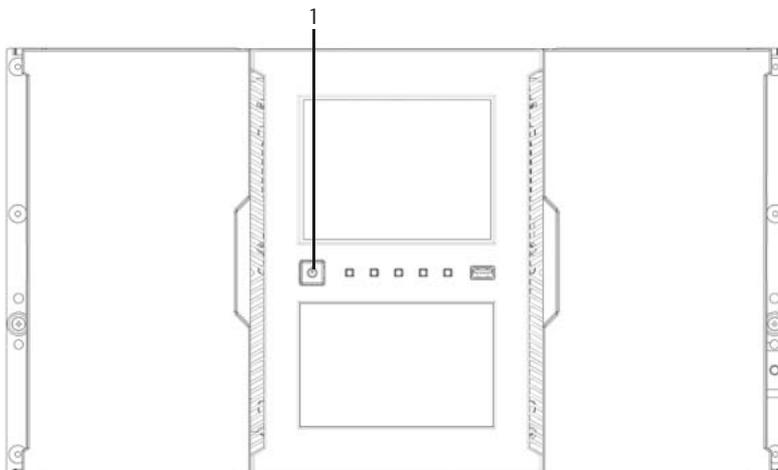
If "Shipment in rack position" is selected, the robotic assembly moves underneath the bottom-most module that is installed in the rack.

Verify that all host processes are idle.

#### ● Note

Before turning off the LT260, make sure that the operation is stopped and that no tape cartridge remains in the drives.

Figure 3.5 Power switch (power-off)



1 Power Button

Figure 3.6 Window selecting the robotic assembly parked position

**Select the parking position for the robotic assembly:**  
If no option is selected in 10 seconds, the library will power off using the default parked position.

<b>The default parked position</b>	Parks the robot near the top of the base module.
<b>The shipping position</b>	Parks the robot near the bottom of the base module. For shipping use, when the bottom cover is installed on the base module.
<b>Shipment in rack position</b>	Parks the robot near the bottom of the stack, for shipping in rack use.

For additional information about shipping the product, refer to the User Guide

### 3.1.1 Points to Note when Turning On or Turning Off the LT260

---



Do Not



#### **Data destruction**

Do not ever run backup software while the library power is being turned off or a power-on initialization sequence is in progress. Otherwise, a malfunction may result.

If the library power is turned off while a backup is in progress, the validity of the data being written is not guaranteed. In addition, the tape cartridges to which data has been written might become unusable. If these problems occur, contact the support department of the backup software vendor and take their suggested corrective actions before retrying the backup.

### 3.1.2 Turning on the Server

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If the server power is turned on while the library is initializing, a library identification error might result. Be sure to allow the library to finish its initialization sequence before turning on the server power.

## 3.2 Operator Panel Operation

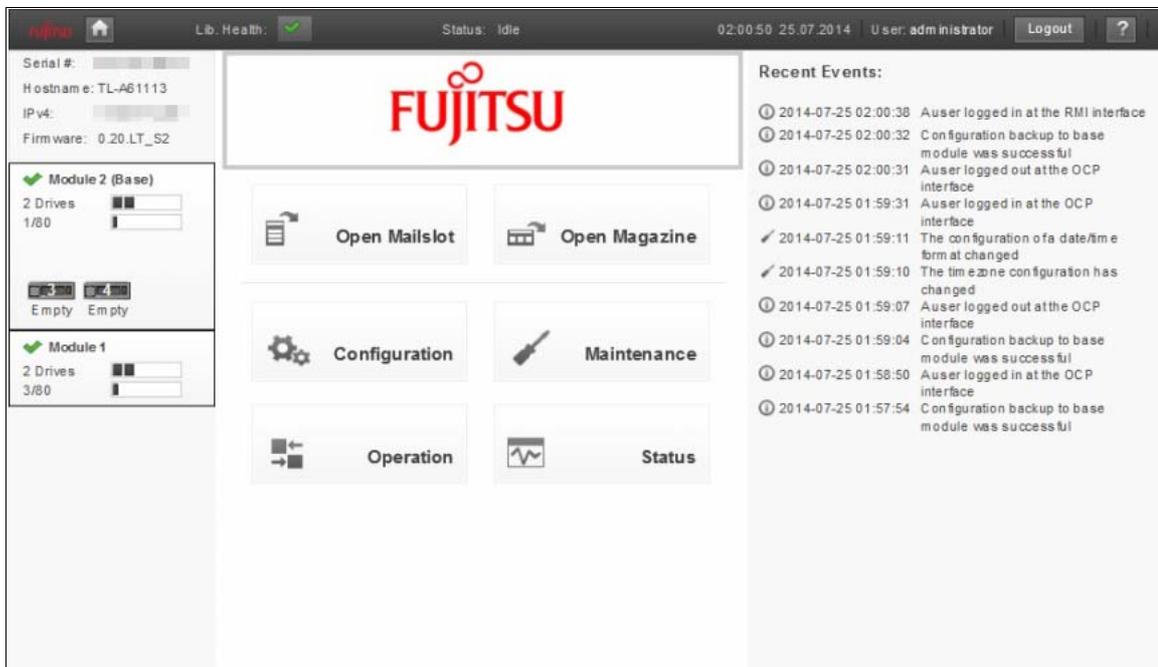
This section describes the screen configuration and the login method of the operator panel.

### 3.2.1 Using the Library Main Screen

The library main screen is organized into the following regions:

- **Top Banner**  
Contains the home button and displays the overall status and information about the library and user. Refer to "[5.2.1 Top Banner Elements](#)" (page 56).
- **Left Pane**  
Displays the library identity and module status. Refer to "[5.2.2 Left Pane Elements](#)" (page 57).
- **Center Pane**  
Provides access to operate and configure the library and to view additional status information. Refer to "[5.2.3 Center Pane Elements](#)" (page 58).
- **Right Pane (Remote Panel only)**  
Displays a log of recent events.

Figure 3.7 Library main screen



## 3.2.2 Logging into the Library

---

This section explains how to login to the library:

### Procedure

**1** Display the login screen.

■ Using the operator panel

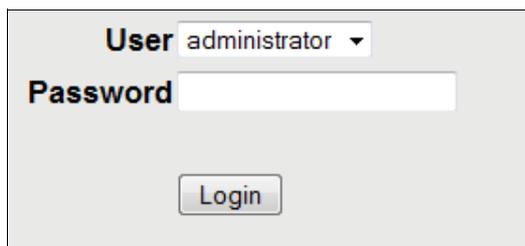
If the operator panel screen saver is on, tap the screen.

■ Using the remote panel

Open a supported web browser and enter the IP address of the library in the browser's address bar.

**2** Select the **User**.

Figure 3.8 Login screen



**3** If required, enter the **Password**.

**4** Click **Login**.

The user levels are:

- user  
No password is required (leave the **Password** blank unless the user password has been set). The user account provides access to status information, but not configuration, maintenance or operation functions.
- administrator  
The administrator password is required to login as the administrative user. The same administrator password is used for the remote panel and operator panel. There is not a default administrator password; the administrator password must be set with the operator panel before administrator functions can be used with the remote panel.  
The administrative user has access to all functionality except for the log configuration and Service features.
- service  
**Access to this user is by Service personnel only.** The service password is set at the factory. The same service password is used for the remote panel and operator panel. Both the administrator and service passwords are required for a service person to login as a Service privilege.
- security  
In addition to the functions that are available when logged in as the administrative user, the key management function can be set. After the Key Management Function Option is purchased, the setting for the key management function is available.

**Note**

By default, the administrator password is unset; all of the digits are null. You must set the administrator password from the operator panel to protect the administrator functions on the operator panel and access the administrator functions on the remote panel.

**End of procedure**

**Note**

Basically, only one user can log in to the library regardless of whether the user logs in from the remote panel or operator panel.

If a user is already logged in, a warning message appears. Select whether to continue the login process.

- Select **Leave** to stop the login process.
- Select **Login** to continue the login process and forcibly log the currently logged in user out.

As an exception, only the "user" user account can log in to the library regardless of whether other users are logged in.

Note that if no operation is performed for a certain period of time, the user is forcibly logged out.

## 3.3 Loading and Ejecting Cartridges

This section explains how to insert and eject a data cartridge.

### 3.3.1 Opening the Mailslot

This section explains how to open the Mailslot:

#### Procedure

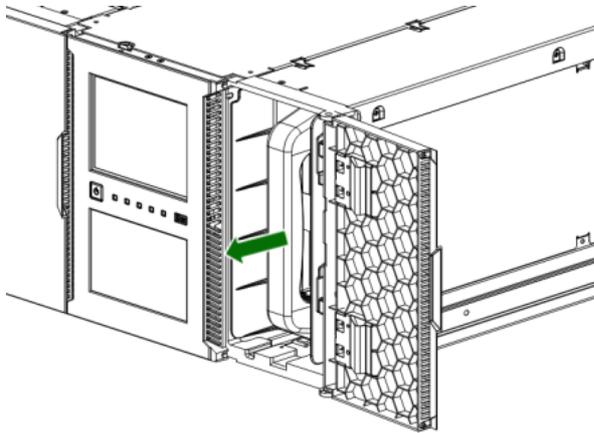
- 1 From the **Operation > Open Mailslot** screen, see the status and unlock any enabled Mailslot in the library.

Figure 3.9 Open Mailslot screen



- 2 To open a Mailslot, click **Open** for the appropriate Mailslot and then click **Submit**.  
The library will release the lock. You can then pull the Mailslot out of the library to access the Mailslot. The Mailslot is heavy so take care not to drop it when pulling it out of the library.

Figure 3.10 How to pull the Mailslot



**Note**

- The Mailslot must be pulled out of the library within 30 seconds after releasing the lock. The library will relock the Mailslot after 30 seconds.
- When remounting the Mailslot, insert the Mailslot at a right angle to the LT260.

The Mailslot must be enabled before it can be opened.  
To enable the Mailslot, refer to "2.5.12 Enabling or Disabling Mailslots" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

**End of procedure**



**WARNING**

Do Not



Hazardous moving parts exist inside this product. Do not insert tools or any portion of your body into the interior of the library through the Mailslot access door.



**CAUTION**

Do



- If the modules are mounted in a higher position, avoid hitting your head on the opened door.
- When pulling out or inserting the Mailslot, be careful not to apply excessive force or vibration on the library. Failure to do so may damage the library.

### 3.3.2 Opening a Magazine

This section explains how to open the magazine.

#### Procedure

- 1 From the **Operation > Open Magazine** screen, unlock library magazines.

Figure 3.11 Open Magazine screen



- 2 To unlock a magazine, click **Open** for the magazine and then click **Submit**. The library will release the lock. You can then open the door and pull the magazine out of the library to access the slots.

#### Note

- Opening a magazine will take the library off-line.
- The magazine will relock after 30 seconds.

End of procedure



- If the modules are mounted in a higher position, avoid hitting your head on the opened door.
- When pulling out or inserting a magazine, be careful not to apply excessive force or vibration on the library. Failure to do so may damage the library.

### 3.3.3 Inserting Tape Cartridges

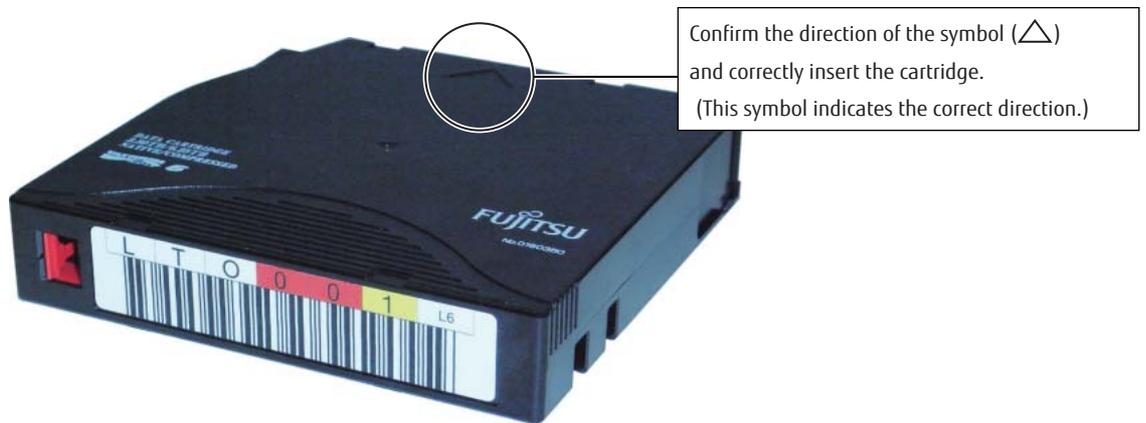
This section explains how to insert tape cartridges.

#### Procedure

- 1 Insert a tape cartridge into the Mailslot or magazine.  
Insert the tape cartridge into the correct direction as shown in [Figure 3.12](#). When the direction is correct, the barcode label faces the front (direction in which the robot can read). In addition, the reel surface of the cartridge faces downward. The hand section can be moved by hand. When manually inserting a tape cartridge into the slot, insert it such that it has the correct orientation by checking the following points:
  - The barcode label faces the front (direction in which the robot can read).
  - The reel surface of the cartridge faces downward.

**Note**  
A barcode label must be affixed to the tape cartridge so that management information can be differentiated for each individual tape cartridge.

Figure 3.12 Tape cartridge insertion direction



- 2 After inserting the tape cartridge into the Mailslot or the magazine, re-insert the Mailslot or magazine into the LT260.  
The LT260 automatically performs inventory operation.  
The management information of tape cartridges managed by the LT260 is updated, and the LT260 goes back on-line.
- 3 Perform the inventory operation of the backup software to update the tape cartridge management information for cartridges held by the backup software.

End of procedure



**Damage to the LT260**

Never insert a tape cartridge in the wrong direction and never insert an out-of-spec tape cartridge. Otherwise, the robot may be damaged. The robot may not operate normally if a tape cartridge is inserted into any slot other than the specified one. The insertion location of tape cartridges differs by model.



**Malfunction**

If a Mailslot containing inserted tape cartridges is positioned with the tape cartridge storage shelves facing downward and the Mailslot is subject to impact, the tape cartridges may fall out of the Mailslot. To prevent this from occurring, do not position the Mailslot with the tape cartridge storage shelves facing downward when carrying the Mailslot.

## 3.4 Cleaning Drives

There are two methods for cleaning the magnetic head of the tape drive: one is "manual cleaning", which is operated from the operator panel or the remote panel; the other is "auto-cleaning with the backup software", which automatically performs a cleaning for the specified number of times.

To perform a cleaning with the backup software, one cleaning cartridge must be stored in the tape library at all times. Note that the number of data cartridges that can be stored is reduced by one.

### 3.4.1 Auto-Cleaning with the Backup Software

Use the backup software to clean drives periodically. Since the cleaning cartridge that is used by this method is managed by the backup software, the cleaning cartridge must be stored in slots of the LT260.

Refer to the manuals of each software for the detailed settings of the backup software.

#### Note

To perform auto-cleaning with NetVault, individual settings are required. Refer to "4.5 NetVault" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Server Connection-" for details.

#### ■ Notes for cleaning with the backup software during a backup operation

For cleanings with the backup software, perform a drive cleaning when no other backup operation (backup/restore) is being performed in the target drive.

Although some backup software allows cleaning management during the operation, the actual cleaning starts after the backup is complete.

#### CAUTION

##### **Damage to the LT260 and data destruction**

If incorrect settings are applied for auto-cleaning with the backup software, the LT260 or the tape cartridge may become damaged, or data destruction may occur. Understand the setting contents before performing a configuration.

##### **Malfunction**

During a cleaning operation with the backup software, "DRIVE CLN" is displayed on the operator panel, but it is not displayed on the remote panel. Logging in to the remote panel may not be allowed if a cleaning with the backup software is being performed. In this case, a login is allowed after the cleaning is complete.

## 3.4.2 Cleaning Drives Manually

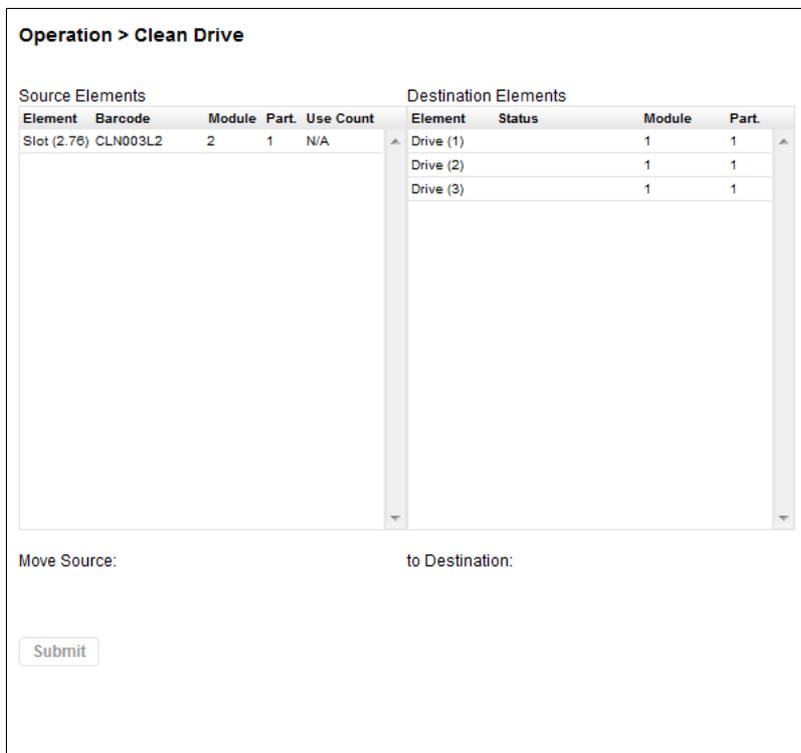
Request the cleaning of drives from the operator panel or the remote panel of the LT260. This method must be performed every time cleaning of the drives is required. In this method, the cleaning cartridges that are stored in the slots of the LT260 are used.

