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**ETERNUS LT210**  
(LT21JLD1U)

**ETERNUS LT220**  
(LT22JLD1U, LT22JLE1U)

# Tape Library

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**User's Guide**



## FOR SAFE OPERATION

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Pay special attention to the section "FOR SAFE OPERATION" Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or damage to their property. Use the product according to this manual.

## ABOUT THIS PRODUCT

This product is designed and manufactured for use in standard applications such as office work, personal devices and household appliances. This product is not intended for special uses (atomic controls, aeronautic or space systems, mass transport controls, medical devices for life support, or weapons firing controls) where particularly high reliability requirements exist, where the pertinent levels of safety are not guaranteed, or where a failure or operational error could threaten a life or cause a physical injury (hereafter referred to as "mission-critical" use). Customers considering the use of these products for mission-critical applications must have safety-assurance measures in place beforehand. Moreover, they are requested to consult our sales representative before embarking on such specialized use.

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**The following notice is for EU users only.**

**WARNING:** This is a product which meets Class A of EN55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**The following notice is for USA users only.**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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The Fibre Channel printed circuit board contains a laser system (GBIC or GLM module). Laser systems are classified as Class I Laser Equipment by the radiation standards of the Department of Health and Human Services (DHHS) in accordance with Radiation Control for Health and Safety Act of 1968 and also based on the safety requirements for laser products in EN60825-1 (+A11). The certificate of conformance is affixed to the module.

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部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	×	○	○	○	○	○
磁带驱动器	×	○	○	○	○	○
机箱 底盘	×	○	○	○	○	○
电源	×	○	○	○	○	○
风扇机，电动机	×	○	○	○	○	○
电缆	○	○	○	○	○	○

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# Revision History

(1/1)

Edition	Date	Revised location (type) (*1)	Revision
01	July 28, 2008	–	–
02	December 20, 2008	Sections 1.2 to 1.4, 4.2, 5.1, Chapters 7 to 9, Sections A.1, A.2, and B.2 (Modification)  Sections 1.2 and 8.1.7 (Modification)  Chapter 8 (Addition)  Section 9.1 (Modification)  Section 9.2 (Modification)  Section 9.6 (Modification)  Chapter 10 (Addition)  Section 11.4.3 (Modification)  Appendix B (Addition)  Appendix C (Addition)  Appendix E (Addition)	LTO Ultrium4 tape drive-related descriptions added and modified because of added support for the drive  Descriptions of the encryption function added  "Notes on operation" added  Description modified in Section 9.1, "Tuning VERITAS NetBackup"  Description modified in Section 9.2, "Tuning NetWorker"  Description modified in Section 9.6, "Tuning NetVault"  Section 10.2, "SNMP Function," added  Description modified in Section 11.4.3, "Setting page"  Section B.1.5, "Key management function option," added  Error codes added  Appendix E, "Event List," added
03	August 8, 2009	Section 7.1 (Modification)  Chapter 6 (Modification)  Appendix F (Addition)	Description modified in Section 7.1, "Solaris Operating System"  Description modified in Chapter 6, "Operating Environment"  Descriptions added in Appendix F, "OpenSSL License"

\*1 Items in the "Revised location" column refer to the latest edition unless the item is marked with an asterisk. An asterisk indicates an item in an older edition.





# Preface

This manual describes the LT210 and LT220 tape libraries.

This manual first provides an overview of the tape library and then detailed information about the tape library. The detailed information includes specifications, installation requirements and procedures for incorporating the tape library into a system, and information about how to clean the tape library.

The manual is intended for users who have a basic knowledge of magnetic tape libraries and how they are used in computer systems.

The organization of manuals related to the LT210 and LT220 tape libraries and the scope of this manual are indicated in the Manual Set section later. Refer to related manuals as necessary.

The organization and contents of this manual are explained below. This information is followed by important information related to handling of the LT210 and LT220.

## Organization of this manual

This manual has thirteen chapters, and appendixes.

### Chapter 1 Overview

Explains the names of parts of this device and related devices, and outlines their functions.

### Chapter 2 Installation

Explains how to install this device, how to mount it in a rack, and how to affix a desktop conversion kit to it.

### Chapter 3 Connection Method and Notes on Connection

Explains how to connect SCSI cables and AC power cables, how to turn the power on and off, how to set the SCSI ID, and how to start up and shut down the system.

### Chapter 4 Setup

Explains how to use the operator panel, how to set the menu tree, tape library, and drive.

### Chapter 5 Configuring the Tape Library

Explains how to confirm the setting information for this device, the procedure for loading and unloading magazines and cartridges, and operations required when operating the tape library.

### Chapter 6 Operating Environment

Explains operating systems on which this device can run, backup software, and the host bus adapter (HBA).

### **Chapter 7 Setting the Operating System**

Explains the operation system settings required to use this device and the precautions to follow when making such settings.

### **Chapter 8 Setting Backup Software**

Explains the backup software settings required to use this device and the precautions to follow when making such settings.

### **Chapter 9 Tuning Backup Performance**

Explains the tuning procedures to be followed to optimize the operation of this device.

### **Chapter 10 Ethernet Functions**

Provides an overview of the Ethernet functions of this device and explains how to use them.

### **Chapter 11 Remote Panel**

Explains how to set and operate the remote panel.

### **Chapter 12 Maintenance**

Explains how to clean the tape drive head and the magazine filter.

### **Chapter 13 Points to be Checked at Occurrence of Trouble**

Explains points to observe when problems occur this device.

### **Appendix A Specifications**

Contains the specifications of this device and the initial settings

### **Appendix B Options**

Explains the options available for this device and supplied consumables for it.

### **Appendix C LT210/LT220 Tape Library Error Codes**

Lists tape library error codes.

### **Appendix D Drive Error Codes**

Lists drive error codes.

### **Appendix E Event List**

Lists event list.

### **Appendix F OpenSSL License**

Lists the provisions of the software library license used in the control software for this product.

## **Appendix G World Time Zones**

Lists world time zones.

## Abbreviation

In this manual, the product names are abbreviated as follows:

Long title	Abbreviation					
Solaris™ 8 Operating System	Solaris 8 OS	Solaris Operating System	Solaris OS			
Solaris™ 9 Operating System	Solaris 9 OS					
Solaris™ 10 Operating System	Solaris 10 OS					
Microsoft® Windows® 2000 Professional	Windows 2000	Windows 2000/2003/2008	Windows			
Microsoft® Windows® 2000 Server						
Microsoft® Windows® 2000 Advanced Server						
Microsoft® Windows Server® 2003, Standard Edition	Windows 2003					
Microsoft® Windows Server® 2003, Enterprise Edition						
Microsoft® Windows Server® 2003 R2, Standard Edition						
Microsoft® Windows Server® 2003 R2, Enterprise Edition						
Microsoft® Windows Server® 2003, Standard x64 Edition						
Microsoft® Windows Server® 2003, Enterprise x64 Edition						
Microsoft® Windows Server® 2003 R2, Standard x64 Edition						
Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition						
Microsoft® Windows Server® 2008 Standard (32-bit)				Windows 2008		
Microsoft® Windows Server® 2008 Standard (64-bit)						
Microsoft® Windows Server® 2008 Enterprise (32-bit)						
Microsoft® Windows Server® 2008 Enterprise (64-bit)						
Red Hat® Enterprise Linux® AS (v.3 for x86)	Red Hat Enterprise Linux AS/ES (v.3 for x86)	Red Hat Enterprise Linux AS/ES	Red Hat Enterprise Linux			
Red Hat® Enterprise Linux® ES (v.3 for x86)						
Red Hat® Enterprise Linux® AS (v.4 for x86)	Red Hat Enterprise Linux AS/ES (v.4 for x86)					
Red Hat® Enterprise Linux® ES (v.4 for x86)						
Red Hat® Enterprise Linux® AS (v.4 for EM64T)	Red Hat Enterprise Linux AS/ES (v.4 for EM64T)					
Red Hat® Enterprise Linux® ES (v.4 for EM64T)						

Long title	Abbreviation		
Red Hat® Enterprise Linux® AS (4.x for x86)	Red Hat Enterprise Linux AS/ES (4.x for x86)		
Red Hat® Enterprise Linux® ES (4.x for x86)			
Red Hat® Enterprise Linux® AS (4.x for EM64T)	Red Hat Enterprise Linux AS/ES (4.x for EM64T)		
Red Hat® Enterprise Linux® ES (4.x for EM64T)			
Red Hat® Enterprise Linux® 5 (for x86)	Red Hat Enterprise Linux 5		
Red Hat® Enterprise Linux® 5 (for Intel64)			
Red Hat® Enterprise Linux® 5 (for Itanium)			
VERITAS NetBackup Enterprise Server™	VERITAS NetBackup Enterprise Server	VERITAS NetBackup	NetBackup
VERITAS NetBackup Server™	VERITAS NetBackup Server		
NetWorker™ Power Edition	NetWorker		
NetWorker™ Network Edition			
NetWorker™ Workgroup Edition			
BrightStor™ ARCserve™ Backup r11.5 for Windows	BrightStor ARCserve Backup r11.5	BrightStor ARCserve Backup	ARCserve Backup
CA ARCserve™ Backup r12 for Windows	CA ARCserve Backup r12		
Symantec® Backup Exec™ 11d for Windows Servers	Symantec Backup Exec 11d	Backup Exec	
Symantec® Backup Exec™ 12.0 for Windows Servers	Symantec Backup Exec 12.0		
Symantec® Backup Exec™ 12.5 for Windows Servers	Symantec Backup Exec 12.5		
NetVault® 7	NetVault		
NetVault® 8			
Microsoft® Internet Explorer	Internet Explorer	IE	

## Notice

- If any information in this manual is unclear or incorrect, please complete the comment form at the back of this manual and give it to a Fujitsu systems engineer or salesperson.
- The contents of this manual may be revised without prior notice.



# Note on Safety



## Note on Safety

Read thoroughly this manual to use this product safely and correctly.








Use the unit correctly according to this manual so that damage should not reach the human body and your property.




Keep this User's Guide at hand for quick reference at anytime necessary.

In this User's Guide, the following indications are used to use the product safely and correctly. Thoroughly understand the meaning of the indication before using this product.

 <b>Warning</b>	Failure to heed this sign could result in serious injury or death.
 <b>Caution</b>	Failure to heed this sign could result in personal injury or damage to properties.

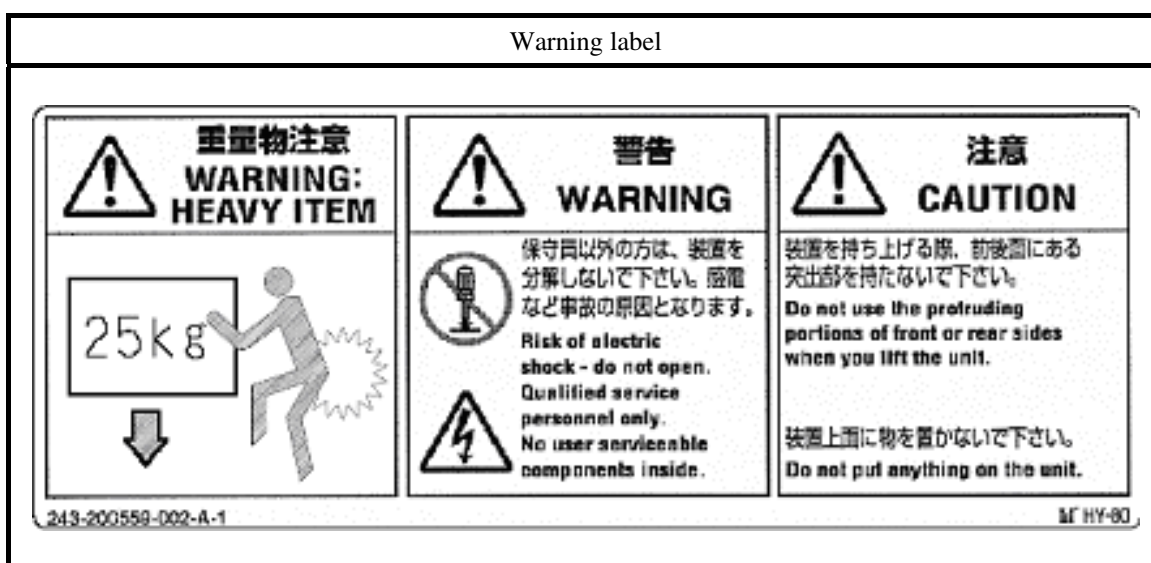
Precautions and notices against hazards are presented with one of the following symbols.

	Indicates that improper use may cause fumes or fire.
	Indicates that improper use may cause explosion.
	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause personal injury due to toxic material.
	Indicates that improper use may cause hands or fingers to be caught.
	Indicates a general prohibited action or warning that cannot be specifically identified.
	Indicates that the disassembling and modification of the product is inhibited.

	Indicates that the user is inhibited to touch the product.
	Indicates a general mandatory action or warning that cannot be specifically identified.
	Indicates an instruction to unplug the power cord from the outlet and turn off the circuit breaker of power distribution panel.

## Warning label

The warning labels attached to this unit are as follows.



- Content of label
  - [Warning about heavy object]
 

The LT210/LT220 tape library (rack-mount type) is heavy (weighing at least 25 kg).

Therefore, be careful when moving the tape library.

\* When the stand-alone kit is used, the tape library weighs 33 kg.
  - [Prohibited disassembly]
 

Users other than qualified maintenance personnel must not disassemble the tape library.
  - [Caution]
 

When moving the tape library, do not hold its protruding parts in the front or rear.

Do not place any objects on top of the tape library.
- Location of label
 

The label is located on the top surface of the tape library.



## Label prohibiting the placement of objects on the tape library

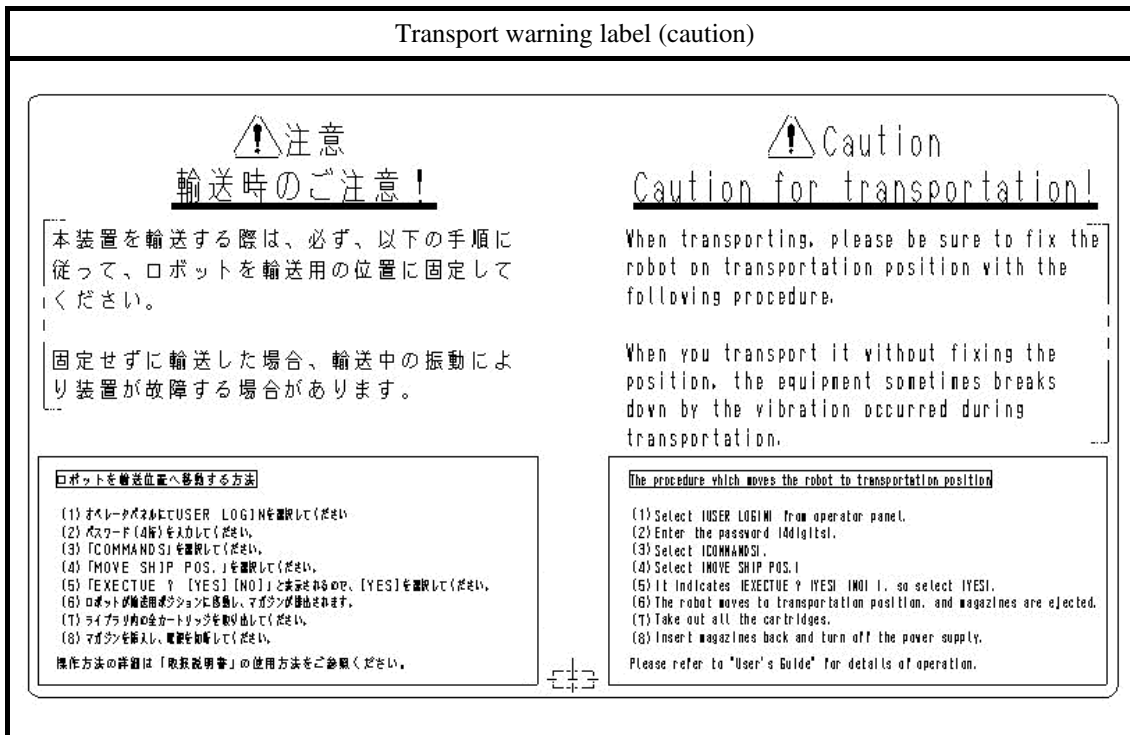
The label prohibiting the placement of objects on the tape library is as follows:



- Content of label  
[Caution]  
Do not place any objects on top of the tape library.
- Location of label  
The label is located on the top surface of the rack-mount type tape library.

## Transport warning label (caution)

The figure below shows a transport warning label (caution) affixed on this device.



- Content of label

[Caution]

Caution during transportation!

Be sure to fix the robot in the transport position by following the procedure below for transport of the device. If the equipment is transported without the robot being fixed in position, vibration during transport may lead to damage to the equipment.

Procedure for moving the robot to the transport position

- (1) Select USER LOGIN from the operator panel.
- (2) Enter the password (4 digits).
- (3) Select [COMMANDS].
- (4) Select [MOTHER POS.].
- (5) With [EXECUTE? [YES] [NO]] displayed, select [YES].
- (6) The robot is moved to the transport position, and magazines are ejected.
- (7) Take out all the cartridges.
- (8) Reinsert the magazines, and turn off the power supply.

See the User's Guide for more information on the operations.

- Location of label

The label is located on the outside on the top of the tape library.

# Important Information on Handling

## When Abnormal Conditions Occur



If excessive heat, smoke, odor, or an unusual noise occurs, immediately turn off the power using the power switch and disconnect the power plug from the outlet. Then, after confirming that the equipment is no longer giving off smoke, contact your sales representative or a Fujitsu maintenance service center to have the unit repaired.

Continued use of the product when it is malfunctioning or operating abnormally could cause a fire and/or electric shock. In addition, do not, under any circumstance, repair the equipment by yourself as doing so is dangerous.



If foreign objects (water, metal shards, liquid, etc.) enter the equipment, immediately turn off the power using the power switch, disconnect the power plug from the outlet, and contact your sales representative or a Fujitsu maintenance service center. Continued use of the product when it is malfunctioning or operating abnormally could cause a fire and/or electric shock.

## Maintenance



Users must not attempt to repair the LT210/LT220 by themselves. Ask Fujitsu to dispatch one of its engineers or an engineer authorized by Fujitsu for maintenance work.

For maintenance, Fujitsu maintenance personnel may bring a maintenance tool (e.g., personal computer) for diagnostic use and connect it to the customer's LT210/LT220.

The maintenance personnel may connect the maintenance tool to the LT210/LT220 in one of the following three ways:

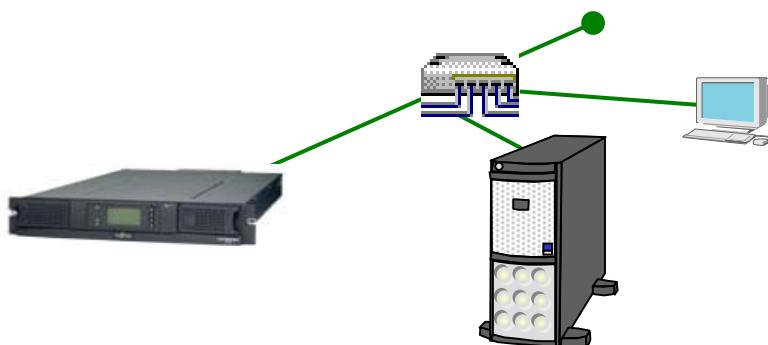
- 1) Connecting the maintenance personnel's personal computer (FST) directly to the LT210/LT220.



- 2) Connecting the customer's personal computer directly to the LT210/LT220.



- 3) Connecting the customer's personal computer to the LT210/LT220 via a network



- Maintenance of the LT210/LT220 requires a personal computer on which Java has been installed. (Java installation is required to collect log information on the LT210/LT220 and update the tape library firmware.)
- If the maintenance personnel's personal computer cannot be connected to the LT210/LT220, the customer must provide a personal computer for maintenance use.

## Handling the LT210/LT220



Do not remove the covers of the main unit and ports, except as needed, such as to replace cell or attach an option.

The equipment includes high-voltage parts and such parts may cause electric shock. If the inside of the equipment needs to be checked or repaired, ask your sales representative or a Fujitsu maintenance service center to perform such work.



If the equipment fails, for example, if the operator panel fails to display properly, do not use the equipment. Continued use of the product when it is malfunctioning or operating abnormally might cause an electric shock and/or fire. If the LT210/LT220 is out of order, contact your sales representative or a Fujitsu maintenance service center to have the unit repaired.



- Prevent foreign objects including metal shards and inflammable materials from being inserted in or dropped into any openings (vent holes, etc.) of the equipment since fire or electric shock may be caused.
- Do not put any containers containing water such as a vase, flower pot, and/or glass on or near the LT210/LT220. Doing so may cause malfunctions, fire, and/or electric shock.
- Do not use a dust spray that uses flammable gas. Doing so may cause a fire.



Before attaching or detaching an optional device, turn off the power switches on the device and the LT210/LT220, and disconnect their power plugs from outlets.

Failure to do so may cause an electric shock.

## Power Cable and Power Plug



- If there is a lightning storm, disconnect the power plug of the LT210/LT220 from the outlet. Using the product or leaving it plugged in during a lightning storm may damage the product or cause a fire.
- Do not apply voltage of a value that is not specified. Do not insert too many plugs into a single outlet. Doing so may cause fire or electric shock.
- To prevent electric shock or fire, do not handle a power plug or disconnect a power plug with wet hands.
- Do not damage or modify the power cable. The power cable may be damaged by placing heavy objects on it, or by pulling, forcibly bending, twisting or heating it, which could cause a fire or electric shock.
- If the power cable or power plug is damaged or the plug does not securely fit in the outlet slots, do not use the cable. Continued use of the cable when it is damaged or the plug does not securely fit in an outlet could cause a fire and/or electric shock.
- If there is a build-up of dust on the prongs of the power plug or the outlet slots, use a dry cloth to wipe the prongs and/or outlet slots clean. Continued use of cables or outlet slots with a build-up of dust could cause a fire and/or electric shock.
- If the T210/LT220 requires grounding, be sure to ground such units before turning the power on. If an electric leak occurs, it could lead to fire or electric shock.  
If, for some reason, it is not possible to ground the equipment, consult your sales representative or a Fujitsu maintenance service center.
- Securely plug in the power plug so that it goes far enough into the outlet. A loose power plug may cause a product failure or fire.
- If the LT210/LT220 is to be moved, before moving it, be sure to turn the power off and ensure that all connected cables have been disconnected. Otherwise, the cables may be damaged, which may lead to fire and/or electric shock, resulting in injury.
- If the LT210/LT220 is to be moved, before moving it, ensure that all connected cables have been disconnected. Otherwise, the cables may be entangled, which may lead to cause the product to drop or fall over, resulting in injury. Watch your footing during the move.
- When the equipment is not used for a long period of time, to ensure safety, be sure to disconnect the power cable of the LT210/LT220 from the outlet. Failure to do so may cause fire and/or electric shock.
- When removing a power plug from the outlet, do not yank on the power cable. Be sure to grasp the plug and not the cable. Yanking on the power cable may cause the core of the power cable to be exposed or broken, causing fire and/or electric shock.

## Operating Environment



- Place the LT210/LT220 in an appropriate environment, avoiding locations exposed to moisture, dust, or smoke, poor ventilation or fire. Otherwise, malfunctions, fire, or electric shock may result.
- Do not splash water on the LT210/LT220. Doing so may cause malfunctions, fire, or electric shock.
- Do not block any holes such as ventilation holes. Doing so could increase the internal temperature of the LT210/LT220 and cause a fire.
- Do not place any heavy objects on top of the LT210/LT220. Also, do not expose the LT210/LT220 to shock or vibration. Doing so may cause the LT210/LT220 to become unbalanced, resulting in its falling down or dropping, causing injury.
- Do not install the product at a location subjected to strong vibration or in an unstable location such as on a slope. Doing so may cause the equipment to drop or fall over, leading to injury.

## Disposal of the LT210/LT220 and Packing Materials

If you need to dispose of the LT210/LT220, follow the instructions provided by maintenance personnel.

## Connectable equipment

Only connect the equipment specified by Fujitsu to the LT210/LT220. Connecting other equipment to the LT210/LT220 may result in injury to users and bystanders, or property damage.

## Expendable Supplies

Use Fujitsu-designated expendable supplies for the LT210/LT220. Using other materials may result in injury to users and bystanders or damage to their property.

## Modification or Reconditioning of the LT210/LT220

Do not modify the LT210/LT220 or overhaul a used product. Doing so may result in injury to users and bystanders or damage to their property.

## Moving or relocating the LT210/LT220



- The user must execute "MOVE SHIP POS." in the COMMANDS menu and move the robot to the shipping position before moving or relocating the LT210/LT220.
- If the library contains any tape cartridges, remove them.
- As this device is quite heavy, exercise caution when handling it.

## LCD unit (operator panel)



The LCD unit (operator panel) in the LT210/LT220 contains mercury. To ensure safety, observe the precautions:

- Do not swallow mercury. Mercury is toxic to the body if swallowed.
- Do not handle the LCD unit in such a way that it becomes gaseous, a powder, or a liquid. Inhaling or swallowing mercury that has been burned, crushed, or liquefied with chemical treatment is hazardous.
- Dispose of the LCD unit in accordance with Japanese laws and the waste disposal regulations of your company.
- Dispose of the LCD unit by segregating it from municipal waste or domestic waste.

## LCD of the LCD unit

The phenomena described below may occur on the LCD of the LCD unit in the LT210/LT220. Note that these phenomena do not result from a faulty LCD, but are due to its characteristics.

- A lattice pattern may appear on the LCD at power-on. The pattern will soon disappear and pose no problem.
- Display colors may vary slightly depending on the LCD product due to variation in the production process.
- Slight unevenness in display colors due to a characteristic of the LCD may be caused by a temperature change.
- Although the LCD is produced based on extremely precise technologies, it may have some dots that are always off or on.

## Light of robot unit

The robot unit installed in this product contains an LED for a CCD camera. Be careful not to look into the light emitted from the LED. Doing so may lead to eye damage.

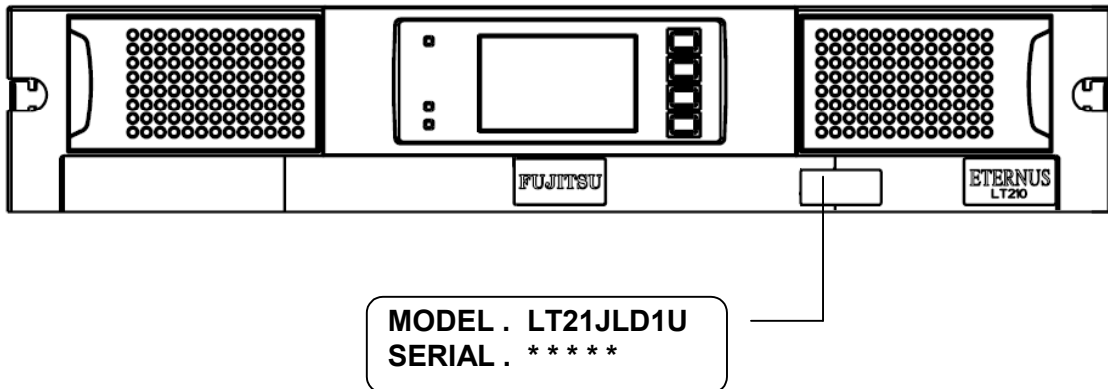


## MODEL and SERIAL number label

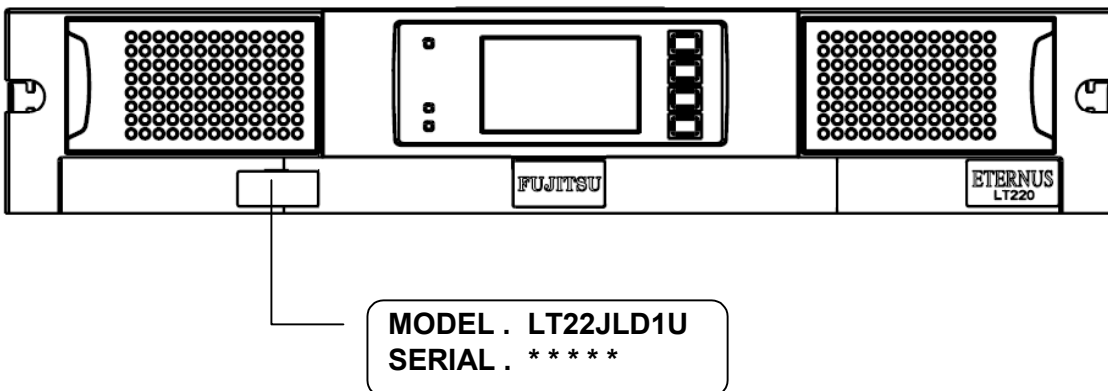
The MODEL and SERIAL number label is affixed to the front of the tape library.

When contacting your sales representative or a service engineer to have the unit repaired, inform that person of the model number and serial number of your tape after confirming them on this label.

- ETERNUS LT210



- ETERNUS LT220





# Manual Organization

ETERNUS LT210/LT220 Tape  
Library User's Guide  
(C144-E233)  
(This Manual)

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  - 3 Connection Method and Notes on Connection
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  - 5 Configuring the Tape Library
  - 6 Operating Environment
  - 7 Setting the Operating System
  - 8 Setting Backup Software
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# Chapter 1 Overview

- 1.1 Tape Library**
- 1.2 Tape Drive**
- 1.3 Cartridge**
- 1.4 Bar Code Label Handling**

This chapter provides information about major hardware components and loader.

The ETERNUS LT210 Tape Library is an automatic tape management system that contains an LTO Ultrium3 tape drive. The tape library can accommodate up to 8 tape cartridges.

The ETERNUS LT220 Tape Library is an automatic tape management system that contains an LTO Ultrium3 or LTO Ultrium4 tape drive. The tape library can accommodate up to 16 tape cartridges.

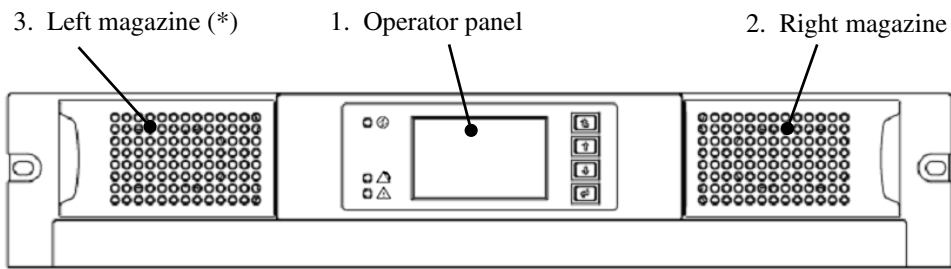
# 1.1 Tape Library

## 1.1.1 Names and features of components

### 1.1.1.1 LT210/LT220 tape library

The locations and features of components of the tape library are described below.

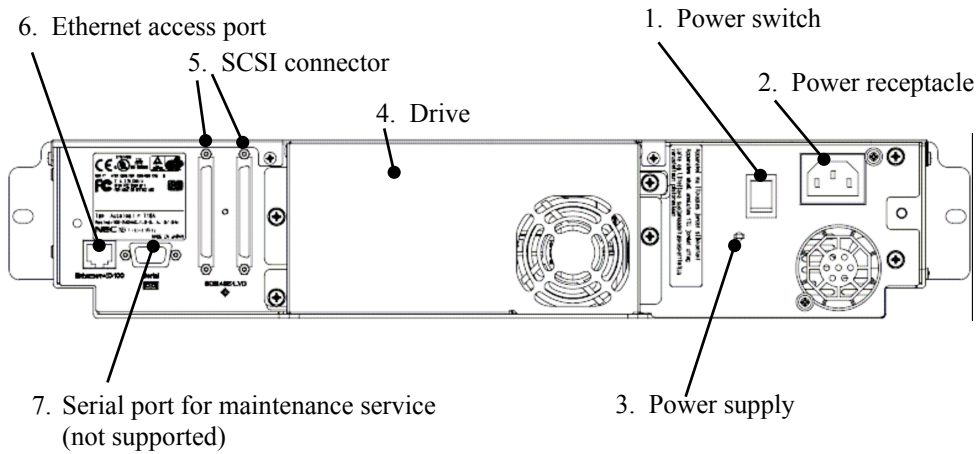
- Front View



**Figure 1.1 Components on the Front of the tape library**

\*1 The LT210 tape library does not have the left magazine.

- Rear View



**Figure 1.2 Components on the Rear of the tape library**

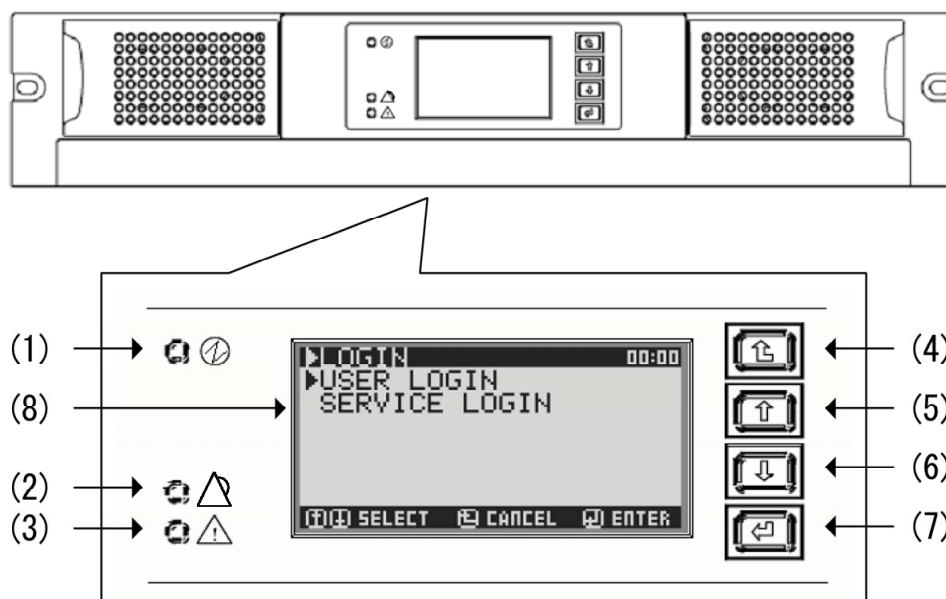


### 1.1.1.2 Operator panel

The following table and figures describe the components on the operator panel of the library.

**Table 1.1 Components of operator panel**

Number	Shape	Function	See
(1)	Indicators	Power On	Section 1.1.1.3
(2)		Alarm	
(3)		Error	
(4)	Buttons	Cancel	Section 1.1.1.4
(5)		Move cursor/Select value (upward)	
(6)		Move cursor/Select value (downward)	
(7)		Select/Enter buttons on the operator panel	
(8)	Screen	Operator panel screen	Section 4.2






**Figure 1.3 Operator panel detailed view**

### 1.1.1.3 Indicators

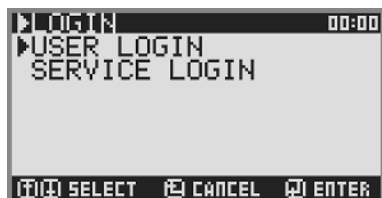
The operator panel has three indicators with the following marks displayed at their sides:

**Table 1.2 Indicators on the operator panel**

Mark	Color	Description
	Green	This indicator goes on when power is supplied to the tape library.
	Yellow	This indicator goes on when a request for cleaning the drive is issued, a request for replacing the cleaning cartridge is issued, or when the cleaning cartridge has been used to capacity (i.e., that it has been used up to the maximum number of times). (See (2) Commands in <a href="#">Section 4.2.3</a> .)
	Red	This indicator goes on if a drive or robot error occurs, or an error is detected by diagnosis. If this indicator goes on, check the message displayed on the operator panel.









### 1.1.1.4 Buttons

The operator panel has four buttons. For the various settings, select the necessary buttons from the effective buttons displayed on the LCD screen of the operator panel, and press the corresponding buttons on the operator panel. You can make each setting by pressing buttons as instructed on the LCD.



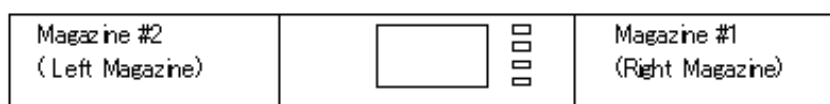
The buttons that are effective and selectable for the current menu are displayed at the bottom of the menu screen.

Table 1.3 Buttons on the operator panel

Display on screen	Button shape	Function	Description
		Cancel button	Use this button to cancel a menu selection or numeric value. Use this button also to return from a submenu to the previous (upper-level) menu.
		Move cursor up Select button	Use this button to move the cursor up on the menu screen or select a numeric value.
		Move cursor down Select button	Use this button to move the cursor down on the menu screen or select a numeric value.
		Enter	Use this button to select and decide on the item currently indicated by the cursor on the menu screen. Also use this button to determine the selection of a numeric value or character.

## 1.1.2 Magazine slot

The magazine numbers are defined as follows:



\* The LT210 tape library does not have the left magazine (Magazine #2).

**Figure 1.4 Magazine slot number**

The magazine slot numbers are defined as follows:

	Front ←			→ Drive
Left Magazine	15	13	11	9
	16	14	12	10
Right Magazine	7	5	3	1
	8	6	4	2

\* The LT210 tape library does not have the left magazine.

**Figure 1.5 Allocation of magazine slot number**

### 1.1.2.1 Data slot

A data slot is used to store a data cartridge. Data slots are assigned in ascending order of magazine slot numbers starting from the specified Origin number ("1" as specified by the SLOT ORIGIN setting).

### 1.1.2.2 Security lock

When a magazine is removed from the magazine slot, the power supply to the robot is shut off by the electronic interlock (safety protection circuit). On the operator panel, the status display screen shows the message "UNLOCKED" for the relevant magazine and "PLEASE LOCK MAGAZINE" in the center of the display as a request message to the customer. (See [Section 4.2.1](#).)

## Important

Removing the magazine disables library operation from backup software because the power supplied to the robot is stopped.

## 1.2 Tape Drive

The Ultrium 3 or Ultrium 4 tape drive used in this tape library is a high-performance streaming tape drive based on LTO (Linear Tape-Open) technology.

One tape cartridge in an LTO Ultrium3 tape drive can store a maximum of 400 GB of data (without compression)\*.

- The third-generation LTO Ultrium3 data cartridge can store 400 GB of data.

One tape cartridge in an LTO Ultrium4 tape drive can store a maximum of 800 GB of data (without compression)\*.

- One fourth-generation LTO Ultrium4 data cartridge can store 800 GB of data.

**Table 1.4 Specifications of LTO Ultrium data cartridges**

Data cartridge type		LTO Ultrium3 data cartridge	LTO Ultrium4 data cartridge
Capacity	Non-compression mode	400 GB (nominal)	800 GB (nominal)
	Data compression mode (2:1)	800 GB (nominal)	1,600 GB (nominal)

**Table 1.5 Specifications of LTO Ultrium tape driver**

No.	Item	Specification	
1	Drive type	LTO Ultrium3 tape drive	LTO Ultrium4 tape drive
2	Data transfer rate	60 MB/s (120 MB/s [*1])	120 MB/s (240 MB/s [*1])
3	Interface	SCSI	SCSI
4	Height (thickness) of the drive	Half height	Full height
5	Encryption function	Not supported	Supported (*2)

\*1 Data transfer rate in data compression mode (2:1)

\*2 To use this function of Ultrium4 tape drives, backup software that supports the hardware encryption function or the key management function option of this tape library is required.

Also, the encryption function is compatible only with LTO Ultrium4 data cartridges in an LTO Ultrium4 tape drive. The encryption function is not compatible with Ultrium1, Ultrium2, and Ultrium3 tape cartridges.