This section explains how to clean the tape drive.

### Procedure

- 1 From the **Operation > Clean Drive** screen, initiate a drive cleaning operation.

Figure 3.13 Clean Drive screen



- 2 Select a cleaning cartridge from the **Source Elements** list.  
The library uses the barcode label to identify cleaning cartridges. If no cleaning cartridges are available, load one into a Mailslot or slot.
- 3 Select the tape drive to be cleaned from the **Destination Elements** list.  
Tape drives currently containing a cartridge are not listed. To clean a tape drive not listed, move the cartridge out of the drive.
- 4 Click **Submit**.

End of procedure

# Chapter 4

## Default Setting

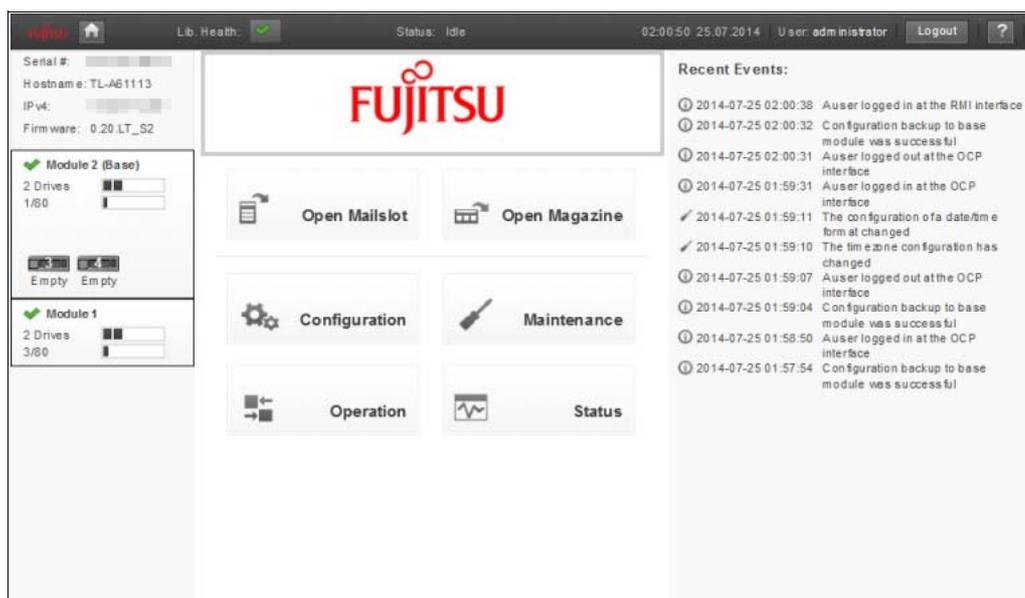
This chapter explains how to make the minimum settings required during installation of the LT260. This chapter explains how to make settings using the operator panel, but the same settings can also be made from the remote panel. For details on this setting method, refer to "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

For information on the screen configuration and the login method of the operator panel, refer to ["5.2 Operator Panel and Remote Panel" \(page 55\)](#).

### ■ Configuration menu

Use the Configuration menu to set library information. To open the Configuration menu, select **Configuration** in the main area of the menu window.

Figure 4.1 Selecting Configuration



# 4.1 Network Settings

The LT260 has a LAN (TCP/IP protocol) communication function.

- Remote panel function  
You can reference or set up the library or drive in the Web browser.
- E-mailing function  
If the library or drive detects a hardware error, fault information is reported by e-mail.

**Note**

For the settings of the e-mailing function, refer to ["5.3 Configuring Event Notification Parameters" \(page 59\)](#).

To use these functions, network information must be set up. The following describes the procedure for setting up the network information:

## Procedure

- 1 From the **Configuration > Network** screen, configure the library network settings.

Figure 4.2 Network setup window

**Configuration > Network**

Host Name:  Domain Name:

Protocol:

**IPv4**

Method:

Address:  Netmask:

Gateway:

DNS 1:  DNS 2:

**IPv6**

Method:

Current Address:

Address:  Prefix Length:

Gateway:

DNS 1:

DNS 2:

- 2** Navigate to the **Configuration > Network** screen.
- 3** Configure or update the **Host Name** and **Domain Name**.  
The remote panel URL is <Host Name>.<Domain Name>.
- 4** Select the internet protocol to use for the library.
- 5** Configure the settings for the selected internet protocol.  
To have the library obtain an internet address from a DHCP server, select the DHCP or Stateless method.
- 6** Click **Submit**.

**End of procedure**

---

## 4.2 Configuring the Date and Time Format

To configure date and time format parameters and to use an SNTP server, from the Configuration area, navigate to the **System > Date and Time Format** screen.

**Note**

The library does not adjust its time for daylight saving time; the time must be adjusted manually.

### 4.2.1 Setting the Time Zone

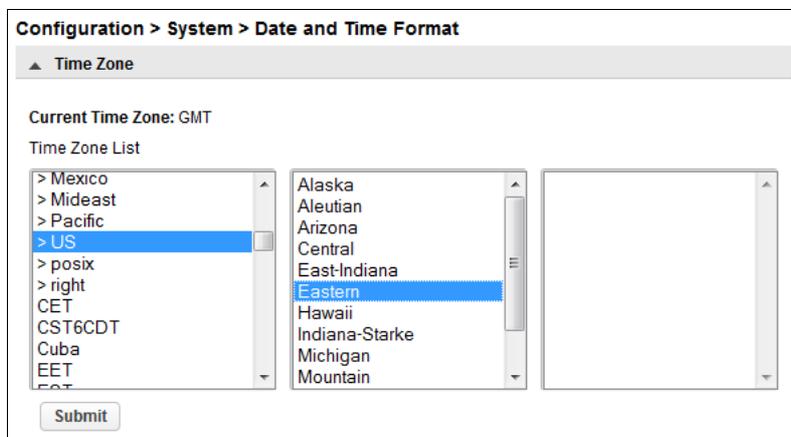
This section describes how to set the time zone.

#### Procedure

**1** Click **Time Zone**.

A list of continents, countries, and regions is displayed. When an item preceded with '>', for example > **US**, is selected, a submenu is displayed in the next column.

Figure 4.3 Time Zone screen



- 2** Expand the time zone list, as necessary, until a location with the appropriate time zone is visible.
- 3** Select a location with the appropriate time zone.
- 4** Click **Submit**.

End of procedure

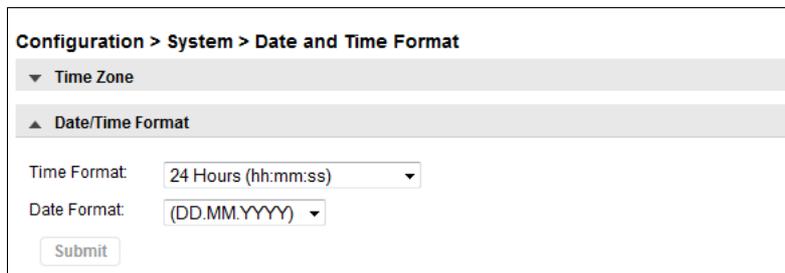
## 4.2.2 Setting the Date and Time Format

This section describes how to set the date and time formats.

### Procedure

- 1 Click **Date/Time Format**.

Figure 4.4 Date/Time Format screen



Configuration > System > Date and Time Format

▼ Time Zone

▲ Date/Time Format

Time Format: 24 Hours (hh:mm:ss) ▼

Date Format: (DD.MM.YYYY) ▼

Submit

- 2 Select a time format.
- 3 Select a date format:  
For example, July 30, 2013 is displayed as:
  - DD.MM.YYYY - 30.07.2013
  - MM/DD/YYYY - 07/30/2013
  - YYYY-MM-DD - 2013-07-30
- 4 Click **Submit**.

End of procedure

## 4.2.3 Setting the Date and Time

This section describes how to set the date and time.

### Procedure

- 1 Click **Set Date/Time**.

Figure 4.5 Set Date/Time screen

Configuration > System > Date and Time Format

▼ Time Zone

▼ Date/Time Format

▲ Set Date/Time

Time:  24 Hours (hh:mm:ss)

Date:  (DD.MM.YYYY)

- 2 Enter time and date information.  
Manual Input:  
Enter time and date information directly.  
Automatic Input:  
Click **Now**. The time and date information is entered automatically by the synchronization to the computer running the remote panel.
- 3 Click **Submit**.

End of procedure

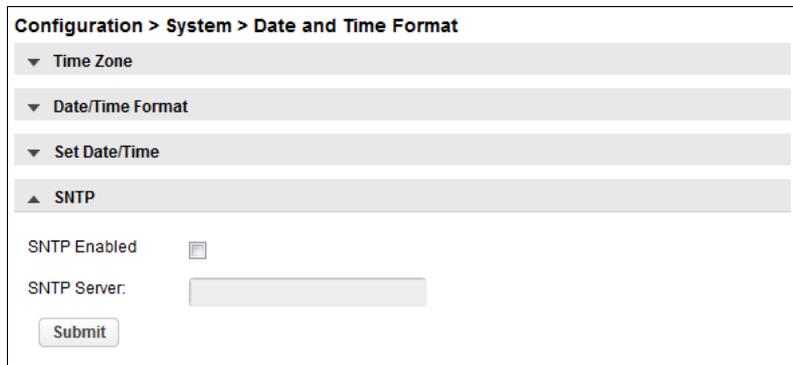
## 4.2.4 Enabling Simple Network Time Protocol (SNTP) Synchronization

The library must have network access to an SNTP server.  
This section describes how to enable the SNTP synchronization.

### Procedure

- 1 Click **SNTP**.

Figure 4.6 SNTP screen



The screenshot shows a web configuration page titled "Configuration > System > Date and Time Format". It features a sidebar with expandable sections: "Time Zone", "Date/Time Format", "Set Date/Time", and "SNTP". The "SNTP" section is expanded, showing a checkbox for "SNTP Enabled" which is currently unchecked, and a text input field for "SNTP Server:". A "Submit" button is located at the bottom of the form.

- 2 Click **SNTP Enabled**.
- 3 Enter the SNTP server address.
- 4 Click **Submit**.

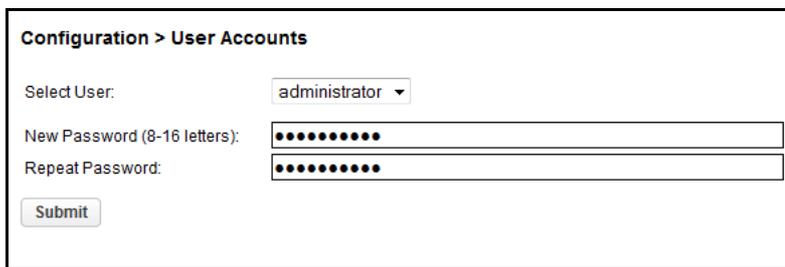
End of procedure

## 4.3 Configuring Passwords for User Accounts

From the **Configuration > User Accounts** screen you can set the password for the user, administrator, or security accounts.

- **user**  
The user account allows access to library status information and does not allow access to configuration, maintenance, or operation features. The initial password is "std00001".  
Setting a user password restricts access to status information to only those who know the user password.
- **administrator**  
Setting an administrator password provides access to the administrator functions with the remote panel or operator panel, and restricts access to administrator functions to only those who know the administrator password. The initial password is "adm00001".
- **security**  
In addition to the functions that are available when logged in as the administrative user, the key management function can be set. After the Key Management Function Option is purchased, the setting for the key management function is available. The initial password is "security".  
Until this password is changed, all administrator functions can be used without any restrictions from the operator panel. Note that access from the remote panel is not allowed in this case. After changing the security password, the password can be changed from both the operator panel and the remote panel.

Figure 4.7 User Accounts window



The screenshot shows a web interface titled "Configuration > User Accounts". It contains a "Select User:" label followed by a dropdown menu showing "administrator". Below this are two text input fields: "New Password (8-16 letters):" and "Repeat Password:", both filled with masked characters (dots). A "Submit" button is located at the bottom left of the form area.

Select the user and then enter the new password twice. The password must contain 8-16 characters, which can include upper and lower case letters, numbers, and special characters.

### ■ Restricted remote panel login

The administrator has the possibility to set login restrictions for administrator and security login. To enable the restriction mode, select the "Restricted Remote Management Interface (RMI) Login:" checkbox. If the restriction mode is enabled the administrator and the security are not allowed to login via remote panel. The administrator has to disable the restriction mode by logging into the operator panel.

Only the administrator is allowed to set and reset the restricted remote panel login.

### ■ Allow magazine and Mailslot access

The administrator can give users access permission to magazines by selecting the "Allow magazine access by the "user" user account:" checkbox.

The administrator can give users access permission to Mailslots by selecting the "Allow mailslot access by the "user" user account:" checkbox.

## 4.4 Saving and Restoring the Library Configuration Setting File

For the LT260, the library configuration setting can be saved as a file or restored using the operator panel or remote panel.

### Caution

When the library is configured or set after purchasing the LT260 or when the library configuration or setting is changed during operation, make sure to save the library configuration settings as a file. The saved library configuration setting file can be restored by using the operator panel or the remote panel. Keep the latest library configuration setting file in a safe location. This file may be required for maintenance.

### 4.4.1 Saving the Library Configuration as a File

This section explains how to save the library configuration as a file.

#### Procedure

- 1 Navigate to the **Configuration > System > Save/Restore Configuration** screen.
- 2 To save the configuration file in the USB device of the library, insert a USB flash drive into one of the USB ports on the Base Module.
- 3 Click **Save**.
- 4 Select a location to save the library configuration file.
  - Remote Panel (Remote Panel only)  
Download the configuration file to the browser or the system where the Remote Panel is being operated from.
  - USB Device Front  
Download the configuration file to the USB flash drive that is inserted in the USB port on the front of the library.
  - USB Device Rear  
Download the configuration file to the USB flash drive that is inserted in the USB port on the rear of the library.

End of procedure

# Chapter 5

## Monitoring the LT260 Status

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This chapter explains how to check the LT260 status and what information is reported.

### 5.1 Status LEDs

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LT260 status can be checked using the status LEDs on the front of the Base Module. For details, refer to ["Status LEDs" \(page 18\)](#) in ["2.2 Operator Panel" \(page 18\)](#).

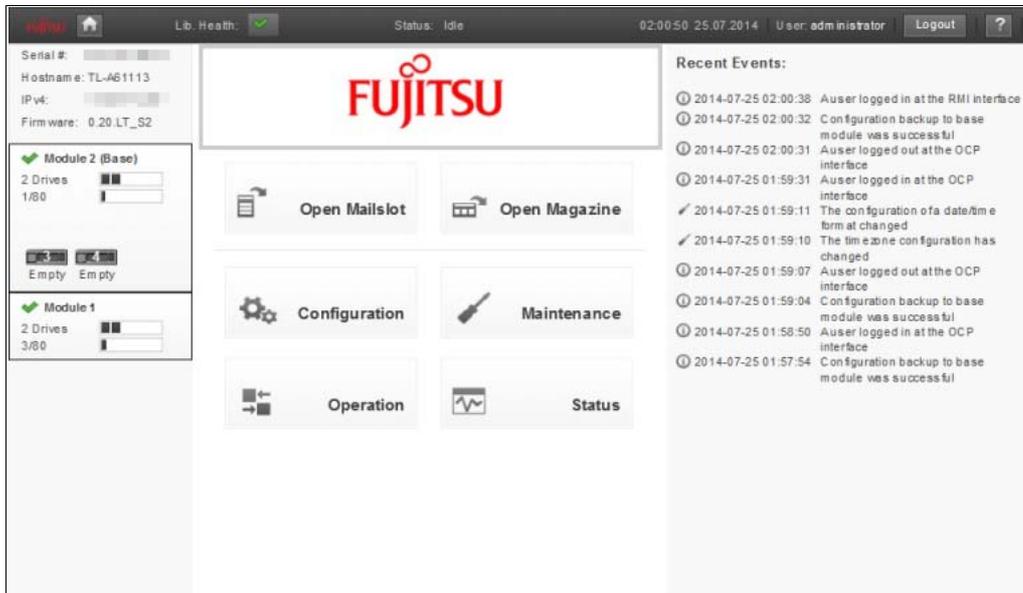
### 5.2 Operator Panel and Remote Panel

---

The main screen is organized into the following regions:

- Top Banner  
Contains the home button and displays the overall status and information about the library and user.
- Left Pane  
Displays the library identity and module status.
- Center Pane  
Provides access to operate and configure the library and to view additional status information.
- Right Pane (Remote panel only)  
Displays a log of recent events

Figure 5.1 Main screen



## 5.2.1 Top Banner Elements

Table 5.1 Top banner elements

Display item	Description	
Home icon		Returns to the main screen.
Library Health	An icon indicating the overall health status of the library	
		Status OK icon indicates that all library components are fully operational and that no user intervention is required.
		Status Warning icon indicates that user attention is necessary, but that the library can still perform most operations. Click the icon to display the event ticket log.
Status		Status Error icon indicates that user intervention is required and the library is not capable of performing some operations. Click the icon to display the event ticket log.
	Idle	The library robotic is ready to perform an action.
	Moving	The library robotic is moving a cartridge.
	Scanning	The library robotic is performing an inventory of cartridges.
	Offline	The library robotic has been taken off line by the library.
Library Time & Date	Helpful when analyzing event logs and support tickets, and might be needed when contacting support.	
User	The user account for this session.	
Logout	Logs out of this session.	
?	Accesses online help.	

## 5.2.2 Left Pane Elements

Table 5.2 Left pane elements

Display item	Description		
Library Status	Overall library confirmation and status		
	Serial #	The base library serial number	
	Hostname	The library hostname	
	Network Configuration	The IP version (IPv4 or IPv6) and IP address	
	Firmware	The library firmware version	
Module Status Overviews	A summary of each module's configuration and health. Click or tap the module status area to select the module.		
	Module Health Icon		Status OK icon indicates that the module and each of its components are fully operational and that no user intervention is required.
			Status Warning icon indicates that user attention is necessary, but that the library can still perform most operations.
			Status Error icon indicates that user intervention is required and the module is not capable of performing some operations.
	Module Number	Modules are numbered based on their location in the physical library. The bottom module is Module 1. The base library module is annotated with (Base).	
	Drive Status	The number of drives installed in the module and the health of each drive. Click or tap on the drive to display drive configuration and status information in the center pane.	
		Black square	A black square indicates that the drive is fully operational and that no user intervention is required.
		Yellow square	A yellow square indicates that user attention is necessary, but that the drive can still perform most operations.
		Red square	A red square indicates that user intervention is required or the drive is not capable of performing some operations.
	Magazine Slot Usage	The number of cartridge slots available and the number in use.	
	Drive Operation Status	The current drive activity for each drive in the module. The drive operation status is only displayed for the selected module.	
		Write	The drive is performing a write operation.
		Read	The drive is performing a read operation.
		Idle	A cartridge is in the drive but the drive is not performing an operation.
		Empty	The drive is empty.
Encryp		The drive is writing encrypted data.	

## 5.2.3 Center Pane Elements

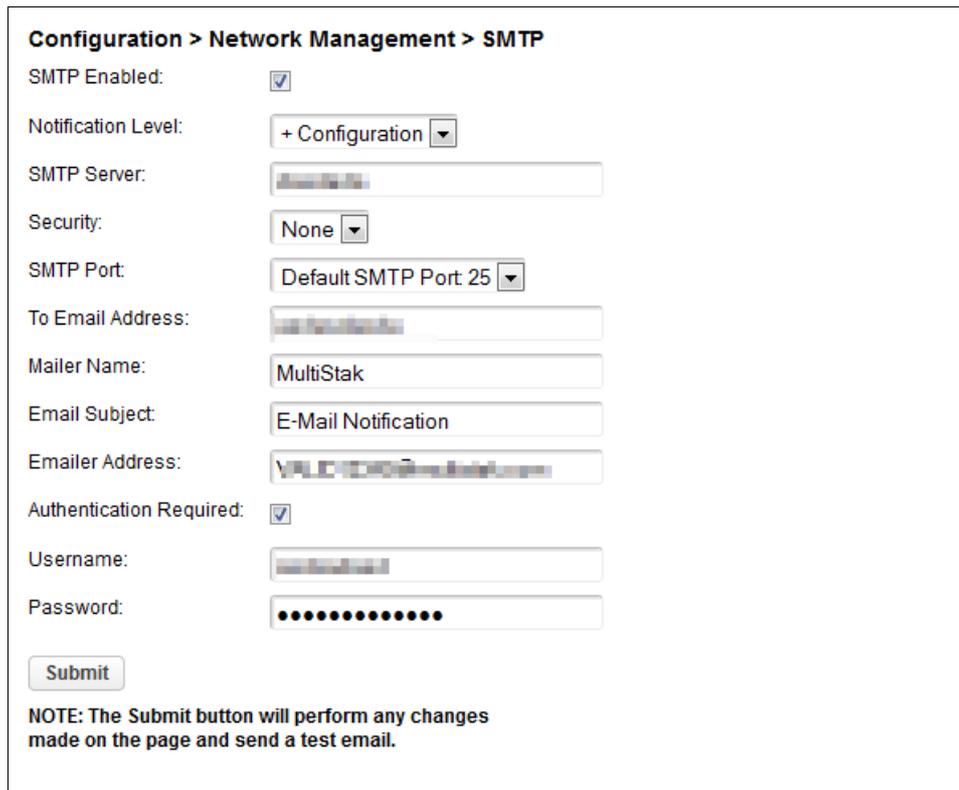
Table 5.3 Center pane elements

Display item	Description
Open Mailslot	(Administrative user only) Click or tap to unlock the Mailslot on the selected module. Mailslots must be enabled before the slots can be used as Mailslots. Refer to "2.5.12 Enabling or Disabling Mailslots" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
Open Magazine	(Administrative user only) Click or tap to unlock a magazine in the selected module. Only one magazine in the library can be open at a time. Refer to <a href="#">"3.3.2 Opening a Magazine" (page 41)</a> .
Configuration	(Administrative user only) Click or tap to configure the library. Refer to "2.5 Configuring the Library" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
Maintenance	(Administrative user only) Click or tap to access maintenance functions. Refer to "2.6 Maintaining the Library" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
Operation	(Administrative user only) Click or tap to access operation functions. Refer to "2.7 Operating the Library" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
Status	Click or tap to access status information. Refer to "2.8 Viewing Status Information" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

## 5.3 Configuring Event Notification Parameters

From the **Configuration > Network Management > SMTP** screen you can enable SMTP (Simple Mail Transfer Protocol) functionality and configure e-mail notification of library events. The library must have network access to an SMTP server.

Figure 5.2 SMTP screen



**Configuration > Network Management > SMTP**

SMTP Enabled:

Notification Level: + Configuration ▾

SMTP Server: [Redacted]

Security: None ▾

SMTP Port: Default SMTP Port 25 ▾

To Email Address: [Redacted]

Mailer Name: MultiStak

Email Subject: E-Mail Notification

Emailer Address: [Redacted]

Authentication Required:

Username: [Redacted]

Password: [Redacted]

**NOTE: The Submit button will perform any changes made on the page and send a test email.**

- SMTP Enabled  
Check to enable SMTP. When checked, the remaining configurations are active.
- Notification Level  
The types of events for which the library should send e-mail:
  - Inactive  
No events are sent.
  - Critical  
Only critical events are sent.
  - + Warnings  
Only critical and warning events are sent.
  - + Configuration  
Only critical, warning, and configuration events are sent.
  - + Information  
All events are sent.
- SMTP Server  
Hostname or IP address of the SMTP server

- Security  
Security protocol for accessing the SMTP server:
  - None
  - SSL
  - TLS
- SMTP Port  
SMTP server port. The default port for the selected protocol will be selected. You can choose one of the default ports or configure a custom port.
- To Email Address  
The address to receive the reported events (for example `firstname.lastname@example.com`). Only one email address can be configured.
- Mailer Name  
Name of the sender of the e-mail
- Email Subject  
Subject line for the e-mail message
- Emailer Address  
Return address to use for the e-mail message
- Authentication Required  
When checked, a username and password are required to access the SMTP server.
- Username  
User account for logging into the SMTP server when authentication is required.
- Password  
Password associated with the Username when authentication is required.

## 5.4 Fault Monitoring (SNMP Report Function)

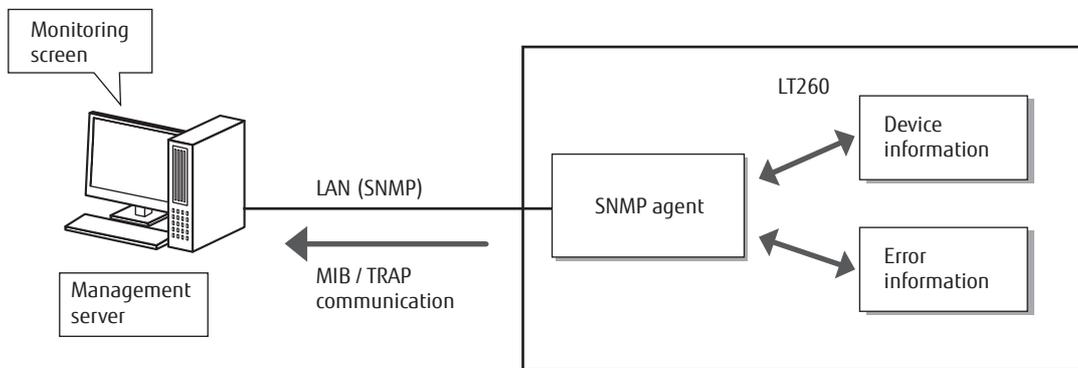
The SNMP report function can be used to link the LT260 to a hardware management system that is connected to a network.

The SNMP report function uses the SNMP protocol to transmit device information obtained via MIB and error information obtained via TRAP from the SNMP agent incorporated into the LT260 to the management software.

This enables centralized management of the LT260 at one location, as is the case with other network devices. For details on the SNMP TRAP list, refer to "Appendix A Event List" in "FUJITSU Storage ETERNUS LT260 Tape Library Overview".

The LT260 supports SNMP v1, v2, and v3.

Figure 5.3 SNMP function



Settings related to the SNMP agent can be made from the remote panel.

### Note

Download the LT260 MIB file from the following website.

[https://www.fujitsu.com/global/support/products/computing/storage/download/index.html#id\\_It](https://www.fujitsu.com/global/support/products/computing/storage/download/index.html#id_It)

# Chapter 6

## Function Expansion Option

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This chapter explains product options that can be added as required after system operation starts.

### 6.1 License Partitioning Option (Logical Library Function)

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A logical library is a function that logically partitions the robots, slots, and tape drives of a tape library to make it seem as if there are up to 20 tape libraries. By using the logical library, a single LT260 can be physically shared from different platforms and backup software.

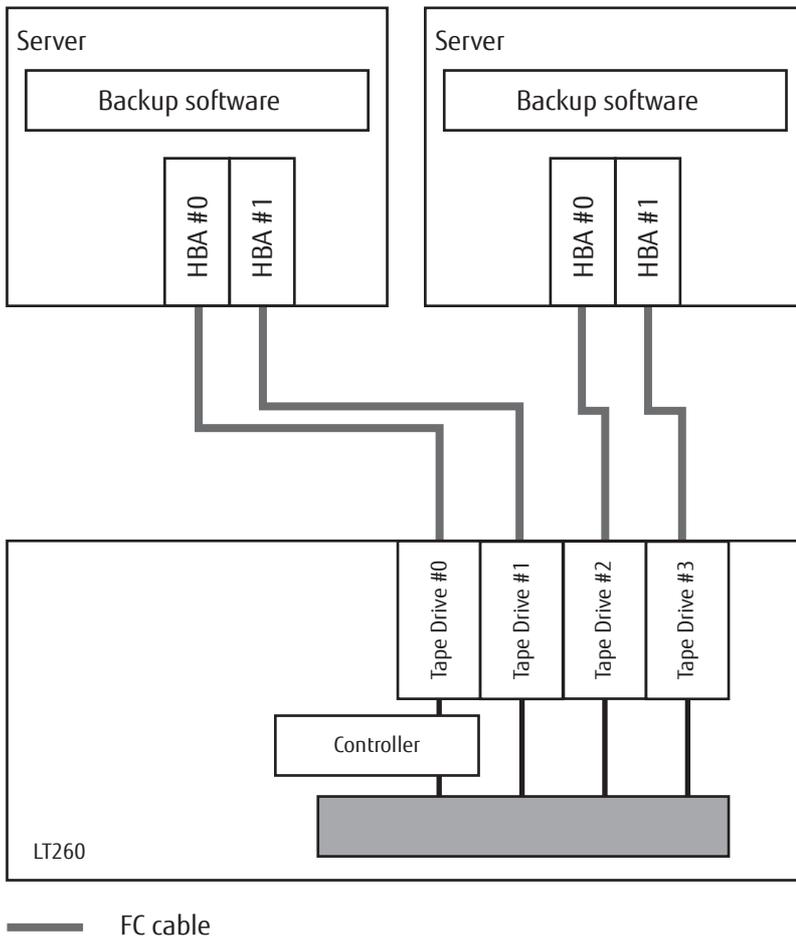
For the LT260, a single tape library can seem to have up to 20 tape libraries.

**Note**

To use the logical library function, a license for the License Partitioning Option is necessary.

---

Figure 6.1 Direct connection (FC-AL connection, a multiple server connection, a shared library, and tape drives that are not shared)



Libraries that are on physical partitions are hereinafter called "physical libraries" and libraries that are on logical partitions are hereinafter called "logical libraries".

## 6.1.1 Function Overview

License Partitioning Option is valid for several UNIX / PC servers to use the Library as a shared device. As a result, decreasing the installation space, uniform management of the tapes, and operation cost reduction can be achieved.

### Caution

- Take special care when changing configurations after logical libraries are created because removing tape cartridges and changing backup software definitions may be required.
- If the logical library design (such as the number of slots) is changed, the backup software license may be affected. Refer to handbooks from each ISV before changing.
- To use the logical libraries, an additional option is necessary.
- Make sure to design the logical library configuration before creating logical libraries.



Do Not



### Malfunction

After defining the LT260 configuration in the backup software, the logical library configuration must not be changed. Changing the configuration may cause unexpected behavior of the backup software.

## 6.1.2 Hardware Configuration

This function logically partitions the slots, tape drives, mail slots to make it seem as if there are multiple tape libraries.

### ■ Number of Logical Libraries

By using the License Partitioning Option, a single tape library can seem to have up to 20 logical libraries.

### ■ Assigning Slots

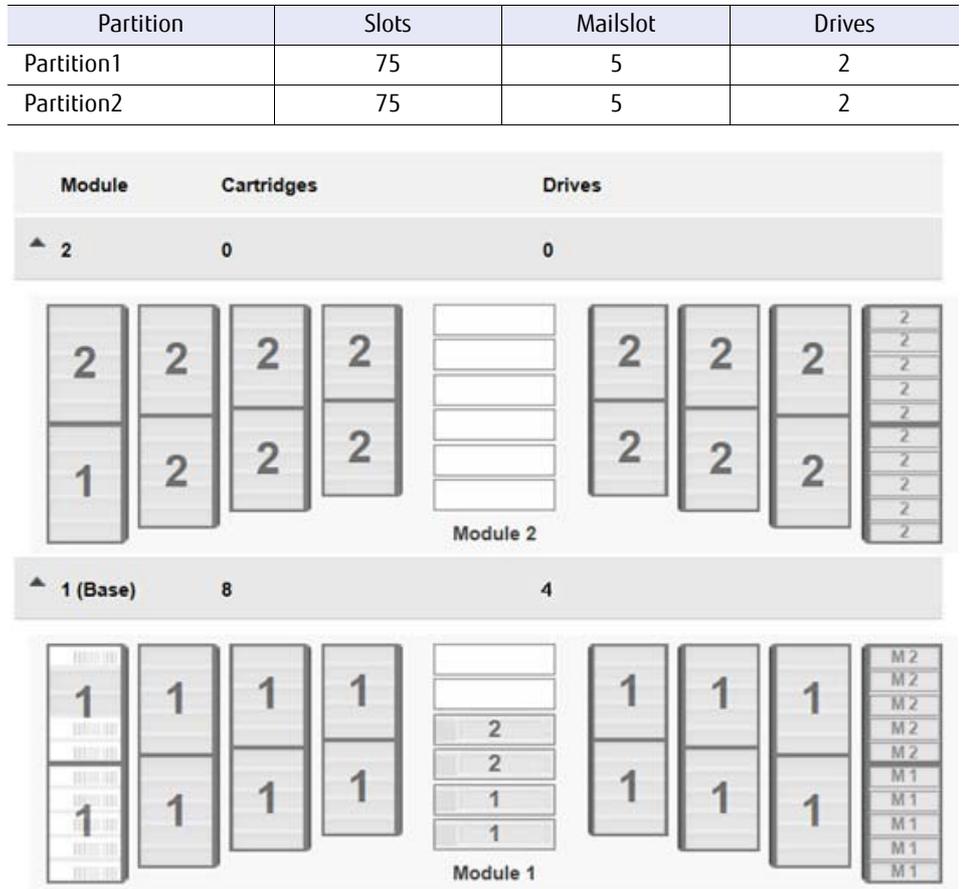
Five slots are assigned to each partition.  
The following two methods are available for assigning slots.