**Figure 1.6 LTO Ultrium tape drive**

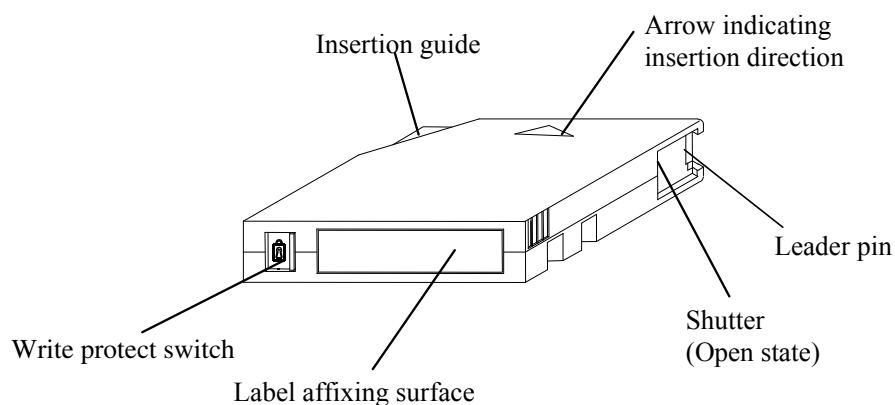
## 1.3 Cartridge

This section describes handling of the cartridge used in this tape library.

### 1.3.1 Ultrium cartridge specifications

The LT210/LT220 tape library uses LTO Ultrium cartridges. Conventional magnetic tape drives place a high load on the leading end of the tape since the drives must read directory information from that portion of the tape.

An LTO Ultrium cartridge has built-in non-contact cartridge memory (EEPROM) in which directory information can be recorded to reduce the number of tape-reading operations and relieve the load placed on the leading end of the tape.



**Figure 1.7 LTO Ultrium cartridge**

**Table 1.6 Tape cartridge specifications**

Product name	Ultrium 2 data cartridge 200GB	Ultrium 3 data cartridge 400 GB	Ultrium 3 data cartridge 400 GB WORM (*2)	Ultrium4 data cartridge (*3)	Ultrium 1 cleaning cartridge U (*4)
Form	Single reel tape cartridge				←
Tape width	12.65 mm (1/2 inch)				←
Tape length	609 m	680 m		820 m	305 m
Storage capacity (*1)	200 GB (400 GB)	400 GB (800 GB)	400 GB (800 GB)	800 GB (1,600 GB)	–
External dimensions	102 x 105.4 x 21.5 mm				←

- \*1 The storage capacity value in the specification is a nominal value. The value in parentheses is the storage capacity when data is compressed by 2:1.
- \*2 WORM (Write Once Read Many) is a data cartridge to which data can be written only once and cannot be changed or erased. When this unit is used with backup software, the backup software must support WORM. Before using a WORM tape cartridge, be sure to read the notes provided in the manual for each backup software product.
- \*3 To use the Ultrium4 tape drive encryption function, not only is an Ultrium4 tape cartridge required but also backup software that supports the hardware encryption function or the key management function option of this tape library is required.
- \*4 This tape cartridge can be commonly used on the Ultrium 2, Ultrium 3, and Ultrium 4 drives. The cleaning cartridge can be used up to about 50 times.
- \*5 See [Table 1.7](#) for information on compatibilities between data cartridges and tape drives.

**Table 1.7 Compatibilities between data drives and data cartridges**

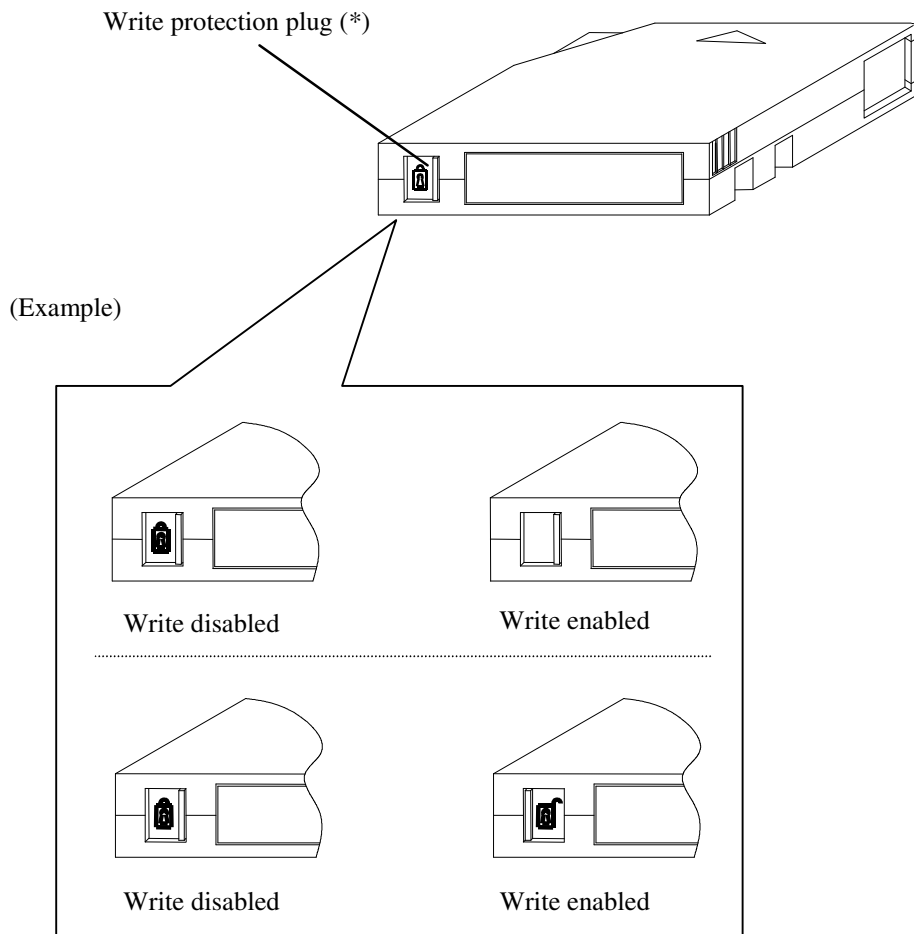
Data cartridge	Storage capacity (*1)	Tape drive	
		LTO Ultrium 3	LTO Ultrium 4
LTO Ultrium 1	100 GB (200 GB)	Read only	Unusable
LTO Ultrium 2	200 GB (400 GB)	Read/write (*2)	Read only
LTO Ultrium 3	400 GB (800 GB)	Read/write	Read/write (*3)
LTO Ultrium 3 WORM	400 GB (800 GB)	Read/write	Read/write (*3)
LTO Ultrium 4	800 GB (1,600 GB)	Unusable (*4)	Read/write

- \*1 The storage capacity values in the specification are nominal values. The value in parentheses is the storage capacity when data is compressed by 2:1.
- \*2 The LTO Ultrium 2 data cartridge stores data in Ultrium 2 format.
- \*3 The LTO Ultrium 3 data cartridge stores data in Ultrium 3 format.
- \*4 The Ultrium 4 data cartridge cannot be used on the Ultrium 3 drive.

### 1.3.2 How to set the write-protect switch

To prevent the data written on a tape from being deleted, you can use the write-protect switch to protect the content of a tape cartridge and disable overwriting.

This section describes how to set the write protection switch of the cartridge.



**Figure 1.8 Write protection of cartridge**

\* The write-protect switch is located at the same position regardless of cartridge type, but the marking on the switch may vary depending on the type of cartridge. For details, refer to the manual supplied with the cartridge to be used.



## 1.3.3 Handling the tape cartridge

Because the tape cartridge is a consumable supply, more errors tend to occur as the tape is used. Be careful when handling the tape so that its performance and reliability can be secured.

### 1.3.3.1 Replacement period

The lifetime of a tape cartridge varies depending on the operating environment (temperature, humidity, dust, etc) and the frequency of use (tape running distance, number of paths). Because the operating environment of the tape cartridge differs for each customer, the lifetime cannot be defined uniformly. As the frequency of use increases, the scratches on the tape surface and dirt on the head also increases, causing more frequent reading and writing errors. For this reason, we recommend replacing the data cartridge in the following periods:

- When the data cartridge is used in a server room or other environment where temperature, humidity, and dust levels are properly controlled:
  - If used for one backup operation every day, replace the tape with a new one after two years.

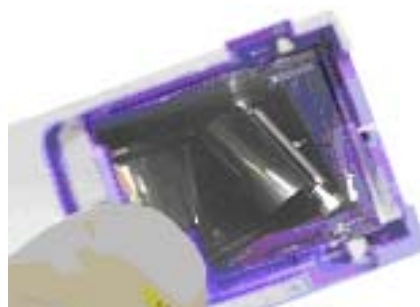
### 1.3.3.2 Notes on the leader pin

Before using a tape cartridge, check the tape cartridge as described below. If the cartridge is found to be abnormal, do not use it.

**(1) Check whether the leader pin is securely latched.**

Normal: The leader pin is latched.

Abnormal: The leader pin has come off without being latched.

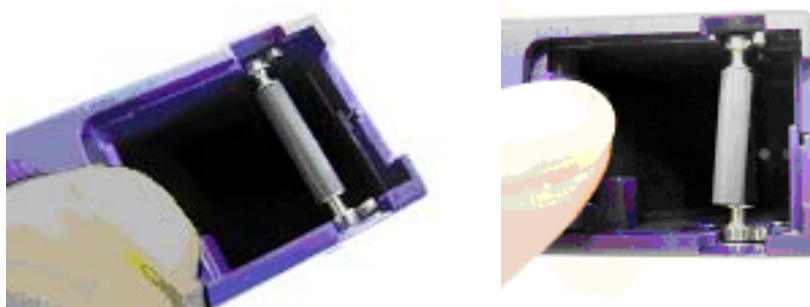


**(2) Check whether the leader pin is correctly attached to the tape with a clip.**

If the clip is not correctly fitted onto the leader pin as shown in the figure below, do not use the tape cartridge.

Normal: The clip is fitted correctly.

Abnormal: The clip is not fitted correctly.  
(The clip is slanted.)



\* **Since the tape cartridge has a precision-made sealed structure, carefully follow the precautions below when checking it:**

- Do not apply excessive force to the tape cartridge or pull out the leader pin and tape.
- Do not forcibly rotate the reel.

**1.3.3.3 Precautions to follow when using the cartridge**

- The tape drive of LT210/LT220 is dedicated for the LTO Ultrium tape cartridge. Tape cartridges such as DLT, 8 mm, and DDS cannot be used. The tape cartridge for LT130/160/LT230/270 can be used.
- The tape cartridge for recording data and the cleaning cartridge are consumable supplies. Although one volume of each cartridge is supplied with the device, be sure to purchase them separately.
- The cleaning cartridge can be used a maximum of 50 times. If the maximum number is reached, replace the cleaning cartridge. For details of the cleaning cartridges, see [Chapter 12, "Maintenance."](#)
- To use a tape 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 LT210/LT220.
  - Leader pin  
Check for any leader pin that has been detached from the cartridge.
  - Replacement period of the tape cartridge  
The tape cartridge is consumed due to mechanical abrasion and chemical deterioration of magnetic material. 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, following as guideline the replacement period described in [Section 1.3.3.1, "Replacement period."](#)
- Do not use a damaged, deformed, or skewed data cartridge.

- When using a data cartridge, be sure to insert it correctly into a magazine slot. Tightly close the protective case from which the data cartridge was removed, and store it in a dust-free place.
- Before using a brand-new cartridge upon removal from the package, confirm that there are no pieces of packaging film or labels bundled with the cartridge stuck to the cartridge.
- Before using a tape cartridge, confirm that the shutter of the tape cartridge can be opened and closed. Do not use a tape cartridge for which the shutter cannot be opened or closed normally. Such a tape cartridge may not be loadable into the tape drive.

#### 1.3.3.4 Notes on handling

- Do not stack tape cartridges high because they may be damaged by falling (stack volumes up to six high). If a tape cartridge is mistakenly damaged by falling, perform data migration immediately after data recovery and then discard the damaged tape cartridge.
- The support track is written into the LTO Ultrium tape cartridge in advance and correct read/write operations are performed based on this information. Though it is possible to delete data using a special device (1200 oersted or more) for the purpose of ensuring data security, the tape whose data has been deleted cannot be reused because the support track has also been deleted.
- Adhesive constituents of binder in the tape may melt and adhere to the magnetic head, corroding the MR elements in the head and causing read/write errors. This results from chemical deterioration of the tape and has nothing to do with the number of times of using the tape. Thus, this problem cannot be resolved by cleaning the tape. Because those constituents tend to melt with the increasing temperature and humidity at which the tape cartridge is stored, sufficient attention needs to be paid to the storage environment conditions. Dispose of tapes with the head to which those constituents adhere.
- Use cartridges in a dew condensation-free environment. If cartridges are brought in from an external environment, such as a storage location, allow them to age before putting them to use.

Generally, cartridges that have been stored in an external environment for 24 hours or shorter require an equivalent period of aging. Cartridges that have been stored in an external environment for 2 days or longer require at least 24 hours of aging.

### 1.3.3.5 Notes on transportation

- Use the tapes brought from outside after letting them adjust to the operation environment conditions for as long as the external storage period (up to 24 hours) to avoid rapid environment changes.
- Transport the tapes by storing them in a container so that they can be protected from flood, dirt, magnetic fields, temperature changes, vibration, and shock.

Table 1.8 lists the environment conditions for transporting the tape.

**Table 1.8 Environment conditions for transporting the tape cartridge**

Item	Condition
Temperature	-23 to 49°C
Humidity	5 to 80 %
Max wet bulb temperature	26°C max
Magnetic field	4000 A/m or less
Others	No condensation

### 1.3.3.6 Notes on storage

- If stored for a long period of time, the tape cartridge should be stood upright for storage.
- Keep tape cartridges away from environments exposed to direct sunlight or large quantities of dust.
- Do not put the tape cartridge near a power cable, motor, and power supply. Otherwise, recorded data may be damaged by the magnetic radiation fields.

Table 1.9 lists the environment conditions for storing recorded tapes.

**Table 1.9 Environment conditions for storing the tape cartridge**

Item	Condition
Temperature	16 to 32°C
Humidity	20 to 80 %RH
Max wet bulb temperature	26°C max
Others	No condensation

## 1.4 Bar Code Label Handling

By affixing the bar code label to the tape, the volume can be registered by reading the bar code, thereby reducing the time required for registration (Note).

### 1.4.1 When affixing the bar code label

For the bar code label used for this library, use a genuine one sold by the tape cartridge vendors.

Note:

The LT210 tape library is not equipped with a bar code reader. It cannot read any bar code affixed to tape cartridges.

#### 1.4.1.1 Specifying the label string

When purchasing a bar code label, specify an 8-digit character string that consists of a volume segment (area) and a media segment (area). Note that a specific type of backup software (e.g., VERITAS NetBackup) only references the last six digits of the character string. Therefore, should the reference area of bar code label be changed when using such backup software, the corresponding setting in the software must also be changed.

Using a bar code label for operation requires a setting in the backup software. For details on this setting, refer to the manual for the backup software.

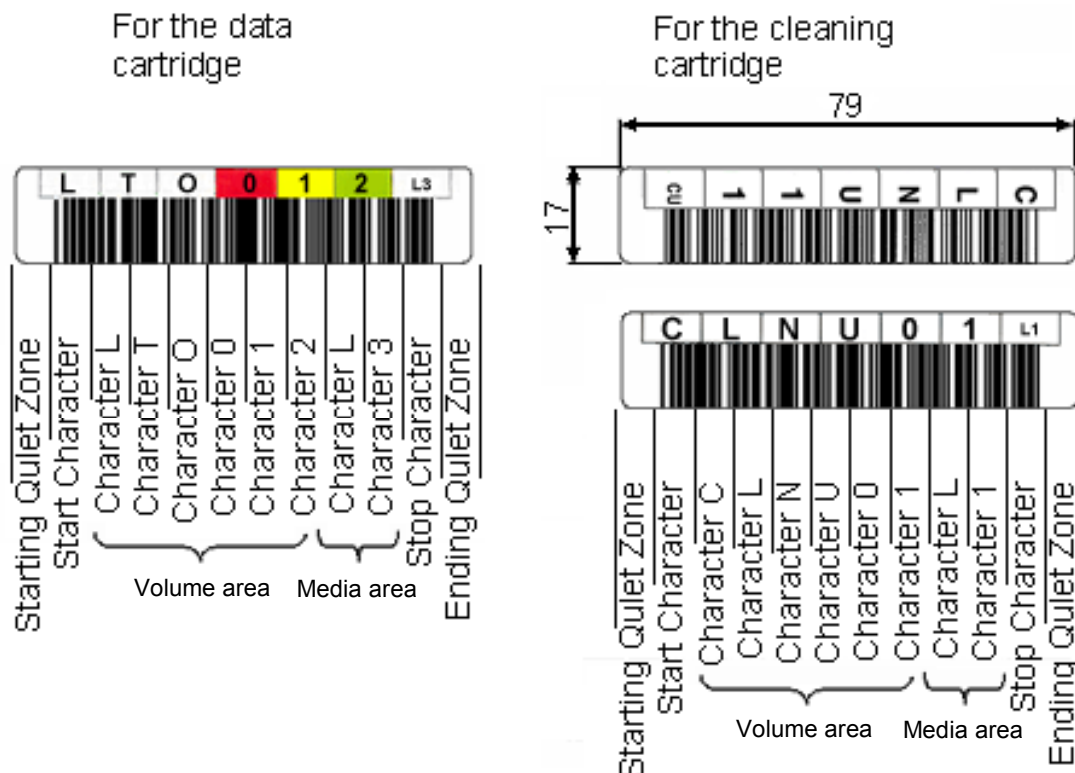


Figure 1.9 Bar code label string

**(1) Specifying the volume area**

A string of six optional characters can be specified in the volume area, excluding "CLNxxx", "DGxxxx", and "CEVLxx" ("x" being any character). [Table 1.10](#) lists characters that can be used for the volume area.

**Table 1.10 Usable characters**

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

**(2) Specifying the media area**

[Table 1.11](#) shows the relationship between the cartridge type and the specified string. Only the specified strings in [Table 1.11](#) can be used.

**Table 1.11 Cartridge type and specified string**

Specified string	L1	L2	L3	L4	LT
Cartridge type	Ultrium 1 data cartridge 100 GB (without compression) 200 GB (with compression)	Ultrium 2 data 200 GB (without compression) 400 GB (with compression)	Ultrium 3 data cartridge 400 GB (without compression) 800 GB (with compression)	Ultrium 4 data cartridge 800 GB (without compression) 1,600 GB (with compression)	Ultrium 3 WORM data cartridge 400 GB (without compression) 800 GB (with compression)

**(3) Specifying the label for cleaning cartridge**

We recommend specifying the serial number of the label for cleaning cartridge as "CLNUxxCU" (xx is any usable characters).

### 1.4.1.2 Notes on label affixing

- Keep the label affixing surface clean and do not leave fingerprints and finger marks on it.
- Affix the bar code label on the specified location (concavity beside the write protect switch) of the tape cartridge correctly (See [Figure 1.10](#)). If the label is affixed at an incorrect location or such that its orientation is incorrect, the bar code may become unidentifiable. After affixing the bar code 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.

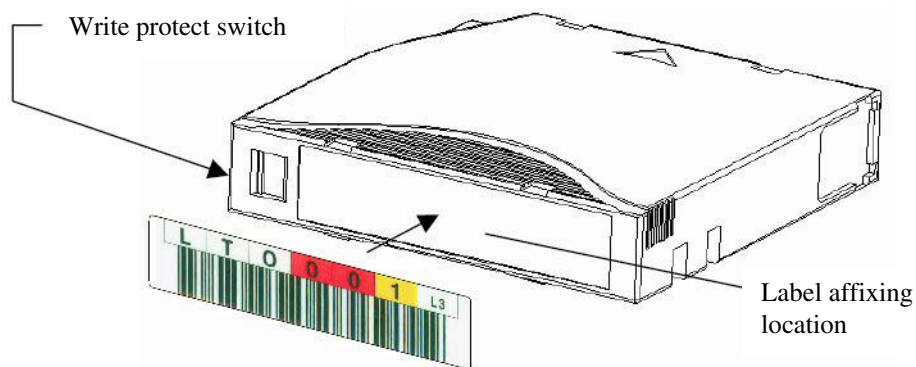


Figure 1.10 Bar code label affixing location

## 1.4.2 When not affixing the bar code label

When the user does not affix the bar code label to a data cartridge, Fujitsu recommends that the user write down the necessary information (e.g., what files are stored on the data cartridge as backup and when backed up) on a label supplied with the data cartridge and affix the label to the data cartridge.

Follow the precautions below when affixing the label.

- Use a label that can be easily peeled off.
- Use a label that will not leave any adhesive material on the cartridge after being peeled off.
- When the information written on the label is to be changed, do not use an eraser but replace the label with a new one. (Index labels are supplied with data cartridges.)
- Always affix a label to the specified position on the cartridge correctly. When replacing an old label with a new one, always remove the old one before affixing the new one.
- When using a label other than the index labels supplied with data cartridges, be sure to select a label that will not leave any adhesive material after being peeled off, and which fits the size of the affixing position on the cartridge.
- Do not affix a label to any position other than the specified affixing position.



**Damage to the library**

Peeling off the label affixed to a cartridge set in the tape library may result in tape library failure.



# Chapter 2 Installation

- [2.1 Installing the Tape Library in a Rack](#)
- [2.2 Stand-alone Kit](#)
- [2.3 Installation Floor Space](#)
- [2.4 Notes on Transporting the Tape Library to Move or Relocate It](#)

This chapter explains how to install the tape library and gives notes on installation.



**Injury or damage to the library**

The work to install the tape library in the rack or stand-alone kit must be performed by a Fujitsu engineer or an engineer authorized by Fujitsu for maintenance work. Under no circumstances must this work be performed by the customer.

## 2.1 Installing the Tape Library in a Rack

### 2.1.1 Installing the rack-mount kit

#### 2.1.1.1 Components of the rack-mount kit

The rack-mount kit is composed of the following components.

**Table 2.1 Components of the rack-mount kit**

No.	Name	Quantity
(1)	Rail 1-FL	1
(2)	Rail 1-FR	1
(3)	Rail 2-BL	1
(4)	Rail 2-BR	1
(5)	Spacer	2
(6)	Screw holder	6
(7)	Washer	4
(8)	Screw (M5)	10
(9)	Screw (M4)	8
(*)(10)	Inner rail R	1
(*)(11)	Inner rail L	1
(*)(12)	Screw (M3)	4

Note: The asterisk (\*) in the No. column indicates that the part is already installed on the main unit of the tape library.

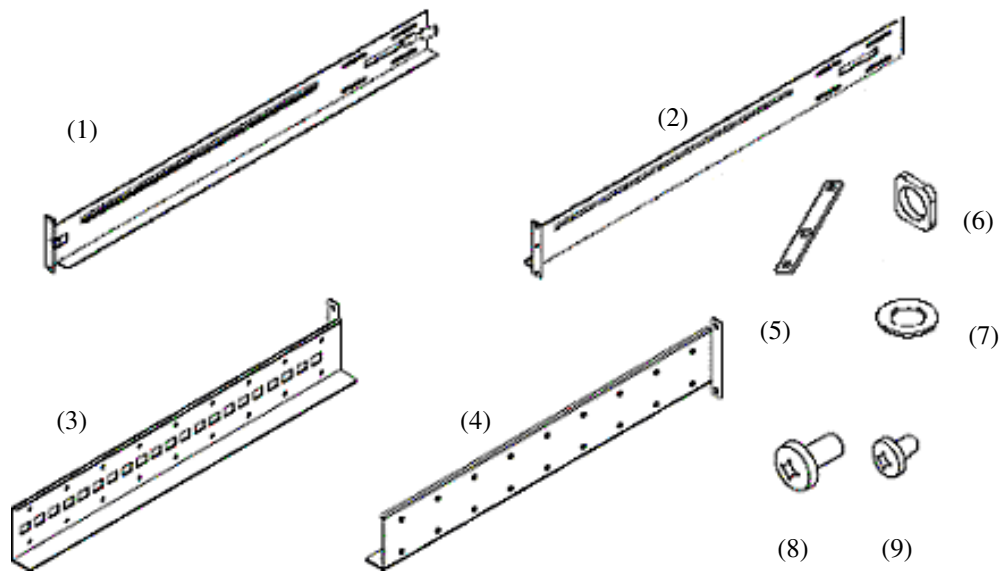


Figure 2.1 Components of the rack-mount kit

### 2.1.1.2 Notes on Installation on the rack

The rack to install an auto loader must satisfy the conditions 1 to 4 shown below.

Check the conformance by drawings or by actual measurement.

- Must be EIA 19-inch rack of universal pitch.
- The front and rear doors have ventilation holes for sufficient cooling of the unit.
- The rack must have the portion to secure the unit on its front and rear side. The securing portion must have the shape as shown in [Figure 2.2](#) and [2.3](#).
- The inner dimension of the rack must satisfy the conditions shown in [Figure 2.4](#) and [Table 2.2](#).

A product such as Industry standard server PRIMERGY or UNIX server SPARC Enterprise, which needs to be pulled out from the rack and whose top cover needs to be removed during maintenance, may be mounted below this unit. In this case, secure a vertical space of 1U below this unit (such as by mounting a blank panel). Otherwise, the operator panel of this unit may interfere with the server top cover, preventing its removal.

Must have securing portions on front and rear of the rack.

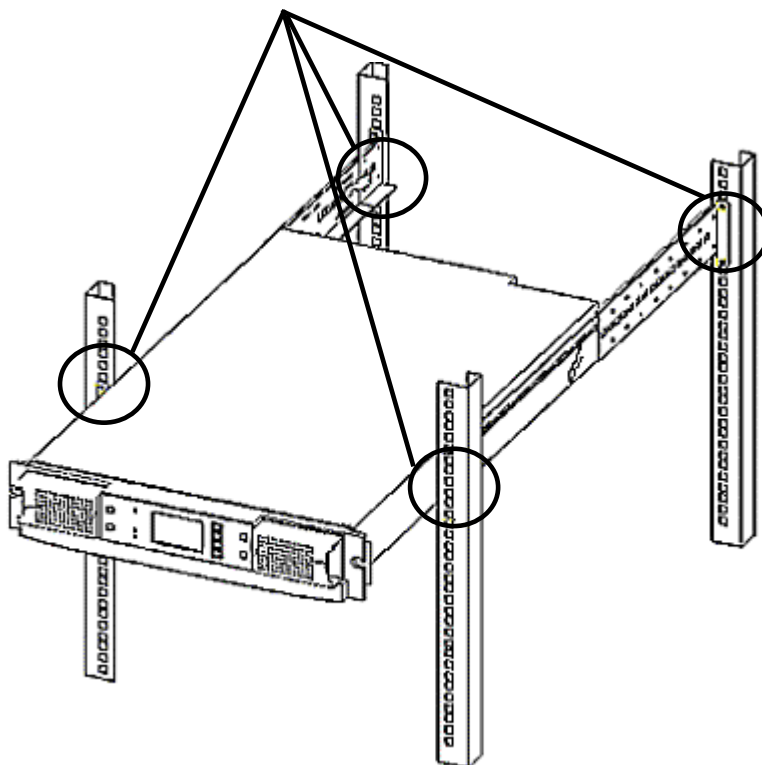


Figure 2.2 Shape of securing portion

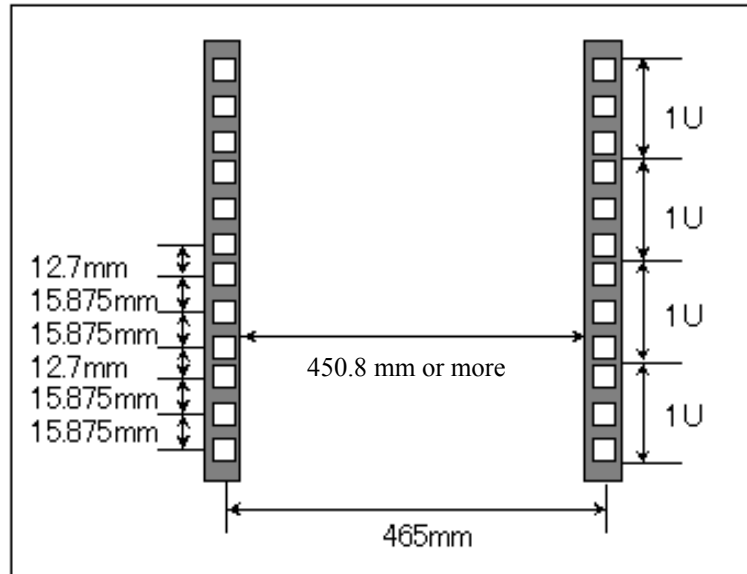
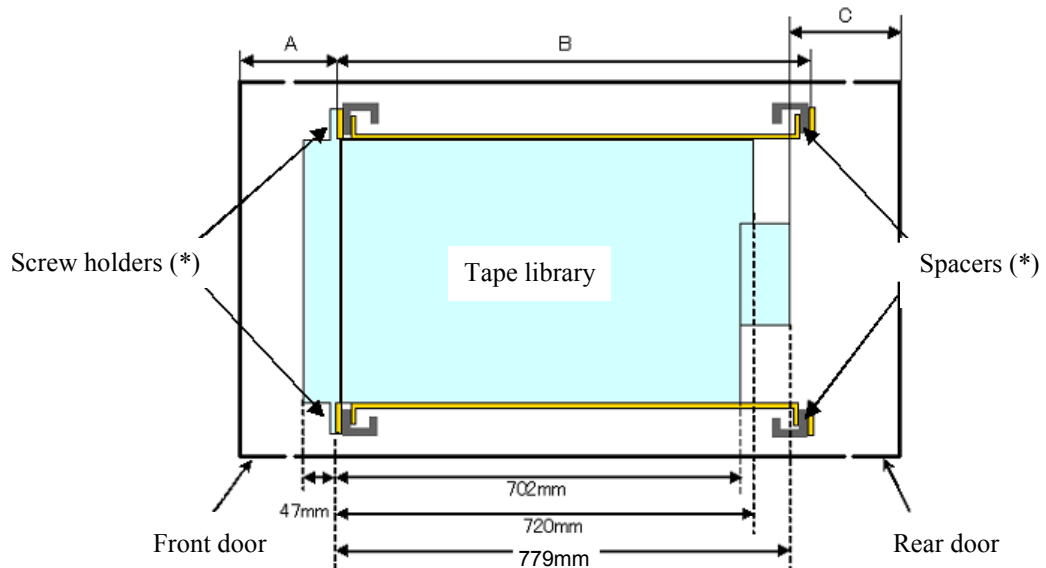


Figure 2.3 Shape of securing portion (front and rear)

Table 2.2 Dimensional conditions of the rack

Position	Description	Condition
A	From securing portions on front to inside of the front door	60 mm or more
B	Space between the securing portions on front and rear	630 to 890 mm
C	From the rear of the unit to the inside of the rear door	60 mm or more



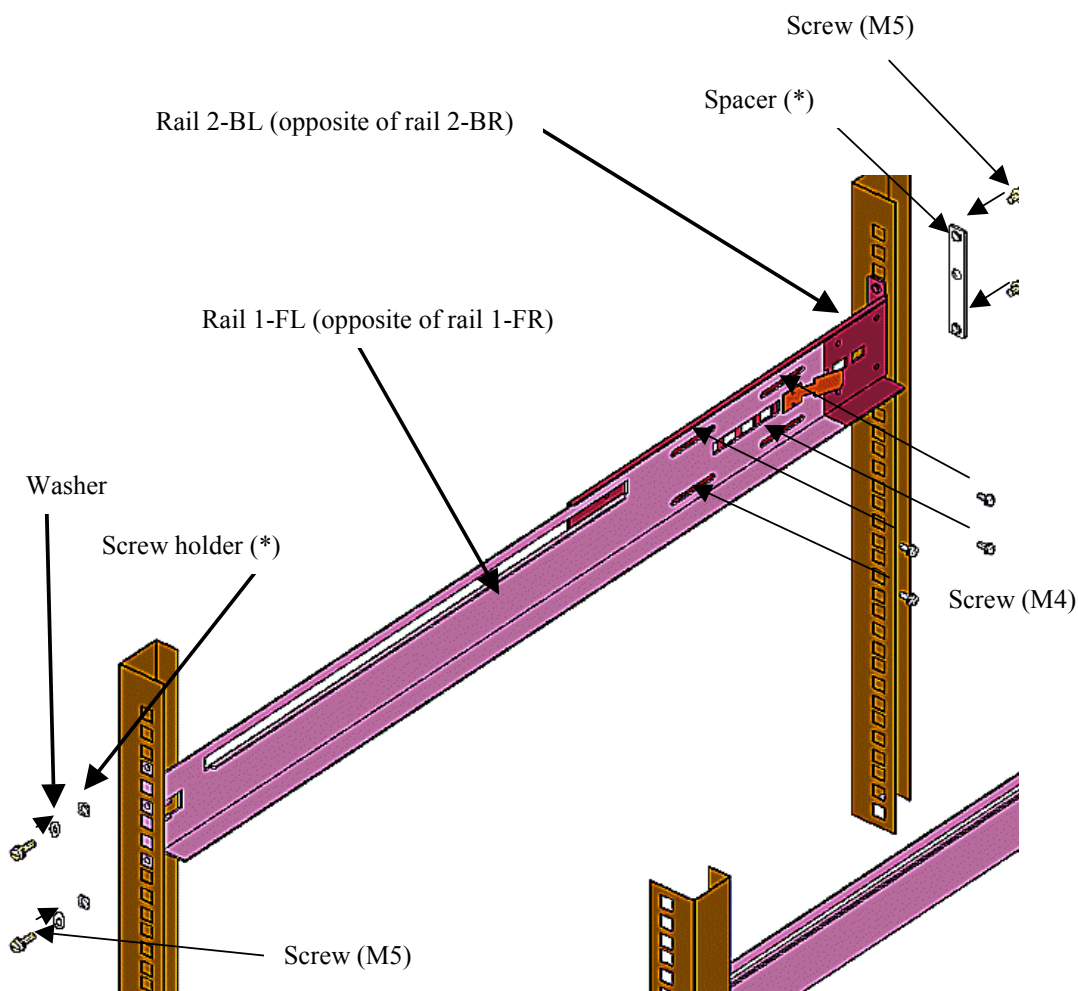
\* Spacers and screw holders are not used when the rack has round mounting holes.

Figure 2.4 Dimensions of the rack

### 2.1.1.3 Installation of side housing

Take the following steps to install the rail 1 and rail 2 into the rack. (See [Figure 2.5.](#))

- 1) Place a rear supporting column of the rack between rail 2-BL and a spacer (\*), and then use two M5 screws to secure the rail and spacer to the supporting column from the rear.
  - 2) Fit a screw holder (\*) into each of the two square holes on the corresponding front supporting column of the rack, and then use two M5 screws and M6 washers to secure rail 1-FL to the supporting column.
  - 3) Fix the two M4 set screws to the rail 1 and the rail 2.
  - 4) Install the side housing (right) in the same way.
- \* Do not use the spacers and screw holders when the rack has screw holes or round mounting holes.



**Figure 2.5 Installation of rail**

## 2.1.2 Installation of tape library

### Caution

#### **Injury or damage to the library**

The tape library weighs about 25 kg. When installing the tape library in a rack, observe the precautions below to ensure safety.

The work to install the tape library in the rack must be performed by at least two persons.

Use a lift or other apparatus to lift and position the tape library. If neither a lift nor other apparatus is available, and installation work must be done manually, remove the cartridges from the tape library to reduce unit weight before starting installation work.

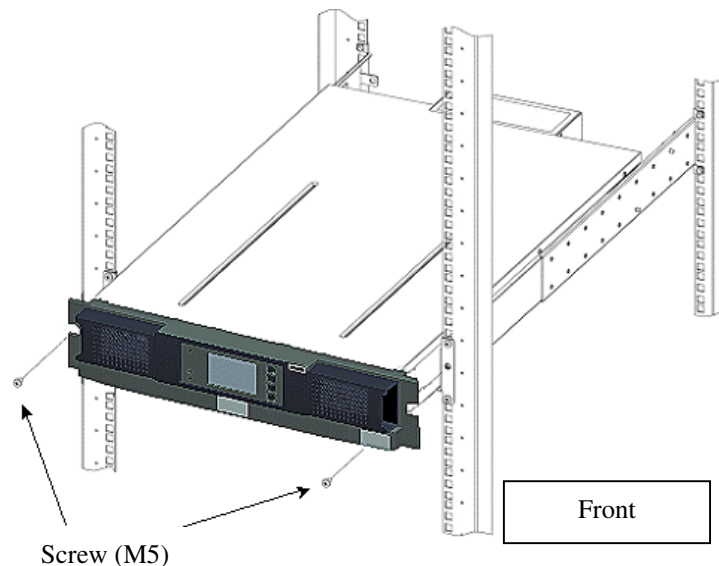
### Caution

#### **Injury or damage to the library**

If other devices are installed in the rack where the tape library is installed, position the heaviest device at the bottom in the rack.

Installing a device heavier than the one at the bottom higher in the rack will make the rack unstable and possibly cause it to fall over.

- 1) Slowly push the tape library into the rack while being very careful to prevent the tape library from touching the screws on the rack-mount kit.
- 2) Use the four M5 screws to secure the tape library to the rack. (See [Figure 2.6.](#))



**Figure 2.6** Installation of tape library

## 2.2 Stand-alone Kit

### 2.2.1 Installing the stand-alone

This section explains how to install the tape library in the stand-alone kit, which enables the user to use the tape library as desktop equipment instead of installing it in a rack.



#### Damage to the library

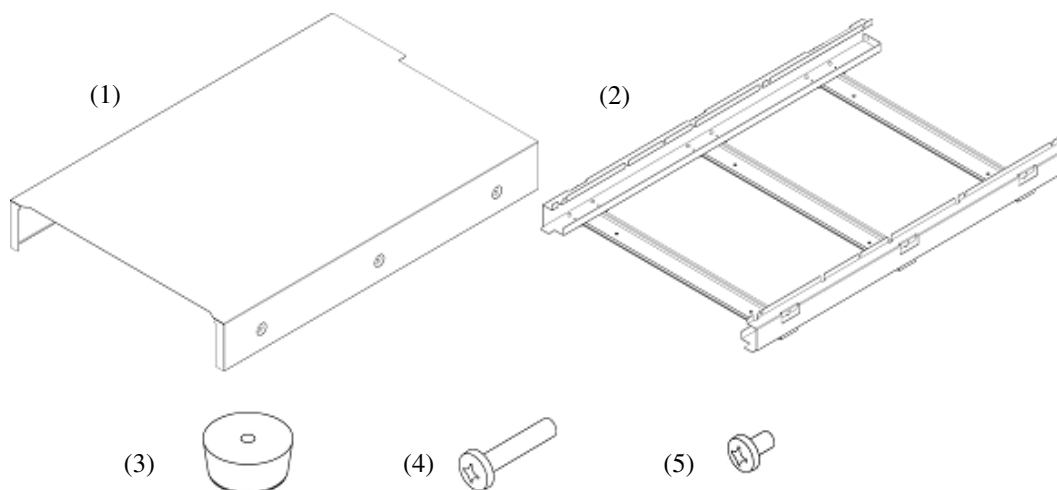
Cables could be damaged during the work to install the tape library in the stand-alone kit. To prevent cable damage, remove all cables from the tape library before starting installation work.

#### 2.2.1.1 Components

The stand-alone kit is composed of the following components.