- Basic Partition Wizard  
You specify the number of partitions and the wizard removes the current partition configuration and assigns the drives and storage slots as evenly as possible to the partitions.
- Expert Partition Wizard  
You add or remove partitions from the current partitions configuration. Use the Expert Partition Wizard to adjust resource (slots and drives) assignments for existing partitions or those created with the Basic Partition Wizard.

Refer to ["6.1.3 Designing Logical Libraries" \(page 67\)](#) for details about operations.

To re-assign a larger number of resources than the assigned number of cells after setting the partition, tape cartridges in the cell that is to be added by re-assignment must be removed from the library to prevent the tape cartridge from being assigned to another logical library.  
 By preparing free slots by using the Expert menu, a new logical library can be added.

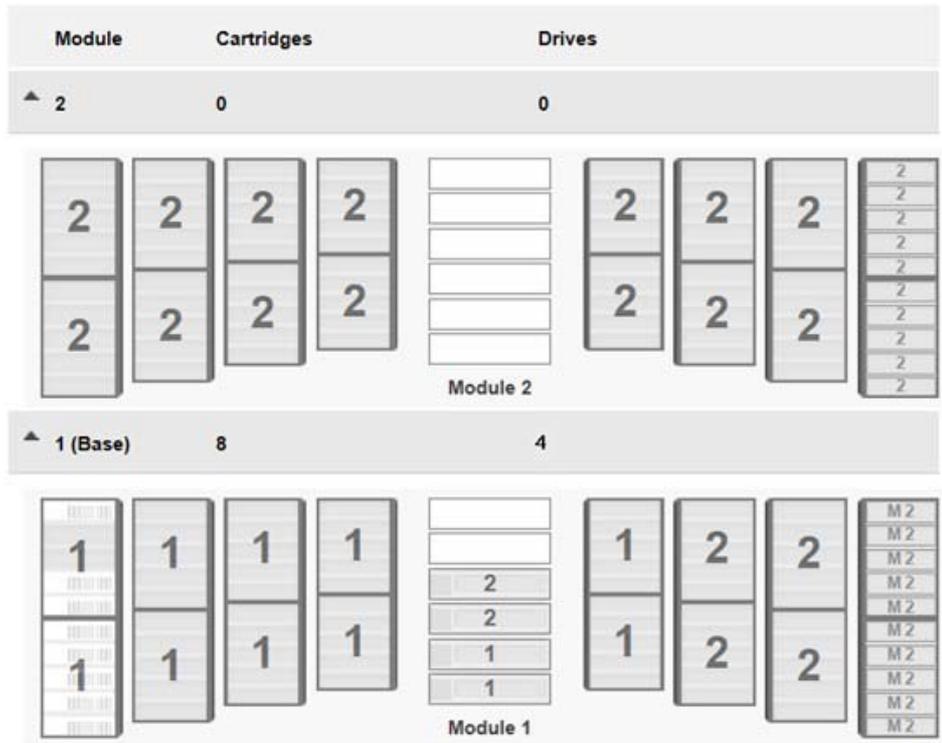
Figure 6.2 Example for partitioning cells: In the case that the Basic Partition Wizard is used



- Conditions when configuring:
- One Base Module and one Expansion Module
  - The Mailslot is available only for the Base Module
  - Four drives are mounted in the Base Module

Figure 6.3 Example for partitioning cells: In the case that the Expert Partition Wizard is used

Partition	Slots	Mailslot	Drives
Partition1	50	0	2
Partition2	100	10	2



- Conditions when configuring:
- One Base Module and one Expansion Module
  - The Mailslot is available only for the Base Module
  - Four drives are mounted in the Base Module

### ■ Assigning Drives

At least one drive must be assigned to a logical library. Although up to 42 drives can be mounted, the maximum number of logical library partitions is 20. A single logical library must be configured with drives from one of the Product ID groups described below. If the current configuration includes drives from both groups, configure multiple logical libraries and allocate the drives from each group to separate logical libraries.

- Product ID group A  
 LT26ASHE, LT26ASHL, LT26AFHE, LT26AFHL, LT26ASJE, LT26ASJL, LT26AFJE, LT26AFJL
- Product ID group B  
 LT26BSKE, LT26BSKL, LT26BFKE, LT26BFKL, LT26BSME, LT26BSML, LT26BFME, LT26BFML, LT26BSNE, LT26BSNL, LT26BFNE, LT26BFNL

## ■ Using Mailslots

Each Mailslot can be assigned to different logical libraries. One Mailslot has 10 slots. Take special care when assigning Mailslots to logical libraries.

To insert or eject tape cartridges from Mailslots by using backup software, operator panel, or remote panel, assigning Mailslots to logical libraries with these panels.

### ● Note

- Changing the backup software setting is not required when the assigning of Mailslots is changed.
- Note that the LT260 does not have multiple accounts for each logical library.

## 6.1.3 Designing Logical Libraries

---

To use the logical libraries, designing how to assign resources in a single library (slots and drives) to logical libraries is required in advance.

### ● Determining the number of logical libraries

Determine the number of logical library partitions that is to be created from the physical library. Up to 20 logical libraries can be created.

### ● Determining the name of logical libraries

After determining the number of logical libraries, decide the logical library name to manage logical libraries. Specify the logical library name as "Partition Name" in the LT260. Specify the logical library name with up to 16 alphanumeric characters.

### ● Determining the number of stored cartridges (slots)

Determine the number of slots to be assigned for each logical library in units of 5.

### ● Determining Mailslots

Determine the number of Mailslots to be assigned for each logical library in units of 1.

### ● Note

- Note that one drive cannot be assigned to multiple logical libraries.
- A single logical library must be configured with drives from one of the Product ID groups described below. If the current configuration includes drives from both groups, configure multiple logical libraries and allocate the drives from each group to separate logical libraries.
  - Product ID group A  
LT26ASHE, LT26ASHL, LT26AFHE, LT26AFHL, LT26ASJE, LT26ASJL, LT26AFJE, LT26AFJL
  - Product ID group B  
LT26BSKE, LT26BSKL, LT26BFKE, LT26BFKL, LT26BSME, LT26BSML, LT26BFME, LT26BFML, LT26BSNE, LT26BSNL, LT26BFNE, LT26BFNL

Table 6.1 An example of a layout for logical libraries

	Physical library (*1)	Logical library 1	Logical library 2
Connection server	-	Windows server	UNIX server
Logical library name (Partition Name)	-	Partition_1	Partition_2
Number of assigned slots (Partition Slots)	150 Slot (1.1-1.70) Slot (2.1-2.80)	50 Slot (1.1-1.50)	100 Slot (1.51-1.70) Slot (2.1-2.80)
Number of assigned Mailslots (Partition Mailslots)	10 Mailslot (1.71-1.80)	0	10 Mailslot (1.71-1.80)
Number of drives (Drive)	4 Drive (1-4)	2 Drive1, Drive2	2 Drive3, Drive4
Auto Clean	-	Disable	Disable

\*1: Conditions when configuring:  
 One Base Module and one Expansion Module  
 The Mailslot is available only for the Base Module  
 Four drives are mounted in the Base Module

## 6.1.4 Configuring Logical Libraries

After designing of the logical library completes, actually create the logical library.

### 6.1.4.1 Configuring Library Partitions

This operation is performed with the remote panel.

The LT260 has less-restricted adaptable partitioning methods.

- **Basic Partition Wizard**  
 You specify the number of partitions and the wizard removes the current partition configuration and assigns the drives and storage slots as evenly as possible to the partitions. Any extra drives or slots are assigned to the first partition.
- **Expert Partition Wizard**  
 You add or remove partitions from the current partitions configuration and then edit each partition configuration to add or remove library resources.  
 Use the Expert Partition Wizard to configure partitions that will have different resources or to adjust resource assignments for existing partitions or those created with the Basic Partition Wizard. Note that the auto drive cleaning function on each partition must be disabled.

For details about the operator panel and the remote panel, refer to "2.5.13 Configuring Library Partitions" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

### 6.1.4.2 Using the Basic Partition Wizard

#### Procedure

- 1** Move to the **Configuration > Partition** screen and click **Basic Wizard**.  
The **Basic Partition Wizard** appears.  
The **Information** screen displays the existing partitions, which will be deleted by the wizard.
- 2** Click **Proceed**.
- 3** Click **Next**.
- 4** The **Create Partition Scheme** screen displays the number of slots, Mailslots, tape drives, and maximum available partitions for the library.  

**Note**

If you want to enable or disable the Mailslots, Cancel out of the wizard and update the Mailslot configuration before configuring partitioning.
- 5** Select the number of partitions.
- 6** Select the number of barcode characters reported to the host application.  
This option provides interchange compatibility with libraries with more limited barcode reading capabilities. The maximum length is 15 and the default is 8. This configuration will apply to all partitions.  

**Note**

The industry standard length for LTO barcode labels is eight characters. Barcode labels longer than eight characters might be scanned incorrectly, particularly if they are not high quality labels.
- 7** Select whether to report the barcode characters from the left or right end of the barcode label to the host application when reporting fewer than the maximum number of characters.  
For example, when reporting only six characters of the barcode label "12345678", if alignment is left, the device will report 123456. If alignment is right, the device will report 345678. The default is left.
- 8** The auto drive cleaning function is not available. Make sure to leave the **Auto Clean** checkbox cleared.
- 9** Click **Next**.

**10** The **Finish Configuration** screen displays the proposed allocation of library resources into partitions.

- To update the configuration, click **Back**.
- To accept the wizard configure partition as shown, click **Finish**.  
After the wizard reconfigures the partition, the library will come on line automatically.
- To exit the wizard, click **Cancel** or **Exit**.

End of procedure

**Note**

You can use the Expert Partition Wizard to adjust the allocation of resources after creating the partitions with the Basic Partition Wizard.

### 6.1.4.3 Using the Expert Partition Wizard

Use the wizard to configure one partition at a time.

**Note**

If you want to enable or disable the Mailslots, Cancel out of the wizard and update the Mailslot configuration before configuring partitioning.

#### Procedure

**1** Move to the **Configuration > Partition** screen and click **Expert Wizard**.  
The **Expert Partition Wizard** appears.  
In the **Create Partition Scheme** screen, the current partitions (if they exist) as well as free resources are displayed.

**2** To add a partition, click **Add**.

**Note**

The Add button will only be active if there are available resources. If there are no available resources, either edit a partition and release resources from it or remove a partition that contains extra resources.

**3** Click **Next**.

**4** Enter a name for the partition.

- 5** Select the number of barcode characters reported to the host application.  
This option provides interchange compatibility with libraries with more limited barcode reading capabilities. The maximum length is 15 and the default is 8. This configuration will apply to all partitions.  

 **Note**

The industry standard length for LTO barcode labels is eight characters. Barcode labels longer than eight characters might be scanned incorrectly, particularly if they are not high quality labels.
- 6** Select whether to report the barcode characters from the left or right end of the barcode label to the host application when reporting fewer than the maximum number of characters.  
For example, when reporting only six characters of the barcode label "12345678", if alignment is left, the device will report 123456. If alignment is right, the device will report 345678. The default is left.
- 7** The auto drive cleaning function is not available. Make sure to leave the **Auto Clean** checkbox cleared.
- 8** Click **Next**.
- 9** In the **Assign Storage Slots** screen, use the >> and << buttons to assign slots to the new partition and then click **Next**.
- 10** In the **Assign Mail Slots** screen, use the >> and << buttons to assign Mailslots to the new partition and then click **Next**.  
Individual Mailslot elements cannot be shared between partitions. Importing or exporting cartridges in a partition without an assigned Mailslot will require magazine access. Opening a magazine will take the library off-line.
- 11** In the **Assign Drives** screen, use the >> and << buttons to assign drives to the new partition and then click **Next**.
- 12** If the partition has multiple tape drives, select the drive that will host the SCSI communication for the partition and then click **Next**.  
The lowest numbered drive in the partition is the default.
- 13** Verify the partition configuration and then click **Finish**.  
After the wizard reconfigures the partition, the library will come on-line automatically.

**End of procedure**

## 6.2 Key Management Function Option

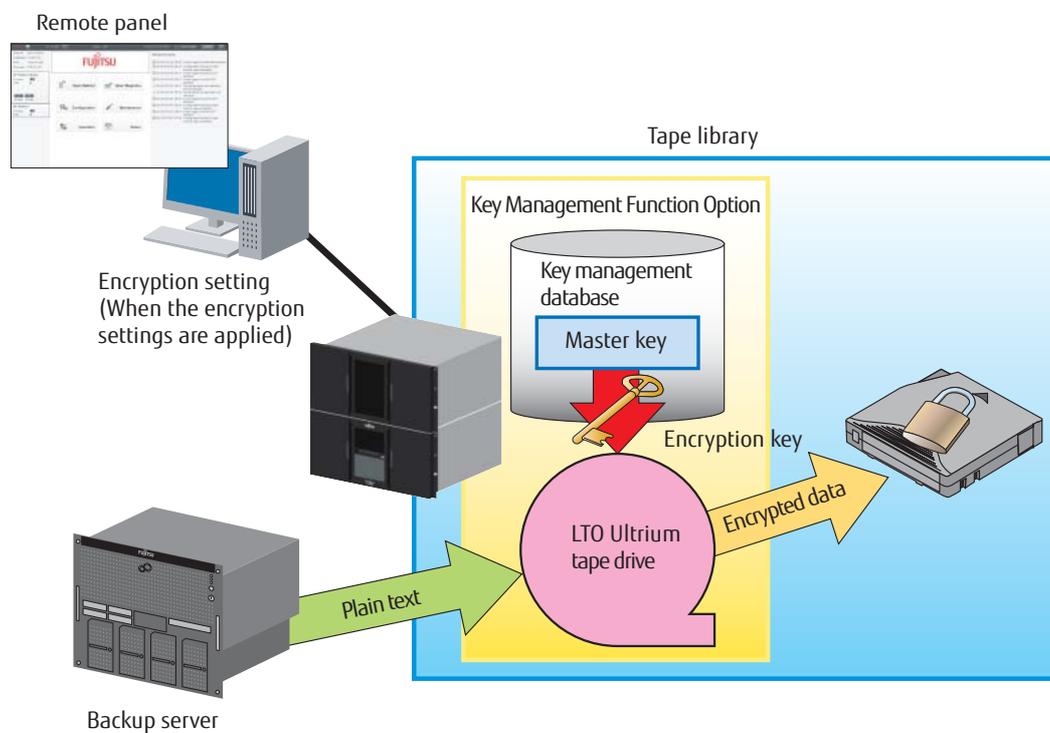
This section explains the Key Management Function Option.

### 6.2.1 Overview

The Key Management Function Option allows the use of the encryption function provided by LTO Ultrium tape drives to manage encryption keys on the tape library.

[Figure 6.4](#) shows the concept of this option.

Figure 6.4 Key Management Function Option



The Key Management Function Option applies the encryption settings from the remote panel to the tape library and assigns one key called the master key. The encryption key that is automatically generated for each data cartridge by the tape library is based on the master key, and this information is stored in a database in the tape library.

During a data backup from a backup server, the tape library automatically assigns an encryption key to the specified data cartridge, encrypts the data (plain text), and saves the data. The encryption process is performed transparently during this time.

 **Caution**

The following tape drives and tape cartridges are required to use the Key Management Function Option:

- LTO Ultrium 5 (G5) or later tape drives
- LTO Ultrium 4 (G4) or later tape cartridges

For other required optional products, refer to "FUJITSU Storage ETERNUS LT260 Tape Library Product List". For more details about tape cartridges, refer to ["A.1 Ultrium Tape Cartridge" \(page 98\)](#).

 **Note**

To use the key management function, purchasing the Key Management Function Option is required.

## 6.2.2 Features of the Key Management Function Option

This option has the following features:

- The Key Management Function Option can be used independently of the OS and backup software because the LT260 automatically performs encryption operations. This allows a secure backup system to be easily constructed (\*1).
- Encryption keys are assigned to tape libraries from the Web browser terminal. This means that the tape library administrators can maintain security without intervention by backup operators.
- When a single key (master key) is assigned to a tape library, an encryption key is automatically assigned to each data cartridge within the tape library. This means that the administrator does not need to manage the encryption keys of each data cartridge.
- The ETERNUS LT220, LT230, LT250, LT260, LT270, and LT270 S2 in the ETERNUS tape library series have compatible master keys (\*2), so setting a common master key for these tape libraries facilitates data sharing or data migration of encrypted tape cartridge data between the tape libraries.
- To share data among multiple tape libraries, Fujitsu recommends operation with a common master key. If a disaster occurs, however, it might be necessary to read data from a data cartridge stored at an external site using a tape library assigned a different master key. For this purpose, you can export encryption keys in advance using the encryption key export/import function.