**Table 2.3 Components of the stand-alone kit**

No.	Name	Quantity
(1)	Desktop cover	1
(2)	Desktop base ASSY	1
(3)	Rubber leg	6
(4)	Screw (M4)	6
(5)	Screw (M3)	16

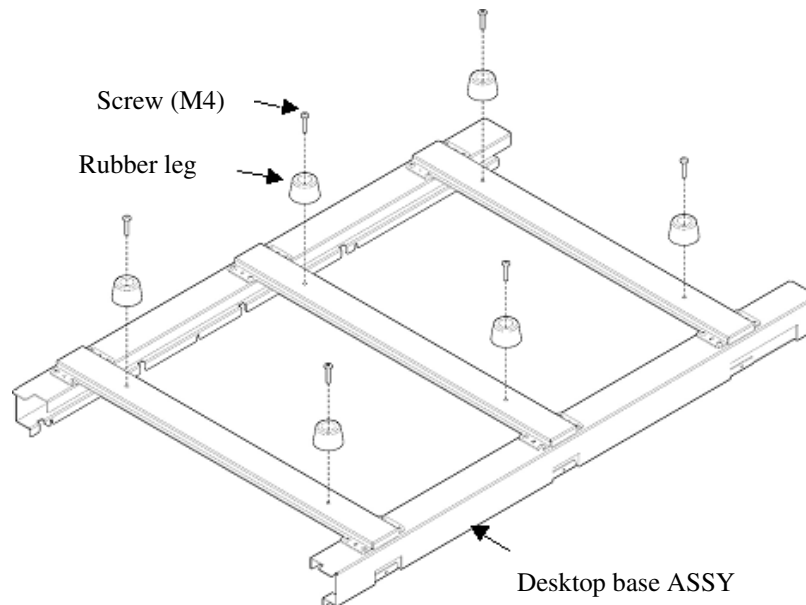


**Figure 2.7 Components of the desktop kit**



### 2.2.1.2 Assembling the stand-alone kit

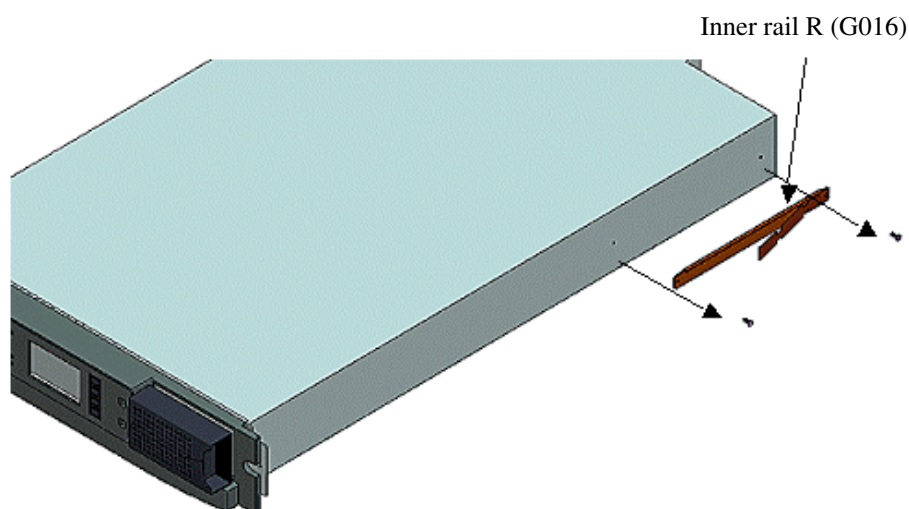
- 1) Attach the six rubber stoppers to the rear face of the assembly with M4 screws.



**Figure 2.8 Fixing the rubber stopper**

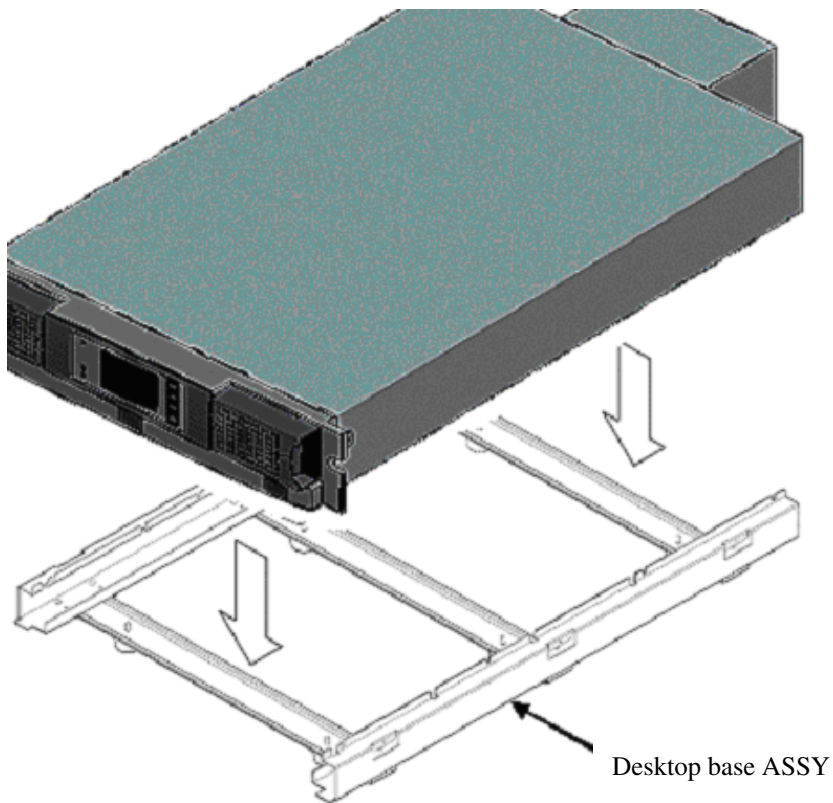
- 2) Place the tape library on a workbench, remove the two M3 screws fixing inner rail R, and remove the rail from the tape library.

Also remove inner rail L located on the left side of the tape library in the same manner.



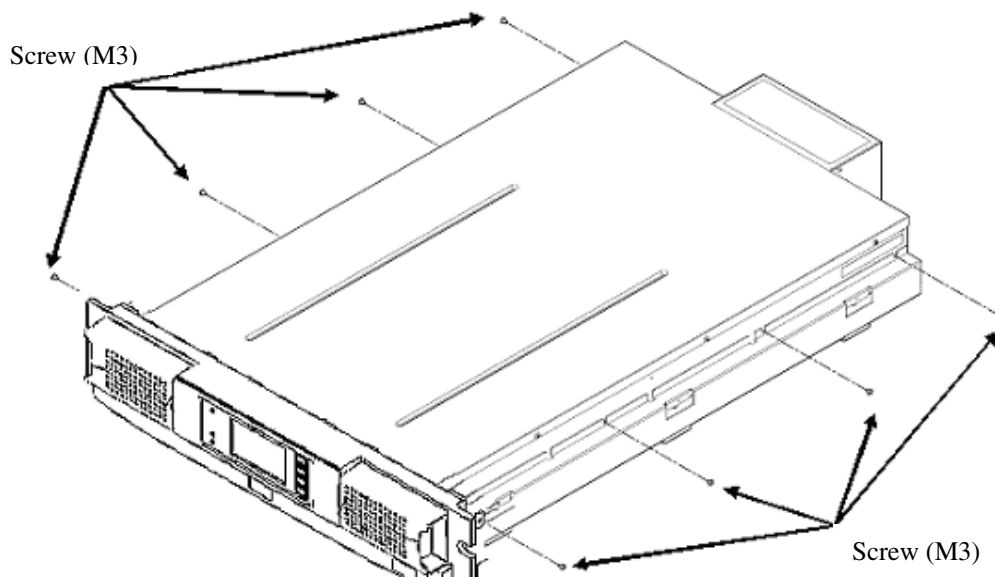
**Figure 2.9 Removing the inner rails**

- 3) Install the tape library in the desktop base assembly.



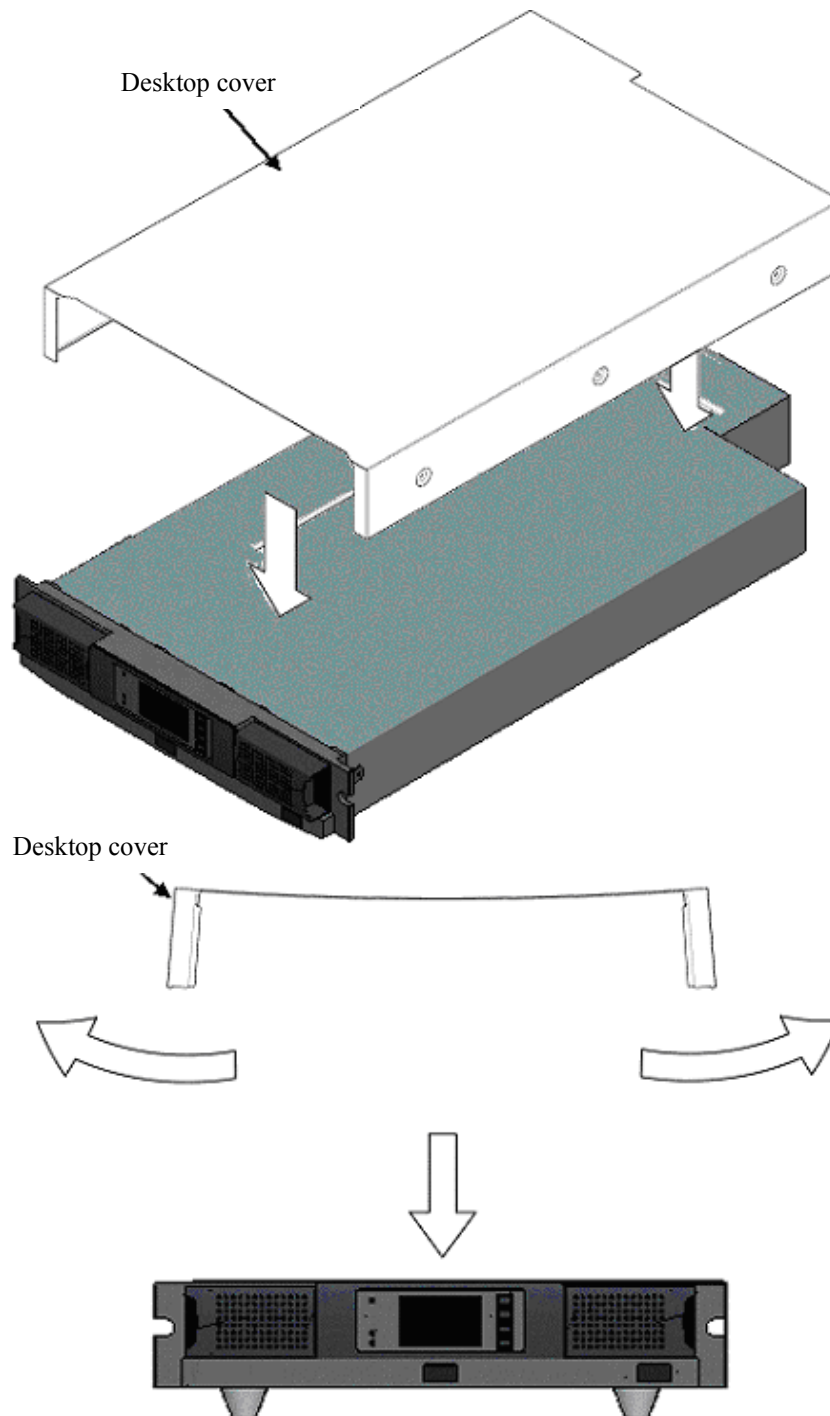
**Figure 2.10 Installing the tape library**

- 4) Secure the both sides of the tape library with four M3 screws.



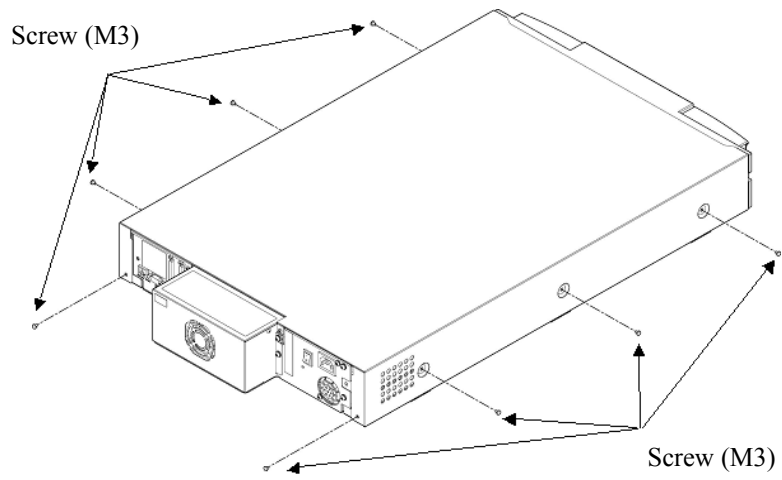
**Figure 2.11 Securing the library to the desktop base assembly**

- 5) Put the desktop cover over the tape library.  
Curve the both sides of the desktop cover and put it over the tape library.



**Figure 2.12** Installing the cover

- 6) Secure the cover with eight M3 screws (left side, right side, and rear side).

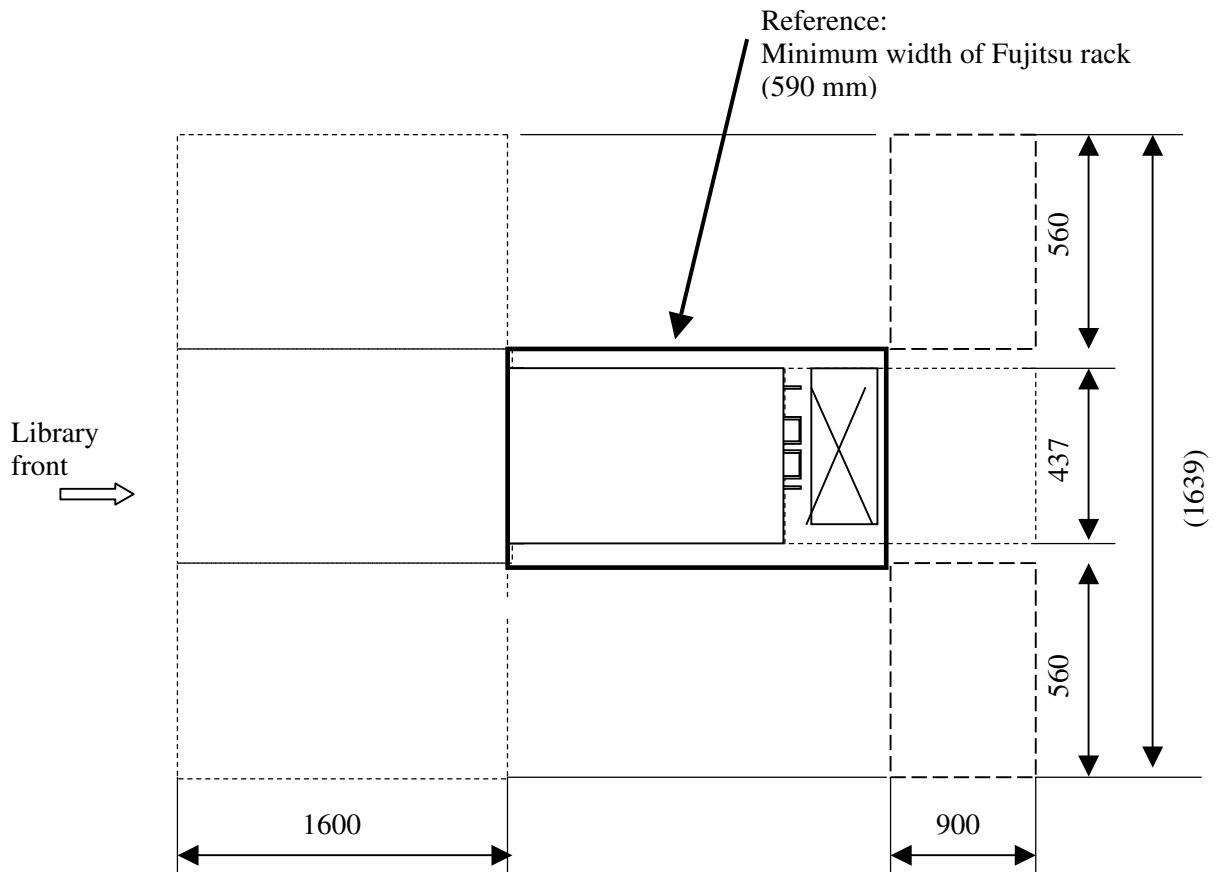


**Figure 2.13 Securing the cover**

To remove the stand-alone kit, perform steps above in reverse order.

## 2.3 Installation Floor Space

### 2.3.1 Rack-mount type

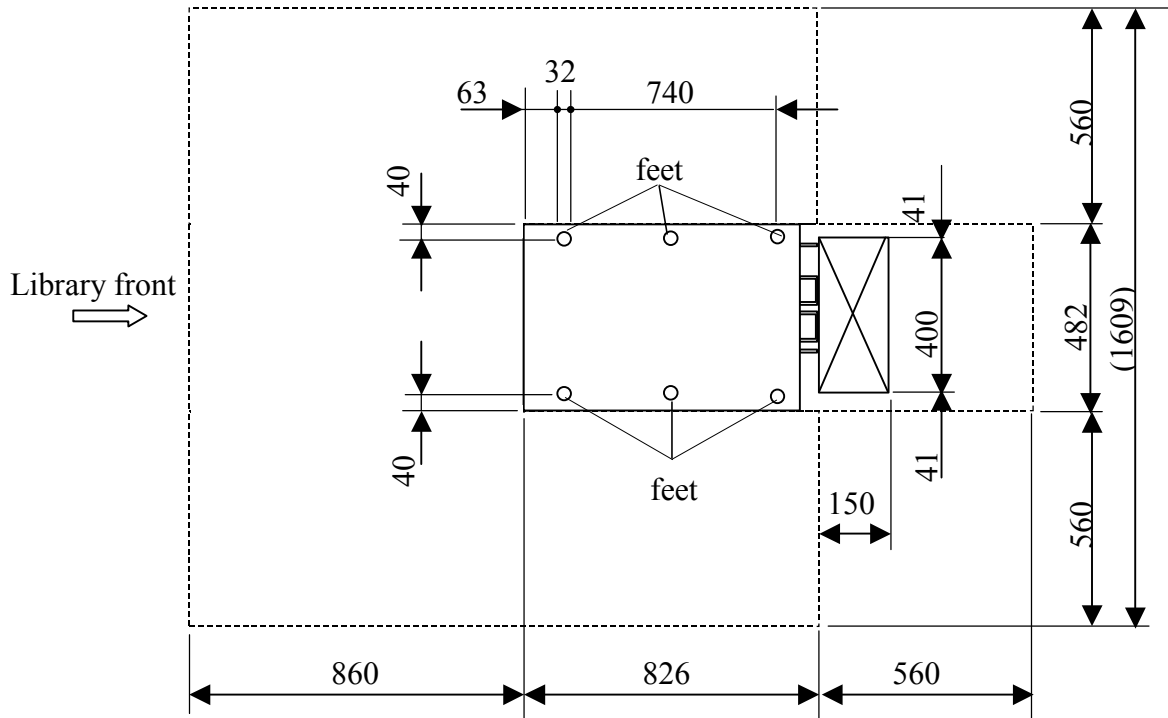


**Figure 2.14 Rack-mount type unit installation clearances**

Notes:

- 1) Hold the maximum height of the library mounted in a rack to 1200 mm above the floor to ensure safety and ready access during operation. (If this limit is to be exceeded, give full consideration to the ease of maintenance work to be carried out on top of the library.)
- 2) Take care in servicing the library so that the rack will not topple over.
- 3) Maintenance clearances widthwise should conform to the physical dimensions of the mounting rack.
- 4) The front and rear doors of the rack must have an adequate number of ventilation holes for library cooling. If the specifications of the doors do not allow the installation of ventilation holes, such as for punching metal and meshes, maintain clearances of at least 40 mm between the library and the doors.

### 2.3.2 When using stand-alone kit



**Figure 2.15 Stand-alone type unit installation clearances**

Note:

Can be installed to adjoin both sides. The maintenance clearances on both sides of the library are required for maintenance work.

## 2.4 Notes on Transporting the Tape Library to Move or Relocate It

- Before transporting the library to move or relocate it, make sure to execute the "MOVE SHIP POS." command in the COMMANDS submenu on the operator panel, and move the robot in the library to the transport position. Moving the library without executing this command may lead to a failure in the robot. This section explains a detailed procedure.
- Take out all remaining tape cartridges from the library before moving it.
- Since this library is quite heavy, be sure to exercise caution when handling it.



### **Damage to the library**

Make sure to move the robot in the library to the transport position even if the library will stay in the rack during transport.

### 2.4.1 Procedure for moving the robot to the transport position

- 1) Select USER LOGIN from the operator panel.
- 2) Enter the password (Default: 1234).
- 3) Select [COMMANDS].
- 4) Select [MOTHER SHIP POS.].
- 5) With [EXECUTE? [YES] [NO]] displayed, select [YES].
- 6) The robot is moved to the transport position, and all magazines are ejected.
- 7) Take out all the tape cartridges in the library.
- 8) Reinsert the magazines, and turn off the power supply.



### **Damage to the library**

After the robot is moved to the transport position, it will no longer be fixed in the transport position when the power is turned on. In such cases, reexecute the "MOVE SHIP POS." command.





# Chapter 3 Connection Method and Notes on Connection

**3.1 SCSI Cable**

**3.2 AC Power**

**3.3 Starting and Shutdown of the System**

This chapter explains how to connect the tape library to a server and gives notes on connection.

### 3.1 SCSI Cable

#### 3.1.1 Specifications of SCSI cable and terminator

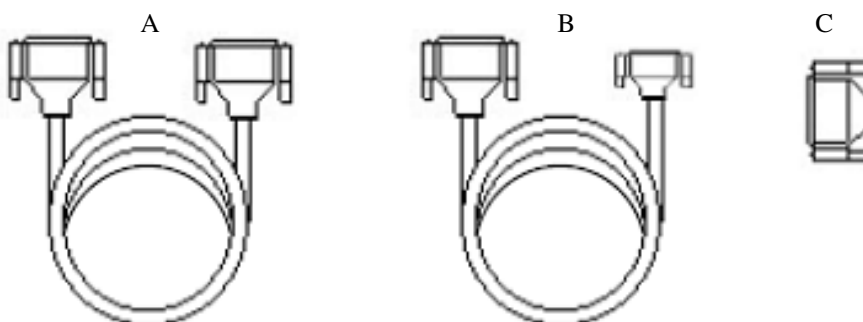
To connect the tape library to a server, use a SCSI cable and terminator that meets the specifications given in [Table 3.1](#) and [Figure 3.1](#).

**Table 3.1 SCSI cable and terminator**

No.	Specification	Cable length	Description
A	SCSI cable	5 m or less	Cable for connection with the server (to be procured separately) (68-pin half-pitch) - (68-pin half-pitch)
B	SCSI cable	5 m or less	Cable for connection with the server (to be procured separately) (68-pin half-pitch) - (68-pin VHDCI)
C	Terminator	-	One is provided with the tape library.

Note:

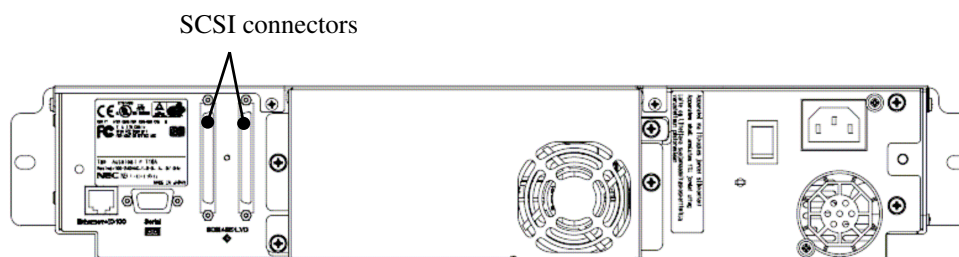
A SCSI cable exceeding 5 m cannot be used to connect the tape library to a server.



**Figure 3.1 SCSI cable and terminator**

### 3.1.2 Connection of SCSI cable

- 1) Use a SCSI cable to connect the tape library to a server. The tape library has two SCSI connectors on the rear. Either SCSI connector can be used to connect the SCSI cable.



- 2) After connecting the SCSI cable, confirm that the SCSI cable connector is fitted straight into the SCSI connector. The SCSI cable connector has screws to secure it to the SCSI connector. Confirm that the SCSI cable connector is firmly secured to the SCSI connector.
- 3) After connecting the SCSI cable, be sure to connect the terminator supplied with the tape library. Otherwise, the tape library will not operate correctly.

#### **Caution**

##### **Damage to the library**

Do not make a daisy chain connection between tape libraries or between tape library and other SCSI devices.

#### **Remarks:**

For how to connect the tape library to a server, refer to the manual for the server.

### 3.1.3 Setting of SCSI ID

The factory-set SCSI IDs are as follows.

- Tape drive: ID=01 (Do not change.)

Remarks: This device controls the robot of the library via the tape drive.

## 3.2 AC Power

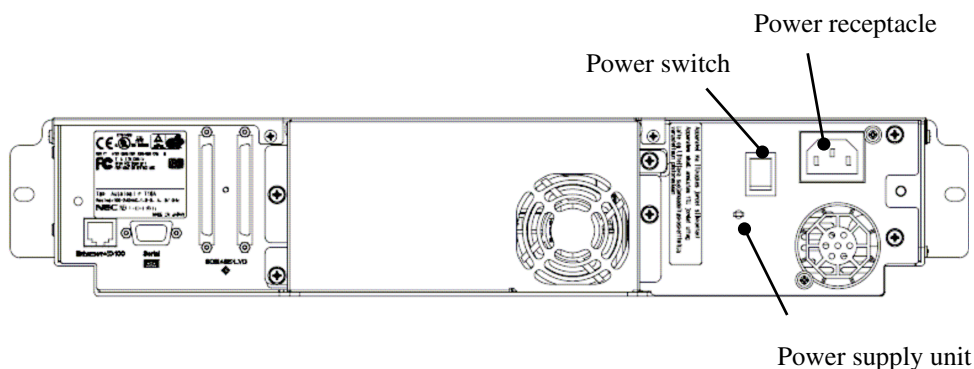
### 3.2.1 Specification requirements for AC power cable

The AC power cable to be connected to the tape library must meet the following requirements:

Use the AC power cable supplied with the tape library. When the power voltage is 200 VAC, use the optional 200 V power cable.

### 3.2.2 Connection of AC power cable

- 1) After connecting the signal cables and the terminator, make sure that the power switch is set to OFF before connecting the AC power cable.
- 2) Make sure that the power switch is set to OFF, then connect the AC power cable provided with the unit to the AC power connector of the unit. Make sure that the plug of the power cord is completely inserted.



### 3.2.3 Power-on and power-on sequence

Turning on the power of the tape library starts power-on sequence automatically.

- 1) Set the power switch located on the rear of the unit to UP position (↑) to turn on the power.
- 2) When the power is supplied, [POWER LED] goes on green and the system starts power-on test.
- 3) When the power-on test successfully completed, a [LOGIN] menu appears on the operator panel.

**Caution:** When you have just turned off the tape library, wait at least 10 seconds before turning it back on. Immediately after the power-off, the protective circuit will work to inhibit power-on.

Caution: Before turning off the tape library, confirm that the tape drive does not contain any tape cartridge.  
If a tape cartridge is found in the tape drive, eject it from the tape drive, and return the tape cartridge to its slot.

**Damage to data**

Shutting off the power to the tape library while a tape cartridge is still loaded in a tape drive may cause the data recorded on the tape to be lost.

## 3.3 Starting and Shutdown of the System

### 3.3.1 Starting

To start the system, first turn on the power to the tape library and the peripheral devices connected to the server, and then the power to the server. Turn on the power to the server after confirming that the tape library has started.



#### **Malfunction**

If the data cartridge is loaded in the drive before starting the system, read/write data stored in the data cartridge may fail.

### 3.3.2 Shutdown

Do not shutdown the system while the unit is operating. Before you attempt to shutdown or restart the system, make sure that the unit stops its operation.

- 1) Before shutdown, make sure that no data cartridge is loaded in the drive through the backup application or message on LCD. If a data cartridge is loaded in a tape drive, eject it from the tape drive and return it to the slot.
- 2) To shutdown the system, first turn off the power of the server, then the library (and peripherals connected to the server).



#### **Equipment damage**

If the system is shutdown with the data cartridge being loaded in the drive, read/write error of data may occur at the next startup or may cause damage of the data cartridge and/or the library.



#### **Damage to data**

Shutting off the power to the tape library while a tape cartridge is still loaded in a tape drive may cause the data recorded on the tape to be lost.

### 3.3.3 Restart

Do not restart the system while the unit is operating. Before you attempt to restart the system, make sure that the unit stops its operation.

# Chapter 4 Setup

**4.1 Log In**

**4.2 Operator Panel Screens**

This chapter describes how to configure the tape library and the drive.

Configuration made on the tape library and the drive will become valid after initialization of the tape library.

## 4.1 Log In

You must login the system when you use the operator panel feature (e.g., ejecting a magazine or configuring the unit). For information on how to operate the operator panel, see [Section 1.1, "Tape Library."](#)

### Damage to data

Two login accounts, such as "User" and "Service," are available. However, the SERVICE LOGIN menu is exclusively used by maintenance personnel. Users must not log in with the SERVICE LOGIN menu.

Login account	User	Password
USER	Customer	1234
SERVICE	Maintenance personnel	-

- 1) After the unit is powered on and diagnosis of robot is completed, the menu screen as shown below appears. Select the user level to log in on this screen.

Select [USER LOGIN]



- 2) If you select [USER LOGIN], the following menu is displayed.

Enter the user password on this menu screen.

Enter the user password consisting of four-digit number (from 0 to 9).

**The factory-set user password is set as "1234".**





- 3) If the password entered does not match the one stored in the unit, the following message is displayed.

If this message is displayed, repeat steps from 1).

Retry for password entry is not limited.



- 4) When the correct password is entered, the following message is displayed.



- 5) Then, the following message is displayed, and the unit becomes ready to operate



## 4.2 Operator Panel Screens

After login, the operator panel displays the following two screens:

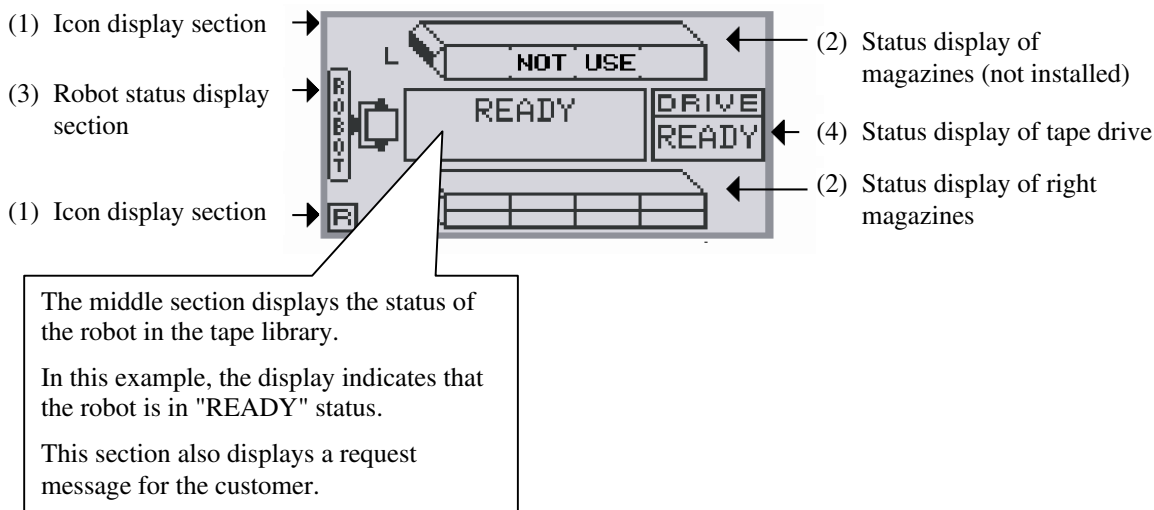
- Menu screen for operation and setting
- Status Display screen for real-time display of internal status of the tape library

Subsequent sections explain the contents of the Status Display and Menu screens.

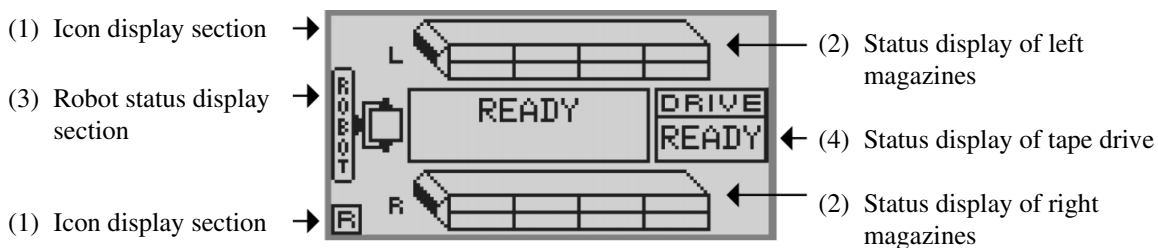
### 4.2.1 Status display screen

[Status Display screen] changes its display when no button operation is performed within certain period of time on [Menu screen], or when Cancel button is pressed on [LOGIN] menu.

Figure 4.1 and 4.2 show the "Status Display screen."



**Figure 4.1 LT210 status display screen**







**Figure 4.2 LT220 status display screen**

The next section explains each item displayed on the Status Display screen.

**(1) Icon display section**

Indicates the current setting for robot section of the unit. The icons are displayed on the upper left and lower left corners on the screen.

**Table 4.1 Icons on operator panel**

Icon	Status
	Indicates that the removal of magazine is prohibited by an application program.
	Indicates that the operation mode of the unit is set to [RANDOM ACCESS MODE].
	Indicates that the operation mode of the unit is set to [SEQUENTIAL MODE].
	Indicates that the unit is in offline state (SCSI communication with host PC is disconnected).

**(2) Magazine status display section**

Indicates the status of the two magazines (right and left) installed in the tape library.

If the magazine slot contains a tape cartridge, the slot is indicated by solid black as shown below.

- (LT210)

The figure below shows that the right magazine contains tape cartridges. (The LT210 tape library is not equipped with a left magazine.)



- (LT220)

The figure below shows that the left magazine contains tape cartridges.



When the magazine is unlocked, the display changes as shown below.

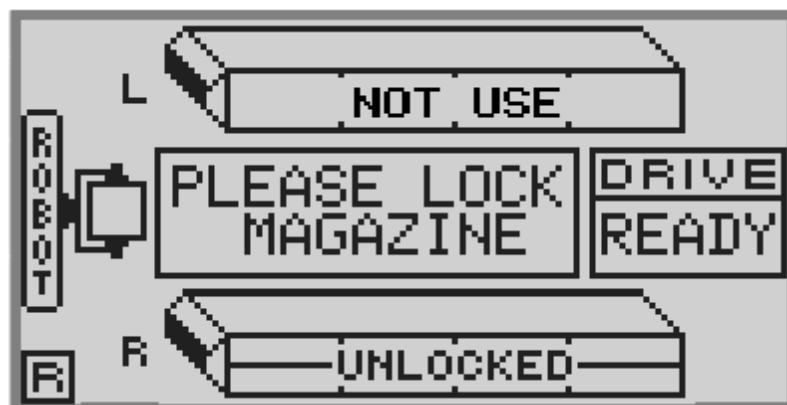
- (LT210)

In the example shown in the figure below, the display section indicates that the right magazine is unlocked with message "UNLOCKED."

Therefore, the tape library displays the message "PLEASE LOCK MAGAZINE" requesting the customer to lock the magazine (or insert one into the corresponding slot).

### Important

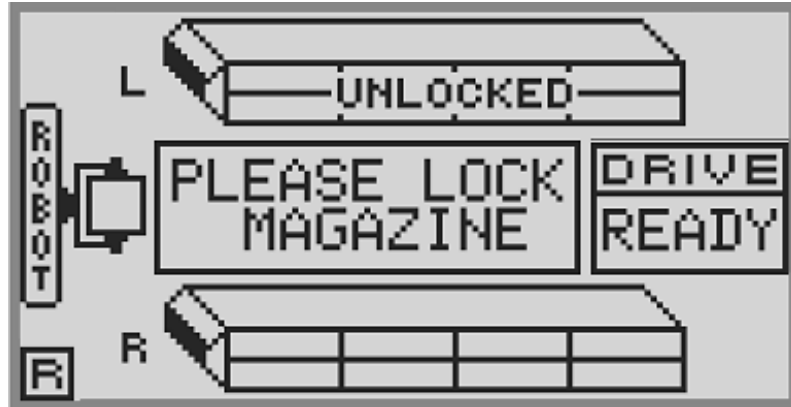
Note that unlocking the magazine shuts off the power supply to the robot, which in turn disables operation of the tape library with the backup software.



- (LT220)

In the example shown in the figure below, the display section indicates that the left magazine is unlocked with message "UNLOCKED."

Therefore, the tape library displays the message "PLEASE LOCK MAGAZINE" requesting the customer to lock the magazine (or insert one into the corresponding slot).

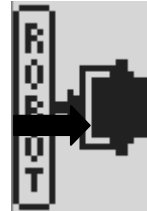


### (3) Robot status display section

Indicates whether a tape cartridge exists in the picker section of the robot.



With no tape cartridge



With tape cartridge

Depending on the robot operation, one of the following phrases is displayed in the center part of the operator panel:

**Table 4.2 Robot status displayed in the center part of the operator panel**

Panel display	Description
INITIALIZE	Tape library initialization in progress.
POSITION CHECK	Accessor position check in progress.
MAGAZINE CHECK	Magazine position check in progress.
INVENTORY	Inventory in progress.
READY	In ready state.
CLEANING . . .	Drive cleaning in progress.
DIAGNOSIS	Accessor mechanism diagnosis in progress.
PLEASE LOCK MAGAZINE	Magazine insertion requested.
EXCHANGE CLEAN CART.	Cleaning cartridge replacement requested. * ALARM LED is on.
CLEAN DRIVE	Drive cleaning requested. * ALARM LED is on.
ENDURANCE COUNT OVER	Total number of accessor operations reached the endurance limit. * ALARM LED is on.
DRIVE FAN ALARM	Drive fan alarm occurred. * ALARM LED is on.
DRIVE EXCHANGED	Drive replacement detected.
*** CHK *** CODE:[xxxx]	Library in error state (xxxx is a CHK code).
MOVE SLOTxx → SLOTxx	Moving from SLOTxx to SLOTxx.
MOVE SLOTxx → DRIVE	Moving from SLOTxx to drive.
MOVE DRIVE → SLOTxx	Moving from drive to SLOTxx.
MOVE ROBOT → SLOTxx	Moving from ROBOT to SLOTxx.
MOVE ROBOT → DRIVE	Moving from ROBOT to drive.

**(4) Status display of tape drive**

Indicates the status of tape drive installed in the library.

- Shown below indicates the tape drive is in "READY" status.



The drive status display section displays one of the error codes listed in [Table 4.3](#) according to the drive operation and status.

Always check the drive status display section to confirm the drive status before operating the operator panel to move a cartridge from the drive.

**Table 4.3 Terms used to indicate the drive status**

<b>Indication</b>	<b>Description</b>
EMPTY	Indicates that no tape cartridge is inserted into the tape drive.
EJECT	Indicates that the tape cartridge was ejected from the tape drive.
READY	Indicates that a tape cartridge is inserted into the tape drive.
READ (*)	Indicates that the tape drive is reading data from the tape cartridge.
WRITE (*)	Indicates that the tape drive is writing data to the tape cartridge.
LOAD (*)	Indicates that the tape drive is loading a tape cartridge.
INIT	Indicates that the tape drive is being initialized.
000X	See <a href="#">Appendix D</a> for error codes for the drive.
CLEAN	Indicates that cleaning of the drive is in progress.

- \*: If the tape drive is in "READ", "WRITE", or "LOAD" status, you may fail to operate the tape drive from the operator panel.

## 4.2.2 Menu screen

[Menu screen] is used for operation and setting of the library. The following items are displayed.

### (1) Icon

Displays an icon to indicate the type of login to the tape library.

### (2) Menu title

Indicates the menu title currently displayed.

### (3) Clock

Indicates the built-in clock time in hour:minute format.

After the tape library or tape drive settings are changed, the following characters may be displayed in addition to the clock.

**REBOOT**: Indicates that, to enable the settings, the tape library needs to be rebooted or the power needs to be turned off and then turned on again.

**RESET!**: Indicates that, to enable the settings, the drive needs to be reset or the power needs to be turned off and then turned on again.

### (4) Menu item

Indicates the menu item. See "Tree Structure of Panel" in [Section 4.2.3, "Main menu."](#)

### (5) Explanation of button

Indicates the available menu items and function of button used for configuration. For details, see [Section 1.1.1.4.](#)

### (6) Scroll bar




Appears when the number of menu items overflows the screen.



Figure 4.3 [Menu screen] window



Table 4.4 Icons on operator panel

Icon	Status
	Indicates that the unit is logged in with user authority.
	Indicates that the unit is logged in with CE (Customer Engineer) authority.
	Indicates that the robot section of the library is in offline state (SCSI communication with host PC is disconnected).

### 4.2.3 Main menu

This section explains the configuration of menus displayed in the menu item section with menu trees and tables.

**(1) UNLOCK MAGAZINE Menu**

Use the UNLOCK MAGAZINE menu when removing the magazine from the library.

**(2) COMMANDS Menu**

Use the COMMANDS menu when moving the cartridge in the library or cleaning the drive through operator panel.

**(3) CONFIGURATION Menu**

Use the CONFIGURATION menu to configure the library and the drive.

**(4) SLOT INFORMATION Menu**

Use this menu to view the information of the cartridge stored in the library.

Submenu item	Description
RIGHT MAGAZINE	Displays the information of the cartridge stored in right magazine.
LEFT MAGAZINE	Displays the information of the cartridge stored in left magazine.
DRIVE	Displays the information of the cartridge loaded in the drive.
PICKER	Displays the information of the cartridge retained by the hand.

**(5) SETTING LIST Menu**

Use this menu to view the configuration of the library.

Various information about the library, network, and drives are displayed.

Submenu item	Description
LOADER	MODEL TYPE / USER SLOT / CLEANING SLOT / LOADER MODE / SLOT ORIGIN / AUTO LOAD MODE / POWER SAVE / INIT. ELEMENT / MODE SENSE / UNIT ATT. MODE / TAPE ALERT / RECOVER ERROR / STARTUP MODE / ABORT MODE / FAST LOAD MODE / AUTO CLEANING / AUTO LOGIN / BACKLIGHT / BUZZER / DATE / TIME / GMT
NETWORK	LINK SPEED / DHCP / IP ADDRESS / SUBNET MASK / GATEWAY / DNS / SNTP / MAC ADDRESS
DRIVE	MODEL / TYPE / SCSI ID / SPEED

**(6) CURRENT INFO Menu**

Use this menu to confirm the various settings related to the network and drives.

Menu item	Setting item
NETWORK	IP ADDRESS / GATEWAY
DRIVE	PORT TYPE / BUS MODE / SCSI ID

**(7) LOGOUT Menu**

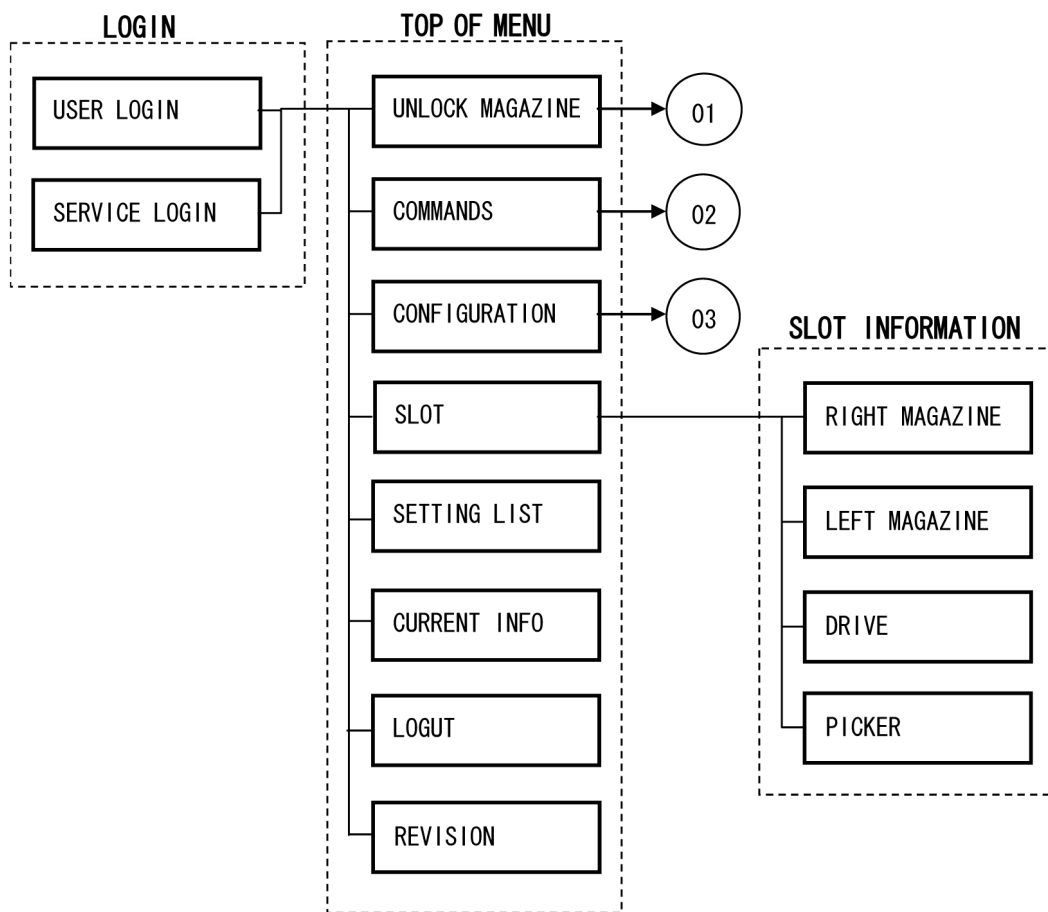
Returns to LOGIN menu.

**(8) REVISION Menu**

Displays the firmware revision of the library and the installed drive.

**Table 4.5 Items that can be checked with REVISION**

Submenu item	Description
LOADER	VENDOR ID / PRODUCT ID / FW REV. / SERIAL NO. / MAC ADDRESS
DRIVE	VENDOR ID / PRODUCT ID / FW REV. / SERIAL NO.



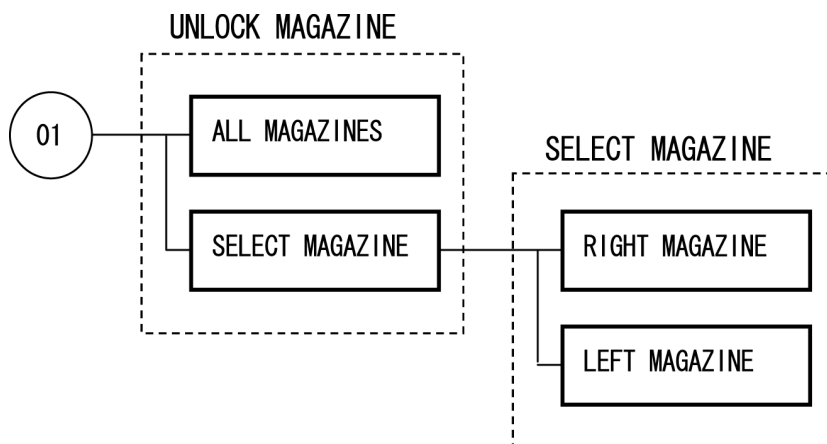
Note:

UNLOCK MAGAZINE submenu (01) and SLOT INFORMATION submenu "LEFT MAGAZINE" do not apply to the LT210 tape library.

**Figure 4.4 Menu tree of TOP OF MENU**

#### 01 UNLOCK MAGAZINE Submenu

Submenu item	Description
ALL MAGAZINES	Unlock all the magazines. Unlocking the magazine allows you to take all the magazines out of the library. (See <a href="#">Section 5.2.1</a> ).
SELECT MAGAZINE	Select the magazine you want to unlock. You can select [RIGHT MAGAZINE], [LEFT MAGAZINE] on the screen. (See <a href="#">Section 5.2.1</a> ).



Note:

The UNLOCK MAGAZINE submenu does not apply to the LT210 tape library.

**Figure 4.5 Menu tree of UNLOCK MAGAZINE**

## 02 COMMANDS Submenus

Submenu item	Description
MOVE TAPE	Use this menu to move a cartridge in a slot to another slot of the library. Specify the slot type and slot numbers of source and destination slots.
UNLOAD DRIVE	Use this menu to unload the cartridge from the drive.
CLEAN DRIVE	Use this menu to provide cleaning on the drive. Cleaning cartridge must be loaded beforehand. Specify the slot number that contains the cleaning cartridge and the drive number you want to provide cleaning. (See <a href="#">Section 12.1.3.1</a> )
ALARM LED OFF	If a failure or error is detected, such as when a request for cleaning the drive is issued or a request for replacing the cleaning cartridge is issued, the Alarm indicator goes on. Use this command to turn the Alarm indicator off after removing the cause for the failure or error.
DIAGNOSIS	Use this menu to diagnose the robot.
MOVE SHIP POS. (*)	Use this menu to move the robot to the transport position before transporting the tape library. Executing this menu (command) ejects all magazines. Remove all cartridges from the magazines, set the magazines back in the slots, and then turn off the tape library power.
REBOOT	Use this menu to reboot the library. You can specify the status of the library after rebooting as "online" or "offline". (See <a href="#">Section 5.4</a> )

\* Be sure to execute this command when moving the tape library.

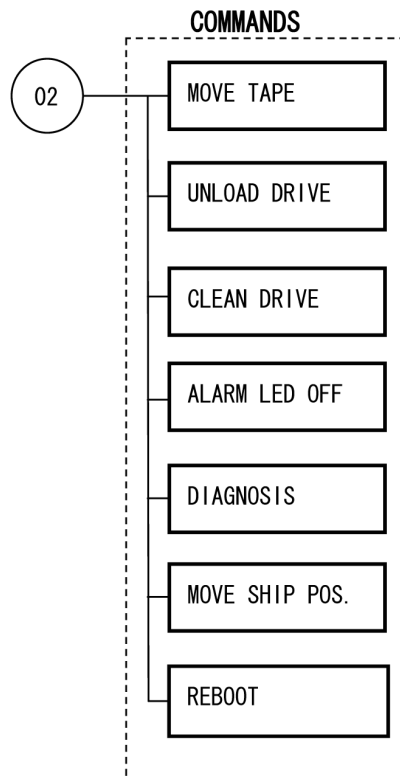


Figure 4.6 Menu tree of COMMANDS

### 03 CONFIGURATION Submenus

Submenu item	Description
LOADER SETTING	Use this menu to configure the library.
DRIVE SETTING	Use this menu when setting SCSI ID for the drive and updating firmware.
LOADER OPTION	Use this menu when setting barcode reader and automatic cleaning.
PANNEL SETTING	Use this menu when providing various settings of operator panel.
NETWORK SETTING	Use this menu when setting ethernet.
SET DEFAULT	This menu is for restoring the factory default. Note: Do not execute this submenu item (command) because it initializes the tape library settings.

- DRIVE SETTING Menu

Submenu item	Default	Description
PORT SETTING (SCSI ID)	01	Set the SCSI ID for the drive. (Do not change)
SPEED	U160	SCSI SPEED can be toggled between Ultra160 (U160) and Ultra320 (U320). SCSI SPEED can be displayed and set from this menu only on models containing an LTO Ultrium4 SCSI drive.
UPDATE FIRMWARE	-	(cannot be used)

- LOADER OPTION Menu

Submenu item	Default	Description
BARCODE READER *	ON	Specify whether to use the barcode reader or not.
AUTO CLEANING	OFF	Specify whether the library performs cleaning of the drive automatically or not. (Do not change)

\* Because the LT210 tape library is not equipped with a bar code reader, the submenu BARCODE READER does not apply to the LT210 tape library.



### Caution

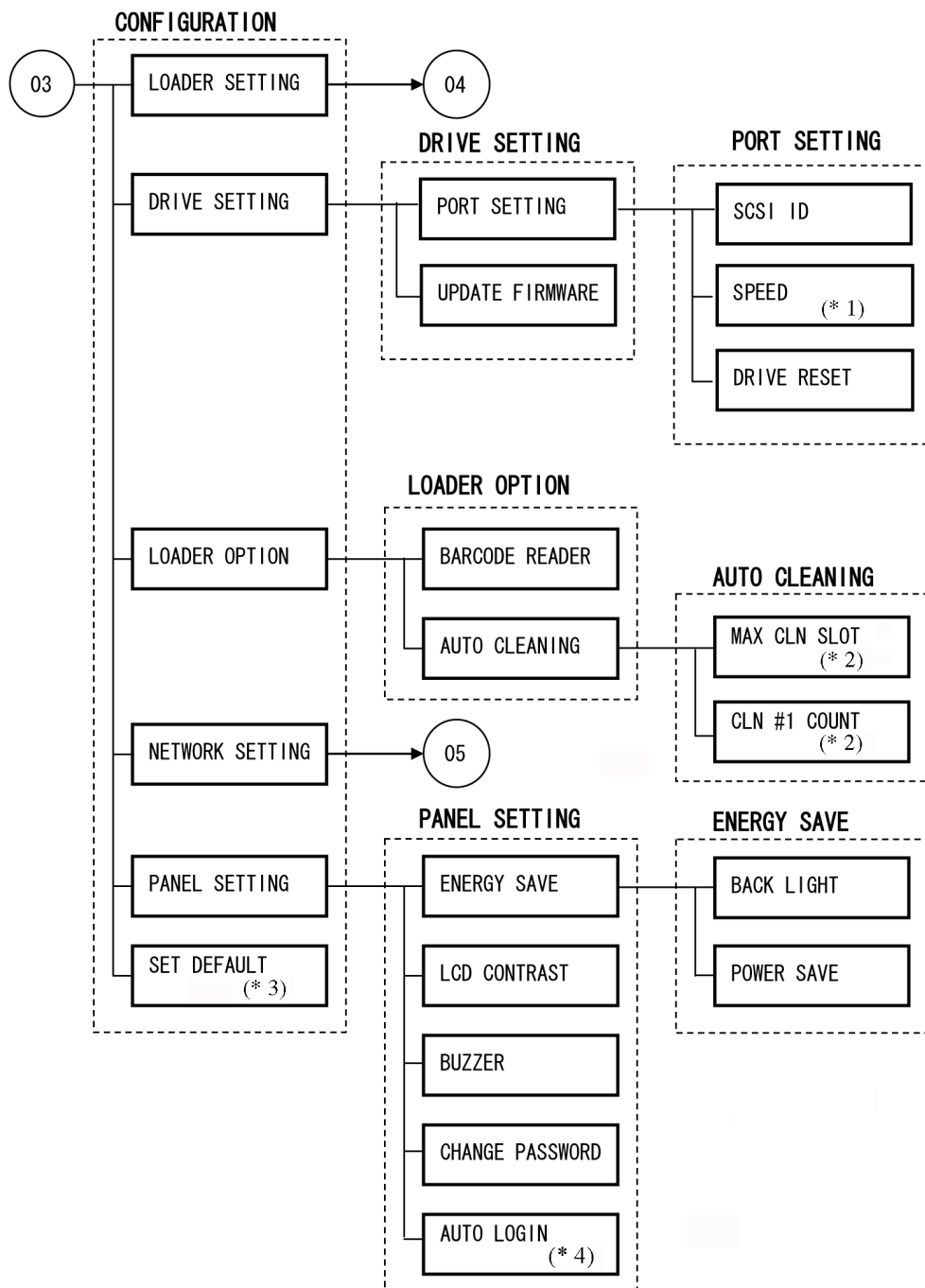
#### Equipment damage

The AUTO CLEANING feature always set to OFF (disabled).  
Enabling this feature may cause an error.

- PANNEL SETTING Menu

Submenu item	Default	Description
ENERGY SAVE	600 (seconds)	BACK LIGHT Set the time duration to automatically turn off the back-light of operator panel.
	10 (minutes)	POWER SAVE Set the time duration to enter into the power-saving mode. 1 to 127 can be set.
LCD CONTRAST	5	Set the contrast of the operator panel. The value between 0 and 9 is available.
BUZZER	ON	Specify whether to emit the buzzer sound.
CHANGE PASSWORD	1234	Change the login password.
AUTO LOGIN (*)	OFF	If no panel operation is performed for several minutes, the library automatically logouts. You must login the library again when the next panel operation is needed.  Setting this feature to ON enables automatic login without entering the login password.  Turning off and then on the power supply returns this feature to the default (OFF).

\* This menu item is displayed only for user login, and cannot be used for service login.



\*1 This submenu item is displayed only on models containing an LTO Ultrium4 SCSI drive.

\*2 This submenu item is displayed only when AUTO CLEANING is set to ON. (AUTO CLEANING is not supported.)

\*3 Precaution: Do not select SET DEFAULT. (The SET DEFAULT submenu item reverts the settings of the tape library to the default settings made at the factory.)

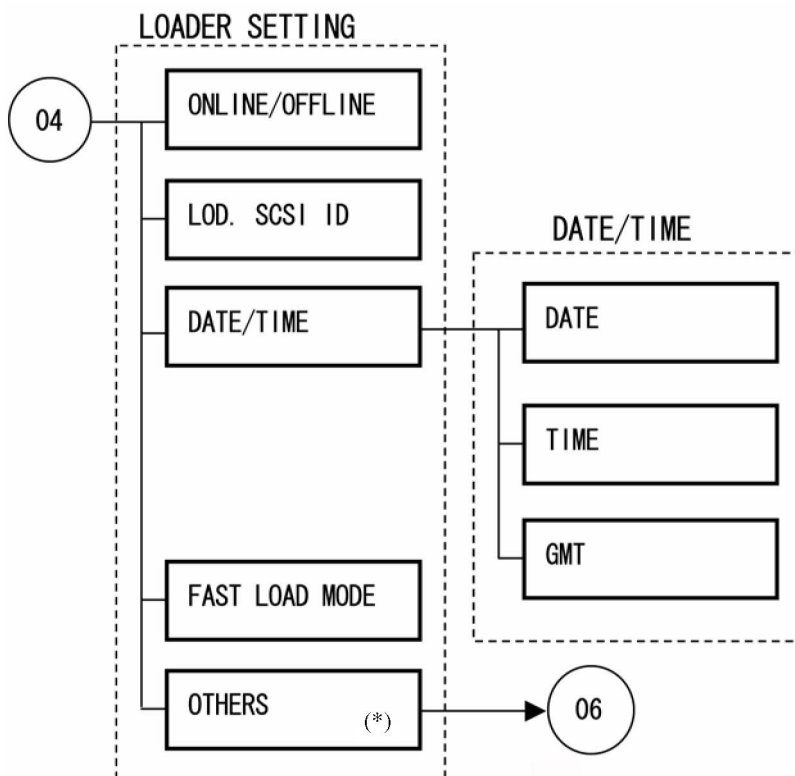
\*4 This submenu item is displayed only for user login.

**Figure 4.7 CONFIGURATION menu tree**

- LOADER SETTING Menu

Submenu item	Default	Description
ONLINE/OFFLINE	ONLINE	Set the library to online or offline mode. Some menus appear only when the library is offline mode. (See <a href="#">Section 5.1.4</a> )
DATE/TIME (*)	-	DATE: Set the date in YYYY/MM/DD format. TIME: Set the time in HH/MM/SS format. GMT: Set the time zone in the range between -12:00 and +13:00 Default: +9 (Japan) If it is necessary to change the DATE/TIME setting, change the setting to an appropriate one by referring to <a href="#">Appendix G, "World Time Zones."</a>
FAST LOAD MODE	OFF	Adjust the accessor operation while loading the cartridge.

- After setting data, visually confirm that the set data is correct.



- \* Selectable only when the library is in offline state.

**Figure 4.8 Menu tree of LOADER SETTING**



- NETWORK SETTING Menu

Submenu item	Default	Description
LINK SPEED	AUTO	Set the network link speed. Select AUTO to use the automatic setting.
DHCP	OFF	Enable the DHCP server.
IP ADDRESS (*)	192.168.002.001	Set an IP address used to access the library from the network.
SUBNET MASK (*)	255.255.255.000	Make the library accessible via the subnet.
GATEWAY (*)	000.000.000.000	Indicates the gateway connection between subnets.
DNS SERVER	255.255.255.255	Set the DNS server address.
SNTP SERVER	OFF	Enables the SNTP server. Set ON and an IP address for this item to use the server.

\* Only values up to 255 can be entered for IP ADDRESS, SUBNET MASK, GATEWAY, and DNS SERVER.

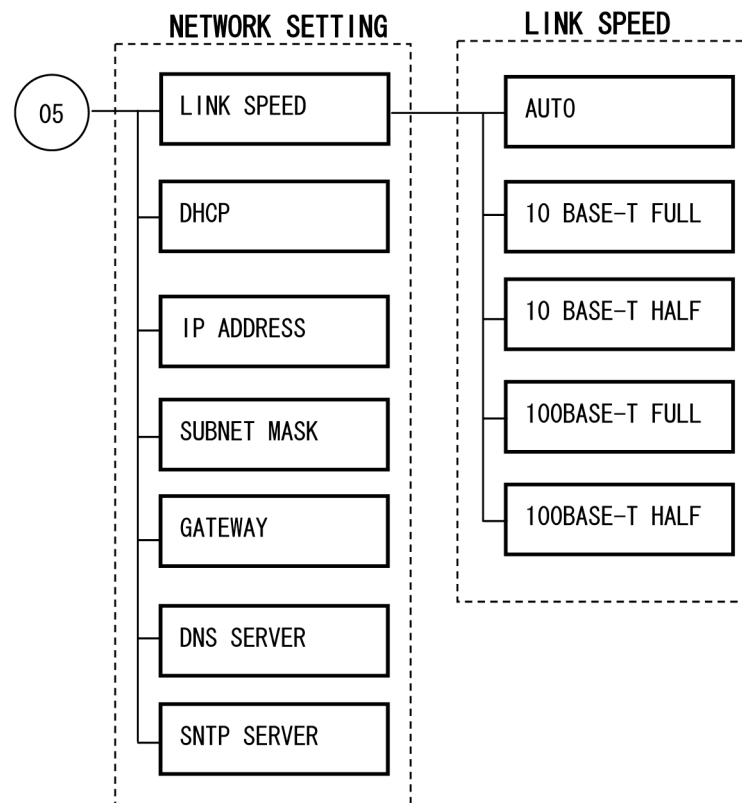
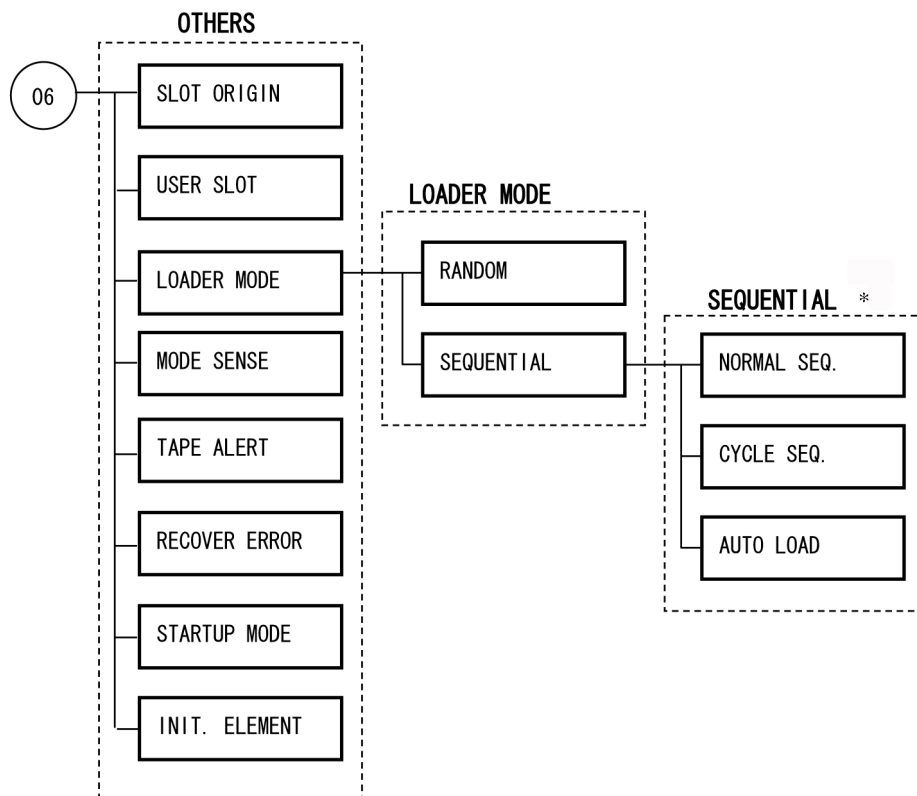


Figure 4.9 Menu tree of NETWORK SETTING

- OTHERS Menu

Submenu item	Default	Description
SLOT ORIGIN	1	Set the Origin number of the slot address to "0" or "1". (Do not change)
USER SLOT *	8 or 16	(Do not change)
LOADER MODE	RANDOM	(Do not change)
UNIT ATT. MODE	OFF	(Do not change)
MODE SENSE	18B	(Do not change)
TAPE ALERT	ON	(Do not change)
RECOVER ERROR	OFF	(Do not change)
STARTUP MODE	ONLINE	(Do not change)
ABORT MODE	OFF	(Do not change)
INIT. ELEMENT	OFF	(Do not change)

\* The initial value of USER SLOT is 8 on the LT210 tape library and 16 on the LT220 tape library.



\* Displayed only when SEQUENTIAL is set to ON.

**Figure 4.10 Menu tree of OTHERS**

# Chapter 5 Configuring the Tape Library

**5.1 Making Settings from the Operator Panel**

**5.2 Magazine**

**5.3 Inserting Cartridge**

**5.4 Rebooting the Library**

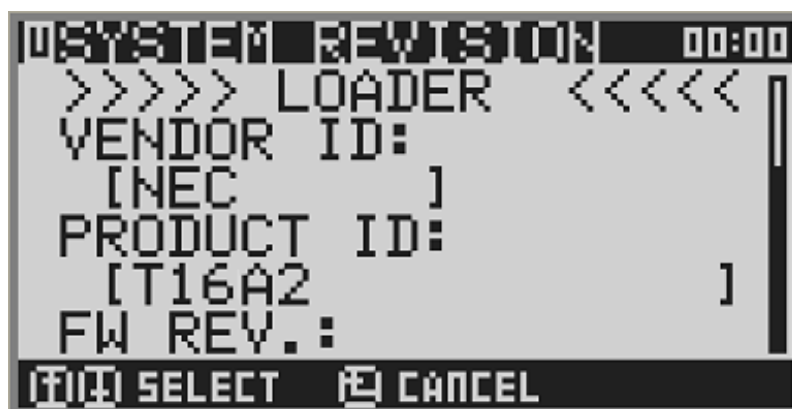
This chapter explains such operating procedures required to operate the tape library as those for viewing configuration data, switching the tape library between online and offline modes, and inserting and removing the magazine and cartridge.

## 5.1 Making Settings from the Operator Panel

### 5.1.1 Viewing configuration data

#### 5.1.1.1 Viewing the firmware version of the library

- 1) Select [TOP OF MENU] → [REVISION].
- 2) The following screen appears to show the firmware version of the tape library.



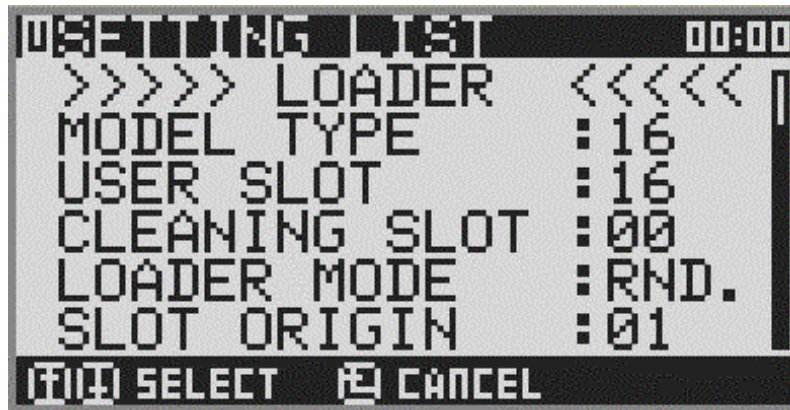
- \* Press the Cancel button  to go back to [TOP OF MENU].

#### 5.1.1.2 Viewing the tape library settings

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [SETTING LIST].



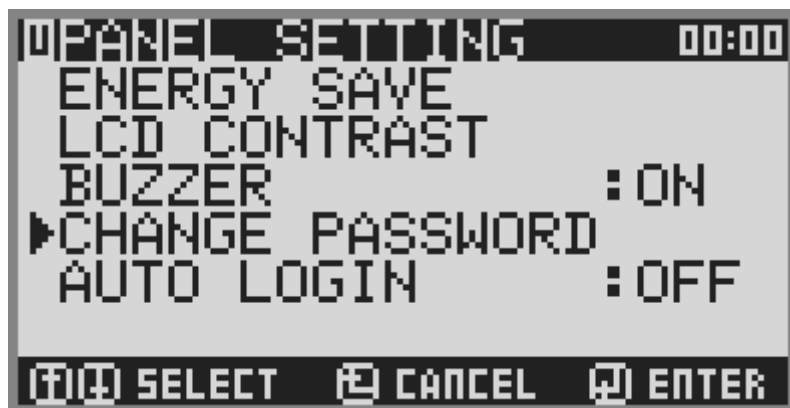
- 3) The configuration information of the library is displayed.



## 5.1.2 Changing password

### 5.1.2.1 Changing the login password

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [CONFIGURATION] → [PANNEL SETTING].
- 3) Select [CHANGE PASSWORD] on the screen as shown below.



- 4) The menu to enter a password is displayed when you select [CHANGE PASSWORD].

First, enter a new password with 4-digit numeric value.



- 5) Next, enter the password specified in Step 4 again.



- 6) If two passwords entered in Steps 4 and 5 match, the following message is displayed. The new password becomes valid immediately after this message is displayed.



- **When the following message appears:**

If two passwords entered in Steps 4 and 5 do not match, the following message is displayed.

If this message is displayed, repeat from Step 1.



### Important

The message that appears after the new password is entered and before a transition to the PANEL SETTING screen is either "PASSWORD CHANGED" or "PASSWORD ERROR." Since the "PASSWORD CHANGED" or "PASSWORD ERROR" message appears for only one second, be sure not to miss it.

## 5.1.3 Setting SCSI SPEED

SCSI SPEED can be toggled between Ultra160 and Ultra320. SCSI SPEED can be displayed and set from the menu only on models containing an LTO Ultrium4 SCSI drive.

This section explains how to set SCSI SPEED.

To switch from Ultra160 to Ultra320, follow the procedure below.

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [TOP OF MENU] → [CONFIGURATION].
- 3) Select [CONFIGURATION] → [DRIVE SETTING].

- 4) Select [DRIVE SETTING] → [PORT SETTING].

The following screen appears. Select [SPEED].



- 5) The SPEED screen appears. Select U230.

The default factory setting is U160.



- 6) The following REBOOT message appears when the SPEED setting is complete. Click [OK], and then click [DRIVE RESET] to perform a reset.



Note: After you click [DRIVE RESET] on the menu or turn off and on the power to the library, the library setting is made effective.

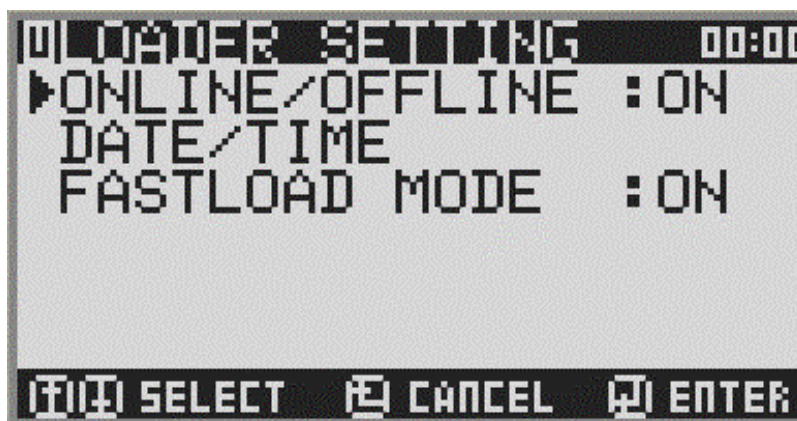


### 5.1.4 Switching ONLINE/OFFLINE

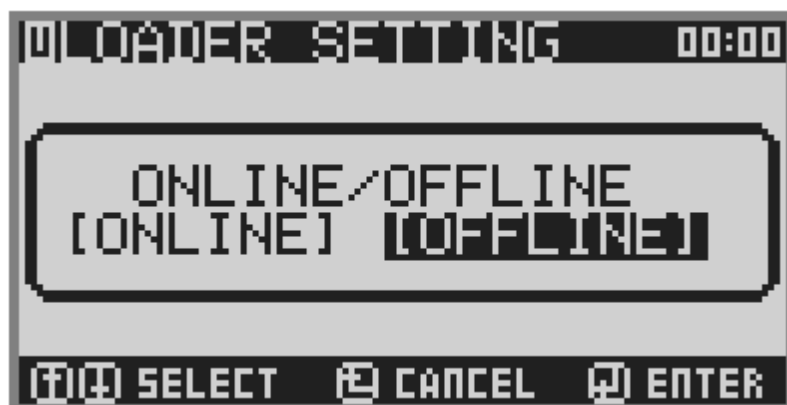
The library normally starts with the online mode. Change to offline mode if you want to operate the library as a single unit.

- **Switching from online mode to offline mode**

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [TOP OF MENU] → [CONFIGURATION].
- 3) Select [CONFIGURATION] → [LOADER SETTING].
- 4) Select [LOADER SETTING → ONLINE/OFFLINE].



- 5) The following message appears, select [OFFLINE].



- **Switching from offline mode to online mode**

Similarly to switching from online mode to offline mode, perform steps 1) to 4), and select [ONLINE] in step 5). After switching operation, a message prompting you to reboot the tape library appears. Upon switching from offline mode to online mode, be sure to reboot the tape library to reflect the new setting.

## 5.2 Magazine


### 5.2.1 Removing magazine

When a magazine is removed, the safety function (electronic interlock) shuts off the power supply to the robot.

After replacing the cartridges in the removed magazine, you must perform software inventory operation with the backup software.

The following describes the procedures for removing magazines from the tape library:



If the  icon is displayed in the status display window on the operator panel, magazine removal by operator panel operation is inhibited by backup software. To remove a magazine, operate the backup software to release the inhibited state and then operate the operator panel and remove the magazine.

For information on the backup software operation, see the manual for each software product. (See [Section 4.2.1, "Status display screen."](#))

#### **Caution**

##### **Injury or electric shock**

Do not put your hand and fingers inside the library.  
Doing so may cause an electric shock or personal injury due to unexpected operation of the library.

#### **Caution**

##### **Malfunction**

If the tape library is left with a magazine removed, the robot will not work. After removing a magazine, be sure to set the magazine back in its original position or set another magazine.

- **Removing a magazine from the LT210 tape library**

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [UNLOCK MAGAZINE].



- **Removing all magazines at a time from the LT220 tape library**

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [UNLOCK MAGAZINE].



- 3) When the screen below appears, select [ALL MAGAZINES], and then click [ENTER].

All magazines are unlocked and protrude halfway out.



- **Removing magazines one by one from the LT220 tape library**

- 1) Following the procedure for removing all magazines at the same time, perform steps 1) and 2), select [SELECT MAGAZINE] in step 3), and then click [ENTER].
- 2) The following screen appears when you select [SELECT MAGAZINE].  
Select the magazine you want to take out.



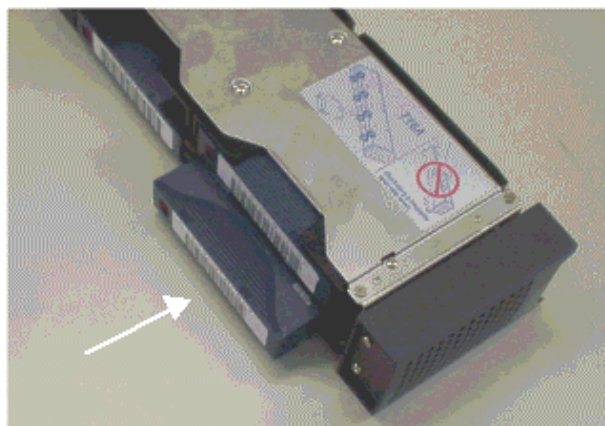
 **Caution**

**Malfunction**

The accessor will not work if the magazine is being removed from the library. Be sure to load it back or load another magazine.

## 5.2.2 Inserting cartridge into magazine

- 1) Insert a cartridge into a magazine slot, and check the following points to confirm that the cartridge is mounted correctly:
  - The cartridge surface with the hub faces down.
  - The barcode label faces the front.
  - The cartridge is fully inserted into the slot.

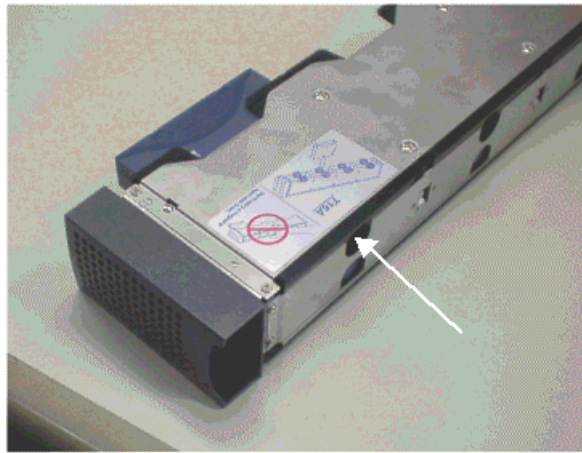


 **Caution****Equipment damage or Malfunction**

Insert the cartridge correctly. If the orientation of the cartridge is incorrect, or the insertion is incomplete, the autoloader will not start. An error message may be displayed or the hand or cartridge may be damaged.

### 5.2.3 Removing cartridge from magazine

- 1) Remove the cartridge from the hole on the rear of the magazine by pushing the cartridge with your finger.



## 5.3 Inserting Cartridge



**Caution**

**Data destruction**

Do not perform any of the operations described below during operation of the backup software (backup or restoring operation). Also, note that if a cartridge is moved by an operation on the operator panel of the library, the cartridge information managed by the backup software may not match the actual cartridge status in the library.

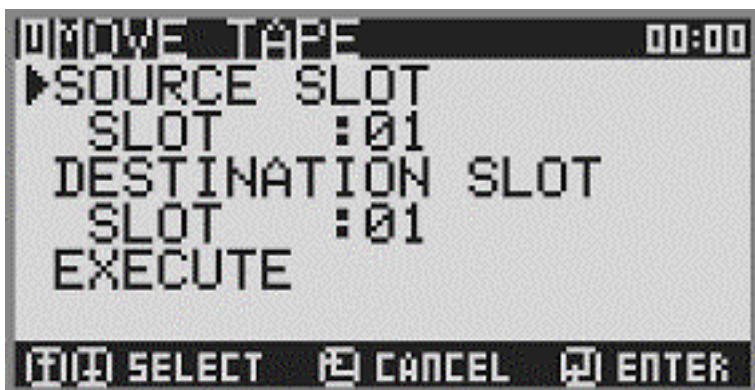
### 5.3.1 Inserting cartridge into drive

You can move a cartridge from a specified magazine slot and insert it into the drive with the operation of the operator panel.