\*1: This encryption function cannot be used together with the encryption function of the backup software.

\*2: The ETERNUS LT20, LT20 S2, LT40, LT40 S2, LT60, LT60 S2, LT200, LT210 do not support the encryption key management function. Note that sales of the ETERNUS LT220, LT230, LT250, and LT270 tape libraries have been discontinued.

### 6.2.3 Types of Key

---

There are two types of encryption keys; a master key that is required for each LT260 and an encryption key that is assigned for each tape cartridge in the tape library.

#### ■ Master key

The master key is a key assigned to each tape library.  
You must assign a master key before using this option.  
The functions of a master key are listed below.

- The master key is used to automatically create encryption keys for individual data cartridges (\*1).
- The same master key can be assigned to multiple tape libraries. A data cartridge that stores encrypted data can be shared between multiple tape libraries by setting the same master key for these tape libraries.
- The master key can be set by the administrator of the tape library.

\*1: Since automatically generated master keys are managed by the tape library alone, their values are not visible to users.

The two methods of creating a master key are as follows: automatic generation by the LT260 and creation by the user using arbitrary characters.

If you choose automatic generation, a master key is created based on information that is specific to the tape library. The same master key as already assigned to another tape library is never created. Master keys, once created, cannot be restored even by the manufacturer or maintenance engineer.

Although the master key is stored redundantly in the database of the tape library, it may be lost in the rare event that the tape library fails. Because the encrypted data will cease to be readable in such a case, be sure to download the master key (to a binary file) and keep it in a safe place.

#### ■ Encryption key

An encryption key is a key uniquely assigned to each data cartridge.

Encryption keys are automatically generated based on the master key and the data that is unique to each data cartridge. This assures that different data cartridges never have the same encryption key.

If the same master key and the same tape cartridge are used in different tape libraries, the tape libraries will generate the same encryption key for the cartridge.

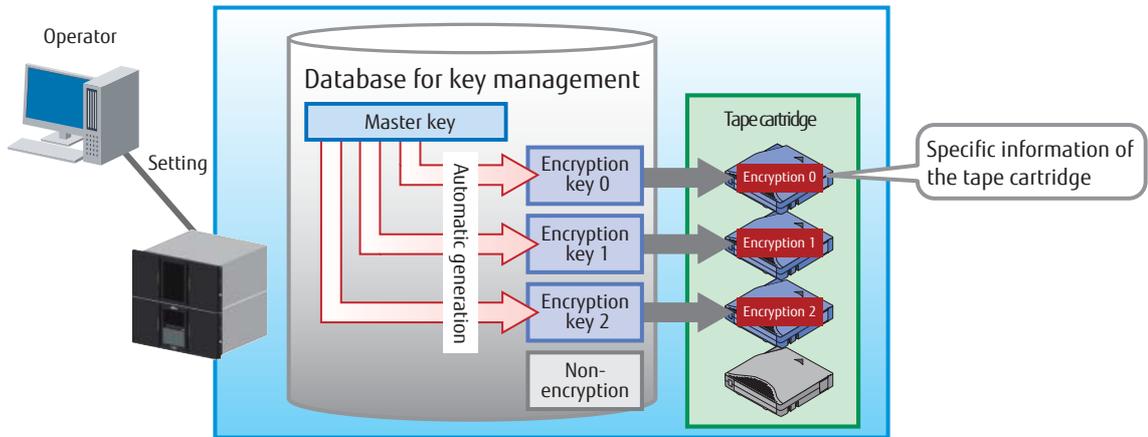
Each data cartridge can be assigned only one encryption key.

In normal operation, the tape library performs encryption key operations automatically, without requiring any operations by the user.

#### ▶ Caution

The encryption key export/import function can be used to export or import only an encryption key (a password and encrypted binary file) for data sharing between tape libraries with different master keys. However, note that if the encryption key is lost, the data can no longer be restored. To share data among multiple tape libraries, Fujitsu recommends operation with a common master key.

Figure 6.5 Concept of automatic encryption key generation



## 6.2.4 Operational Examples

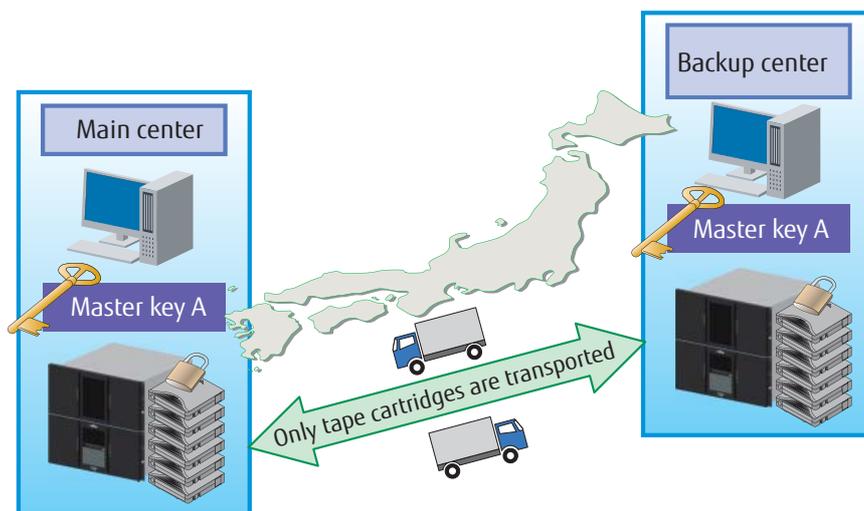
Data encryption by the Key Management Function Option does not affect normal operation.

This section provides some examples of using the Key Management Function Option, including storage of an encrypted data cartridge at another site and data sharing among multiple tape libraries.

### ■ Data sharing between centers

Assigning the same master key for multiple tape libraries installed at the same center or separate centers enables these tape libraries to share data cartridges with encryption keys hidden from view.

Figure 6.6 Sharing data cartridges using a master key



■ Encryption of data on a data cartridges stored at an external location

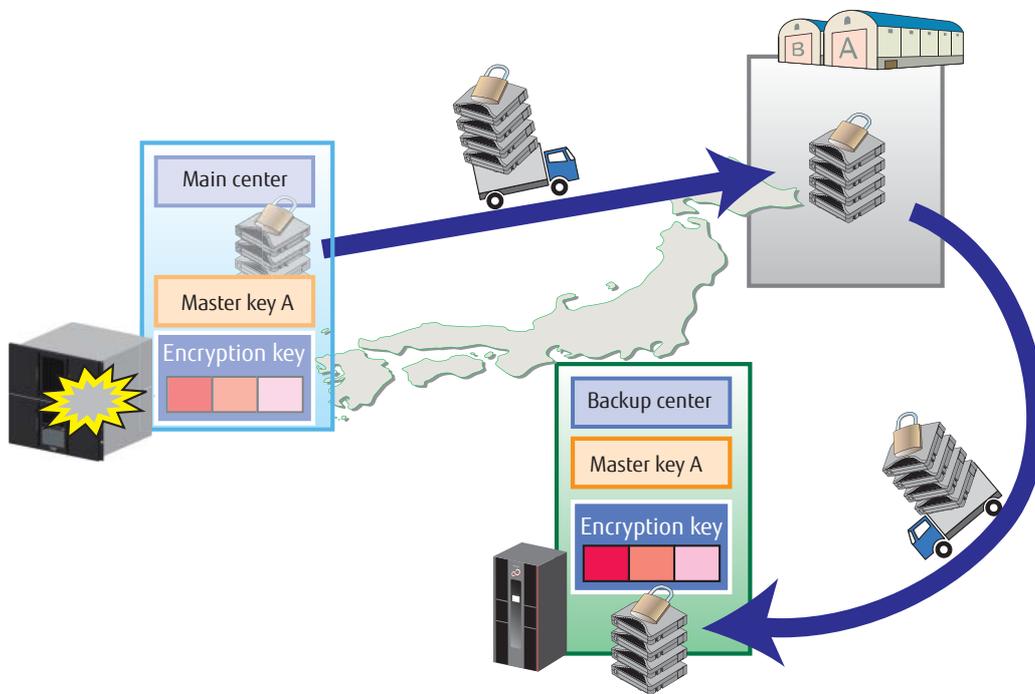
For disaster recovery, encrypted data cartridges can be stored at an external location, such as an external warehouse, and, when needed, brought back to read the data on them. Even if a data cartridge in storage is lost or stolen, the encryption can prevent data leakage.

Once a data cartridge in storage is inserted into its original tape library or one with the same master key, the data can be read from the tape library without setting the key again.

**Note**

Once encryption keys are exported, even if the tape library becomes unavailable such as in the event of a disaster, data on the data cartridge can be read by importing the encryption key to a tape library with a different master key.

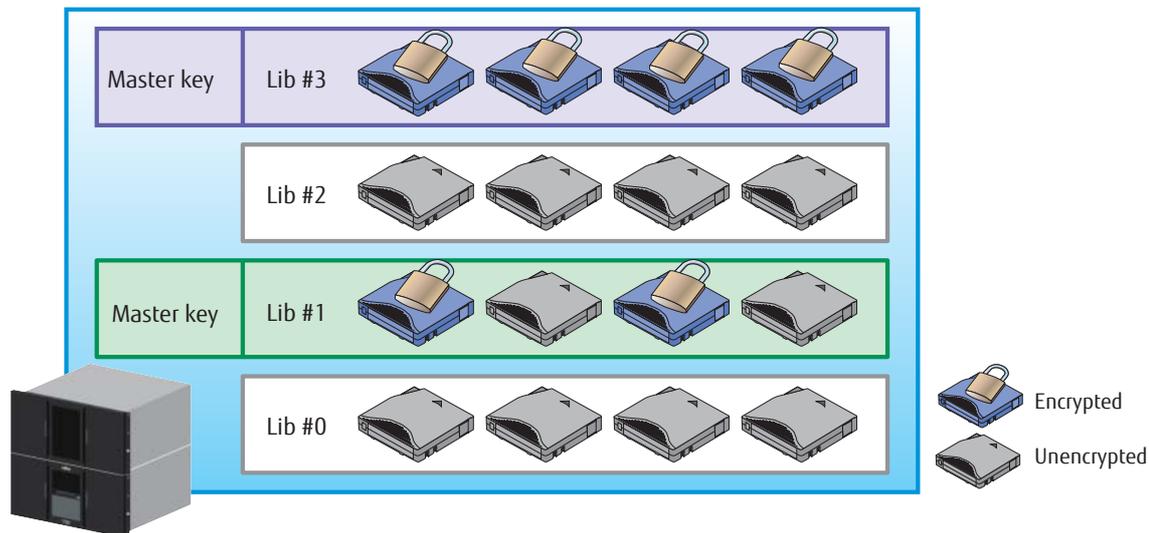
Figure 6.7 External storage of data cartridges



■ Encryption key setting for each logical library

When using the logical library configuration, individual master key assignments and encryption/non-encryption can be specified for each logical library.

Figure 6.8 Encryption key setting for each logical library



### ■ Interoperation among LT-series models

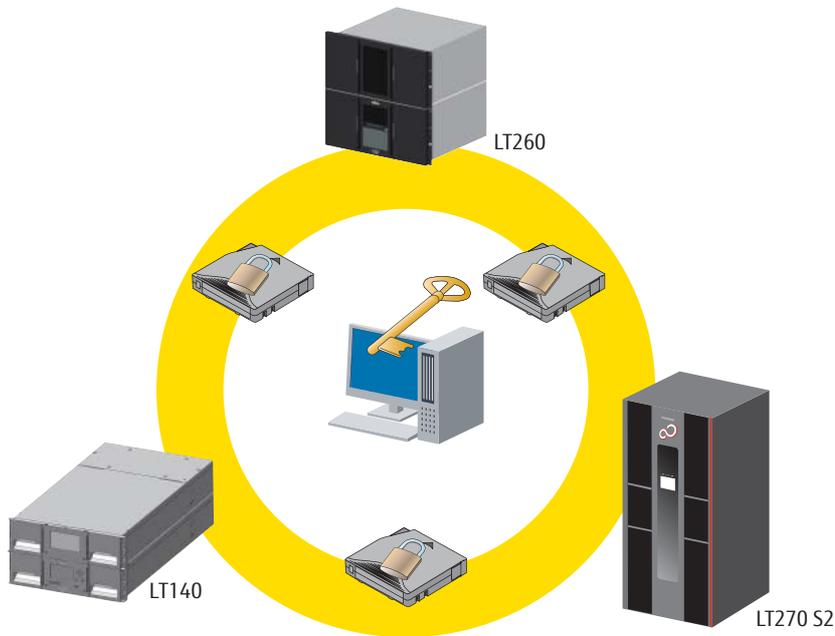
The ETERNUS LT140, LT220, LT230, LT250, LT260, LT270, and LT270 S2 tape libraries (LT-series) share compatible master keys and encryption keys, so keys and encrypted data cartridges can be shared among the LT-series tape libraries.

Setting a common master key for these tape libraries facilitates data sharing or data migration between the tape libraries with the keys hidden from view.

**▶ Caution**

- The Key Management Function Option does not support interoperability with data cartridges encrypted by the encryption function of tape libraries, software, or other products manufactured by other companies.  
Refer to ["Table A.3 Tape drive compatibility with data cartridges" \(page 100\)](#) for details.
- Sales of the ETERNUS LT220, LT230, LT250, and LT270 tape libraries have been discontinued.

Figure 6.9 Interoperation among LT-series models



### 6.2.5 Connectivity with Backup Software

On a system using the encryption key management function, Fujitsu recommends using verified backup software.

Make sure to disable the native encryption function of the backup software if a backup software that supports the tape drive encryption function of Ultrium 5 or later is used.

# Chapter 7

## Troubleshooting

This chapter explains troubleshooting.

### Caution

This library is designed to operate when installed in a rack using the rack rail kit. Operating the library without installing it in the rails, such as on a table or rack shelf, could result in library errors. Placing any weight on top of the library might also cause errors.

## 7.1 Fibre Channel Connection Problems

Use the **Status> Drive Status** screen to check the link connection for your tape drive.

### ■ If the screen shows Logged Out:

- Check that the Fibre speed is set to Automatic or that the correct Fibre speed is selected. If you are unsure of the speed of the HBA or switch that the drive is connected to, try Automatic.
- Check that the correct port type, fabric or loop, is selected. Loop requires additional configuration. If you are unsure of the correct port type, try Automatic.

### ■ If the screen shows No Link, the Speed Status is "-" and the Link LED on the back of the drive is off:

The speed is probably set incorrectly. Try setting the speed to Automatic. If there are still issues, change the port type to Auto Detect.

### ■ If the screen shows No Light:

- The cable is not plugged in correctly. Check that it is connected correctly to Port A of the tape drive.
- The cable is damaged. FC cables are delicate. If the cable has been bent or twisted sharply, it might be broken and must be replaced.

### ■ If the screen shows ALPA Conflict:

There might be a conflict with the ALPA address on Loop ports. Select Soft for the Loop mode to allow the system to select an available address each time the tape drive connects to the FC fabric. If your server configuration does not support changing addresses, try using the Hard Auto-Select Option for the Loop mode. This allows the system to select an available address when it first connects, and then retain that address for future connections.

## 7.2 Detection Problems after Installing a SAS Drive

Problems encountered after installation are often caused by improper SAS cable connections, application software configuration errors, or an incorrectly configured operating system. If the application software or operating system does not communicate with the library after installation, determine the extent of the detection problem:

- Does the application software detect the tape drive?
- Does the application software detect the library?
- Does the operating system detect the tape drive?
- Does the operating system detect the library?
- Does the operating system detect the library, but list it as a generic device?

Based on the extent of the detection problem, check the following:

■ If neither the application software nor operating system detects the tape drive, or they do not detect both the tape drive and the library:

- Verify that all SAS cables are securely connected on both ends. If the mini-SAS connectors that connect to the tape drive and some HBAs will not plug in, check the key. The mini-SAS connector on the tape drive is keyed at location four, which is the standard location for end devices. If the connector on the cable is keyed in a different location, not only will the connector not plug in, but the cable probably will not work.
- Check the length and integrity of your SAS cabling. For reliable operation, do not use a SAS cable longer than six meters. Do not use a cable adapter or converters between the HBA and the library.
- Check the SAS connectors for damage or debris.
- Verify that your HBA is supported by the host computer and qualified with the library.
- Verify that your HBA has the latest firmware.

■ If the application software or operating system detects the tape drive, but not the library:

Verify that multiple LUN support is enabled on the HBA. The library uses two Logical Unit Numbers (LUNs) to control the tape drive (LUN 0) and robotic (LUN 1). The library requires an HBA with multiple LUN support and multiple LUN support must be enabled on the host computer. When multiple LUN support is not enabled, the host computer can see the tape drive, but not the library.