This section explains how to move and insert a cartridge by using an example of inserting the cartridge stored in slot #10 into the drive.

- 1) From the server console, stop the backup software service.
- 2) Select [LOGIN] → [USER LOGIN].
- 3) Select [COMMANDS] → [MOVE TAPE].

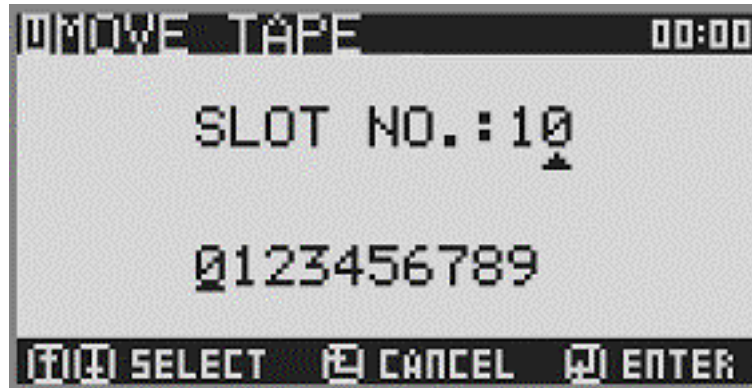
The screen to specify the [SOURCE SLOT] and [DESTINATION SLOT] is displayed.



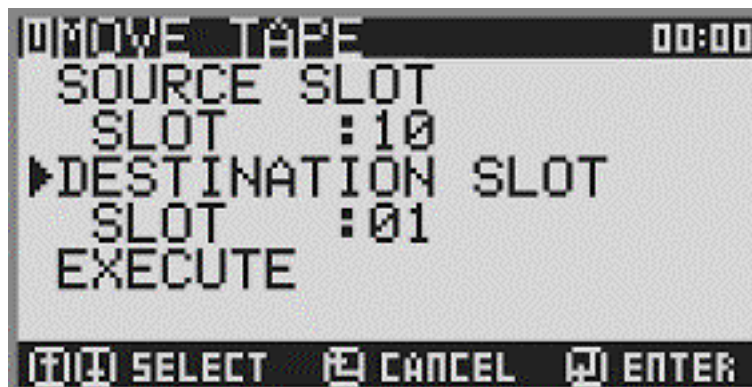
- 4) Select the magazine slot that contains the cartridge to be moved by using the cursor.



- 5) Specify the magazine slot number that contains the cartridge to be moved.



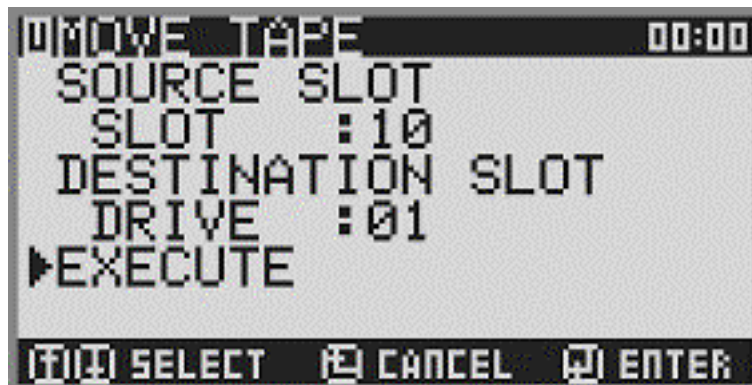
- 6) Select the [DESTINATION SLOT] to change it to a drive.



- 7) Change slot type to "DRIVE".



- 8) If you select [EXECUTE], the cartridge is moved and inserted into the drive.



### 5.3.2 Removing cartridge from the drive

Take the following steps to remove the cartridge from the drive.



#### Caution

##### Equipment damage

Perform this operation only when an emergency state occurs (e.g., the host system fails to control the unit).

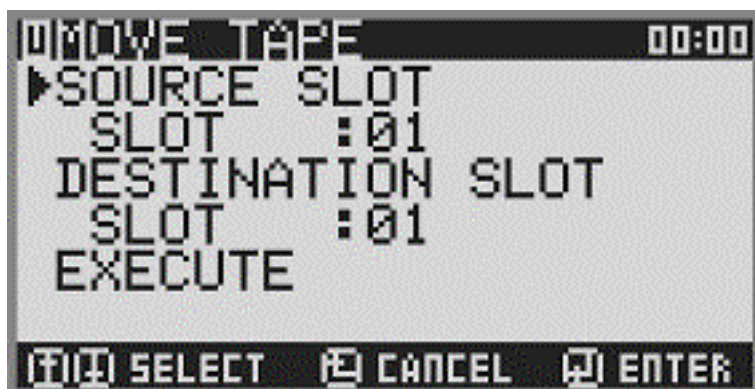
##### Malfunction

Do not remove a tape cartridge from any magazine slot (other than mail slots) or drive while the tape library is being operated with the backup software.

Doing so disables the operation with the backup software.

If a tape cartridge is removed accidentally under such conditions, you must perform software inventory operation with the backup software.

- 1) Stop the backup software service.
- 2) Select [LOGIN] → [USER LOGIN].
- 3) Select [COMMANDS] → [UNLOAD DRIVE] to eject a cartridge from the drive.  
When [UNLOAD DRIVE] is executed, the cartridge moves to the drive bay.
- 4) Execute [MOVE TAPE] to move the cartridge at the drive bay.
- 5) The screen to specify the SOURCE SLOT and DESTINATION SLOT is displayed.  
Select [SOURCE SLOT].





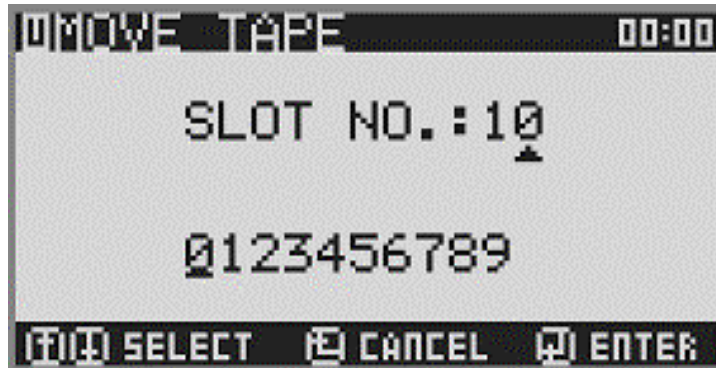
- 6) Specify the slot type of the SOURCE SLOT to "DRIVE".



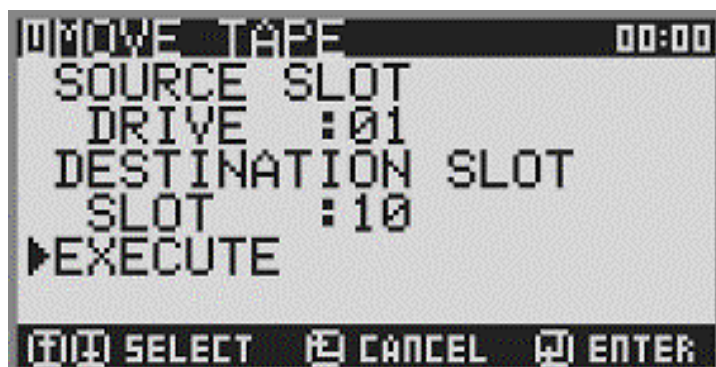
- 7) Select the [DESTINATION SLOT] to change it to a mail slot.



- 8) Specify the mail slot number.



- 9) If you select [EXECUTE], the cartridge is moved to the mail slot.



- \* To remove the cartridge stored in the slot, execute the [UNLOCK MAGAZINE].

## 5.4 Rebooting the Library

The autoloader must be rebooted (re-initialized) in the following cases:

- When the system administrator or maintenance service engineer instructs to reboot the library unit

Take the following steps to reboot the library unit.

### Caution

#### **Equipment damage or data destruction**

If you reboot the library without performing the following procedure, the library unit or cartridge may be damaged and/or the data may be lost.

Before rebooting the tape library, make sure that the drives do not contain any tape cartridges.

### Caution

#### **Data destruction**

Do not perform any of the operations described below during operation of the backup software (backup or restoring operation).

- 1) Confirm that all the jobs are completed and the library is in offline state.  
If the library is in online state, set it to offline. (See [Section 5.1.4](#))
- 2) Select [LOGIN] → [USER LOGIN].
- 3) Select [TOP OF MENU] → [COMMANDS].
- 4) Select [COMMANDS] → [REBOOT].
- 5) If you select [REBOOT], the message "EXECUTE REBOOT?" appears. Select [YES].



- 6) You must select the status of library after restart, "Online" or "Offline".  
To switch to online mode, select "ONLINE"; to switch to offline mode, select "OFFLINE."

# Chapter 6 Operating Environment

**6.1 Solaris OS**

**6.2 Windows**

**6.3 Linux**

This section explains the operating systems, backup software products, host bus adapter (HBA), and their operating environments.

## **Remarks:**

1. Some combinations of operating system (OS) version, platform, and backup software may not be supported.
2. For the functions and support status of the OS and backup software, refer to the manuals supplied with the software products.

## 6.1 Solaris OS

The software product names in this section are not noted with trademark or registered trademark symbols (TM)(R).

- **Basic software (OS)**

Solaris 8 Operating System
Solaris 9 Operating System
Solaris 10 Operating System

- **Backup software**

VERITAS NetBackup Server 6.0 or later
VERITAS NetBackup Enterprise Server 6.0 or later
NetWorker Power Edition 7.2 or later
NetWorker Network Edition 7.2 or later
NetWorker Workgroup Edition 7.2 or later
Tivoli Storage Manager 5.3 or later

- **Host bus adapter (HBA)**

Maker	Platform	Adapter name	Remarks
Fujitsu	PRIMEPOWER	PW0G8SC1	Dual channel Ultra 320 SCSI card - Dual port - VHDCI 68-pin connector
	S series	XSPSC312A	Dual channel Ultra 320 SCSI card - Dual port - VHDCI 68-pin connector
		X4422C	Dual Gigabit Ethernet+Dual SCSI card - Dual port - VHDCI 68-pin connector
	SPARC Enterprise	SE0X7SC1X	Dual channel Ultra 320 SCSI card - Dual port - PCI-X - VHDCI 68-pin connector - Applicable FGCs: FKL/FCH/FHK
		SE0X7SC2X	Dual channel Ultra 320 SCSI card - Dual port - PCI Express - VHDCI 68-pin connector - Applicable FGCs: FKL/FCH/FHK

Note: Apply the latest patch.

## 6.2 Windows

- **Basic software (OS)**

Windows 2000 Server Service Pack 4 or later
Windows 2000 Advanced Server Service Pack 4 or later
Windows Server 2003, Standard Edition SP 1 or later
Windows Server 2003, Enterprise Edition SP 1 or later
Windows Server 2003, Standard x64 Edition SP 1 or later
Windows Server 2003, Enterprise x64 Edition SP 1 or later
Windows Server 2003 R2, Standard Edition
Windows Server 2003 R2, Enterprise Edition
Windows Server 2003 R2, Standard x64 Edition
Windows Server 2003 R2, Enterprise x64 Edition
Windows Server 2003 Enterprise Edition for Itanium-based Systems (*)
Windows Server 2003 Datacenter Edition for Itanium-based Systems (*)
Windows Server 2008 (*)

\* The number of available supported backup software programs is limited.

- **Backup software**

VERITAS NetBackup Server 6.0 or later
VERITAS NetBackup Enterprise Server 6.0 or later
Tivoli Storage Manager 5.3.2 or later
BrightStor ARCserve Backup r11.5 or later
Backup Exec 11d or later
NetVault 8.8.2 or later

- **Host bus adapter (HBA)**

Maker	Platform	Adapter name	Remarks
Fujitsu	PRIMERGY	PG-128	SCSI card (Ultra 160)
		PG-1281	- Half pitch 68-pin connector
		PG-130L	SCSI card (Ultra 160)
		PG-1301L	- VHDCI 68-pin connector
		PRIMEQUEST	MC-08SC21

## 6.3 Linux

- **Basic software (OS)**

Red Hat Enterprise Linux AS (v.3 for x86)
Red Hat Enterprise Linux ES (v.3 for x86)
Red Hat Enterprise Linux AS (v.4 for x86)
Red Hat Enterprise Linux ES (v.4 for x86)
Red Hat Enterprise Linux AS (v.4 for EM64T)
Red Hat Enterprise Linux ES (v.4 for EM64T)
Red Hat Enterprise Linux AS (v.4 for Itanium) (*)
Red Hat Enterprise Linux 5 (for x86) (*)
Red Hat Enterprise Linux 5 (for Intel64) (*)
Red Hat Enterprise Linux 5 (for Itanium) (*)

\* The number of available supported backup software programs is limited.

- **Backup software**

VERITAS NetBackup Server 6.0 or later
VERITAS NetBackup Enterprise Server 6.0 or later
NetWorker Power Edition 7.2 or later
NetWorker Network Edition 7.2 or later
NetWorker Workgroup Edition 7.2 or later
NetVault 8
Tivoli Storage Manager 5.3.2 or later

- **Host bus adapter (HBA)**

Maker	Platform	Adapter name	Remarks
Fujitsu	PRIMERGY	PG-128	SCSI card (Ultra 160)
		PG-1281	- Half pitch 68-pin connector
		PG-130L	SCSI card (Ultra 160)
		PG-1301L	- VHDCI 68-pin connector
		PRIMEQUEST	MC-08SC21



# Chapter 7 Setting the Operating System

## **7.1 Solaris Operating System**

## **7.2 Windows 2000, Windows 2003 or Windows 2008**

## **7.3 Red Hat Enterprise Linux AS/ES**

This chapter explains how to set up the operating system as required for using the tape library, and gives notes on setup.

Notes:

1. Refer to the manual of the applicable operating system for information about how to perform operations in that operating system.
2. Special setting for the tape library is not required for the operating system unless it is noted in this manual.

## 7.1 Solaris Operating System

This section explains the points to be noted when setting up Solaris OS.

### 7.1.1 Required patches

The following patch must be applied to use this product.

- Patch number
  - 914604-04 (Note)

Note: This patch is for the Enhanced Support Facility of the server monitoring software.

- URL of the Web site for patch download:  
<http://www.fujitsu.com/global/support/software/security/>

### 7.1.2 st driver and IBMtape driver

#### 7.1.2.1 Applying the st driver

To use the tape library, you must apply the st driver patch below to your Solaris OS. Download the relevant st driver from the Web site at the URL shown below.

- st driver patch numbers
  - Solaris 8 OS: 108725-22 or later
  - Solaris 9 OS: 113277-35 or later
  - Solaris 10 OS: No patch is required.

Note: When using Tivoli Storage Manager as backup software, use the IBMtape driver. Do not use the st driver. For information on the IBMtape driver setting, see [Section 7.1.2.2, "Applying the IBMtape driver."](#)

- URL of the Web site for driver download:  
<http://www.fujitsu.com/global/support/software/security/>

#### **Important**

Be sure to apply the patch before configuring the st driver. Applying the patch after configuring the st driver may clear the configuration data.

- Editing the st.conf file

Add the device configuration information to the /kernel/drv/st.conf file as shown below.

- When connecting the Ultrium3 drive of the LT210/LT220 to the system:

```
# Copyright (c) 1995, by Sun Microsystems, Inc.
# All rights reserved.
#pragma ident "@(#)st.conf 1.21 98/03/25 SMI"
Beginning of the information to be added
tape-config-list=
"IBM    ULTRIUM-HH3", "IBM Ultrium3", "LTO_Ultrium3";
LTO_Ultrium3 =
2,0x3b,0,0x18659,4,0x44,0x44,0x44,0x44,3,60,300,600,1200,600,600,18000;
End of the information to be added
```

Enter five blank characters between "IBM" and "ULTRIUM-HH3."

For the Ultrium3 drive, add the following information:

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

```
"IBM    ULTRIUM-HH3", "IBM Ultrium3", "LTO_Ultrium3";
```

```
LTO_Ultrium3=
```

```
2,0x3b,0,0x18659,4,0x44,0x44,0x44,0x44,3,60,300,600,1200,600,600,18000;
```

- When connecting the Ultrium4 drive of the LT220

```
# Copyright (c) 1995, by Sun Microsystems, Inc.
# All rights reserved.
#pragma ident "@(#)st.conf 1.21 98/03/25 SMI"
Beginning of the information to be added
tape-config-list=
"IBM    ULTRIUM-TD4", "IBM Ultrium4", "LTO_Ultrium4";
LTO_Ultrium4 = 2,0x3b,0,0x18659,4,0x46,0x46,0x46,0x46,3,60,300,
600,1200,600,600,18000;
End of the information to be added
```

Enter five blank characters between "IBM" and "ULTRIUM-TD4."

For the Ultrium4 drive, add the following information:

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

```
"IBM    ULTRIUM-TD4", "IBM Ultrium4", "LTO_Ultrium4";
```

```
LTO_Ultrium4=
```

```
2,0x3b,0,0x18659,4,0x46,0x46,0x46,0x46,3,60,300,600,1200,600,600,18000;
```

### Remarks:

1. If the system is already configured with the same type of drive (LTO Ultrium3 or LTO Ultrium4) as the drive to be used, you need not reedit the device configuration file. Confirm that the description of device configuration information in the file is as described above.
2. Setting with the "tape driver definition tool" (recommended)  
 The package with the tape driver definition tool is on the CDROM disk that comes with the tape library or Enhanced Support Facility 3.0 or later. When the package is installed on the local system, the tape driver of each supported tape device whose connection is detected during an extension of installation processing is automatically added to the /kernel/drv/st.conf file.

### 7.1.2.2 Applying the IBMtape driver

This section explains how to use the IBMtape driver to make the LT210 and LT220 tape libraries recognize the server. The IBMtape driver must be set to use Tivoli Storage Manager as backup software. The setting of the IBMtape driver is not required for other backup software products because the st driver is used for them.

Note:

Use the st driver for backup software other than Tivoli Storage Manager. For information on the st driver setting, see [Section 7.1.2.1, "Applying the st driver."](#)

#### Disabling the st driver

When the IBMtape driver is used to have the LT210/LT220 drives recognize the server, the st driver must be disabled.

- 1) Log in as a root user to the server and stop all programs that access the drives.
- 2) Use the ls command to check whether the LT210/LT220 devices are recognized by the st driver.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 50 Oct 30 18:07 /dev/rmt/1 ->
../../../../devices/pci@1f,2000/fibre-channel@1/st@1,0:
```

<p>"<u>devices/pci@1f,2000/fibre-channel@1</u>": Physical path indicating the location where HBA is mounted</p>	<p>"st": Indicates that drives are controlled by the st driver.</p>	<p>"1,0": "target ID (SCSI ID), LUN" displayed in hexadecimal notation</p>
---	---	--

According to this information, check whether the physical path indicates the location of HBA to which the LT210/LT220 is connected and whether the target ID (SCSI ID) and LUN information is consistent with the LT210/LT220 drives. Based on this information, check whether the LT210/LT220 drives are controlled by the st driver.

- 3) If the drives are controlled by the st driver, comment out the target definition in /kernel/drv/st.conf.

```
#name="st" class="scsi"
# target=1 lun=0;
```

Comment out

To comment out the target definition, insert "#" at the beginning of the line on which the target ID (LOOP ID) and LUN are defined.

Note: Be careful, if a drive is built into the server, do not comment out the definition.

- 4) Delete the device file in /dev/rmt.

```
# rm -i /dev/rmt/*
```

Note: Be careful not to mistakenly use the rm command to delete a required file.

### Installing the IBMtape driver

- 1) Download the latest IBMtape driver from the IBM home page.

Access <ftp://ftp.software.ibm.com/storage/devdrv/Solaris> and download the file named IBMtape.x.x.x.x.bin (x.x.x.x is the version).

- 2) Install the driver using the pkgadd command as shown below. For \$DIR, specify the directory containing the downloaded IBMtape driver.

```
# pkgadd -d $DIR/IBMtape.x.x.x.x.bin
```

### Setting the IBMtape driver

Add definitions to /usr/kernel/drv/IBMtape.conf so that the target ID defined by HBA target binding can be recognized.

```
name="IBMtape" class="scsi"
target=0 lun=0
block_size=0
buffering=1
immediate=0
trailer=0
sili=0;
:
```

target

Set target as follows:

Connection method	Setting
SCSI	Set the SCSI ID that was set for the LT210/LT220 drive.

lun

For the LT210/LT220 drive, LUN is fixed to 0.

After the setting is finished, reboot the server.

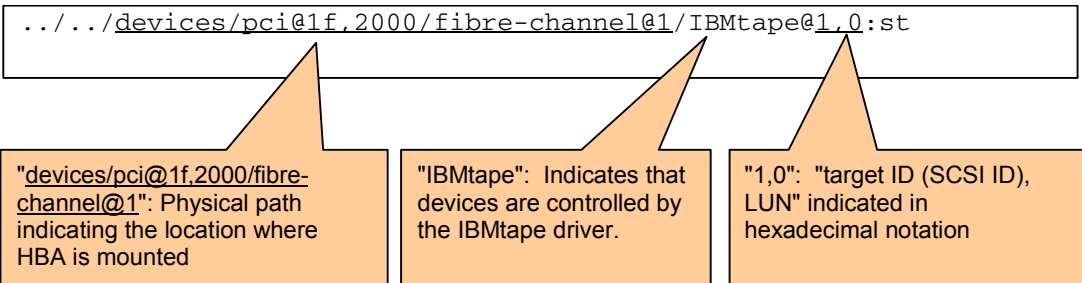
```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

Check devices

- 1) Log in as a root user to the server and execute the ls command to display the device file.

```
# ls -l /dev/rmt/*st
lrwxrwxrwx 1 root root 50 Oct 30
18:07 /dev/rmt/1st->
.. /../devices/pci@1f,2000/fibre-channel@1/IBMtape@1,0:st
```

- 2) Check the symbolic link of the displayed device file.



According to this information, check whether the physical path indicates the location of HBA to which the LT210/LT220 is connected and whether the target ID (SCSI ID) and LUN information are consistent with that for the LT210/LT220 drives. Based on this information, check whether the LT210/LT220 drives are controlled by the IBMtape driver.

**Remarks:**

The LT210/LT220 controller is controlled by the dedicated driver of each backup software product. So, the controller is not recognized unless backup software is installed.

### 7.1.3 Using LT210/LT220 tape driver through SCSI connection

While the LT210/LT220 tape library is used, there is a probability that driver patches will need to be applied. Refer to the URL for driver downloading and download necessary drivers as required.

#### 7.1.3.1 When using PRIMEPOWER

Using the tape library may require the application of a driver patch. Access the Web site at the URL shown below, and download the driver as required.

Use an Fjulsu driver.

- Fjulsu driver patch numbers
  - Solaris 8 OS: 114632-06 or later
  - Solaris 9 OS: 114951-05 or later
  - Solaris 10 OS: 121336-01 or later
- URL of the Web site for driver download:  
<http://www.fujitsu.com/global/support/software/security/>
- Notes on the versions of driver patch
  - Solaris 8 driver patch
    - <When driver patch 912773-04 or later has already been applied>  
Do not apply driver patch 114632-04 or later.
    - <When driver patch 912773-03 or earlier has already been applied>  
Apply driver patch 114632-04 or later after deleting driver patches 912773-03, 912773-02, and 912773-01 in this order.
  - Solaris 9 driver patch
    - <When driver patch 912774-04 or later has already been applied>  
Do not apply driver patch 114951-03 or later.
    - <When driver patch 912774-03 or earlier has already been applied>  
Apply driver patch 114951-03 or later after deleting driver patches 912774-03, 912774-02, and 912774-01 in this order.

### 7.1.3.2 When using the S series

Using the tape library may require the application of a driver patch. Access the Web site at the URL shown below, and download the driver as required.

To use an XSPSC302A or XSPSC312A Dual Channel Ultra320SCSI card, apply the necessary driver patch as shown below:

- When using Solaris 8 OS: Driver patch 115275-04 or later or 115274-04 or later
- When using Solaris 9 OS: Driver patch 115665-07 or later or 115667-03 or later
- Solaris 10 OS: No driver patch needs to be applied.

To use an X4422B or X4422C Dual Gigabit Ethernet + Dual SCSI card, apply the necessary driver patch as shown below:

- When using Solaris 8 OS: Driver patch 111883-23 or later
- When using Solaris 9 OS: Driver patch 112817-16 or later
- Solaris 10 OS: No driver patch needs to be applied.

URL of the Web site for driver download:

<http://www.fujitsu.com/global/support/software/security/>

### 7.1.3.3 When using SPARC Enterprise

Using the LT210/LT220 tape library may require the application of a driver patch. Access the URL shown below, and download the driver as required.

To use the dual channel Ultra320 SCSI card SE0X7SC1F or SE0X7SC2F, apply FUJITSU ULTRA LVD SCSI Host Bus Adapter Driver 2.0.

- Driver patch number
  - Solaris™ 10 OS: 914572-03 or later

The URL of the Web site for driver download is:

<http://www.fujitsu.com/global/support/software/security/>



## 7.2 Windows 2000, Windows 2003 or Windows 2008

Upon installing a SCSI adapter in the system and connecting the tape library to the system, you can confirm the connection by using the procedure described below.

### 7.2.1 Confirming connection of the tape library

After installing a SCSI adapter, connecting the tape library, and rebooting the system, follow the procedure below to confirm that the device is connected correctly.

[When Windows 2008 is used]

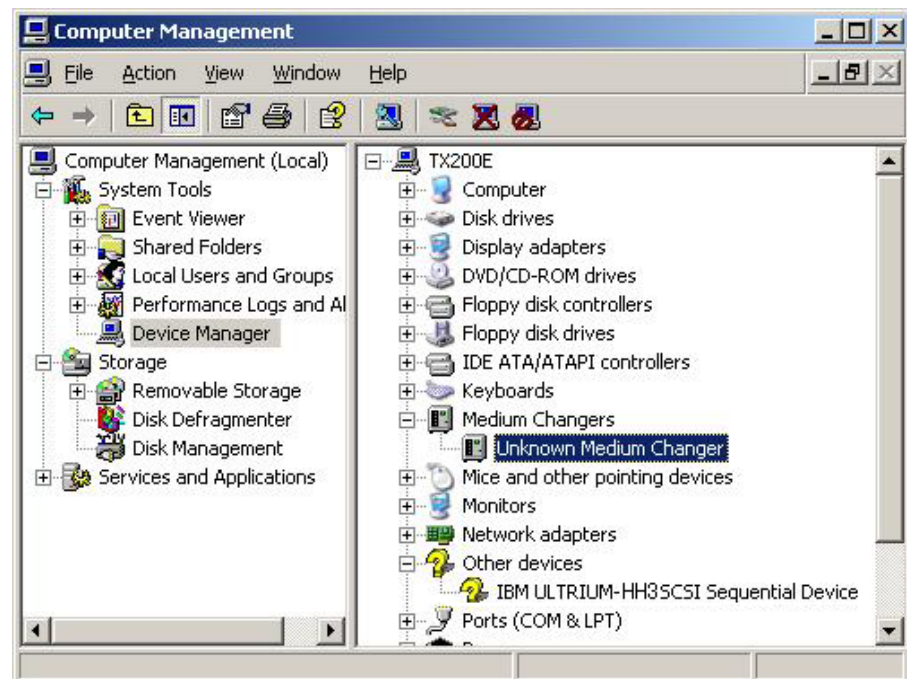
- 1) Click the [Start] button, open the Control Panel, and then open the Hardware and Sound window.
- 2) Click [Device Manager] to open it.

[When Windows 2003 is used]

- 1) Click the [Start] button, open the Control Panel, and then open the System Properties window.
- 2) Select the Hardware tab, and then open the Device Manager window.

[When Windows 2000 is used]

- 1) Click the [Start] button, select [Settings], open the Control Panel, and then open the System Properties window.
- 2) Select the Hardware tab, and then open the Device Manager window.
- 3) In the Device Manager window, change the view to "Devices by connection."
- 4) Confirm that "IBM ULTRIUM-HH3 SCSI Sequential Device" (tape drive) and "Unknown Medium Changer" (controller) are displayed for the HBA to which the tape library is connected.

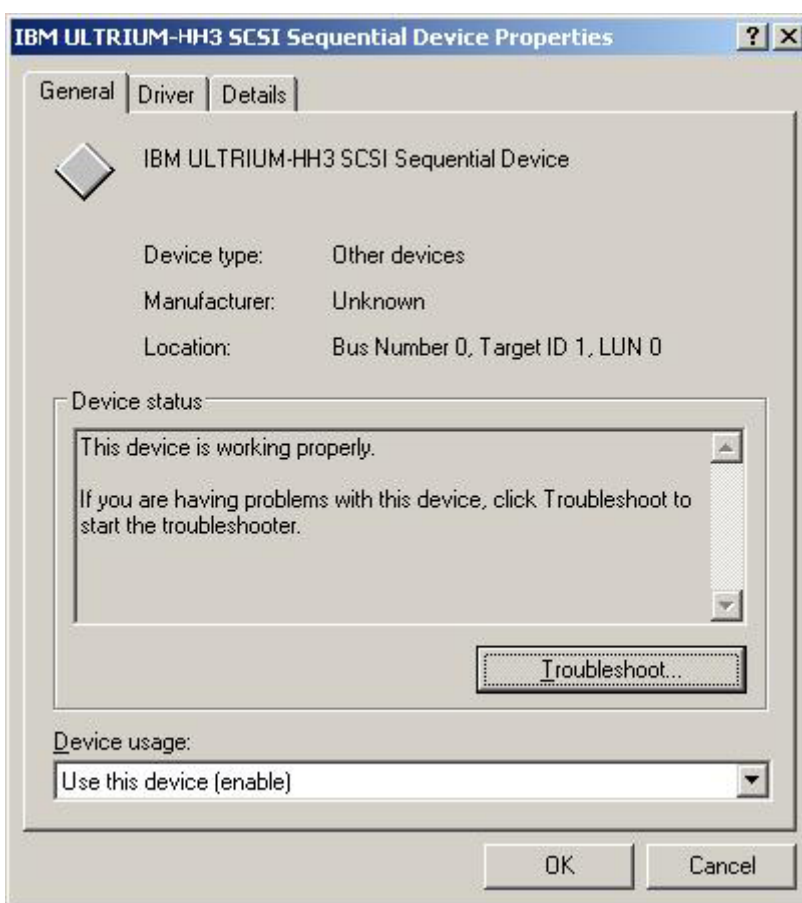


### Remarks:

Although the "IBM ULTRIUM-HH3 SCSI Sequential Device" icon is replaced with a question mark (?) when a default Windows-compliant tape driver is not installed, this does not pose any problems.

Note: "IBM ULTRIUM-TD4 SCSI Sequential Device" is displayed for the LTO Ultrium4 drive.

- 5) Open the Properties window for "IBM ULTRIUM-HH3 SCSI Sequential Device" (when using the Ultrium3 drive) or "IBM ULTRIUM-TD4 SCSI Sequential Device" (when using the Ultrium4 drive). Confirm that the Target ID matches that of the LT210/220 tape drive. In other words, confirm that the Location field displays "Target ID 1, LUN 0."



- 6) Open the Properties window for "Unknown Medium Changer." In the window, confirm that the Target ID corresponds to the LT210/LT220. When the Location field shows "Target ID 1, LUN 1," the Unknown Medium Changer indicates the tape library controller.



- 7) Thus, connection was confirmed.

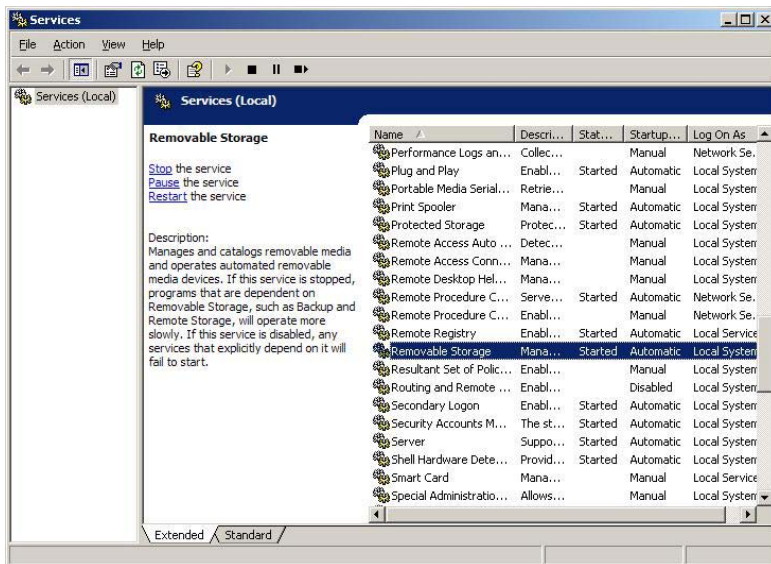
### Important

If connection cannot be confirmed by the method above, confirm that the HBA has been installed normally. When the HBA has been installed normally, it is assumed that the tape library has been turned off or an error occurred in connection or the SCSI ID setting. Review the settings, reboot the server, and then confirm the connection again.

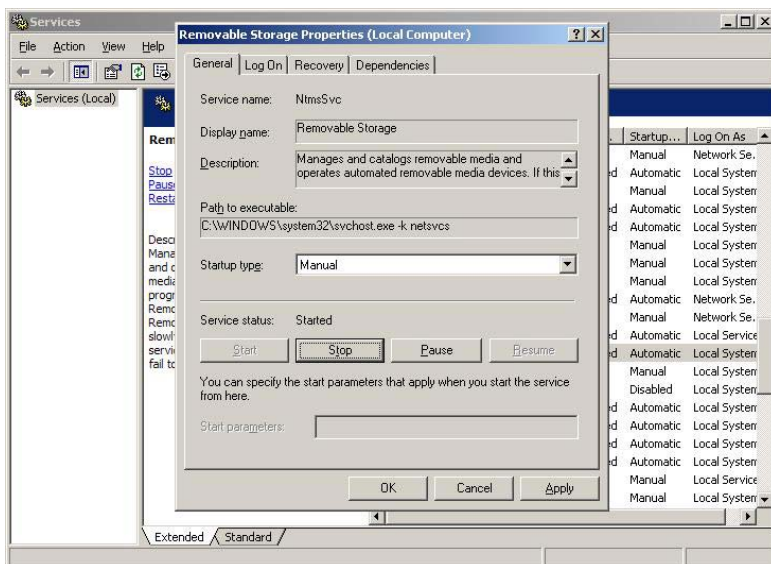
## 7.2.2 Removable storage manager (RSM)

When not using Removable Storage Manager (RSM), be sure to stop its service. When using RSM, refer to the manual for your backup software for information on RSM. To stop RSM, follow the procedure below.

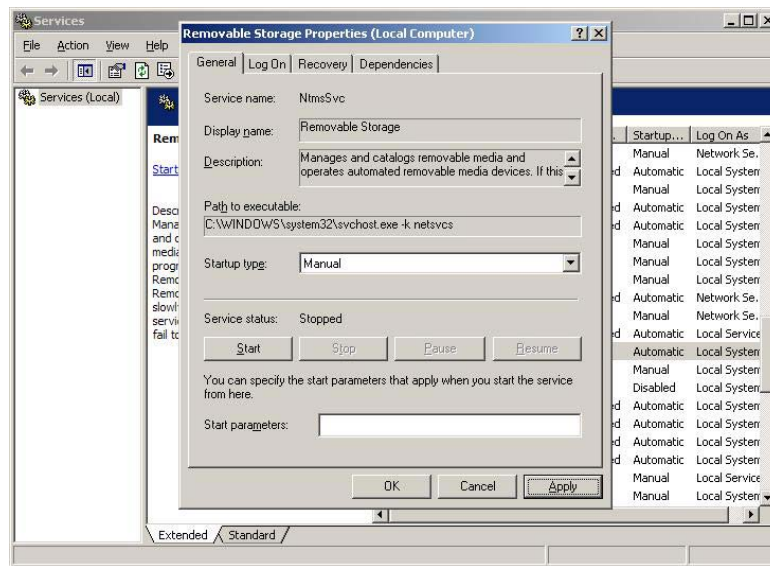
- 1) Open the Services window, and then double-click "Removable Storage Manager."



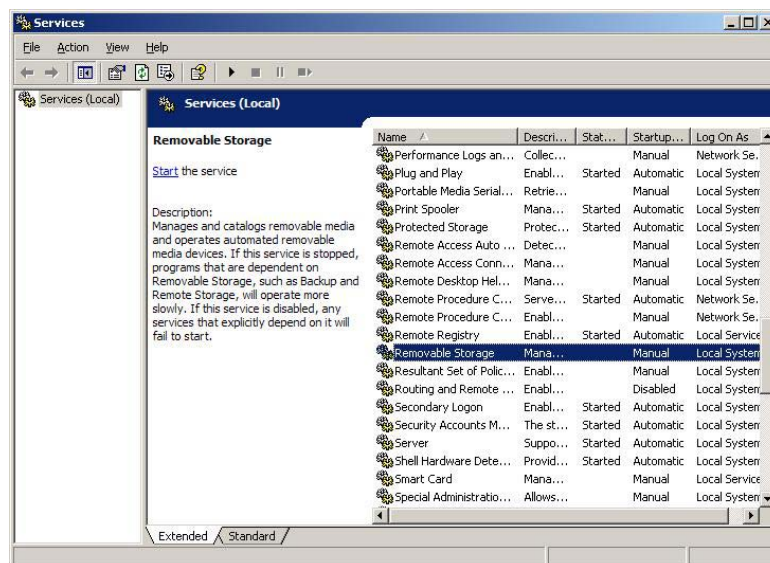
- 2) Select "Manual" for "Startup Type," and then click the [Stop] button beneath "Service Status" to stop the service.



- 3) Click the [Apply] button to make the new setting effective.



- 4) Confirm that "Manual" is displayed as the startup type of Removable Storage Manager, and then end the setting procedure.



## 7.3 Red Hat Enterprise Linux AS/ES

This section explains how to make settings for connecting the LT210/LT220 to Red Hat Enterprise Linux AS/ES.



### Malfunction

When a SCSI HBA is used, ensure that statements are provided in the `modules.conf` file as shown below. If the sequence of the statements differs, the LT210/LT220 may not normally be recognized. Especially when a SCSI HBA is added after OS installation, the sequence of the statements may differ from the following. alias `scsi_hostadapter aic7xxx`. alias `usb...`

### 7.3.1 Tape drivers used

The tape driver used depends on the backup software used. [Table 7.1](#) lists the tape drivers used with each type of backup software.

**Table 7.1 Tape drivers used with each type of backup software**

Backup software	Tape driver used
VERITAS NetBackup	st driver
NetWorker	
NetVault	sg driver
Tivoli Storage Manager	IBMtape driver

### 7.3.2 LT210/LT220 connection confirmation procedure

Follow the procedure below to check whether the LT210/LT220 is correctly connected:

- 1) Log in to the server as a root user.
- 2) Execute the `cat /proc/scsi/scsi` command to display a list of connected devices.

- LT210/LT220

```
# cat /proc/scsi/scsi
Attached devices:
Host: scsi0 Channel: 00 Id: 01 Lun: 01
  Vendor: NEC Model: T16A2 Rev: 0004
  Type: Medium Changer ANSI SCSI revision: 03
Host: scsi0 Channel: 00 Id: 01 Lun: 00
  Vendor: IBM Model: ULTRIUM-HH3 Rev: 73P6
  Type: Sequential-Access ANSI SCSI revision: 03
```

**Remarks:**

"Vendor: NEC Model: T16A2" indicates an LT210/LT220 library controller.

"Vendor:IBM Model: ULTRIUM-HH3" indicates an Ultrium 3 drive.

Note: "ULTRIUM-TD4 " is displayed for the LTO Ultrium4 drive.

Based on this information, check whether the LT210/LT220 controller and drive are recognized on the correct paths and whether the recognized target ID and LUN match those of the LT220 drive.