 **Note**

Many RAID or array controllers do not provide multiple LUN support.

■ If the application software or operating system does not detect any devices on the HBA:

- Verify that the SAS host adapter is installed correctly. Refer to the manual that came with your host adapter for installation and troubleshooting instructions. Pay particular attention to any steps describing configuration settings. Make sure that the host adapter is properly seated in the motherboard slot and the operating system correctly detects the host adapter.
- Verify that the proper device driver is installed for the SAS host adapter.

■ If the library is detected by the operating system, but not by the application software:

Refer to the documentation included with your backup application for instructions on how to verify proper installation. Some backup software packages require an additional module to communicate with the robotics.

■ If the library is detected by the operating system, but is listed as an unknown or generic device:

- Make sure that the proper device driver, if applicable, is installed for the device. Check your software provider's website for the latest drivers and patches.

 **Note**

Many backup applications use their own drivers. Before installing a driver, make sure it is not in conflict with the application software.

- If you continue to have problems with a SAS library, check the following:
  - Ensure that the library is compatible with the SAS host adapter and backup application you plan to use.
  - Verify that your HBA is supported by the host computer and qualified with the library.
  - Ensure you are using a compatible, high-quality cable.

## 7.3 Operation Problems

This section describes problems that may occur during operation and how to resolve them.

### 7.3.1 Power Problems

- Device does not power on.

Perform the following procedure:

#### Procedure

- 1 Check all power cord connections.
- 2 Check the LEDs on the power supplies.
- 3 Make sure the power button on the front panel has been pressed, and the green Ready LED is lit.
- 4 Make sure the outlet has power. Try another working outlet.
- 5 Replace the power cord.

End of procedure

- No message appears on the operator panel display.

Perform the following procedure:

#### Procedure

- 1 Check all power cord connections.
- 2 Check the LEDs on the power supplies.
- 3 Make sure the power button on the front panel has been pressed, and the green Ready LED is lit.
- 4 Make sure the outlet has power. Try another working outlet.

End of procedure

## 7.3.2 Failure/Attention Indications Displayed on the Operator Panel

---

- The operator panel displays a warning or error icon.  
Tap the icon to see more information about the event on the operator panel.

## 7.3.3 Tape Movement Problems

---

- Tape stuck in drive.  
Try the following steps, in this order, to remove the stuck tape.

### Note

The tape drive must rewind the tape before ejecting it. This can take as long as five minutes, depending on how much tape must be rewound. Once the tape is rewound, the eject cycle will take fewer than 16 seconds.

The Ready light flashes while the tape rewinds. Wait for the tape to finish rewinding before attempting another operation.

### Procedure

- 1 Attempt to unload the tape from your backup software.
- 2 Shut down the backup software and stop the operating system's removable storage services. From the **Operation > Move Media** screen, attempt to unload or move the tape to a slot.
- 3 Power down the library, disconnect the cable from the drive, power up the library, and wait until the tape drive is idle or ready. From the **Operation > Move Media** screen, attempt to unload or move the tape to a slot.
- 4 From the **Operation > Force Drive Media Eject** screen, attempt a force eject or emergency unload operation.

End of procedure

### IMPORTANT

Inspect the tape cartridge that was stuck. Damage or misplaced labels on the cartridge could have caused the load/unload failure. Discard any tape cartridge found to have issues.

- Tape cannot be removed from slot.

If the operator panel or remote panel is still operational:

#### Procedure

- 1 Unlock the magazine from the **Operation > Open Magazine** screen and extend it to access the slot.
- 2 Grasp the cartridge and remove it from the slot. Some tapes need to be inserted and removed several times to condition them for free movement in and out of the magazine.
- 3 Check the barcode label and verify that it is secure to the cartridge.
- 4 Check the cartridge for damage.
- 5 Check the slot for damage.

End of procedure

### 7.3.4 Media Problems

- Cleaning or data cartridge incompatible with drive.
  - Check the event log to see which cartridge is incompatible.
  - Make sure you are using data and cleaning cartridges that are compatible with the drive and model of your device and that you are using the correct cartridge type for the operation. The device automatically unloads incompatible cartridges, the Attention LED flashes. Export the media.
- Cannot write to or read from tape.
  - Make sure that the cartridge is not a WORM cartridge that has already been used.
  - Make sure that the cartridge is write enabled (move the write-protect switch to the enabled position).
  - Make sure the data cartridge is compatible with the drive model. LTO tape drives can read data cartridges from two generations back and write to data cartridges one generation back.
  - Make sure you are using an Ultrium cartridge that has not been degaussed. Do not degauss Ultrium cartridges!
  - Make sure that the cartridge has not been exposed to harsh environmental or electrical conditions and is not physically damaged in any way.
  - Many backup applications do not read or write to cartridges that were created using a different backup application. In this case, you may have to perform an erase, format, or label operation on the cartridge.
  - Make sure you understand any data protection or overwrite protection schemes that your backup application may be using, which could prevent you from writing to a given cartridge.
  - Retry the operation with a different, known good tape.
  - Clean the tape drive from the **Operation > Clean Drive** screen.

## 7.3.5 Attention LED is Lit

---

- Both the Attention and Cleaning LEDs are lit.

This is most likely caused by a dirty drive that cannot read a tape and marks the tape invalid. Log into the operator panel or remote panel and check the event log to see which drive has reported that it needs cleaning. Clean the drive with an approved Ultrium cleaning cartridge.

- A particular cartridge sets off the cleaning light.

Remove the cartridge from the library.

- A cartridge recently imported from a different environment is causing issues.

Media that is moved from one environment to another can cause issues until it has acclimated to the new conditions. A cartridge should be acclimated for at least 24 hours before being used, particularly if it has been stored at a substantially different temperature or level of humidity than the device.

- The Attention LED is lit but the Cleaning LED is not lit after a cartridge load.

The library was unable to complete the requested operation with the selected tape cartridge.

- Use only cartridges that are compatible with the drive type.
- Use the correct type of cartridges for the operation. For example, use a cleaning cartridge for cleaning.
- Make sure you are using an Universal cleaning cartridge.

- The Cleaning LED is lit after using a cleaning cartridge.

The cleaning cartridge has expired. A cleaning cartridge will expire after approximately 50 cleaning cycles.

- A particular cartridge sets off the Attention LED and possibly the Cleaning LED.

Retry the operation with a different cleaning cartridge.

If the Attention LED is cleared and the drive has been cleaned, and then immediately re-displays each time a particular cartridge is reloaded, that cartridge should be suspected as being defective.

- If this occurs, export the cartridge and load a known good cartridge. In some cases, a cartridge can be worn out, have a defective Cartridge Memory, or have been formatted as a Firmware Upgrade Cartridge.
- Any cartridge that is suspected of being defective or contaminated should NOT be reused in any drive.
- If the bad cartridge is a cleaning cartridge, it might be expired.

## 7.3.6 Turning Off the Attention LED

---

The Attention LED that is turned on with the warning event may turn off automatically in the conditions described below, but a manual operation is required to turn it off for all other cases. Note that most of the warning events require manual operation to turn the Attention LED off.

The following events do not require manual operation to turn the Attention LED off.

- Events related to cleanings (Event code: 4002, 4008, 4067, 4068, and 4072)
- Events related to the fan status (Event code: 4000, 4071, and 4096)
- Event related to drive disconnections (Event code: 4021)

The following procedure shows how to manually turn the Attention LED off.

### Procedure

- 1 Login to the library with administrative privileges.
- 2 Move to **Maintenance > Logs and Traces > View Logs** screen.
- 3 In the **Event Ticket Log** screen, click **Close all open tickets**.  
A confirmation screen (pop-up screen) related to the Close Tickets operation appears.
- 4 Click **Close all open tickets**.  
Logs displayed in the **Event Ticket Log** screen are cleared.

End of procedure

## 7.3.7 Inventory Problems

---

- The library displays incorrect bar codes.
  - Verify that the label is properly applied.
  - Verify that the label is not soiled.

## 7.3.8 Remote Panel Network Connection Issues

---

### ■ Cannot connect to the remote panel.

- Verify that the Ethernet cable is connected to the Base Module's library controller and to the LAN.
- Verify that the link LED on the RJ45 (LAN) connector is lit when the device is powered up. If the LED is not lit, the device is not communicating with the LAN. See your network administrator for help.
- Verify that the device has been configured with a valid static network address or DHCP has been enabled so the device can obtain a network address. If using DHCP, write down the device's network address from the operator panel login screen. If the device did not obtain a valid address via DHCP, verify that the DHCP server is up and the library has network access to it. If necessary, set a static network address instead.
- Enter the library's IP address into the address bar of a web browser connected to the same LAN as the device. If the remote panel web page does not display, ping the device's IP address. If the ping fails, verify that the device has a valid network address and that there are no firewalls or other obstructions to network traffic between the computer with the web browser and the device. See your network administrator for help.

## 7.3.9 Cleaning Problems

---

### ■ Cannot load the cleaning cartridge.

- Make sure you are using an Ultrium cleaning cartridge.
- Make sure the cleaning cartridge has not expired. The cleaning cartridge will expire after approximately 50 cleaning cycles.
- Power cycle the library.

## 7.4 Performance Problems

The process of backing up files involves many system components, from the files in the file system on the disk, through the backup server, and out to the library, all managed by software running on an operating system. The backup process can only run as fast as the slowest component in the system.

Performance issues are solved by identifying and addressing performance limitations in your system. Refer to sections below for the following potential performance limitations:

- [Average File Size](#)
- [File Storage System](#)
- [Connection from the Backup/Archive Host Server to the Disk Storage System](#)
- [Backup/Archive Server](#)
- [Backup/Archive Software and Method](#)
- [Connection from the Archive/Backup Host Server to the Library](#)
- [Media](#)

### 7.4.1 Average File Size

The hard drive must seek to the position of a file before it can start reading. The more time the disks are seeking to files, the lower the performance. Therefore, if the average file size is small, the read performance will be lower.

To determine the average file size, divide the size of the backup by the number of files.

If the average file size is small (64 KB or less), consider using a sequential, image, or block backup method that backs up the whole hard drive or LUN image instead of individual files. The trade off for using one of these methods is that you might only be able to restore the entire image instead of individual files.

#### Note

File fragmentation will also cause excessive drive seeking, which lowers performance, so ensure that files are regularly defragmented.

### 7.4.2 File Storage System

The file storage system determines the organization of the files on the disks. Using RAID controllers to spread files over multiple disks can improve performance because some disks can be seeking while others are reading. Storing files on a single non-RAID disk results in the slowest performance while storing files on a high-end Disk storage system results in the fastest performance.

Converting standalone disks to RAID can improve performance.

### 7.4.3 Connection from the Backup/Archive Host Server to the Disk Storage System

---

The connection between the host server and the disks determines how much data can be transferred from the disks to the host computer at a time. A connection with insufficient bandwidth cannot provide enough data for the tape drives to write at full speed. For optimum performance, the storage subsystem must be able to provide data at the tape drive's maximum transfer rate.

Backup systems using a lower speed Ethernet network should use multiple network connections.

### 7.4.4 Backup/Archive Server

---

The backup server must have enough RAM and processor power to transfer the files from the disk to the tape drive, in addition to running the backup or archive software and any other processes.

Check the RAM and processor usage during a backup operation. If they are operating at capacity, adding RAM or processor capability can improve performance.

### 7.4.5 Backup/Archive Software and Method

---

Each backup method has its own impact on performance, depending on how well it can keep data streaming to the tape drive. In most cases, native applications don't have the features required to maximize performance for LTO tape drives. It is recommended to use a full-featured backup or archive application with this library.

File-by-file backup or archive methods provide the best restore performance if you only need to restore individual files. However, if the average file size is small, file-by-file methods will significantly reduce performance.

Disk image, flash, or sequential backup methods provide the fastest performance because they back up an entire disk, partition, or LUN, which minimizes disk seeking. The disadvantage is that backup and restore operations work on an entire disk, partition, or LUN. You might not be able to back up a subset of files or restore a single file. If you can restore a single file, the restore process will be slow.

Database backup performance will vary based on the use model. To improve performance when backing up data from a database:

- Use specific backup agents for the database.
- Use the latest versions of the databases.
- Do not back up individual mailboxes.
- Do not back up specific records or do a record-by-record backup.
- Do not back up when the database is in heavy use.

### 7.4.6 Connection from the Archive/Backup Host Server to the Library

---

For the best performance, the connection from the host server to the library must have enough bandwidth to provide enough data to keep the tape drive streaming. Current LTO tape drives take advantage of some of the fastest interfaces available so the type of interface used to connect the library to the host server is not likely to be the cause of a performance issue. However, issues with cables and connectors can limit performance.

Do not exceed recommended cable lengths.

## 7.4.7 Media

---

The type and condition of the media also affect backup performance. For best performance, use media that is the same LTO generation as the tape drives.

## 7.5 Finding Event Information

---

You can find error codes by viewing log files from the **Maintenance > Logs and Traces > View Logs** screen or downloading support tickets from the **Maintenance > Download Support Ticket** screen. Refer to "2.6.2 Viewing Log Files" or "2.6.5 Downloading Support Tickets" in "Fujitsu Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

## 7.6 Unlocking the Magazine

---

It is recommended that you unlock the magazine using the operator panel or remote panel. If these methods fail, or if a magazine needs to be removed when the power to the device is off, you can release the magazine manually. Only one magazine or Mailslot can be open at a time.

### Note

As a best practice, perform this procedure while applications are idle. While the magazine is extended, the library robotic assembly cannot move media.

### 7.6.1 Using the Operator Panel

---

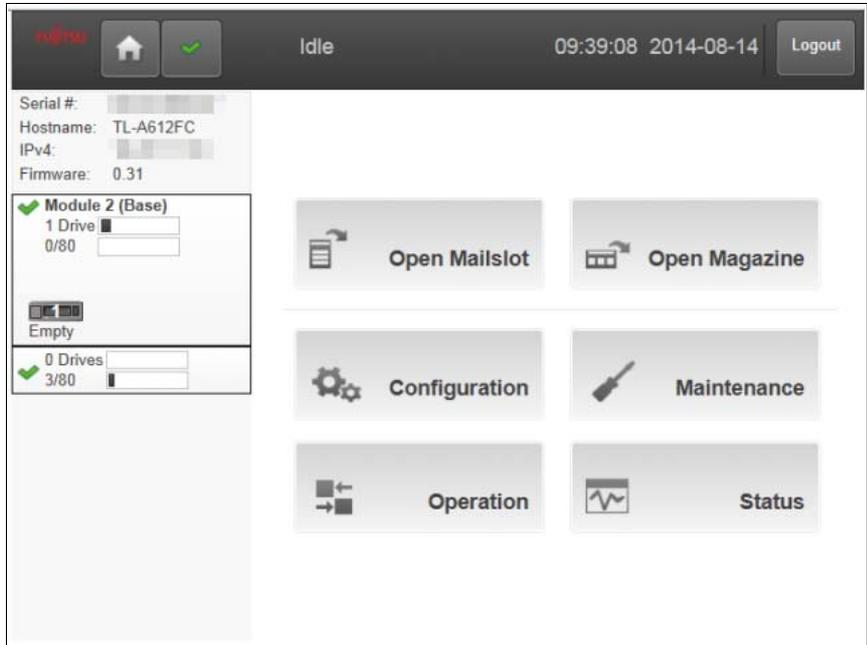
This section describes how to unlock the magazine using the operator panel.

#### Procedure

- 1 Log in as an administrator.

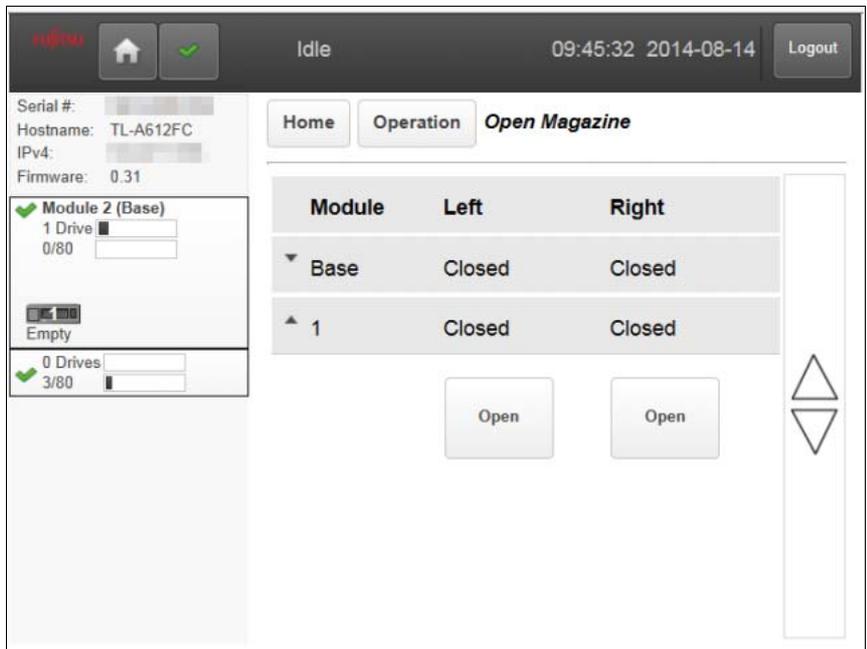
2 On the Home screen, tap **Open Magazine**.