**7.3.3 st driver**

The st driver is a standard driver of Red Hat Enterprise Linux and installed by default. Install the st driver if it is not installed. The following explains how to set up the st driver.

Add the definitions shown below to the etc/stinit.def file. If the etc/stinit.def file does not exist, create it.

After adding the definitions, execute the stinit command to reflect the new settings.

- For an Ultrium3 drive

```
manufacturer=IBM model = "ULTRIUM-HH3" {
can-bsr scsi2logical drive-buffering
timeout=800
long-timeout=14400
model blocksize=0 density=0x00
}
```

- For an Ultrium4 drive

```
manufacturer=IBM model = "ULTRIUM-TD4" {
can-bsr scsi2logical drive-buffering
timeout=800
long-timeout=14400
model blocksize=0 density=0x00
}
```

**7.3.4 sg driver**

The sg driver (SCSI Generic driver) is a standard driver of Red Hat Enterprise Linux.

If the sg driver is used as a tape driver to use the LT210/LT220, the default settings need not be changed.

### 7.3.5 IBMtape driver

The IBMtape driver can be downloaded from the IBM home page. Access <ftp://ftp.software.ibm.com/storage/devdvr/Linux/> and download and install the pertinent driver shown below according to the CPU and kernel used.

Intel x86 (32-bit): IBMtape-X.X.X- YYYYYYYY.i386.rpm.bin

Intel IA64 (Itanium): IBMtape-X.X.X- YYYYYYYY.ia64.rpm.bin

Intel EM64T/AMD64: IBMtape-X.X.X-YYYYYYY.x86\_64.rpm.bin  
(xxxx is a driver version and YYYYYYYY is the kernel version of an OS.)

**For information on how to install the driver, see the following document or the document provided with the downloaded driver.**

[ftp://ftp.software.ibm.com/storage/devdvr/Doc/IBM\\_Tape\\_Driver\\_IUG.pdf](ftp://ftp.software.ibm.com/storage/devdvr/Doc/IBM_Tape_Driver_IUG.pdf)

Note: When using backup software other than Tivoli Storage Manager, do not use the IBMtape driver.

If the IBMtape driver is used as a tape driver to use the LT210/LT220, the default settings need not be changed.



# Chapter 8 Setting Backup Software

## **8.1 Setting VERITAS NetBackup**

## **8.2 Setting NetWorker**

## **8.3 Setting ARCserve Backup**

## **8.4 Tivoli Storage Manager**

## **8.5 Backup Exec**

## **8.6 NetVault**

This chapter explains how to set backup software that is required to use the tape library.

Notes:

1. Refer to the manual supplied with each type of backup software for information about standard settings and operating procedures for that backup software.
2. Actual screen displays and operations may differ from those described in this manual depending on the version of backup software. In such cases, refer to the corresponding sections of the manual supplied with your backup software.
3. Set the backup software so as to return the tape cartridge from the tape drive to the slot in the tape library after backup or restore processing using the tape cartridge.

While the tape cartridge is loaded in the tape drive, the tape is being pulled out of the tape cartridge. If the tape remains in this pulled-out status, dust will collect on the data recording surface of the tape and may cause errors in reading or writing data.

## 8.1 Setting VERITAS NetBackup

This section explains the points to be noted when setting up VERITAS NetBackup.

### 8.1.1 Applying patches

When using the tape library, apply the latest patches for VERITAS NetBackup 5.x/6.x. When using the various option functions, patches for the option functions must also be applied.

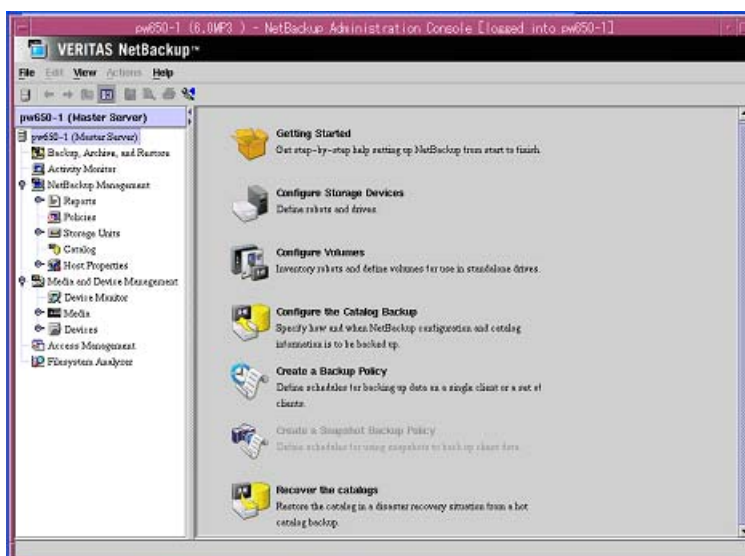
Refer to the homepage of VERITAS Software for information about patches.

Refer to the README file that comes with a patch for information about applying that patch.

- Symantec Corporation: <http://www.symantec.com/>

### 8.1.2 Setting a robot type and drive type (this unit)

- 1) Select Configuration Storage Devices from the NetBackup Administration Console, and then activate the wizard to set a robot type and drive type.



- 2) After setting with the wizard, expand Media and Device Management and select Devices. Confirm that the robot type and drive type are as shown below:

Robot type: TLD

Drive type: Ultrium3 drive - HCART3  
Ultrium4 drive - HCART

### 8.1.3 System parameter settings

When VERITAS NetBackup is installed on a Solaris OS server, system IP resources must be added for NetBackup interprocess communication.

While referring to the recommended minimum values for the NetBackup system parameters listed below, specify additional entries in the `/etc/system` file on the NetBackup Master Server and each media server. Then, reboot the system.

To verify the existing system parameter settings, execute the `sysdef -i` command.

If a system parameter value is changed to a value lower than the default value, NetBackup may not work normally for installation and backup. Return the system parameter value to the default value.

```
* BEGIN NetBackup recommended minimum settings
* Message queues
set msgsys:msginfo_msgmax=8192 (valid for versions up to Solaris 7)
set msgsys:msginfo_msgmnb=65536
set msgsys:msginfo_msgmni=256
set msgsys:msginfo_msgtql=512
set msgsys:msginfo_msgseg=8192 (valid for versions up to Solaris 7)
* Semaphores
set semsys:seminfo_semmap=64 (valid for versions up to Solaris 7)
set semsys:seminfo_semmni=1024
set semsys:seminfo_semmns=1024
set semsys:seminfo_semmnu=1024 (valid for versions up to Solaris 9)
set semsys:seminfo_semmns1=300
set semsys:seminfo_semopm=32
set semsys:seminfo_semume=64 (valid for versions up to Solaris 9)
* Shared memory
set shmsys:shminfo_shmmax=16777216
set shmsys:shminfo_shmmin=1 (Always set to 1) (valid for versions up to
Solaris 8)
set shmsys:shminfo_shmmni=220
set shmsys:shminfo_shmseg=100 (valid for versions up to Solaris 8)
* END NetBackup recommended minimum settings
```

The following notes apply to setting the system parameters.

- If another application such as Oracle runs on the system, the setting value might need to be increased. However, "shmsys:shminfo\_shmmin" must always be 1.
- If the system overloads during execution of a NetBackup job, an interprocess communication error might occur, causing a job error. For example, even though the volume manager daemon (vmd) is operating, the following message is output and the job terminates abnormally.

"Media Manager volume daemon (vmd) is not active"

In such cases, review the related system parameters.

- Refer to [Chapter 9, "Tuning Backup Performance,"](#) for information on shmsys:shminfo\_shmmax before calculating its value.

## 8.1.4 Setting system parameters on the Linux server

On the Linux server, set system parameters according to the recommended method for each system.

Based on the example shown below, set system parameters for the NetBackup Master Server and each Media Server.

The values shown in the following example are standard minimum values for the NetBackup system parameters. The appropriate values vary depending on the environment. After setting system parameters, perform operation verification to confirm that no problems occur.

If a system parameter value is changed to a value lower than the default value, return it to the default value.

Example:

Add the following values to the `/etc/sysctl.conf` file or set them as maximum values in the file, and then execute `/sbin/sysctl -p`.

```
kernel.msgmax=8192
kernel.msgmnb=65536
kernel.msgmni=256
kernel.shmmax=134217728
kernel.shmmni=220
kernel.sem = 300 1024 32 1024
```

```
-----
# (The values of kernel.sem represent semmsl, semmns, semopm, and semmni
respectively.)
```

## 8.1.5 Tape driver with a Windows server

To use the tape library in Windows 2000/Windows 2003, use the VERITAS Tape Device Driver (`halfinch.sys`) to control the tape drive.

For information on the installation of the tape device driver, refer to the manual (installation guide) for the relevant NetBackup product.

## 8.1.6 Notes on using Solaris 10

- Solaris 10 OS only supports the global zone.
- Ignore the following message output in a system in which Solaris 10 and NetBackup 6.0 are installed:

```
Mar 28 14:51:05 ppdrv bpjava-msvc[3196]: [ID 427199 user.error]
pam_dial_auth: terminal-device not specified by login, returning Error in
underlying service module.
```

- Ignore the following message output to indicate a configuration error in the `/kernel/drv/st.conf` file in a system in which Solaris 10 and NetBackup 6.0 are installed:

```
Mar 28 14:49:41 ppdrv avrd[595]: [ID 591981 daemon.notice] st.conf
configuration for IBM.ULTRIUM3-SCSI.000 (device 1), name [IBM Ultrium
LTO 3], vid [IBM Ultrium 3], type0x3b, block size 0, options 0x2b679 (see
st(7D) man page)
```

## 8.1.7 Notes on operation

### (1) Drive type and media classification

The Configuration Wizard of VERITAS NetBackup automatically recognizes an Ultrium3 drive as the "HCART3" drive type and an Ultrium4 drive as the "HCART" drive type in settings for the library. As a result, registered "HCART3" tape cartridges are used with the Ultrium3 drive, and registered "HCART" tape cartridges are used with the Ultrium4 drive. However, once the media classification of a tape cartridge is registered in VERITAS NetBackup, it cannot be changed. To use such a tape cartridge in a tape library that does not contain a tape drive of the same type as your tape cartridge, you must change the registered drive type.

### (2) Tape library encryption function

With the key management function option installed for the tape library, avoid using volume pools whose names begin with "ENCR\_".

## 8.2 Setting NetWorker

This section explains the points to be noted when setting up NetWorker.

### 8.2.1 Tape driver

- To use the tape library on Solaris OS, use the Solaris OS standard st driver to control the tape drive.
- To use the tape library on Linux (Red Hat Enterprise Linux), use the Linux OS standard st driver to control the tape drive.

Refer to [Chapter 7, "Setting the Operating System,"](#) for information about the st driver setting.

Note:

Do not use any other driver than the st driver

### 8.2.2 Setting the library and drive types

The tape library and drives need to be set up using the jbconfig command.

- Set the drive type as follows:
  - NetWorker 7.4 or later:
    - Using an Ultrium4 drive: Select [LTO Ultrium-4].
    - Using an Ultrium3 drive: Select [LTO Ultrium-3].
  - NetWorker 7.2.1 or later:
    - Using an Ultrium4 drive: Select [LTO Ultrium-3].
    - Using an Ultrium3 drive: Select [LTO Ultrium-3].
  - NetWorker 7.2 and earlier:
    - Using an Ultrium4 drive: Select [LTO Ultrium-2].
    - Using an Ultrium3 drive: Select [LTO Ultrium-2].

- Assign the drive a device file name as follows:  
(x is a number.)  
For Solaris OS: /dev/rmt/xcbn  
For Linux: /dev/nstx

For details on the jbsconfig command, see the NetWorker manuals.

## 8.2.3 Setting the load timeout

### 8.2.3.1 Varying environment variables

To use the LT210/LT220, set 300 seconds (five minutes) for the load timeout value. Note that the environment variable used for this setting varies depending on the drive type and the NetWorker version used.

**Table 8.1 Environment variables**

NetWorker version	Environment variable used for this setting
NetWorker 7.2 (*1)	NSR_DEV_LOAD_TIME_LTO_ULTRIUM_2
NetWorker 7.2.1 or later (*2)	NSR_DEV_LOAD_TIME_LTO_ULTRIUM_3
NetWorker 7.4 or later (*3)	NSR_DEV_LOAD_TIME_LTO_ULTRIUM_3

\*1 Set the NSR\_DEV\_LOAD\_TIME\_LTO\_ULTRIUM\_2 environment variable to use an Ultrium3 or Ultrium4 drive together with NetWorker 7.2.

\*2 Set the NSR\_DEV\_LOAD\_TIME\_LTO\_ULTRIUM\_3 environment variable to use an Ultrium4 drive together with NetWorker 7.2.1 or later.

\*3 Set the NSR\_DEV\_LOAD\_TIME\_LTO\_ULTRIUM\_4 environment variable to use an Ultrium4 drive together with NetWorker 7.4 or later.

#### Remarks:

The same setting with NetWorker 7.4 can be made from NetWorker Management Console (GUI). (In such a case, the NetWorker server need not be stopped and rebooted.)

Set a load timeout value as follows.

- 1) Log in to NetWorker Management Console, and click [Device] in the NetWorker management window.
- 2) Select [Diagnostic Mode] from the [View] menu.
- 3) Click [Device] in the left tree to display a list of devices.
- 4) Double-click the target device, or right-click the device and select [Properties]. The Properties window is displayed.
- 5) Select the Advanced tab.
- 6) Select 300 for Device Load Number.
- 7) Click [OK].

For details, see the NetWorker manuals.

### 8.2.3.2 Setting the load timeout

Set the load time according to the following procedure:

- 1) Stop NetWorker if it is running.

```
# nsr_shutdown
```

- 2) Open the `/etc/init.d/networker` file with an editor such as `vi`.

```
# vi /etc/init.d/networker
```

- 3) Modify the file as shown below.

(Example of a correction)

For Solaris version NetWorker 7.2.1 or later, or Linux version NetWorker (modify the boldface part)

```
#!/bin/sh

NSR_DEV_LOAD_TIME_LTO_ULTRIUM_3=300
export NSR_DEV_LOAD_TIME_LTO_ULTRIUM_3

case $1 in
'start')
(echo 'starting NetWorker daemons:') > /dev/console
```

For Solaris version NetWorker 7.2, edit the part as follows:

```
NSR_DEV_LOAD_TIME_LTO_ULTRIUM_2=300
export NSR_DEV_LOAD_TIME_LTO_ULTRIUM_2
```

- 4) Save the edited file.

- 5) Start NetWorker.

```
# /etc/init.d/networker start
```

#### Remarks:

The same setting with NetWorker 7.4 can be made from NetWorker Management Console (GUI). (In such a case, the NetWorker server need not be stopped and rebooted.)

Set the load time as follows:

- 1) Log in to NetWorker Management Console and click "Device" in the NetWorker management window.
- 2) Select [Diagnostic Mode] from the [View] menu.
- 3) Click [Device] in the left tree to display a list of devices.
- 4) Double-click the target device or right-click the device. The [Properties] window is displayed.
- 5) Select the [Advanced] tab.
- 6) Select 300 for [Device load time].
- 7) Click [OK].

For more information, see the NetWorker manuals.

## 8.2.4 Notes

When "nsrjb - Hv" is executed, the message shown below may be output. If this message is output, unloading a cartridge from the drive may have failed. If unloading is eventually completed, the message does not pose any problems even if it is displayed.

```
box_unload: Unload failure was detected - Will be retried.
box_unload: Retry: Start time = 1162888050
box_unload: Retry: 30 is made to sleep.
nsrjb: An attempt was made to unload a volume from /dev/rmt/0cbn.
box_unload: Retry: Failed - Will be retried.
Jukebox handle is closed at port /dev/scsi/changer/c4t1d0.
Unloading will be made to sleep for 5 seconds.
Jukebox handle is opened at port /dev/scsi/changer/c4t1d0.
Jukebox is being unloaded: Drive '/dev/rmt/0cbn', slot '1'
Jukebox handle is closed at port /dev/scsi/changer/c4t1d0.
Jukebox handle is opened at port /dev/scsi/changer/c4t1d0.
box_inventory:
Jukebox handle is closed at port /dev/scsi/changer/c4t1d0.
box_inventory_free:
```

## 8.2.5 Notes to observe when using Solaris 10

- Only Global Zone is supported when using the Solaris 10 OS
- In some cases, when using the Solaris 10 OS, automatic incorporation using jbcofog may not be possible. In such cases, execute incorporation manually. For details, refer to the NetWorker manual.



## 8.3 Setting ARCserve Backup

BrightStor ARCserve Backup r 11.5 and later support connections to Ultrium3 drives and Ultrium4 drives mounted in the LT210/LT220.

ARCserve Backup automatically recognizes the type of tape library and tape drive. Therefore, you do not have to set the types.

### 8.3.1 Notes on using ARCserve Backup

(1) Tape library encryption function

With the key management function option installed for the tape library, set "Disable" in [Data Encryption] at the backup time.

For details on the [Data Encryption] setting, see the ARCserve Backup manual.

If Enterprise Module, which is an option for ARCserve Backup, has not been installed, "Disable" need not be set here because the hardware encryption function is not supported.

## 8.4 Tivoli Storage Manager

This section explains the points to be noted when setting up Tivoli Storage Manager.

### 8.4.1 Patches required for Tivoli Storage Manager

No patches are required when using Tivoli Storage Manager for the LT210/LT220.

### 8.4.2 Notes on using Solaris 10

Solaris 10 OS only supports the global zone.

## 8.5 Backup Exec

This section explains the points to be noted when setting up Backup Exec.

### 8.5.1 Patches required for backup exec

No patches are required when using Backup Exec for the LT210/LT220.

### 8.5.2 Tape driver

To use the tape library on Windows 2000 or Windows Server 2003, use the tape driver made by VERITAS. Installing a VERITAS driver package automatically installs the appropriate drivers for the library and tape drive, thus eliminating the need for manual setup.

### 8.5.3 Notes on using Backup Exec

(1) Tape library encryption function

With the key management function option installed for the tape library, set "Disable" in [Data Encryption Type] in the Properties window displayed during backup job creation.

For details on the [Data Encryption Type] setting, see the Backup Exec manual.

## 8.6 NetVault

This section explains the points to be noted when setting up NetVault.

### 8.6.1 Device template

To use the LT210/LT220 with NetVault 7.1.x, you must install a device template.

### 8.6.2 Setting the type of library and tape drive

NetVault automatically recognizes the type of library and tape drive.

### 8.6.3 Notes on operation

#### 8.6.3.1 Automatically unloading a cartridge from the drive

To unload a tape cartridge from the drive automatically when executing Open Door operation on the LT210/LT220, you must make the following settings when adding the LT220 to the system:

- 1) On the NetVault GUI, select "Device Management" to open the NetVault device management window.
- 2) In the NetVault device management window, select "Add Library" from the Add menu to open the Add Library window.
- 3) Select the tape library on the Library Selection tab and the tape drive on the Drive Selection tab, and make the necessary settings.
- 4) Select the Configure tab, right-click the selected tape library to open a pop-up menu, and then select "configure" from the pop-up menu to open the Configure window.
- 5) Select the Configuration tab in the Configure window, check the "Must unload drive(s) to open door" box, and then click the [OK] button to save the setting.

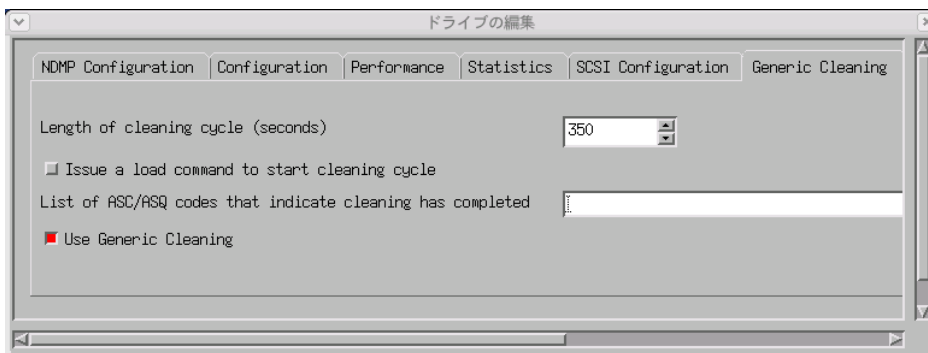
#### 8.6.3.2 Support of Ultrium3 and Ultrium4 drives

- NetVault 7.1.2 and later support Ultrium3 drives, which are not supported by earlier versions of NetVault.
- NetVault 8.0 (NetVault 8.2 for Windows) and later support Ultrium4 drives, which are not supported by earlier versions of NetVault.

#### 8.6.3.3 Cleaning the tape drive

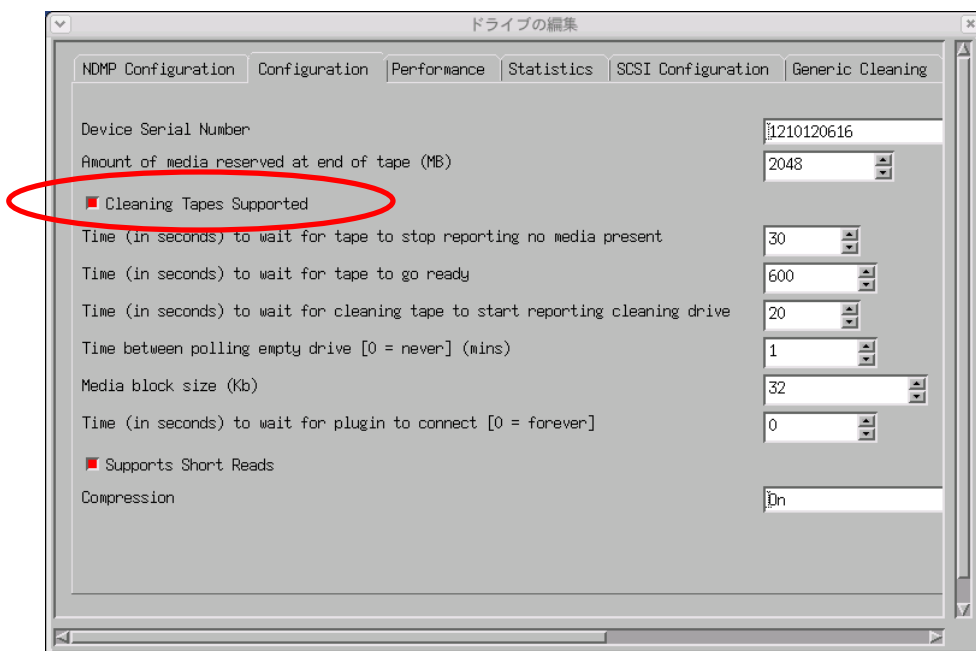
To clean the tape drive with the NetVault cleaning function, the following settings must be made using Device Management.

- 1) Set the drive Generic Cleaning items as shown below.  
Issue a load command to start cleaning cycle: Off (Default ON)  
Use Generic Cleaning: On (default OFF)



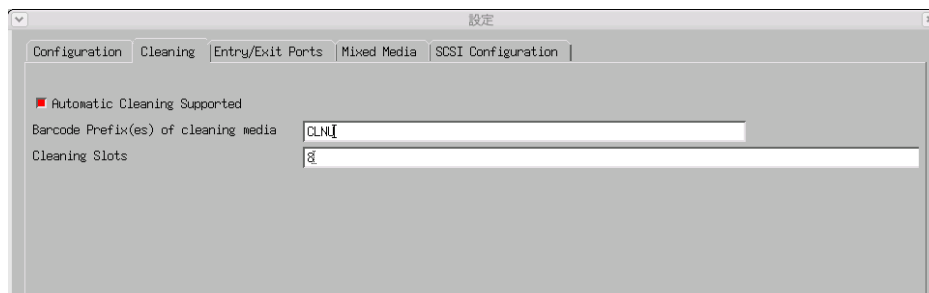
2) Set the drive Configuration item as shown below.

- Cleaning Tapes Supported: On



3) Set the library Cleaning items as shown below.

- Automatic Cleaning Supported: On
- Barcode Prefix(es) of cleaning media: A cartridge with a label having the same character string as the one which is set here is registered as a cleaning cartridge.  
(Example: If "CLNU" is set here, a cartridge with a label showing a character string beginning with CLNU such as CLNU00 is registered as a cleaning cartridge.)
- Cleaning Slots: Slot numbers of slots containing cleaning cartridges



# Chapter 9 Tuning Backup Performance

**9.1 Tuning VERITAS NetBackup**

**9.2 Tuning NetWorker**

**9.3 Tuning ARCserve Backup**

**9.4 Tivoli Storage Manager**

**9.5 Backup Exec**

**9.6 Tuning NetVault**

This chapter explains tuning that makes the tape library easier to use.

Notes:

1. Performance depends on the system environment in which the tape library is used.
2. Refer to the applicable manual for information about operation.
3. Special tuning for the tape library is not required for the backup software unless it is noted in this manual.

## 9.1 Tuning VERITAS NetBackup

This section explains how to tune the performance of VERITAS NetBackup.

### 9.1.1 Tuning the buffer size

To use the tape library with NetBackup, the settings described below are recommended to maximize system performance. Create the files described below, and then set the buffer size to the recommended value.

	Recommended value			Default
	Solaris OS	Windows	Linux	
SIZE_DATA_BUFFERS	256 kbyte	Fixed	256 kbyte	64 kbyte
NUMBER_DATA_BUFFERS	64	512	64	16
NUMBER_DATA_BUFFERS_RESTORE	64	512	64	16

- Set `SIZE_DATA_BUFFERS` as follows:  
Open the `/usr/opensv/netbackup/db/config/SIZE_DATA_BUFFERS` file.  
To set the buffer size to 256 kilobytes, specify a buffer size of 262144 in this file.
- Set `NUMBER_DATA_BUFFERS` as follows:  
Open the `/usr/opensv/netbackup/db/config/NUMBER_DATA_BUFFERS` file.  
To set the buffer size to 64, specify a buffer size of 64 in this file.  
To set the buffer size to 512, specify a buffer size of 512 in this file.
- Set `NUMBER_DATA_BUFFER_RESTORE` as follows:  
Open the `/usr/opensv/netbackup/db/config/NUMBER_DATA_BUFFER_RESTORE` file.  
To set the buffer size to 64, specify a buffer size of 64 in this file.  
To set the buffer size to 512, specify a buffer size of 512 in this file.



#### Caution

##### Device malfunction

Be sure to set a value of 256 kilobytes or less for the buffer size (`SIZE_DATA_BUFFERS`). If the buffer size is set to a value greater than 256 kilobytes, an unexpected error may occur.

Note: The setting method may be updated. For confirmation, refer to the manual supplied with your backup software.

Notes:

1. If NetBackup is installed as a slave server, `/usr/open/netbackup/db` does not have a config directory. Use the `mkdir` command to create a config directory.

2. With Windows, create the above files in the following directory:

<InstallPath>\VERITAS\NetBackup\db\config



**Data destruction**

If the buffer size (SIZE\_DATA\_BUFFERS) is changed, tape data that has been backed up in accordance with the previous setting may no longer be readable. Once system operation starts, be careful about changing settings.



**Device malfunction**

Be sure to set a value of 256 Kbytes or less for the block size. If the buffer size is set to a value greater than 256 kilobytes, an unexpected error may occur.

## 9.1.2 Tuning shared memory

If a buffer size is set, the shared memory size of the server must be set.

This section explains how to set the shared memory size by using an example in which the buffer size is set to 256 kilobytes and the job concurrency level per drive is set to 1.

- 1) Edit the `/etc/system` file to set the shared memory size.

```
set shmsys:shminfo_shmmax = 16777216
```

### Remarks:

1. The shared memory size is calculated as shown below (by considering the size of memory mounted in the server). Setting an excessive size of shared memory wastes memory area. Therefore, always set an optimum size of shared memory.

Shared memory size = `SIZE_DATA_BUFFERS` ×  
`NUMBER_DATA_BUFFERS` × number of drives × job  
concurrency level per drive

2. If a value greater than the above is already set, it need not be changed.
- 2) Reboot the server to update the shared memory size on the server.

```
# /usr/sbin/shutdown -y -i6 -g0
```



## 9.2 Tuning NetWorker

This section explains how to tune the block size of NetWorker. The recommended block size is 256 kilobytes (with a default size of 64 kilobytes).



### Device malfunction

Be sure to set a value of 256 kilobytes or less for the block size. If the buffer size is set to a value greater than 256 kilobytes, an unexpected error may occur.



### Data destruction

If the block size is changed, tape data that has been backed up according to the previous size setting may no longer be readable. Once system operation starts, be careful about changing the setting value.

Set the block size using the following environment variable:

The name of environment variable varies depending on the NetWorker version.

- NetWorker 7.4 or later: NSR\_DEV\_BLOCK\_SIZE\_LTO\_ULTRIUM\_3 (\*1)
- NetWorker 7.2.1 or later: NSR\_DEV\_BLOCK\_SIZE\_LTO\_ULTRIUM\_3 (\*2)
- NetWorker 7.2: NSR\_DEV\_BLOCK\_SIZE\_LTO\_ULTRIUM\_2

\*1 Set the NSR\_DEV\_BLOCK\_SIZE\_LTO\_ULTRIUM\_4 environment variable to use an Ultrium4 drive together with NetWorker 7.4 or later.

\*2 Set the NSR\_DEV\_BLOCK\_SIZE\_LTO\_ULTRIUM\_3 environment variable to use an Ultrium4 drive together with NetWorker 7.2.1 or later.

The following explains the procedure for setting the block size to 256 kilobytes.

1) Stop NetWorker if it is running.

```
# nsr_shutdown
```

2) Open the /etc/init.d/networker file with an editor such as vi.

```
# vi /etc/init.d/networker
```

- 3) Modify the file as shown below.

For Solaris version NetWorker 7.2.1 or later, or Linux version NetWorker (modify the boldface part)

```
#!/bin/sh

NSR_DEV_LOAD_TIME_LTO_ULTRIUM_2=300
export NSR_DEV_LOAD_TIME_LTO_ULTRIUM_3
NSR_DEV_BLOCK_SIZE_LTO_ULTRIUM_3=256
export NSR_DEV_BLOCK_SIZE_LTO_ULTRIUM_3

case $1 in
'start')
(echo 'starting NetWorker daemons:') > /dev/console
```

For Solaris version NetWorker 7.2, edit the part as follows:

```
NSR_DEV_BLOCK_SIZE_LTO_ULTRIUM_2=256
export NSR_DEV_BLOCK_SIZE_LTO_ULTRIUM_2
```

- 4) Save the edited file.
- 5) Start NetWorker.

```
# /etc/init.d/networker start
```

If data is written with the new block size to an existing data cartridge that has been used before the above execution, labeling needs to be performed again. For information on the labeling method, see the NetWorker manuals.

### Remarks:

The same setting with NetWorker 7.4 can be made from NetWorker Management Console (GUI).

(In such a case, the NetWorker server need not be stopped and rebooted.)

Set a block size as follows.

- 1) Log in to NetWorker Management Console, and click [Device] in the NetWorker management window.
- 2) Select [Diagnostic Mode] from the [View] menu.
- 3) Click [Device] in the left tree to display a list of devices.
- 4) Double-click the target device, or right-click the device and select [Properties]. The Properties window is displayed.
- 5) Select the Advanced tab.
- 6) Select [256KB] for Device Configuration.
- 7) Click [OK].

For details, see the NetWorker manuals.

## 9.3 Tuning ARCserve Backup

When using BrightStor ARCserve Backup for the tape library, you need not make a tuning setting.

## 9.4 Tivoli Storage Manager

When using Tivoli Storage Manager for the tape library, you need not make a tuning setting.

## 9.5 Backup Exec

When using Backup Exec for the tape library, you need not change the tuning settings.

## 9.6 Tuning NetVault

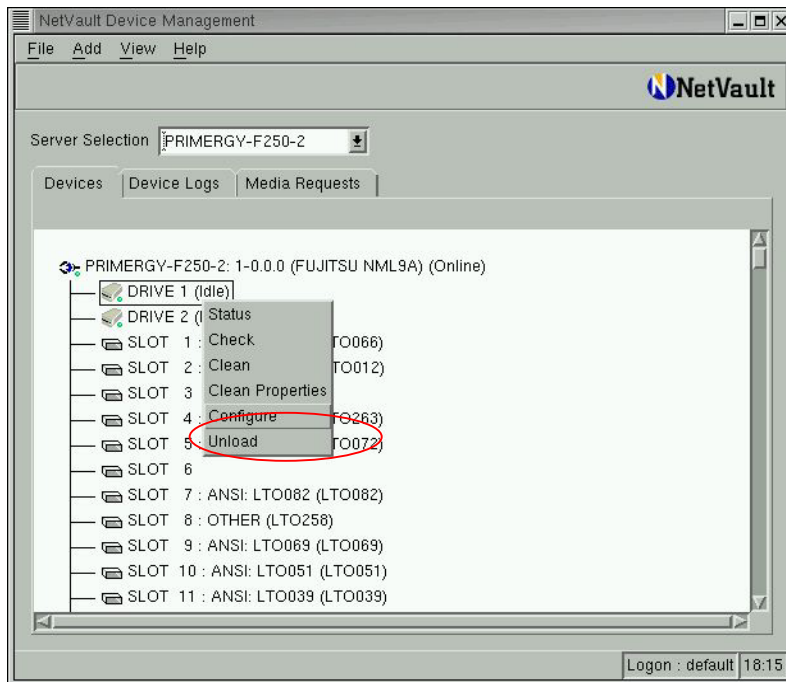
Fujitsu recommends setting a write block size (media block size) of 256 kilobytes to obtain the maximum performance with NetVault. (The default block size is 32 kilobytes.) When changing the write block size, be sure to also update the shared memory setting (Amount of memory to assign for transfer buffers). To do so, follow the procedure below.

### **Caution**

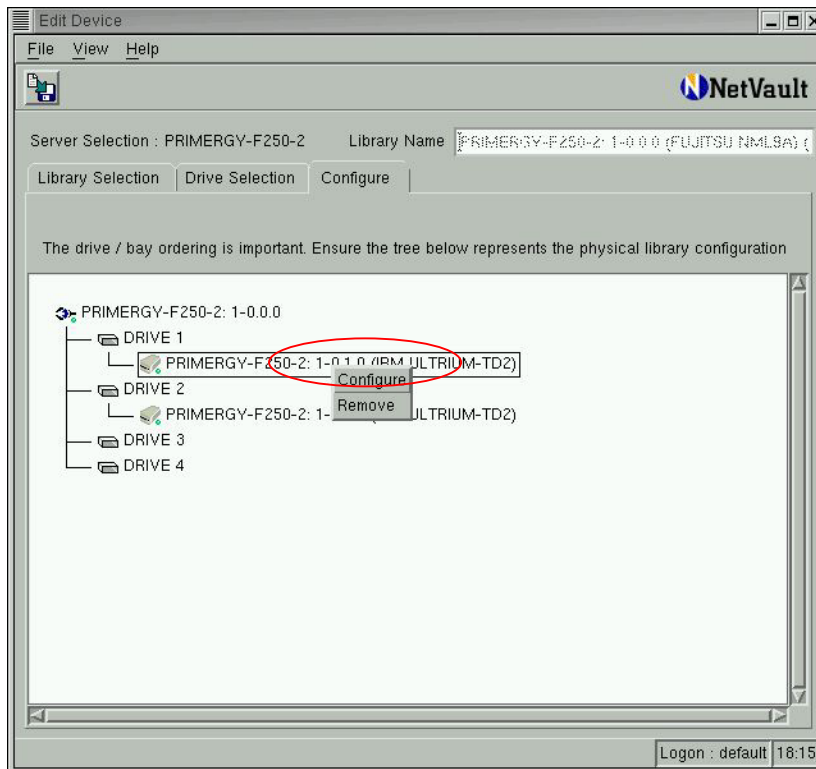
#### **Data destruction**

If the block size is changed, tape data that has been backed up according to the previous size setting may no longer be readable. Once system operation starts, be careful about changing the setting value.

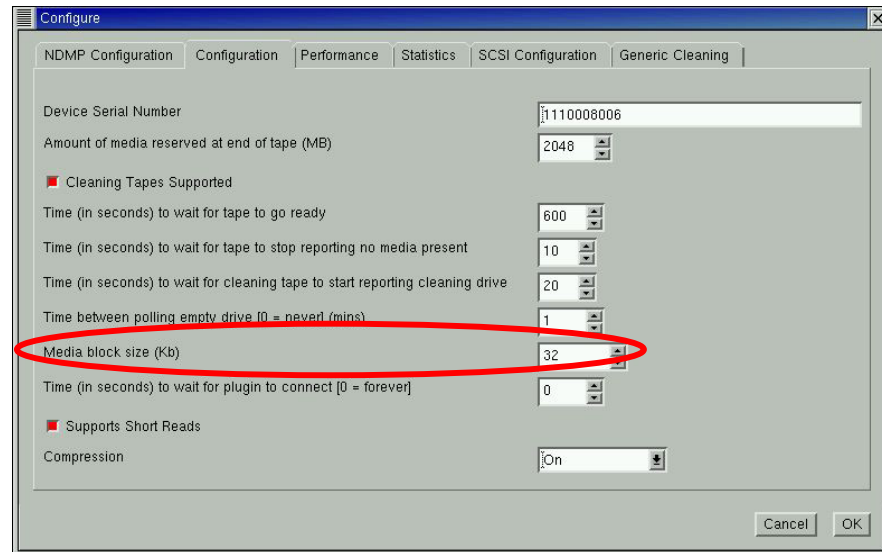
1) Display the Edit Device window from the Device Management window.



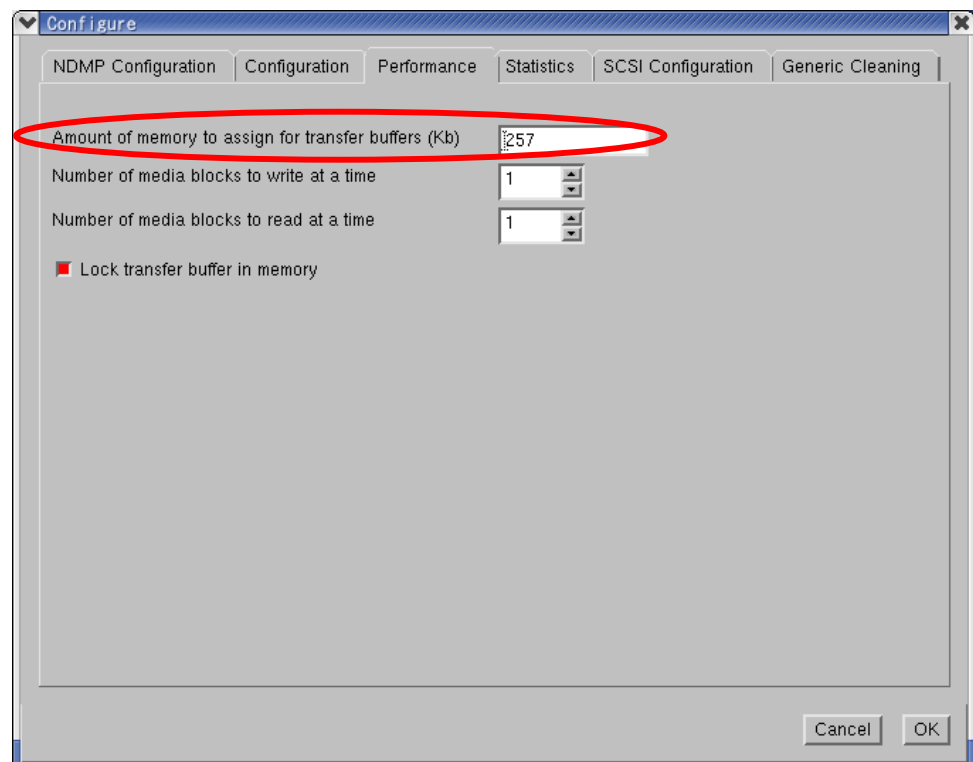
2) Select the Configure tab and right-click the drive to be changed to select Configure.



- 3) Select the Configuration tab, change the Media block size (Kb) value to 256, and click the [OK] button.



- 4) Select the Performance tab, specify "write block size x 4 + 1 or more" for "Amount of memory to assign for transfer buffers" (KB), and then click [OK].



Repeat the above procedure for all mounted drives.

Note:

Specify the same value for all drives.

The setting for the total shared memory size varies depending on the operating system. Note this fact when specifying the system block size and shared memory size.

Because performance varies depending on the operating environment, it is not always improved by the above setting. Tune NetVault according to the operating environment.

# Chapter 10 Ethernet Functions

**10.1 Overview of Connection Configuration**

**10.2 SNMP Function**

This chapter provides an overview of the Ethernet functions of this device and explains how to use them.

## 10.1 Overview of Connection Configuration

The following configuration is required for using the Ethernet functions.

### (1) General

- LAN based on 10BASE-T/100BASE-TX  
(Full duplex and half duplex are both possible. The gateway can be passed through.)

### (2) Remote panel

Web browser: Internet Explorer 6.0 (IE 6.0) or later is recommended.  
Internet Explorer 5 or later, Mozilla, Netscape, or Firefox 1.0 may also be used but some of the data may be garbled.

Java: Java Plug-in 1.6 or later is required.  
Check whether the proper version of Java Plug-in is installed. If not, download this version from the following URL and install it:  
<http://www.java.com/> or <http://www.java.com/ja>

### (3) SNMP function

SNMP Manager: Fujitsu's ETERNUS SF Storage Cruiser can be used to receive the recommended traps.  
Various settings must be made for monitoring.  
(See the relevant software manuals for information on how to make the settings.)  
\* SNMP: Simple Network Management Protocol



## 10.2 SNMP Function

### 10.2.1 Capabilities of the SNMP function

The LT210/220 supports sending SNMP traps and collecting MIB information via SNMP. The SNMP function can receive SNMP traps with SNMP Manager. Using the function, MIB information can be collected with the MIB browser.

### 10.2.2 Setting Up the SNMP function

#### 10.2.2.1 Tape library settings

##### (1) Network settings

The correct IP address and subnet mask must be set.

If the tape library and SNMP Manager have different subnets, the Gateway address must be set.

- 1) On the operator panel, set and confirm the IP address, subnet mask, and Gateway address.
- 2) From the PC server running SNMP Manager, execute ping xxx.xxx.xxx.xxx (xxx.xxx.xxx.xxx is the device IP address) to confirm that communications are normal. If the ping request cannot find the device, confirm the network settings and network cable connections again.
- 3) Next, confirm that the remote panel of the LT210/220 is accessible from a Web browser on the PC server running SNMP Manager. If the PC server does not have a Web browser, you can perform this operation from another PC server.

#### 10.2.2.2 settings

Set the SNMP notification destination and notification level.

- 1) From the PC server running SNMP Manager, log in to the remote panel with a Web browser. Display the event notification setting (SNMP) page.
- 2) Specify the IP address of the SNMP trap notification destination in Trap To, and check the "Valid" check box.
- 3) Note that you can set up to four notification destinations.
- 4) Confirm the notification level. By default, a notification is sent for an event whose severity is greater than "warning." (The higher the severity of an event, the lower the numeric value indicating the severity.)
- 5) Confirm the community name. The default setting is "public."
- 6) If you want to enter the device name (Name), the physical location of the device (Location), and contact information (Contact) in the MIB, make the appropriate settings. Note that these settings are not required.
- 7) Finally, click the [Submit] button, and confirm the settings.

### 10.2.2.3 SNMP Manager settings

No particular settings need be made to receive traps and collect MIB information with a browser. However, Fujitsu recommends users to read the MIB definition file to better understand these operations. The CD-ROM disk with the product manual contains the MIB definition file.

A setting must be made with ETERNUS SF Storage Cruiser to format and display traps. For details, see the ETERNUS SF Storage Cruiser manual.

### 10.2.3 Contents of notifications sent by the SNMP trap function

The information reported with an extended trap is as follows.

Item	Description
Generic Trap Type	6 (Enterprise Specification) A trap of this type is a vendor-specific trap. It indicates the validity of the extended trap indicated as Specific Trap Type.
Specific Trap Type	2 (unitEventTrap) A trap of this type indicates an event registered in the event table of this device.
Additional information	
unitEventUnitId	This item indicates the configuration element related to this event in UnitId. 1: other 2: controller 3: drive1
unitEventId	This item indicates the event ID used for event table management. This value ranges from 0 to the maximum specifiable value in the table minus 1.
unitEventTime	This item indicates the actual event occurrence time, with a character string in the following format: MMDDYYYYΔHHMMSS (Δ is a space.) If the time is invalid, the character string consists of blank characters.
unitEventType	This item indicates the event type (severity). 1: unknown 2: emergency 3: error 4: warning 5: info
unitEventDescr	This item indicates event details with character strings. For details, see <a href="#">Appendix E, "Event List."</a>

## 10.2.4 Supplementary information on the SNMP function

### (1) SNMP trap generation time

An asynchronous event is reported with an SNMP trap only when the notification destination is valid and the severity of the event is greater than the set severity. (The higher the severity of an event, the lower the numeric value indicating the severity.)

### (2) Events sent via SNMP

You can reference the events sent with SNMP traps in [Appendix E, "Event List."](#) Note that the list centers on the events sent from the robot section. Only a limited number of drive events are reported.



# Chapter 11 Remote Panel

**11.1 Network Environment and Settings**

**11.2 Start-up of the Remote Panel**

**11.3 Overview of Remote Panel**

**11.4 Detailed Specifications of Remote Panel**

The remote panel enables you to monitor the tape library from any terminal on the network or via the Internet.

This chapter explains how to set up the remote panel.

## **Important**

The remote panel provides maintenance functions for maintenance personnel and functions to monitor the status of the tape library for the system administrator and general users.

## 11.1 Network Environment and Settings

### 11.1.1 Required environment

The followings are required to use the remote management interface.

- 10Base-T or 100BaseTX Ethernet network
- IP address (Internet or local address)
- PC that contains a Web browser (IE 6.0 or more) that can access the network

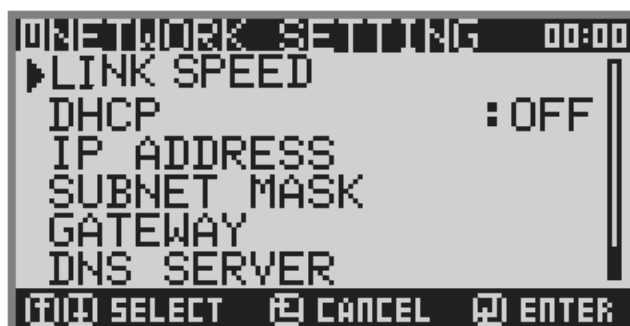
The followings are required to set the remote management interface.

- Setting of IP address
- Setting and confirmation of subnet mask and gateway
- Installation of JAVA

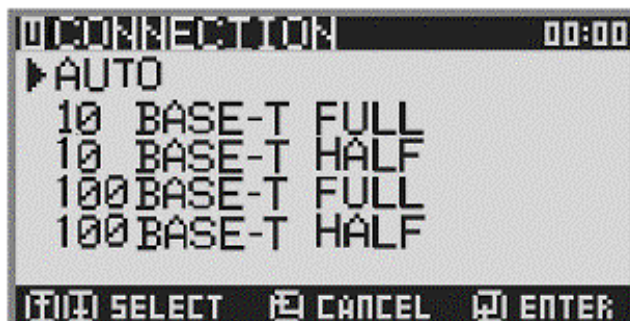
### 11.1.2 Setting of link speed

Set the network link speed according to the following procedure:

- 1) Select [LOGIN] → [USER LOGIN].
- 2) Select [CONFIGURATION] → [NETWORK SETTING].
- 3) When the following screen appears, select [LINK SPEED].



- 4) When the following screen appears, select the communication mode.



- 5) The screen shown in 3) above is displayed, turn off the power to the tape library and then turn it on again.
- 6) Turning off the power to the tape library and then turning it on again applies the LINK SPEED setting to the system.

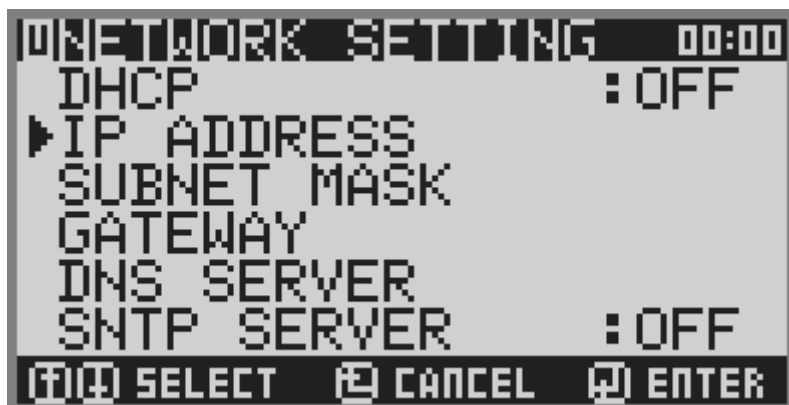
### **IMPORTANT**

If a link speed other than [10BASE-T HALF] is set and a communication error occurs, change the setting to [10BASE-T HALF].

### 11.1.3 Setting of IP Address

Set an IP address for the library in the following procedure.

- 1) Select [LOGIN] → [USER LOGIN].
- 2) When you select [CONFIGURATION] → [NETWORK SETTING].
- 3) The following screen will appear.  
Select [IP ADDRESS].



- 4) Set an IP address.



Select a number with the  and  buttons, and press  to set the entry.

If you entered an incorrect number, press the  button to cancel the setting.



- 5) After setting, click [CANCEL]. The following screen appears. Select [YES] on this screen, or turn off and on the library.



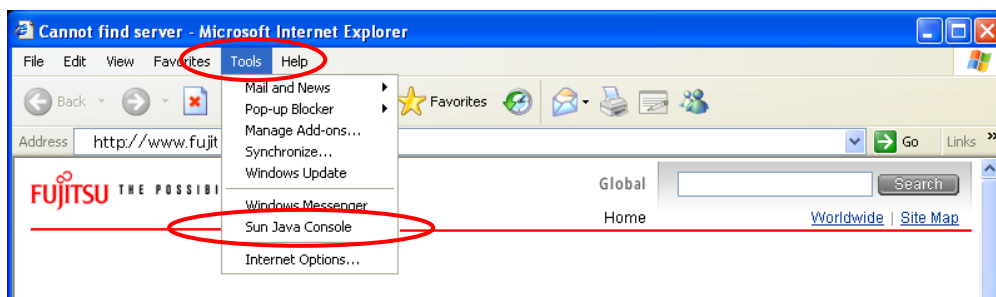
- 6) After the tape library is rebooted, the new IP address setting is valid.
- 7) Confirm [SUBNET MASK] and [GATEWAY]. Set them if necessary in a manner similar to the IP address setting.

## 11.1.4 JAVA settings

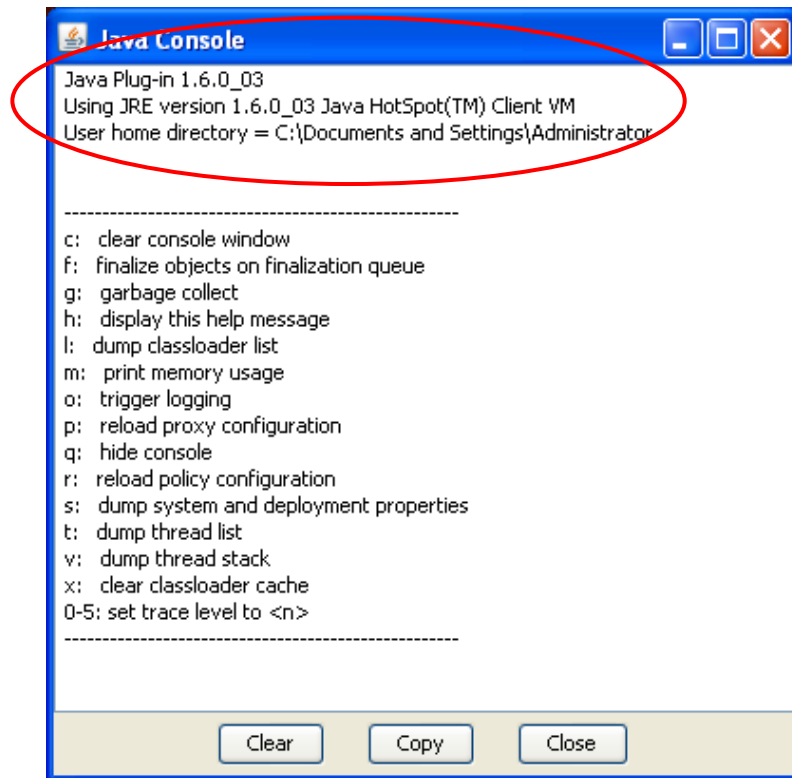
To use the remote panel function for monitoring this library, JAVA must be installed on the PC used for the monitoring through a network connection.

### 11.1.4.1 Installation of JAVA

- 1) Access one of the following URLs:  
<http://www.java.com/>  
<http://www.java.com/ja/>
- 2) Download Java Runtime Environment (JRE) Version 1.6 or later.  
Sample download file: Java Runtime Environment 6.0 Update 6 (JRE 1.6.0\_03)
  - Available versions of the Java Runtime Environment (JRE) as JAVA software:
    - JRE 6.0 (JRE 1.6)
- 3) Follow the procedure for executing the downloaded file to install JAVA.
- 4) Start the Web browser (IE 6.0), and make sure that JAVA has been installed correctly. If you are using IE, click [Tools (T)], and select [Sun Java Console].



- 5) Once the Java Console window appears, verify the displayed version of the installed Java Runtime Environment (JRE).



- 6) Select [Close (E)].

## 11.2 Start-up of the Remote Panel

To start the remote panel, start a Web browser from any terminal in the network, and specify the IP address assigned to the tape library unit as a URL.



Connect the remote panel after confirming that the tape library has started (READY state).

- 1) Start the Web browser (IE 6.0), and specify the IP address assigned to the library in the Address (D) field (e.g., <http://192.168.2.1/>).

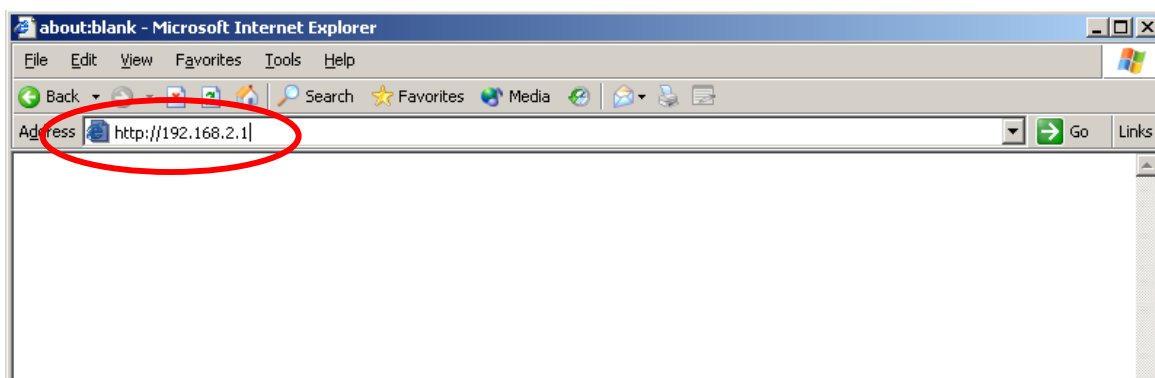


Figure 11.1 Start-up of the remote panel

- 2) If Java Plug-in has been properly installed on the terminal and the library unit and the terminal are properly connected via the network, the Security Warning window appears.

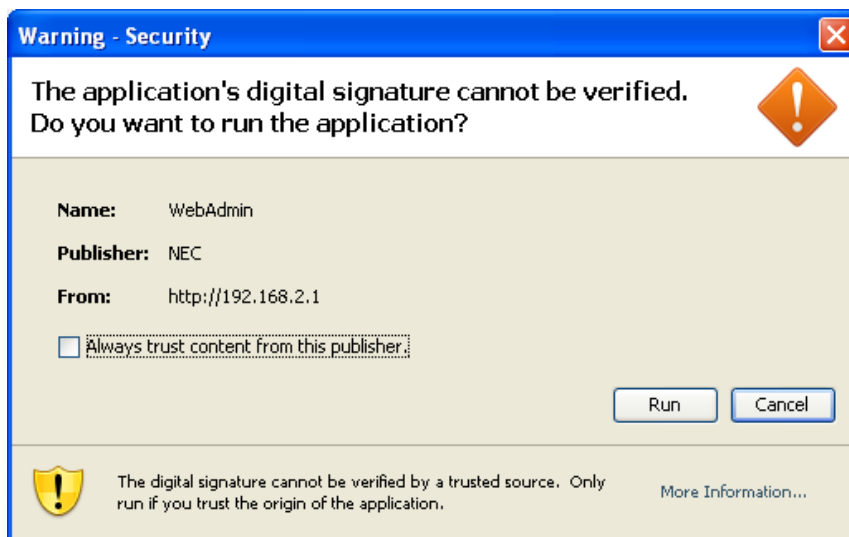


Figure 11.2 [Warning-Security] window

- 3) Place a checkmark in the "Always trust content from this publisher" check box in this window, and click the [Run] button.



Once [Run] is clicked with the "Always trust content from this publisher " check box checked, the Security Warning window will not appear when the same terminal is used to connect the remote panel to the library unit and start the remote panel.



If the [Cancel] button is clicked, the Security Warning window no longer appears, and the Login screen appears as the initial screen of the remote panel.

However, in such cases, the Security Warning window appears again after the Web browser is started again to connect the remote panel to the library and start the remote panel.

- 4) After a moment, the Login screen appears as the initial screen.

(The normal amount of time taken until the Login screen appears for the initial connection is about a minute, but this may vary depending on the environment.)



If only the banner part is displayed and the Login window does not appear after a moment, Java Plug-in may not be installed or may not have the correct settings.

Referring to [Section 11.1.4, "JAVA settings,"](#) confirm that JAVA is installed correctly.

If no indication of whether JAVA is installed is displayed, Java may be disabled.

If you are using IE, select [Tools (T)] – [Internet Options (O)] to open the Internet Options dialog box, click the [Advanced] tab, and confirm the following at the location shown in the figure below.

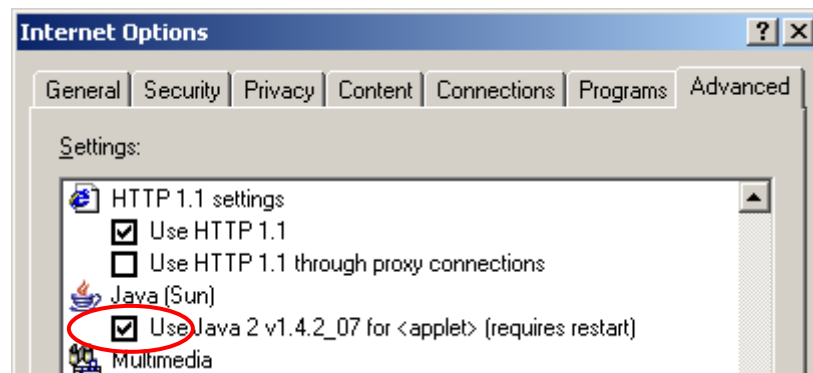


Figure 11.3 Java setting in IE

## 11.3 Overview of Remote Panel

### 11.3.1 Login format

1) Registered users

Up to four users can be registered arbitrarily. A general user, administrator, and maintenance personnel are registered as reserved users beforehand.

**Table 11.1 Reserved users**

User type	User name	Password (default)
General user	User	user
Administrator	Admin	1234
Number of characters	Up to 8	Up to 16

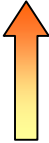
\* Both user name and password are case-sensitive.

2) Simultaneous login

If multiple users log in to the remote panel simultaneously, the response deteriorates and communication errors or a timeout may occur. Normally, only one user should login.

3) Access authority

The following three types of authority are available for access to the remote panel:

- Maintenance personnel
  - Administrator (user)
  - General (user)
- 

Higher access authority

The access authority assigned to a user is identified by the user name entered by the user at login to the remote panel. Unauthorized logins are also controlled by password management.

In the subsequent description of each menu of the remote panel, the users who can access the menu are described next to the menu title.

4) Notes on user setting and the use of account

- Admin and User accounts are preset at the factory. To use the remote panel, usually perform login not with Administrator authority but with User authority.
- The administrator password can be changed. If you have changed the administrator password to a new one, write down the new password in a note to remember it, and keep it in a safe place.

### 11.3.2 Web page configuration

Each page displayed on the browser consists of the banner and the information part specific to each page as shown in the figure below. The banner displays the Fujitsu logos.

Although the size of the screen is set for a screen resolution of 800 by 600 pixels, 1280 by 1,024 pixels is recommended. The basic menu varies depending on the privilege of the login user. Details are provided in Section 11.4, "Detailed Specifications of Remote Panel." Submenus are displayed according to the function selected from the basic menu.

The submenus are explained as the explanation of each function page.

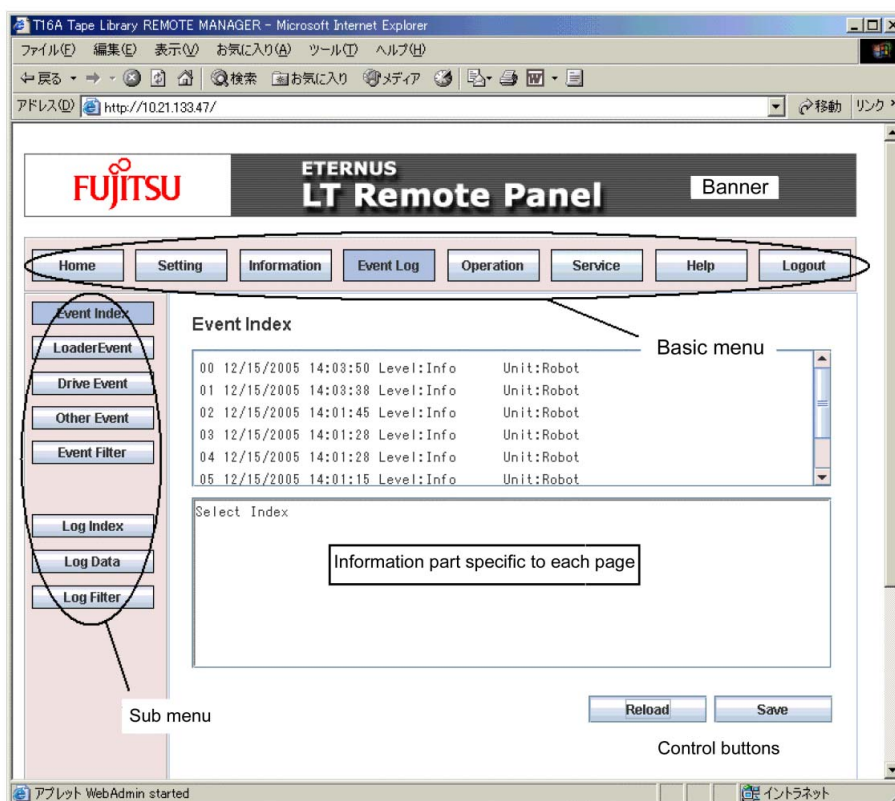


Figure 11.4 Web page configuration

#### Caution

##### Operation disabled

After logging in to the remote panel of the tape library, use only the buttons on the remote panel for operation. Do not operate any tool buttons (e.g., "Back") on the Web browser screen.

### 11.3.3 Page tree

Individual windows (pages) after login are related as shown in the figure below.

The basic menu is displayed the same way for all the pages and contains menu items that classify and group the individual pages by function. The submenu contains the individual function items for each function group selected from the basic menu. Individual functions are linked from the submenu.

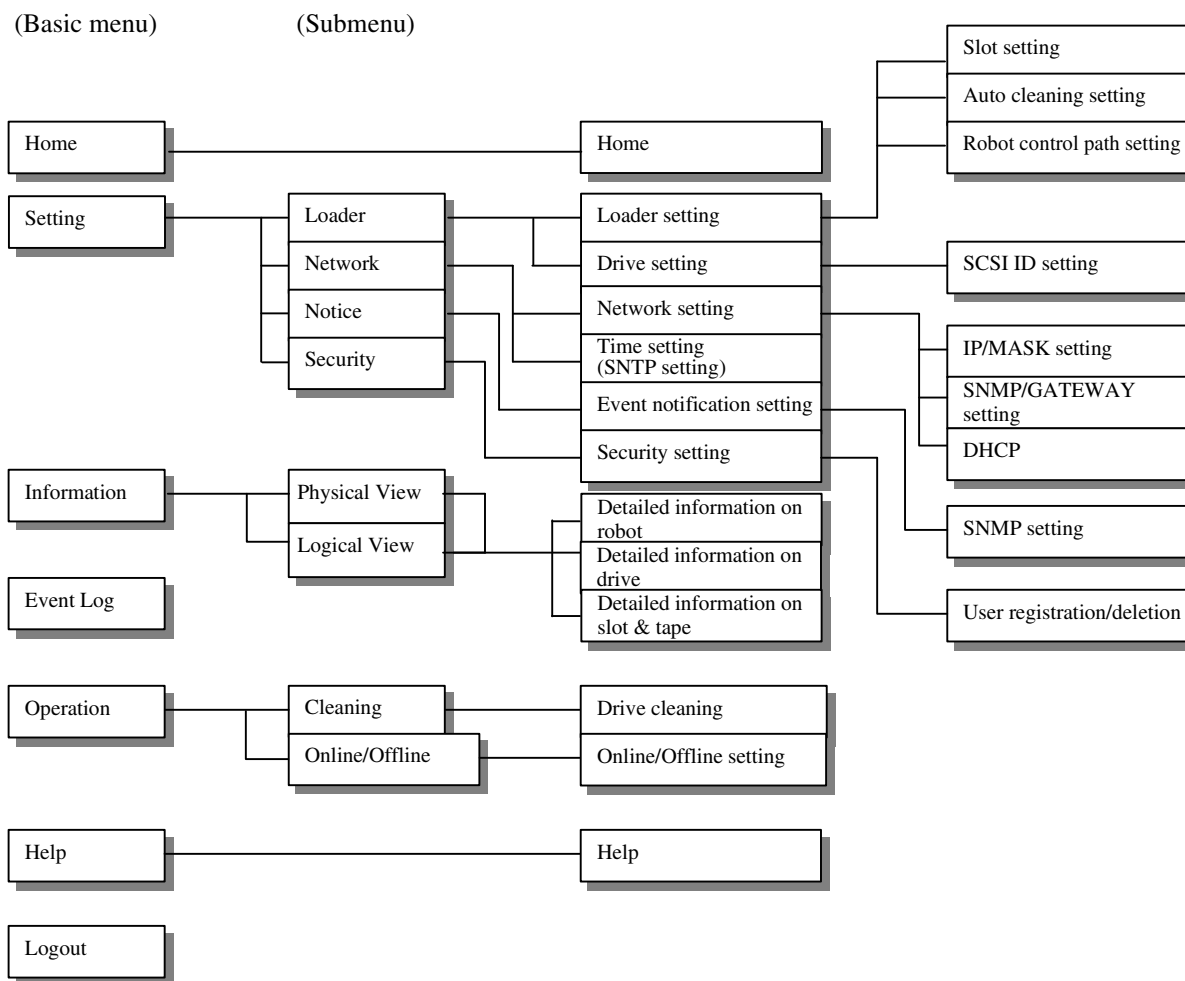


Figure 11.5 Page tree



### 11.3.4 Web page basic menu

This menu is displayed in common in respective screens after logging in. In this basic menu, the currently selected menu is distinguished from other menus by color. Menus that are not available are displayed in pale colors.



#### Caution

##### Operational failures

Do not set and operate the "inhibited" menu.

**Table 11.2 Availability of basic menus by user authority**

Basic menu	Function	General user (User)	Administrator (Admin)
Home	Displays the external view, basic information, and basic menu of the tape library.	Y	Y
Setting	Sets tape library operations.	N	Inhibited (*1)
Information	Displays the status of the robot, tape drives, and slots.	Y	Y
Event Log	Displays the log of the tape library and sets the log display condition.	Inhibited	Inhibited
Service	Menu for maintenance personnel only	N	N
Operating	Tape library operations	N	Inhibited (*2)
Help	Explains operation menu functions.	Y	Y
Logout	Log-out screen	Y	Y

Y: Possible

N: Impossible

\*1 Do not use any items on this menu except [Notice] (SNMP Setting) and [Security].

\*2 As a general rule, do not use any items on this menu except [Cleaning] and [Online/Offline].

## 11.4 Detailed Specifications of Remote Panel

### 11.4.1 Login page [general user] [administrator]

#### [Function]

The login page allows the user to log in to the remote panel.

User authentication is performed based on the user name and password. The administrator access privilege or user access privilege is set according to the user name. The login page jumps to the home page.

#### [Display contents]

(1) Account (user name)

Enter the login user name (an account can be created on the security setting page) (see [Section 11.4.3.4](#)).

(2) Password

Enter the password corresponding to the user name. The entered password is displayed as "\*\*\*\*..." The password is case sensitive.

(3) Login button

If the entered user name and password are valid, the home page is displayed.

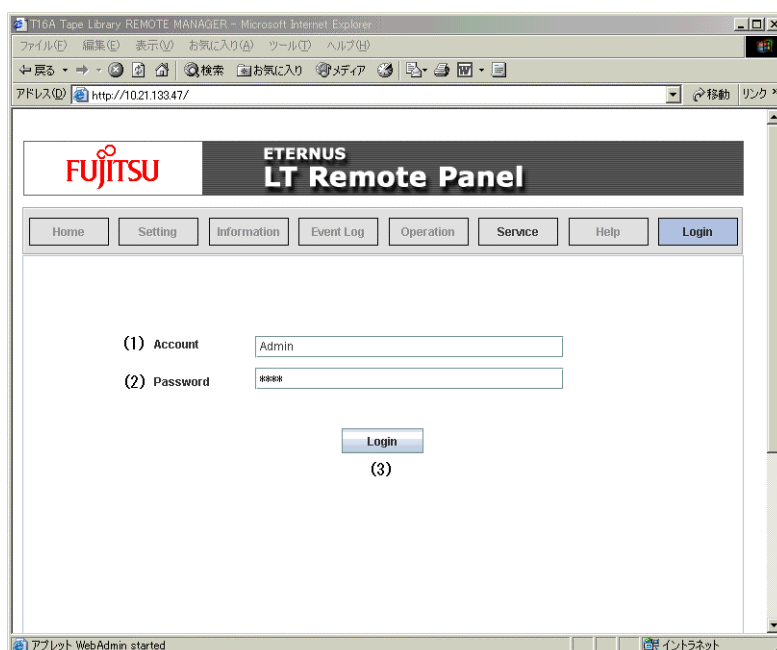


Figure 11.6 Login page (with data entered)

If the user name or password is invalid, the login attempt fails with the following message displayed.

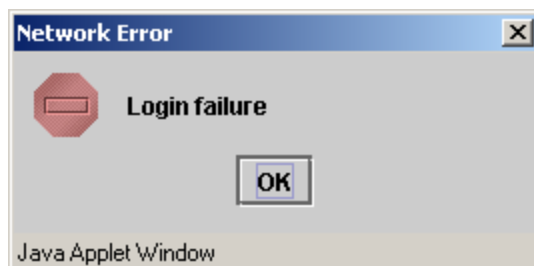


Figure 11.7 Login error dialog box

## 11.4.2 Home page [general user] [administrator]

[Basic menu] → [Home]

### [Function]

The home page is the start page after a user login.

The home page displays an external view of the connected tape library, basic information, and basic menu. When a function is selected from the basic menu, the corresponding setting page is displayed.

### [Display contents]

- (1) Basic menu
  - Buttons to individual pages. The buttons that can be selected depend on the user privilege.
- (2) Device image
  - The external photo view of this tape library is shown. "Data Downloading ..." is displayed while photo data is received.
- (3) Loader information data
  - a) Product Name: Library name (default: T16A2)
  - b) FW Revision: Revision of library firmware
  - c) Serial Number: Serial number of library
  - d) Number of Robots: Number of robots (fixed to 1)
  - e) Number of Slots: Number of slots. When the auto cleaning function is enabled, the indicated number is after the number of cleaning slots has been subtracted.
  - f) Number of Drives: Number of tape drives (fixed to 1)
  - g) Applet Revision: Java Applet revision

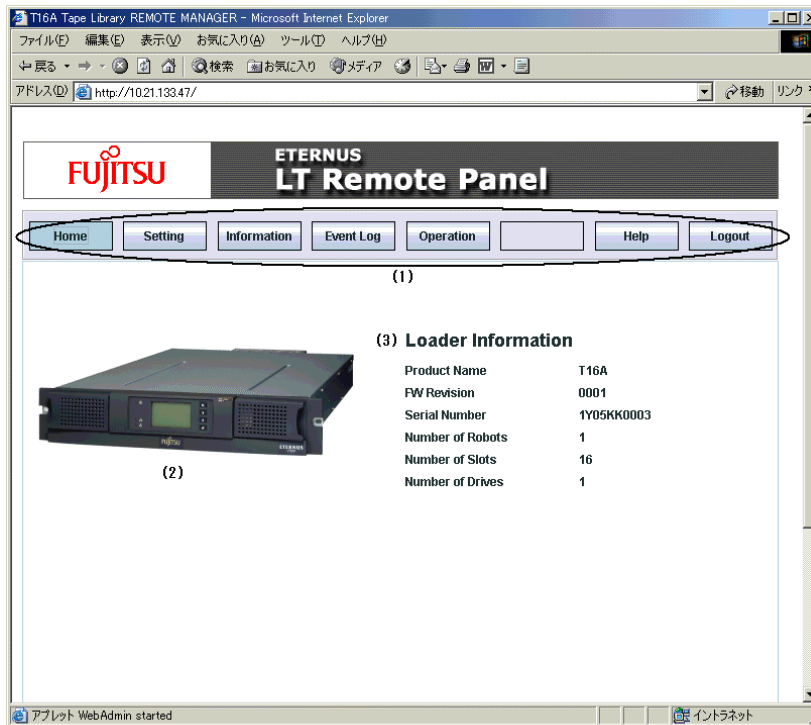


Figure 11.8 Home page (for administrator)

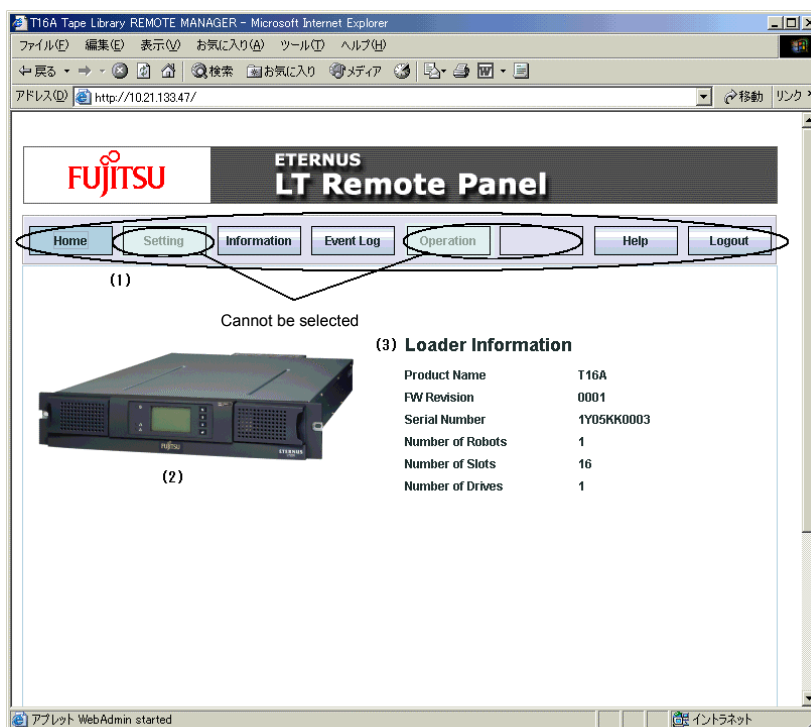


Figure 11.9 Home page (for general user)

## 11.4.3 Setting page

### 11.4.3.1 Loader setting page [administrator]

[Basic menu] → [Setting] → [Loader]

#### [Function]

The loader setting page allows the administrator to check or change the settings of the robot control unit and whole library including the SCSI ID function. To change settings, the mode must be changed to offline mode in advance.

#### [Display contents]

- (1) Basic menu
- (2) Submenu of setting page

The submenu is linked to the following four pages:

- Loader: Button to the loader (library) setting page (See [Section 11.4.3.1.](#))
- Network: Button to the network setting page (See [Section 11.4.3.2.](#))
- Notice: Button to the event notification setting page (unsupported)
- Security: Button to the security setting page (See [Section 11.4.3.4.](#))

- (3) Loader Information data

- Loader Mode

The default is "Random Mode."

- Barcode Reader

Specify whether to enable the bar code reader.

Note:

The initial value of the LT210 is "Disable," and that of the LT220 is "Enable."

- Auto Cleaning [inhibited to change]

The default is Disable.

- Number of Cleaning Slots [inhibited to change]

- (4) Drive setting

Confirm or set the drive SCSI ID. No error occurs if the SCSI ID of a drive that is not mounted is changed.

- Drive No. 1 SCSI ID [inhibited to change]

Set the SCSI ID of drive 1. The default is 1.

- (5) Robot setting

Set or confirm the various robot settings.

- Power Save Mode (min)

(The default is Enable for 5 minutes.)

Note:

A value greater than 127 is invalid.

- Mode Sense page #1F Length [inhibited to change]  
Use the default setting (18 Bytes).
- Recovered Error Reporting [inhibited to change]  
Use the default setting (Disable).
- Tape Alert Mode [inhibited to change]  
Use the default setting (Enable).

(6) Reload button

This button clears the changes made on this page and restores the original settings (current settings).

(7) Submit button

This button applies the changes made on this page.