Figure 7.1 Main screen of operator panel



3 Tap **Open** in the left or right magazine column within the module containing the magazine to be replaced.

Figure 7.2 Open Magazine screen



- 4 Tap **Submit**. A message box indicates when the magazine has been unlocked.
- 5 Tap **OK** to close the message. The **Open Magazine** screen shows that the magazine is now unlocked.

**Note**

If not removed, the magazines and the Mailslot will relock after 30 seconds.

End of procedure

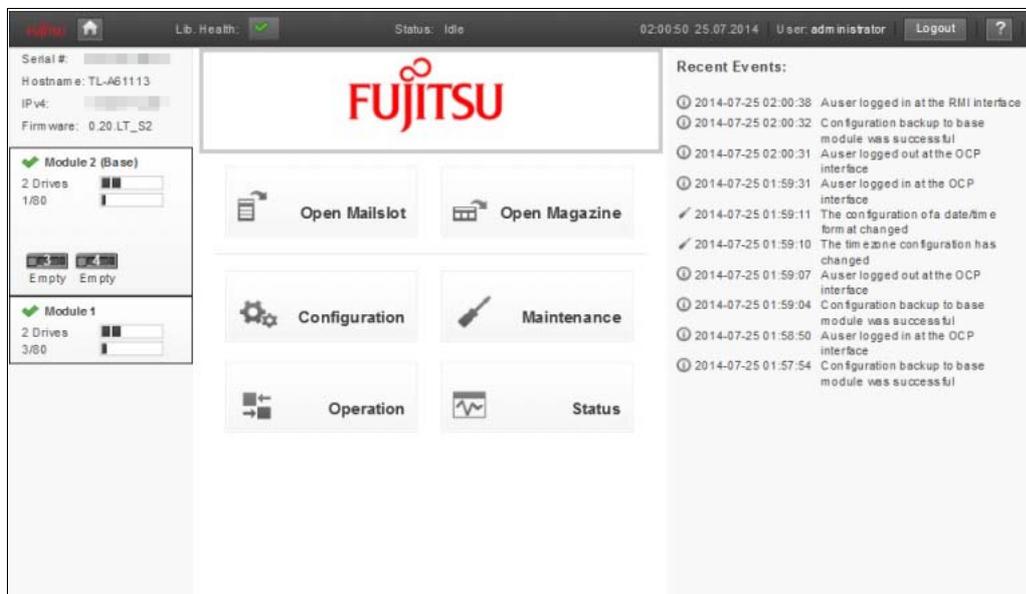
## 7.6.2 Using the Remote Panel

This section describes how to unlock the magazine using the remote panel.

### Procedure

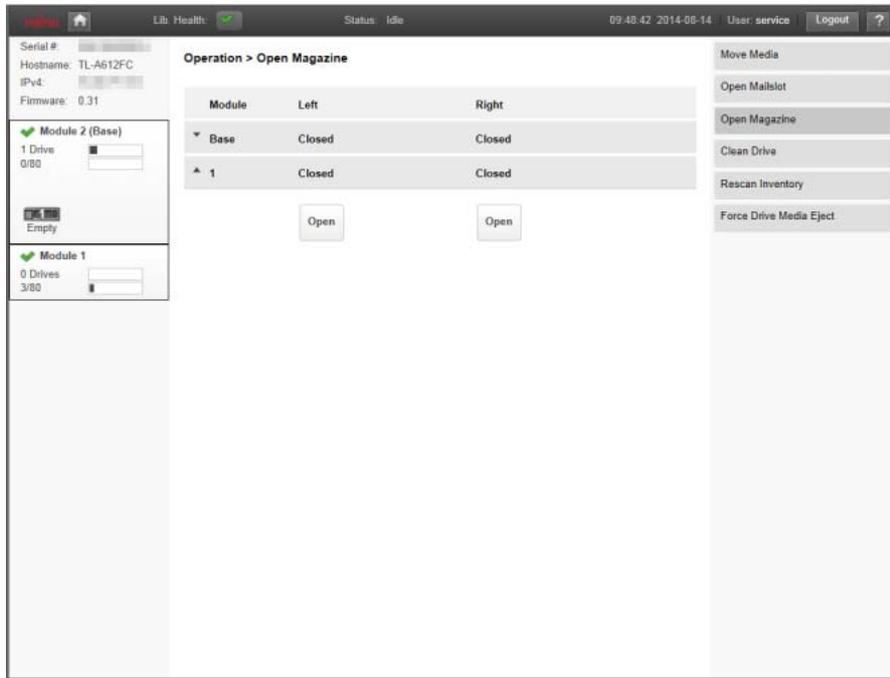
- 1 Log in as an administrator.
- 2 On the Home screen, click **Open Magazine**.

Figure 7.3 Main screen of remote panel



- 3 Tap **Open** in the left or right magazine column within the module containing the magazine to be replaced.

Figure 7.4 Open Magazine screen



- 4 Click **Submit**. A message box indicates when the magazine has been unlocked.
- 5 Click **OK** to close the message. The **Open Magazine** screen shows that the magazine is now unlocked.

**Note**

If not removed, the magazines and the Mailslot will relock after 30 seconds.

**End of procedure**

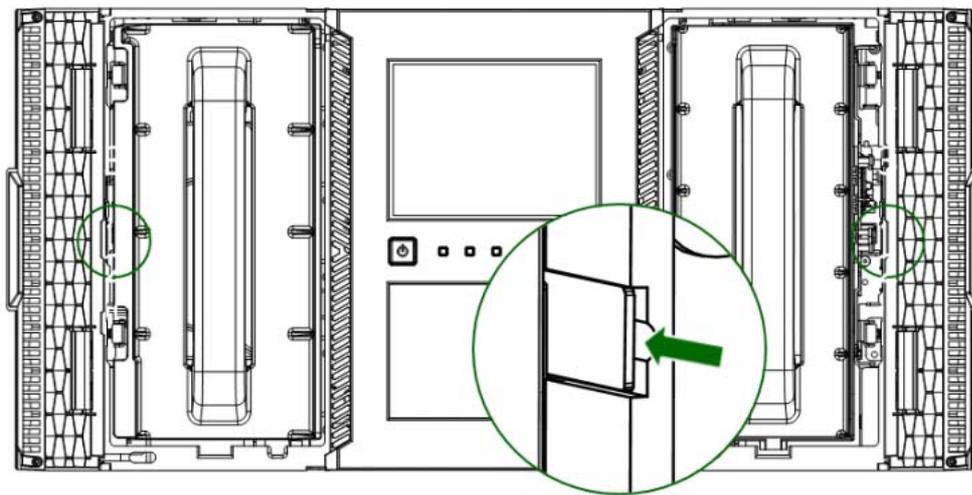
### 7.6.3 Using the Manual Release

This section describes how to manually unlock the magazine.

#### Procedure

- 1 Open the magazine access door.
- 2 Insert a small flat head screwdriver or Torx driver into the appropriate magazine release hole and gently push the tab in.

Figure 7.5 How to use the Manual Release



#### IMPORTANT

Do not exert force once you encounter resistance. Doing so can damage the device.

End of procedure

## 7.7 Unloading a Stuck Tape

If the tape is stuck in a tape drive, eject the tape from the drive from the **Operation > Force Drive Media Eject** screen.

If a tape is stuck in a magazine, open the magazine, grasp the cartridge, and pull it out of the slot.

## 7.8 Identifying a Failed Component

This section describes how to identify failed components.

### Procedure

- 1** Activate the UID LEDs from the **Maintenance > UID LED Control** screen.  
This will illuminate the blue LED on the front and rear of the Base Module to identify the library containing the failed module or component.
- 2** Identify which of the modules (Base or Expansion) in the library contains the failed component.
  - 2-1** In the upper left of the Home screen, locate the module that indicates an error.
  - 2-2** Click or tap the module for information on the failed component.

End of procedure

## 7.9 Returning the Robotic Assembly to the Base Module

If you have powered off the library and the robotic assembly did not return to its park position in the Base Module behind the operator panel:

### Procedure

- 1** Power on the library by pressing the power button on the Base Module just below the operator panel.
- 2** From the remote panel, return the robotic assembly to its park position from the **Maintenance > Move Robotic to Base Module** screen.
- 3** Power off the library by pressing the power button on the Base Module and holding for 3 seconds.

End of procedure

If the robotic assembly is still not in the Base Module, contact your maintenance engineer.

## 7.10 Running Library Tests

The library provides tests to verify library operations.

- **Wellness Test**  
Refer to "2.6.1.5 Wellness Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **System Test**  
Exercises overall library functionality by moving cartridges within the library. Cartridges are returned to their original location.  
Refer to "2.6.1.1 System Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **Slot to Slot Test**  
Randomly exchanges cartridges within the library. Cartridges are NOT returned to their original locations.  
Refer to "2.6.1.2 Slot to Slot Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **Element to Element Test**  
Moves a cartridge to a specific element and then returns it to its original location.  
Refer to "2.6.1.3 Element to Element Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **Position Test**  
Moves the robotic assembly vertically between two elements. The number of movements can be specified. The robotic assembly does not move cartridges in this test.  
Refer to "2.6.1.4 Position Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **Robotic Test**  
Performs a full inventory and exercises all robotic assembly movements and sensors.  
Refer to "2.6.1.6 Robotic Test" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".
- **Operator Panel LED Test**  
Illuminates each of the front panel LEDs.  
Refer to "2.6.1.7 Operator Panel Test and Calibration" in "FUJITSU Storage ETERNUS LT260 Tape Library User's Guide -Panel Operation-".

## 7.11 Operator Panel (Touch Control) Problems

- Touch control is not accepted from the operator panel.

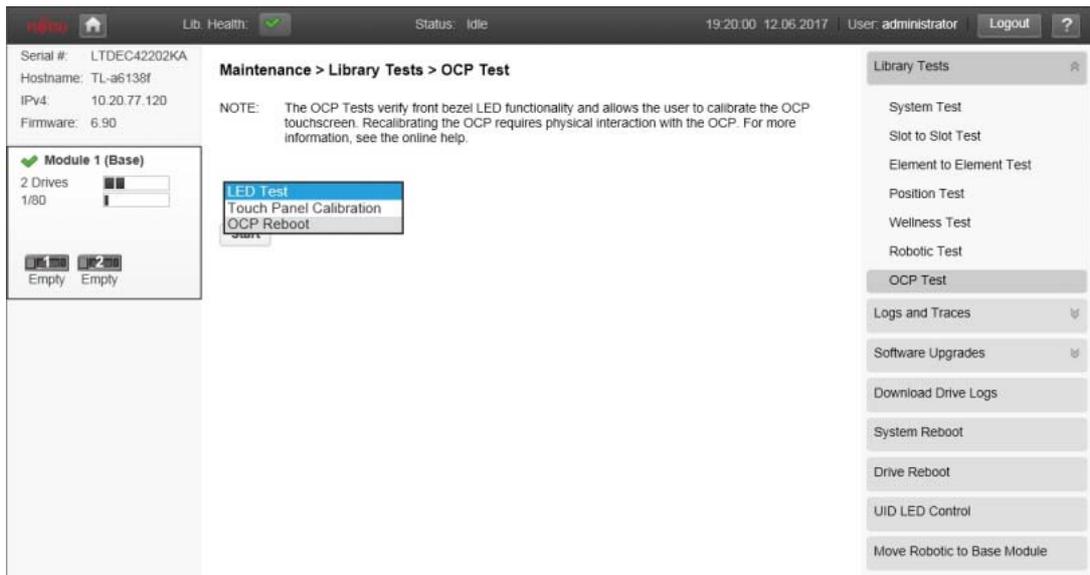
If the touch control of the operator panel becomes unavailable, use the remote panel to reset the operator panel. Perform the following procedure:

### Caution

This operation can be performed for the library firmware versions V10L20 (4.90) and later. If the currently used library firmware version is older than V10L20 (4.90), update the firmware.

### Procedure

- 1 Login to the library with administrative privileges.
- 2 Move to **Maintenance > Library Tests > OCP Test** screen.
- 3 In the **OCP Test** screen, select **OCP Reboot** for the test type from the pull-down menu.



- 4 Click **Start**.  
The operator panel flashes green and then the login screen of the operator panel is displayed.

End of procedure

# Appendix A

## Tape Cartridge and Barcode Label Specifications

This appendix describes tape cartridge and barcode label specifications and notes on using tape cartridges and barcode labels.

### A.1 Ultrium Tape Cartridge

#### A.1.1 Tape Cartridge Specifications

The LT260 uses the tape cartridge for LTO Ultrium listed in [Table A.1](#). For information on tape drive compatibility with data cartridges, refer to [Table A.3](#).

Table A.1 Tape cartridge specifications (1/2)

Item	Ultrium 4 data cartridge (*2)	Ultrium 4 data cartridge WORM (*3)	Ultrium 5 data cartridge (*2)	Ultrium 5 data cartridge WORM (*3)	Ultrium 6 data cartridge (*2)	Ultrium 6 data cartridge WORM (*3)
Type	Single-reel tape cartridge					
Tape width	12.65mm (1/2 inch)					
Tape length	820m		846m			
Storage capacity (*1)	800GB (1,600GB)		1.5TB (3.0GB)		2.5TB (6.25TB)	
External dimensions	102.0 x 105.4 x 21.5 mm					

\*1: The storage capacity value in the specification is a nominal value. The value enclosed in parentheses is the storage capacity when data is compressed. The data compression ratio is 2:1 for LTO Ultrium 4 and LTO Ultrium 5 data cartridges. The data compression ratio is 2.5:1 for LTO Ultrium 6, LTO Ultrium 7, LTO Ultrium 7 Type M, and LTO Ultrium 8 data cartridges.

\*2: The tape drive encryption function is used only with Ultrium 4 data cartridges or later. Moreover, it requires a backup software product that supports the hardware data encryption function.

\*3: Write Once Read Many (WORM) refers to a type of data cartridge that can be written only once. To use the WORM feature together with backup software in linkage with the LT260, the backup software must support the WORM feature. Before using WORM cartridges together with any backup software, be sure to refer to the backup software manual.

Table A.2 Tape cartridge specifications (2/2)

Item	Ultrium 7 data cartridge (*2)	Ultrium 7 data cartridge WORM (*3)	Ultrium 7 Type M data cartridge (*2)	Ultrium 8 data cartridge (*2)	Ultrium 8 data cartridge WORM (*3)	Ultrium 1 cleaning cartridge U (*4)
Type	Single-reel tape cartridge					
Tape width	12.65mm (1/2 inch)					
Tape length	960m					305m
Storage capacity (*1)	6.0TB (15.0TB)		9.0TB (22.5TB)		12.0TB (30.0TB)	-
External dimensions	102.0 x 105.4 x 21.5 mm					

- \*1: The storage capacity value in the specification is a nominal value. The value enclosed in parentheses is the storage capacity when data is compressed. The data compression ratio is 2:1 for LTO Ultrium 4 and LTO Ultrium 5 data cartridges. The data compression ratio is 2.5:1 for LTO Ultrium 6, LTO Ultrium 7, LTO Ultrium 7 Type M, and LTO Ultrium 8 data cartridges.
- \*2: The tape drive encryption function is used only with Ultrium 4 data cartridges or later. Moreover, it requires a backup software product that supports the hardware data encryption function.
- \*3: Write Once Read Many (WORM) refers to a type of data cartridge that can be written only once. To use the WORM feature together with backup software in linkage with the LT260, the backup software must support the WORM feature. Before using WORM cartridges together with any backup software, be sure to refer to the backup software manual.
- \*4: The cleaning cartridge is common to and can be used with Ultrium 1 to Ultrium 8 drives.
- A cartridge can be used up to 50 times as a rough standard. After approximately 50 uses, this cartridge can no longer be used. Fujitsu recommends replacing it before the 50th time.
  - Be sure not to use a cleaning cartridge intended for another LT series tape library, or a cleaning cartridge already used on a tape library manufactured by another company. Otherwise, errors and other problems may occur.
  - For details on how to use cleaning cartridges, refer to ["3.4 Cleaning Drives" \(page 44\)](#).

## A.1.2 Tape Drive Compatibility with Tape Cartridges

Table A.3 Tape drive compatibility with data cartridges

Data cartridge	Storage capacity (*1)	Tape drive			
		LTO Ultrium 5	LTO Ultrium 6	LTO Ultrium 7	LTO Ultrium 8
LTO Ultrium 3	400GB (800GB)	Reading enabled	Cannot be used	Cannot be used	Cannot be used
LTO Ultrium 3 WORM					
LTO Ultrium 4	800GB (1,600GB)	Reading and writing enabled (*2)	Reading enabled	Cannot be used	Cannot be used
LTO Ultrium 4 WORM					
LTO Ultrium 5	1.5TB (3.0TB)	Reading and writing enabled	Reading and writing enabled (*3)	Reading enabled	Cannot be used
LTO Ultrium 5 WORM					
LTO Ultrium 6	2.5TB (6.25TB)	Cannot be used	Reading and writing enabled	Reading and writing enabled (*4)	Cannot be used
LTO Ultrium 6 WORM					
LTO Ultrium 7	6.0TB (15.0TB)	Cannot be used	Cannot be used	Reading and writing enabled	Reading and writing enabled (*5)
LTO Ultrium 7 WORM					
LTO Ultrium 7 Type M	9.0TB (22.5TB)	Cannot be used	Cannot be used	Cannot be used	Reading and writing enabled (*6)
LTO Ultrium 8	12.0TB (30.0TB)	Cannot be used	Cannot be used	Cannot be used	Reading and writing enabled (*7)
LTO Ultrium 8 WORM					

\*1: The storage capacity value in the specification is a nominal value. The value enclosed in parentheses is the storage capacity when data is compressed. The data compression ratio is 2:1 for LTO Ultrium 3, LTO Ultrium 4, and LTO Ultrium 5 data cartridges. The data compression ratio is 2.5:1 for LTO Ultrium 6, LTO Ultrium 7, LTO Ultrium 7 Type M, and LTO Ultrium 8 data cartridges.

\*2: Data in LTO Ultrium 4 data cartridges is recorded in Ultrium 4 format.

\*3: Data in LTO Ultrium 5 data cartridges is recorded in Ultrium 5 format.

\*4: Data in LTO Ultrium 6 data cartridges is recorded in Ultrium 6 format.

\*5: Data in LTO Ultrium 7 data cartridges is recorded in Ultrium 7 format.

\*6: Data in LTO Ultrium 7 Type M data cartridges is recorded in Ultrium M8 format.

By attaching LTO Ultrium 7 Type M barcode labels on unused LTO Ultrium 7 data cartridges, they can be used as LTO Ultrium 7 Type M data cartridges.

Note the following when LTO Ultrium 7 Type M data cartridges are used.

- When a previously unused LTO Ultrium 7 Type M data cartridge is used for the first time, make sure to write the data using the backup software or another tool. If the data cartridge is inserted in an LTO Ultrium 8 drive and ejected without writing any data, that data cartridge is not usable as an Ultrium M8 formatted data cartridge.
- Once the data cartridge is formatted to Ultrium M8, the data cartridge cannot be reverted to an Ultrium 7 formatted data cartridge. In addition, Ultrium 7 formatted data cartridges cannot be converted to Ultrium 8 formatted data cartridges.
- Data cartridges used in Ultrium 7 format cannot be used in Ultrium M8 format. In addition, data cartridges used in Ultrium M8 format cannot be used in Ultrium 7 format.

\*7: Data in LTO Ultrium 8 data cartridges is recorded in Ultrium 8 format.

## A.1.3 Notes Regarding the Use of Tape Cartridges

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To assure required performance and reliability, tape cartridges must be handled with care. A tape cartridge is a consumable, meaning that it wears out after a certain period of use.

### ■ Precautions to Follow when Using the Tape Cartridge

- The Ultrium drives of the LT260 are dedicated drives for LTO Ultrium cartridges. In addition to the LT260, these tape cartridges can also be used with the LT20 S2, LT40 S2, LT60 S2, LT130, LT160, LT200, LT210, LT220, LT230, LT250, LT270, and LT270 S2. Note that DLT, 8 mm, DDS, LT300 tape cartridges and the like cannot be used with Ultrium tape drives.
- The data cartridge and the cleaning cartridge are consumable supplies. Be sure to purchase them separately. For details of the tape cartridge specifications, refer to ["A.1.1 Tape Cartridge Specifications" \(page 98\)](#).
- A cleaning cartridge can be used up to 50 times as a rough standard. If the maximum number is reached, replace the cleaning cartridge.
- A cleaning cartridge is for exclusive use in the tape library device being used. Be sure not to use a cleaning cartridge in the LT260 Tape Library that was used in another library device.
- To use a data cartridge that was used in another library device in this library, check the following points. If any relevant point is found, perform recovery work or replacement with a new one before using LT260.
  - Barcode label  
Use the tape cartridge vendor's label for the barcode label to be affixed to the cartridge. For details on the specifications, refer to ["A.2 Barcode Labels" \(page 107\)](#).
  - Leader pin  
Check for any leader pin that has been detached from the tape cartridge. For more details on leader pins, refer to ["A.1.4 Handling Tape Cartridges" \(page 102\)](#).
  - Replacement cycle of tape cartridges  
A tape cartridge, being a consumable, wears out due to mechanical abrasion and/or chemical deterioration. If storage under the environment conditions recommended by Fujitsu is assumed, the service life of the tape cartridge is about 30 years. However, if circumstances such as the environment for use, number of times of use, and storage environment are considered for actual operation, we recommend replacing the tape cartridge with a new one.

## A.1.4 Handling Tape Cartridges

To assure required performance and reliability, tape cartridges must be handled with care. A tape cartridge is a consumable, meaning that it wears out after a certain period of use. Generally, the longer a tape cartridge is used, the greater the number of errors.

The following paragraphs are notes on handling tape cartridges.

### ■ Notes on storage

#### Storage environment

[Table A.4](#) lists the environment conditions required for storing a recorded tape cartridge.

Table A.4 Tape cartridge storage environment

Item	Data/cleaning cartridge
Temperature	16 to 32 °C
Humidity	20 to 80 % RH
Maximum wet-bulb temperature	26 °C
Miscellaneous	No condensation

In addition, note the following points:

- For long-term storage, keep tape cartridges upright.
- Do not leave tape cartridges in direct sunlight or in a dusty environment.
- Do not put tape cartridges near a power cable, motor, or power supply. Recorded data might be destroyed by a radiating magnetic field.

### ■ Notes on transport

#### Environmental conditions for transport

To transport or carry tape cartridges, observe the environmental conditions listed in [Table A.5](#).

Table A.5 Tape cartridge transport environment

Item	Data/cleaning cartridge
Temperature	-23 to 49 °C
Humidity	5 to 80 %
Maximum wet-bulb temperature	26 °C
Magnetic field	4000A/m or less
Miscellaneous	No condensation

In addition, note the following points:

- When using a tape cartridge brought in from outdoors, avoid any sudden changes in the environment, and let the tape adapt to the operating environment by exposing as long as it has been stored outside (up to 24 hours).  
Example:
  - Outside for six hours  
Leave the tape cartridge in the operating environment for six hours to let it adapt before using it.
  - Outside for one day or more  
Leave the tape cartridge in the operating environment for 24 hours to let it adapt before using it.
- During transportation, put the tape cartridge in a container to protect it from water damage, contamination, magnetic fields, temperature changes, vibration, and shock.

## ■ Handling

This section provides notes on handling tape cartridges.

- To prevent tape cartridges from falling, do not stack them more than six cartridges high. If you damage a cartridge by mistakenly allowing it to fall, repair the cartridge and immediately copy the data to other medium. After doing so, dispose of the damaged cartridge.
- An LTO Ultrium tape cartridge has a factory-written servo track, enabling precise reading and writing to the tape using this information. Although data can be deleted using a dedicated device (1200 oersteds or more) for security protection of the data, the servo track is also deleted. Thus, a cartridge whose data has been deleted cannot be reused.
- Due to chemical deterioration of tape cartridges, an adhesive constituent in the tape binder might sometimes ooze and stick to the magnetic head, causing read/write errors.

If an adhesive contaminant sticks to the head, a chemical contained in the contaminant (binder constituent) might corrode the MR element of the head. Since this adhesive contaminant oozes regardless of the number of times the tape is used, tape cleaning does not solve the problem; the only solution is to dispose of the tape.

In addition, an adhesive contaminant tends to emerge if a tape is stored in a hot or humid environment. Maintenance of the correct storage environment is important.

## ■ Notes on the shutter and leader pin

Before loading a tape cartridge in the device, confirm that the tape cartridge shutter can open and close and that the leader pin has been removed from the tape cartridge.

If the shutter cannot open and close normally, do not use the tape cartridge because loading it in a drive may not be possible. In addition, even if the leader pin of a tape cartridge with recorded data has been removed, the tape cartridge can be used again with the leader pin reattached to the cartridge. In such cases, contact the support section. Note that repairs to a tape are limited to within 30 cm from the end of the tape.

The procedure to check a shutter and a leader pin is as follows:

### Procedure

- 1 Before using a tape cartridge, confirm that its leader pin is latched.

Figure A.1 Latched state of the leader pin (the leader pin is latched)



Figure A.2 Latched state of the leader pin (the leader pin has been removed)



- 2 Confirm that the tape is correctly attached with clips to the leader pin.  
Do not use the tape cartridge until the clips are verified as fitting correctly into the leader pin as shown below.

Figure A.3 Fit state of clips (clips fit correctly)



Figure A.4 Fit state of clips (clips do not fit correctly (the leader pin is misaligned))



**End of procedure**

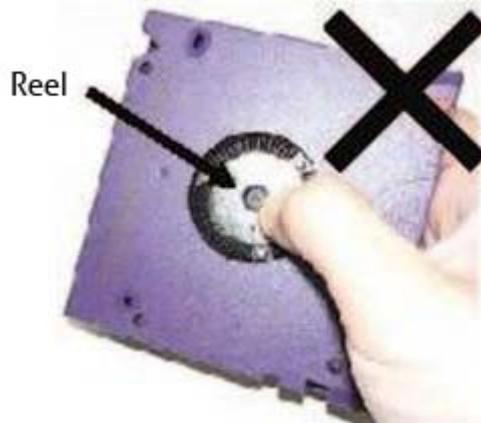
**▶ Caution**

Do not apply force to or pull out the leader pin or tape of a tape cartridge because it is a precision component. Do not push or turn the reel.

### ■ Notes when handling the tape cartridges

Because the data cartridge is a precision product with an enclosed structure, be sure to keep the following in mind when inspecting it.

- Do not drop the data cartridge or expose it to shock or vibration.
- Do not apply excessive force to the data cartridge, or pull on the leader pin or the magnetic tape.
- Do not press on the magnetic tape reel or turn it.



### ■ Notes on affixing a label

It is important to affix a highly adhesive, high-quality label on each tape cartridge. Loading a tape cartridge whose label is loose will cause problems in the LT260. Therefore, be sure to use the labels provided with the tape cartridges.

## A.2 Barcode Labels

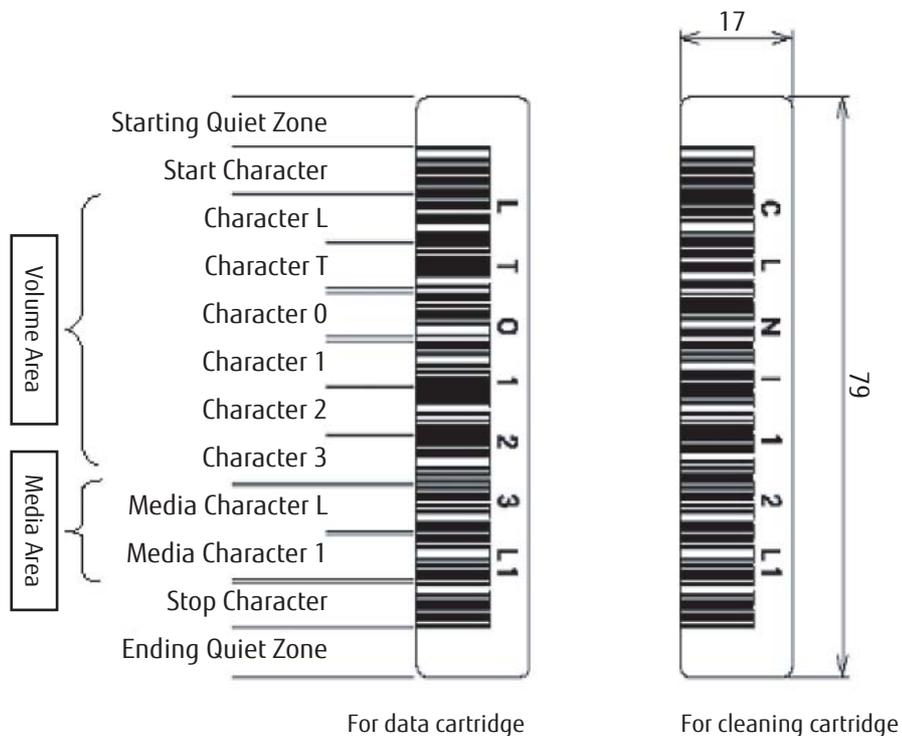
Barcode-based operation is required for the LT260. Purchase and use the barcode labels available from EDP/COLORFLEX or the magnetic tape vendor.

Data cartridge label: EDP/Colorflex #1700-00  
Cleaning cartridge label: EDP/Colorflex #1700-CN

### A.2.1 Barcode Label Specifications

When purchasing labels, specify an eight-character string indicating the "volume area + media area."

Figure A.5 Character string on barcode label



■ Specifying a character string in the volume area (Volser)

Strings in the volume area of the data cartridges are six-character strings. However, note that the following six-character strings cannot be used: "CLN $xxx$ ", "DG $xxxx$ ", and "CEVL $xx$ " ( $x$  is an arbitrary character string)

[Table A.6](#) lists the characters that can be used in the volume area.

Table A.6 Characters that can be used on barcode labels

Character type	Description
Upper-case alphabetic character	26 characters from A to Z
Numeric characters	10 characters from 0 to 9

■ Specifying a string in the media area (Media ID)

[Table A.7](#) shows the relationship between the cartridge type and the specified string.

Table A.7 Cartridge type and specified string

Specified string	Tape cartridge type
L1	Ultrium 1 data cartridge 100GB (Non-compressed), 200GB (Compressed)
L2	Ultrium 2 data cartridge 200GB (Non-compressed), 400GB (Compressed)
L3	Ultrium 3 data cartridge 400GB (Non-compressed), 800GB (Compressed)
L4	Ultrium 4 data cartridge 800GB (Non-compressed), 1,600GB (Compressed)
L5	Ultrium 5 data cartridge 1.5TB (Non-compressed), 3.0TB (Compressed)
L6	Ultrium 6 data cartridge 2.5TB (Non-compressed), 6.25TB (Compressed)
L7	Ultrium 7 data cartridge 6.0TB (Non-compressed), 15.0TB (Compressed)
M8	Ultrium 7 Type M data cartridge 9.0TB (Non-compressed), 22.5TB (Compressed)
L8	Ultrium 8 data cartridge 12.0GB (Non-compressed), 30.0GB (Compressed)
LT	Ultrium 3 data cartridge WORM 400GB (Non-compressed), 800GB (Compressed)
LU	Ultrium 4 data cartridge WORM 800GB (Non-compressed), 1,600GB (Compressed)
LV	Ultrium 5 data cartridge WORM 1.5TB (Non-compressed), 3.0TB (Compressed)
LW	Ultrium 6 data cartridge WORM 2.5TB (Non-compressed), 6.25TB (Compressed)
LX	Ultrium 7 data cartridge WORM 6.0TB (Non-compressed), 15.0TB (Compressed)
LY	Ultrium 8 data cartridge WORM 12.0TB (Non-compressed), 30.0TB (Compressed)

■ Specifying a string on a cleaning cartridge label

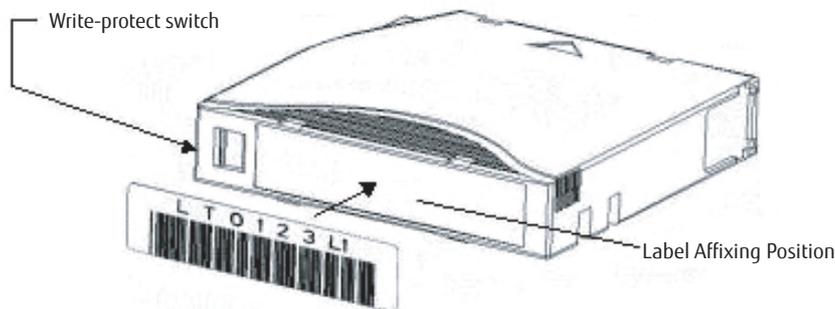
Specify the character strings of a cleaning cartridge barcode label as "CLNU  $xx$ L1" (where  $xx$  represents any usable characters).

## A.2.2 Notes on Affixing a Barcode Label

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- Keep the surface clean and free of fingerprints or dirt.
- Affix the barcode label on the specified location (concavity beside the write-protect switch) of the tape cartridge correctly (refer to [Figure A.6](#)).  
The barcode may not be recognized if the label is affixed in an incorrect position or orientation or if the label is wrinkled.
- After affixing the barcode label, press on it firmly. Notice that the end parts of the label are easily broken.
- To replace the label, peel the old label from the tape and then affix a new one.

Figure A.6 Barcode label affixing location



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FUJITSU Storage ETERNUS LT260 Tape Library  
User's Guide -Installation & Operation-

P3AM-8792-10ENZO

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