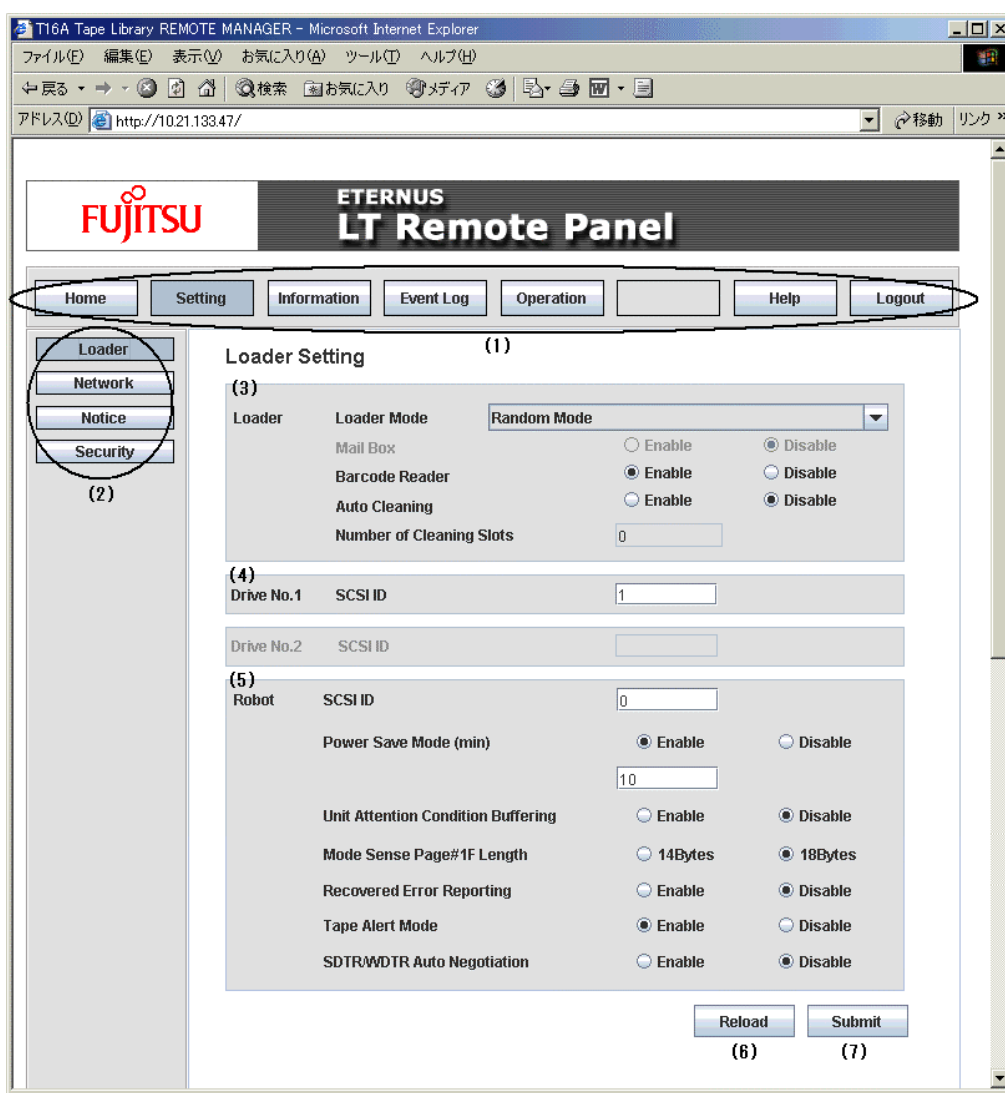


Figure 11.10 Auto loader setting page

### 11.4.3.2 Network setting page [administrator]

[Basic menu] → [Setting] → [Network]

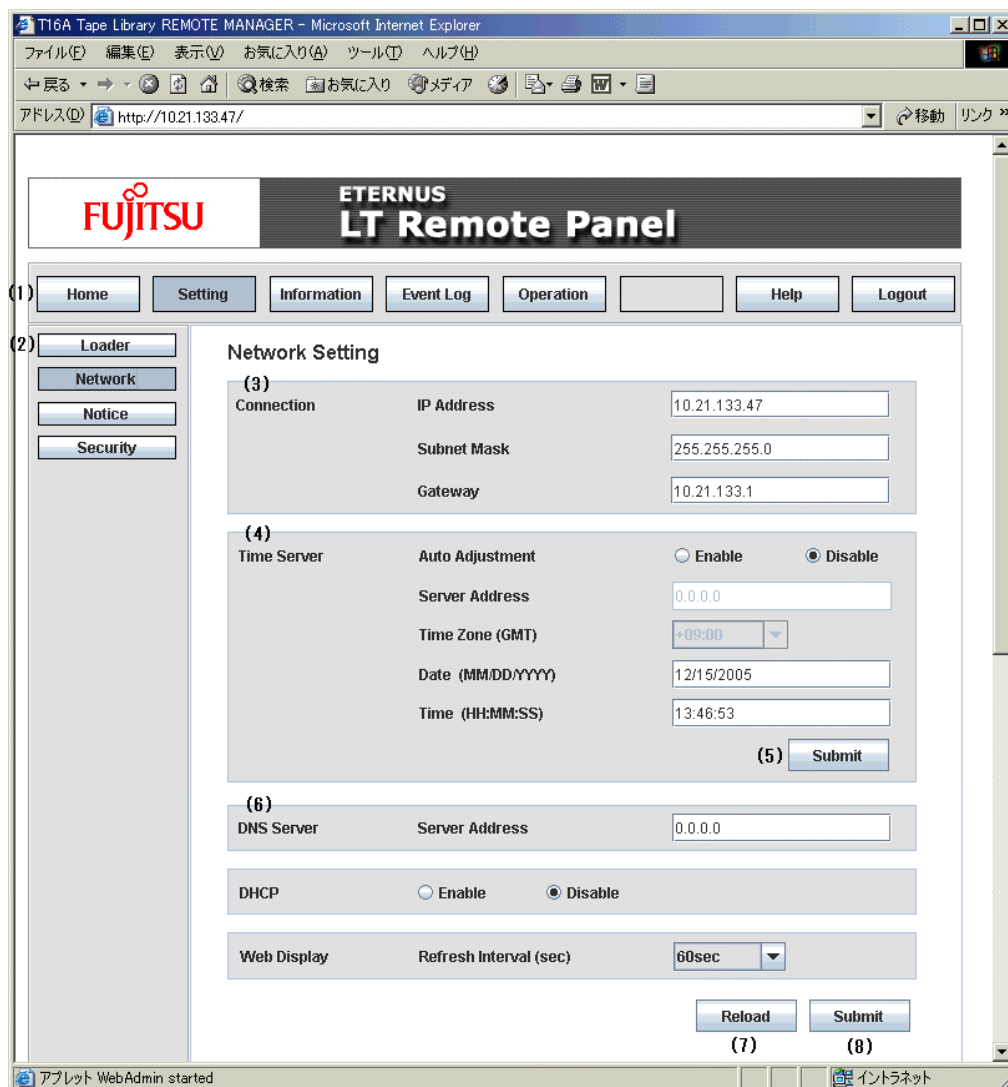


Figure 11.11 Network setting page

#### [Function]

This Network setting page allows the administrator to make settings for the tape library, settings for connection to the network and timer server, and the update timing of the Web screen.

#### [Display contents]

- (1) Basic menu
- (2) Submenu of setting page

(3) Connection/Network Connection Setting

Specify the IP address, Subnet Mask, and Gateway address needed to connect the tape library to the network.

- IP Address  
(the default is 192.168.2.1).
- Subnet Mask  
(the default is 255.255.255.0).
- Gateway  
(the default is 0.0.0.0).

(4) Time Server setting [cannot be used]

Specify whether to enable time acquisition from the Time Server (NTP server) and information on time setting.

(5) Submit button (for Timer Server) [cannot be used]

Used to submit the Time Server setting.

(6) Other setting items

- DNS Server  
Use the default value as is (0.0.0.0).
- DHCP  
Use the default setting (Disable) as is.
- Web Display  
Refresh Interval (sec)

(7) Reload button

This button clears the changes made on this page and restores the original settings (current settings).

(8) Submit button

This button applies the changes made on this page (excluding the settings made for Time Server).

### 11.4.3.3 Event notification setting (SNMP) page [Administrator]

[Basic menu] → [Setting] → [Notice] → [SNMP Setting]

[Function]

This setting page enables you to specify notification via SNMP of events generated by the device.

[Display contents]

- (1) Basic menu
- (2) Submenu of setting page
- (3) Tabs for switching between pages

Switch between the SNMP Setting and E-mail Setting pages with these tabs.



## (4) SNMP Setting

Specify common settings for SNMP.

## Community

SNMP community name setting (maximum of 32 characters) (The default is public.)

## Name

Device name setting (maximum of 32 characters) (The default is NULL.)

## Location

Device physical location setting (maximum of 32 characters) (The default is NULL.)

## Contact

Contact information setting (maximum of 64 characters) (The default is NULL.)

## (5) SNMP Trap Notification Setting

Specify common settings for SNMP.

## SNMP

Specify settings related to the notification destination. Up to four destinations can be specified.

## Valid

Check "Valid" to make the Trap To setting effective.

## Trap To

Specify the IP address of the Trap send destination (in decimal notation as follows: XXX.XXX.XXX.XXX).

## (6) SNMP Notification Setting

Specify the threshold for SNMP trap notification.

## Trap Level

Specify the threshold for sending a trap.

Select the threshold from the following five levels: unknown, emergency, error, warning, info.

If "unknown" is checked, only unknown events are reported.

If "info" is checked, all events are reported. (The default is warning.)

## (7) Reload button

The [Reload] button clears the changes made and restores the original settings.

## (8) Submit button

The [Submit] button applies the changes made.

The system checks the entered values when the [Submit] button is clicked. The system applies the settings when it determines that they are normal.

## (9) Test button

This is a button for sending a test SNMP trap.

Click the [Test] button to send a test SNMP trap to the active SNMP trap notification destination.

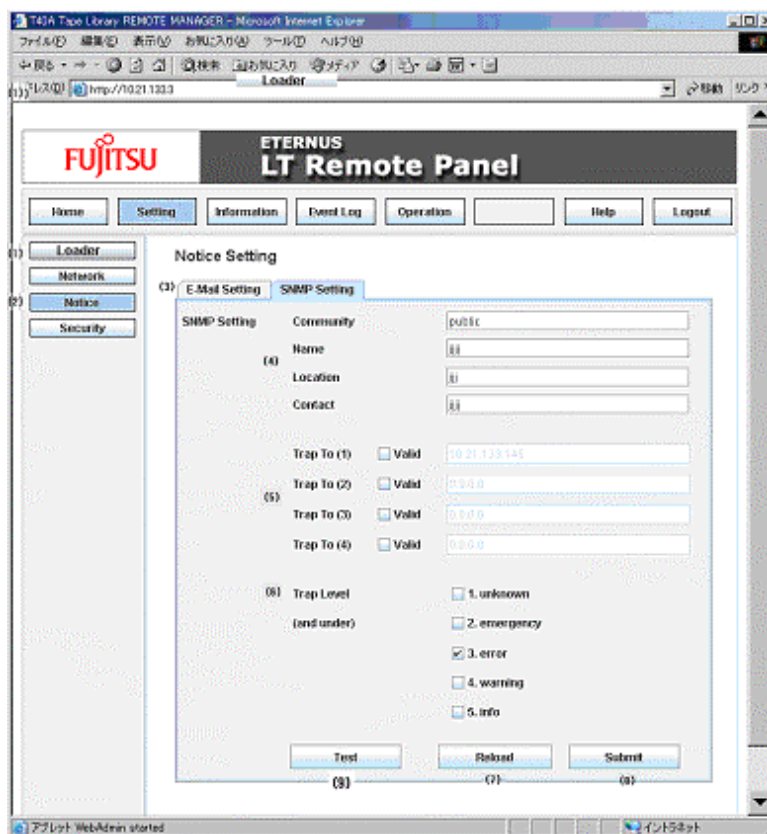


Figure 11.12 Event notification setting (SNMP) page

### 11.4.3.4 Security setting page [administrator]

[Basic menu] → [Setting] → [Security]

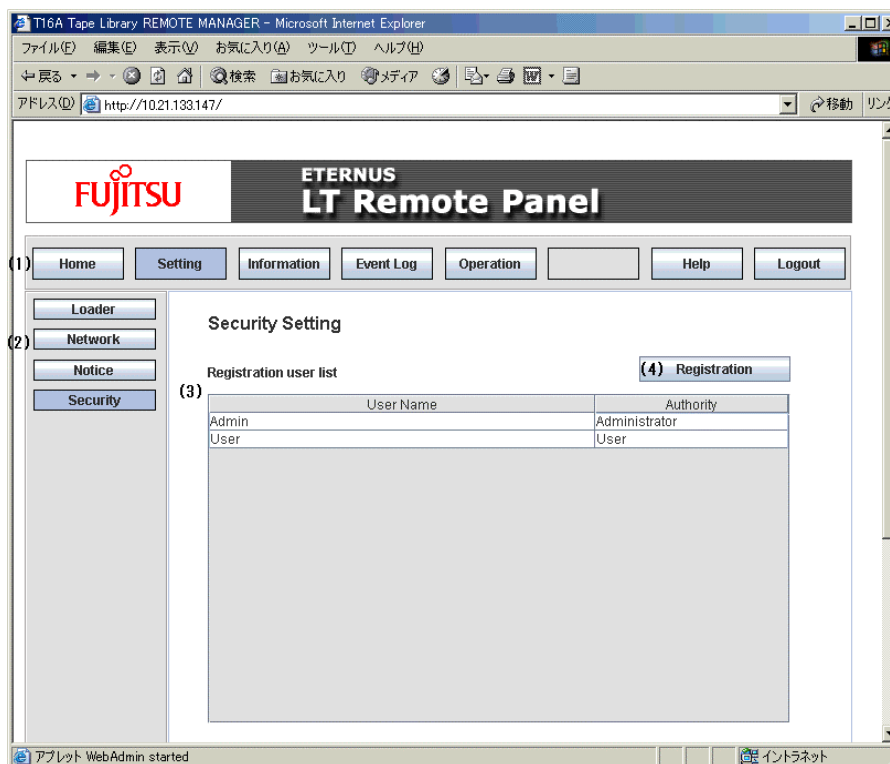


Figure 11.13 Security setting page

#### [Function]

The security setting page allows you to list the login-enabled users, or to add, change, or delete a user.

#### [Display contents]

- (1) Basic menu
- (2) Submenu of setting page
- (3) Registration user list

The users already registered (user names and user privileges) are listed. Clicking a user name in the list displays a user setting page as a separate page so that you can change the current settings.

- (4) Registration button (user registration button)

You can click this button to register a new user who is not in the list. Click the button to display a user addition page, and enter the necessary data to add a new user.

Clicking the Registration button opens the User Setting window, which enables you to add, change, and delete the users who can log in.

### 11.4.3.5 User Setting window [Administrator]

[Basic menu] → [Setting] → [Security] → [Registration or User list]

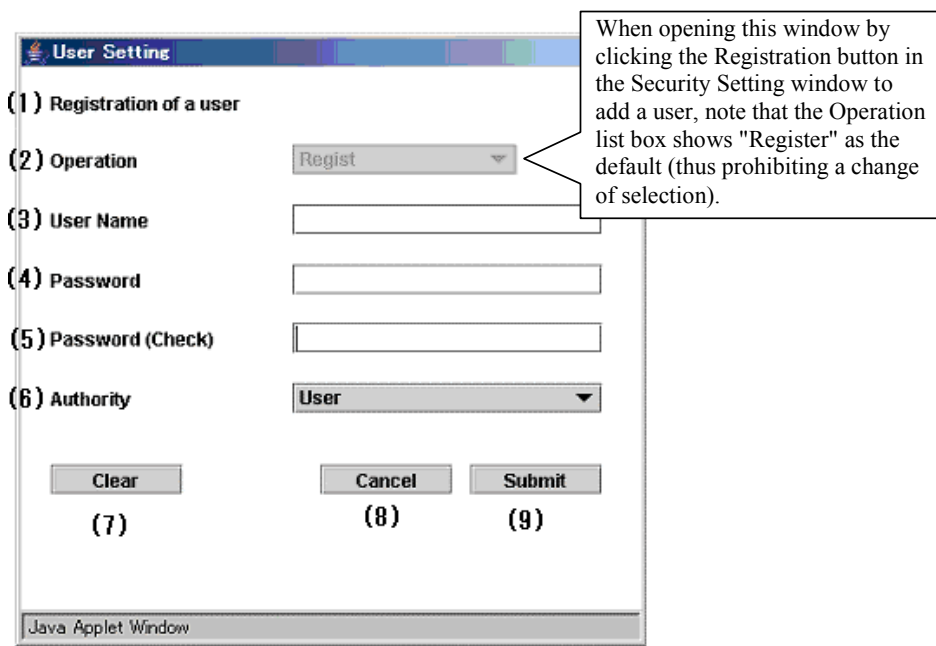


Figure 11.14 User setting window

#### [Function]

This window is opened from the Security Setting window and enables you to add, change, and delete the users who can log in.

#### [Display contents]

- (1) User name
 

Select the user name for which settings are to be changed from the list box. For adding a new user, the list box shows "Registration of a user."
- (2) Operation setting
 

Select the change or deletion operation for user settings from the list box.

  - Change:
 

Changing registration contents (Only the password and user level can be changed.)
  - Delete:
 

Deleting a registered user

\* For adding a new user, the Operation list box shows "Register" disabling the selection of other operations.

(3) User name setting

The User Name field shows the user name of the registered user for which user settings are to be changed or deleted. (The user name cannot be changed.)

For adding a new user, this field shows a blank, enabling the entry of any user name.

(4) New password setting

Specify a new password (case-sensitive) in the New Password field.

(5) New password setting (for reentry)

(6) User level setting

Select the user level (access authority) to be set from the Authority list box.

- Administrator  
System administrator
- User  
General user

(7) Clear button

Click the Clear button to reset all entered values to the defaults.

(8) Cancel button

Click the Cancel button to close the User Setting window without reflecting entered data.

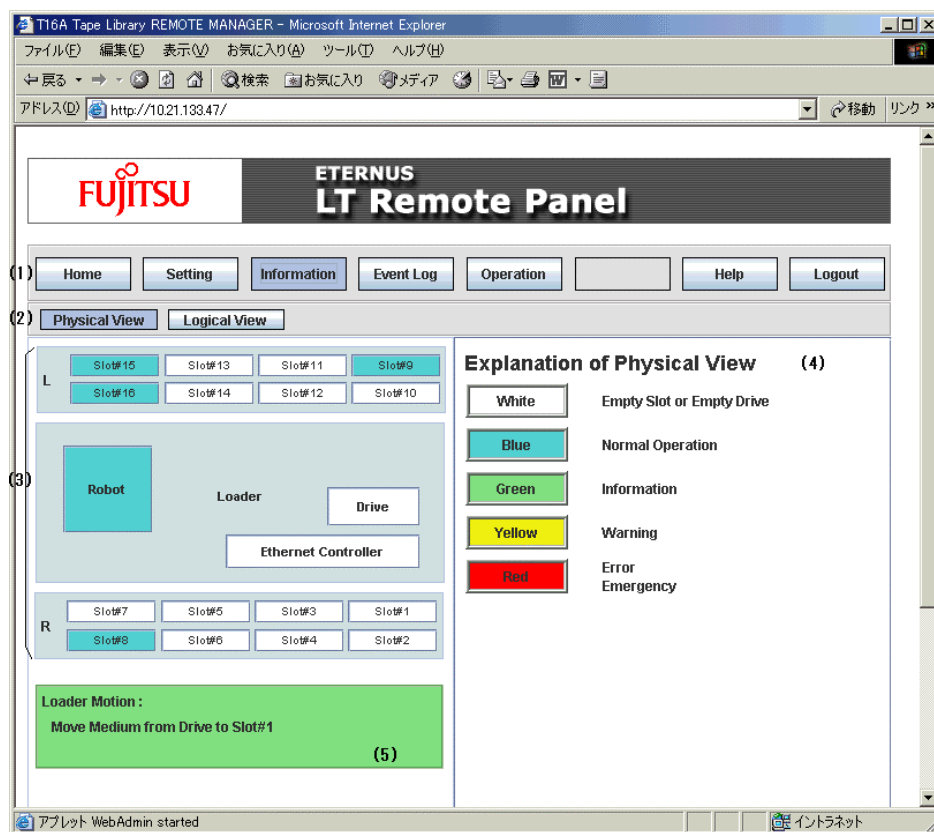
(9) Submit button

After entering data for all necessary setting items, click the Submit button to update the user registration.

## 11.4.4 Information page

### 11.4.4.1 Physical View page [general user] [administrator]

[Basic menu] → [Information] → [Physical View]



Note:

Because the LT210 is not equipped with a left magazine (L), (Not Use) is displayed in the left magazine area.

**Figure 11.15 Physical View page**

#### [Function]

The physical view page displays the status of the library components such as the robot, drive, and slots (including tape information). The page displays information visually as an image of the components mounted on the tape library. The normal status and abnormal status of the individual components and the status of the tape storage slots are displayed in separate colors.

To view detailed information on an element, click the element. Detailed information on the element is displayed in the right frame of the page.

**[Display contents]**

Physical configuration image in the library

- (1) Basic menu
- (2) Submenu of view page

The submenu can be used to switch between the Physical View and Logical View.

- (3) Physical configuration image of library

The library components are displayed in a physical image.

- L, R (Left and Right magazines)

The status of each magazine is displayed. Clicking either button does not display an additional page.

Note:

Because the LT210 is not equipped with a left magazine (L), (Not Use) is displayed in the left magazine area.

- Slot#XX, Cln#X

The status of each slot is displayed. Clicking a slot number displays detailed information on the slot and the tape in the right frame. See [Section 11.4.4.5](#).

- Loader

The status of the whole loader (library) is displayed. Clicking Loader does not display a corresponding page.

- Robot

The status of the robot is displayed. Clicking Robot displays detailed information on the robot in the right frame. See [Section 11.4.4.3](#).

- Drive

The status of the drive is displayed. Clicking Drive displays detailed information on the drive in the right frame. See [Section 11.4.4.4](#).

- Ethernet Controller

The status of the network controller is displayed. Clicking Ethernet Controller displays detailed information on the controller in the right frame. See [Section 11.4.4.6](#).

- (4) Information view page

When a device such as the robot, slot, drive, or Ethernet controller is selected from the physical configuration image of the library, detailed information on the selected device is displayed. While no device is selected, the coloring of the status display is explained.

- (5) Operation information view frame

The operation status of the library is displayed by colors and character strings (such as Initializing, Idle, Magazine Checking, Move Medium from Slot#XX to Slot#XX, Unlock Detecting etc.)

White	Empty Slot or Empty Drive	Normal status (without media)
Blue	Normal Operation	Normal status (with media)
Green	Information	Information notification (normal)
Yellow	Warning	Warning
Red	Error/Emergency	Error/emergency

Figure 11.16 Operation information view frame

### 11.4.4.2 Logical View page [general user] [administrator]

[Basic menu] → [Information] → [Logical View]

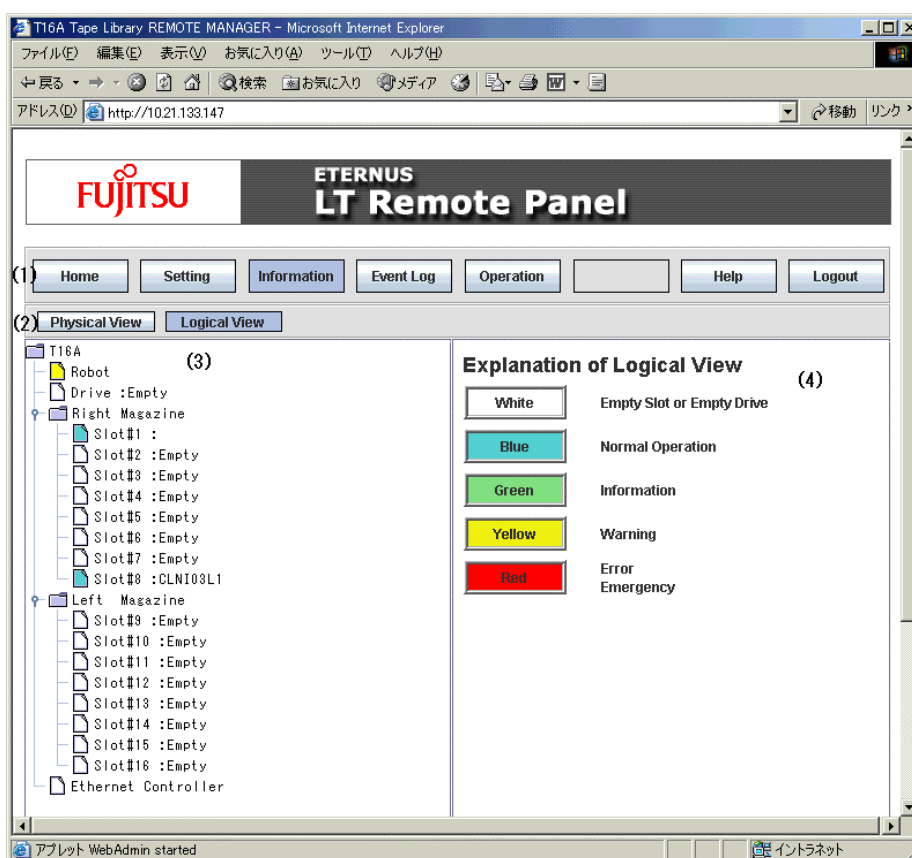


Figure 11.17 Logical View page

#### [Function]

The logical view page displays status information on the library components including the robot, drive, and slots (including tape information) in a tree structure in which the components are classified into function groups. This page has the same basic function as the physical view page. (See the physical view page.)

To view detailed information on an element, click the element. Detailed information on the element is displayed in the right frame of the page.







**[Display contents]**

- (1) Basic menu
- (2) Submenu of view page

The submenu can be used to switch between the Physical View and Logical View.

- (3) Physical configuration image of library

The components of the library are displayed in a logical image like Explorer.

In the tree view, the components are grouped by the respective types (robot, drives, magazines, and slots) and displayed in groups. When a group contains several elements (drives, slots), these elements are displayed one layer below. When multiple elements are grouped, icon  or  is displayed to the left of the group icon. When  is displayed, one layer below is not displayed. When  is displayed, one layer below is displayed.

Displayed elements are as follows (if elements cannot be accommodated on one page, they can be viewed by page scrolling).


- Robot

The status of the robot is displayed. Clicking the element displays detailed information on the robot in the right frame (see [Section 11.4.4.3](#)).

- Drives

The status of the drive is displayed. Clicking the element displays detailed information on the drive in the right frame (see [Section 11.4.4.4](#)).

- Right Magazine or Left Magazine

The status of each magazine is displayed. Clicking either element does not display a corresponding page. Clicking the icon  lists the slots in the relevant magazine.

- Slot#XXe

The status of each slot is displayed. Clicking a slot number displays detailed information on the relevant slot and tape in the right frame (see [Section 11.4.4.5](#)).

- Ethernet Controller

The status of the network controller is displayed. Clicking this element displays detailed information on the controller in the right frame (see [Section 11.4.4.6](#)).

- (4) Information view page

When a device such as the robot, slot, drive, or Ethernet controller is selected from the logical configuration image of the library, detailed information on the selected device is displayed.

When the library logical configuration image is selected, the status of the selected device is displayed.

### 11.4.4.3 Detailed information on the robot [general user] [administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Robot]

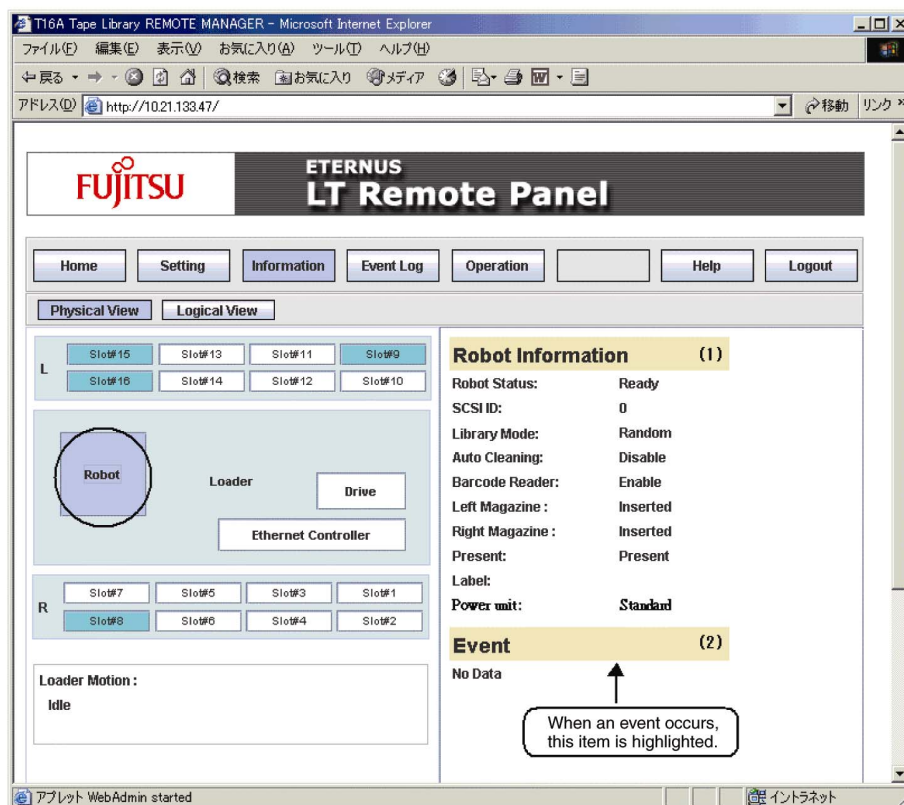


Figure 11.18 Detailed information on the robot (Physical View)

#### [Function]

The Robot Information frame displays detailed information on the robot.

This information is displayed in the right frame of the physical view or logical view page.

**[Display contents]**

## (1) Robot Information

The current status of the robot is displayed.

## – Robot Status

Robot status such as Ready, Prevent Medium Removal, or Unknown Condition.

- Ready                                      Ready status
- Prevent Medium Removal      Exclusive control status caused by a backup software operation
- Unknown Condition              Unknown status

## – Loader Mode

Loader mode such as Random

## – Auto Cleaning [not supported]

Whether the auto cleaning function is enabled or disabled

## – Barcode Reader

Whether the barcode reader is enabled or disabled (Enable or Disable)

## – L (Left Magazine), R (Right Magazine)

Magazine status (Inserted or Unlocked)

## – Present

Whether a tape cartridge is in the robot (hand or picker) (Empty or Present)

## – Label

Label name on the tape cartridge in the robot (hand or picker)

"---" is displayed if no tape cartridge is inserted.

## (2) Robot event information

## – Event

Information such as an error event (No Data or Emergency (CHECK: XXXX) etc.) that occurred in the robot is displayed. When the information is updated, it is highlighted.

#### 11.4.4.4 Detailed information on the drive [general user] [administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Drive]

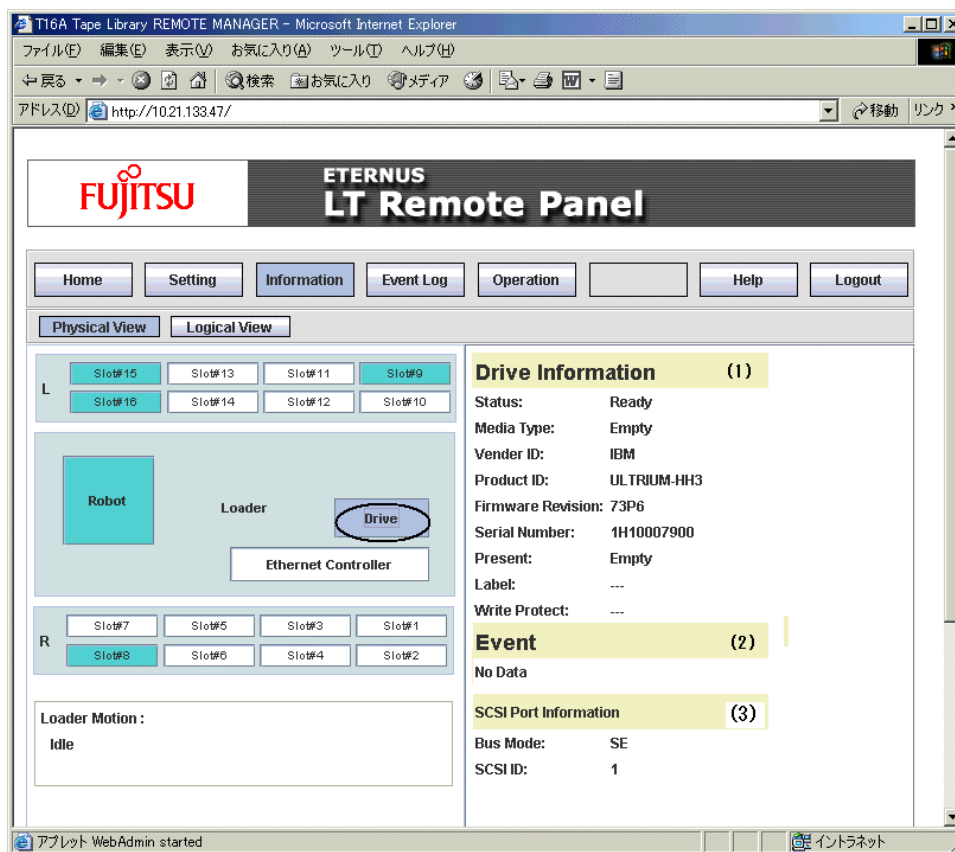


Figure 11.19 Detailed information on the drive (Physical View)

#### [Function]

The Drive Information frame displays detailed information on the selected drive.

This information is displayed in the right frame of the physical view or logical view page.

**[Display contents]**

## (1) Detailed information on the drive

## – Status

Drive status such as Ready, Loading, Threading etc. "---" is displayed if the relevant drive is not mounted.

## – Media Type

Type of tape cartridge loaded in the drive (Empty, LTO Generation 3 etc.)

## – Vendor ID

Drive vendor ID (IBM)

## – Product ID

Product name of the drive (ULTRIUM-HH3 etc.)

## – Firmware Revision

Version of drive firmware (FW)

## – Serial Number

Serial number of the drive

## – Present

Whether a tape cartridge is in the drive (Present or Empty)

## – Label

Label name of the tape cartridge in the drive. "---" is displayed when no there is no tape cartridge in the drive.

Note: Because the LT210 tape library is not equipped with a bar code reader, nothing is displayed if a tape cartridge is inserted.

## – Write Protect

Whether the tape cartridge in the drive is write-protected (Protect or Permit). "--" is displayed when there is no tape cartridge in the drive.

## (2) Drive event information

## – Event

Events such as errors that occurred in the drive and consumables replacement messages are displayed. When the information is updated, it is highlighted.

## (3) SCSI port information

## – Bus mode

Bus mode of the drive

## – SCSI ID

SCSI ID of the drive

### 11.4.4.5 Detailed information on slot & tape [general user] [administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Slot#XX]

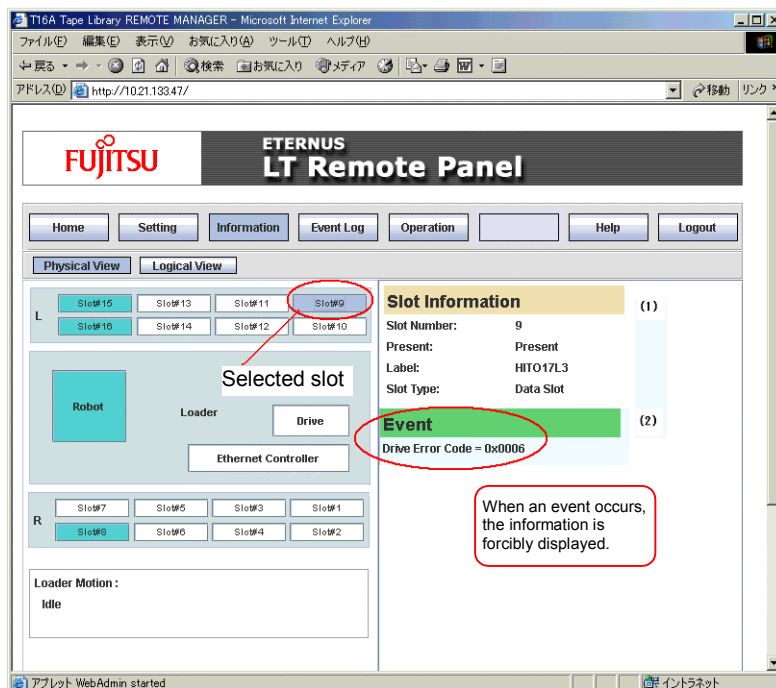


Figure 11.20 Detailed information on slot & tape (data slot)

#### [Function]

The Slot Information frame displays detailed information on the selected slot and tape cartridge inserted into the slot.

**[Display contents]**

## (1) Slot Information

The Slot Information frame displays the current status information on the selected slot and tape cartridge inserted into the slot.

## – Slot Number

Slot number of the selected slot

## – Present

Whether a tape cartridge is in the slot (Empty or Present)

## – Label

Label name on the tape cartridge in the slot

"---" is displayed if no tape cartridge is inserted. Nothing is displayed if a tape cartridge without a barcode label is inserted.

Note: Because the LT210 tape library is not equipped with a bar code reader, nothing is displayed if a tape cartridge is inserted.

## – Slot Type

The type of slot is displayed as follows:

- Data Slot: Normal slot (data slot)
- Not Used: Slot that cannot be used because of license or volume restrictions

## (2) Tape cartridge event information

## – Event

Information such as an error event occurrence related to a tape cartridge that is mounted in the slot is displayed. When the information is updated, it is highlighted.

### 11.4.4.6 Detailed information on the controller [general user] [administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Ethernet Controller]

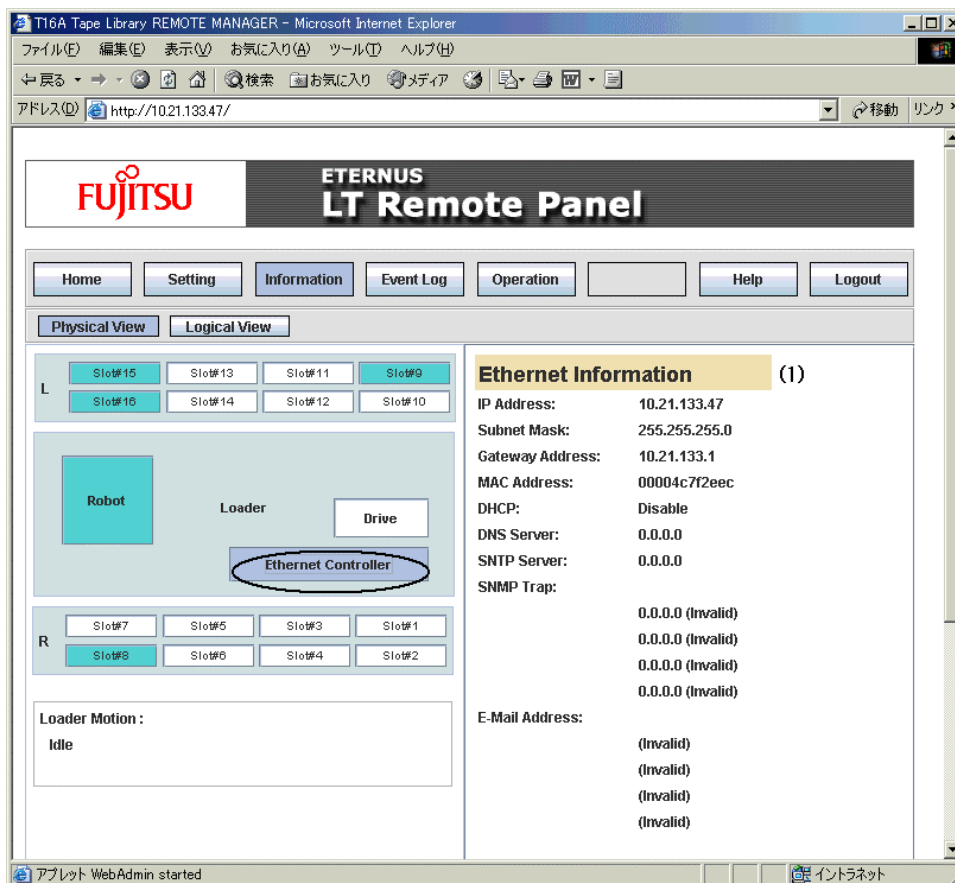


Figure 11.21 Detailed information on the Ethernet controller

#### [Function]

The Ethernet Information frame displays detailed information on the Ethernet controller. This frame only displays information. If you want to change settings, use the network setting page (see [Section 11.4.3.2](#)).



**[Display contents]**

## (1) Detailed information on the Ethernet controller

This frame displays the following items for information on the Ethernet controller of the library:

- IP Address  
IP address of the Ethernet controller
- Subnet mask  
Subnet mask of the Ethernet controller
- Gateway Address  
Gateway address of the Ethernet controller
- MAC Address  
MAC address of the Ethernet controller
- DHCP  
Whether DHCP is enabled or disabled. Disable is displayed because DHCP is normally not used.
- DNS Server  
IP address of the DNS server. 0.0.0.0 is displayed because the DNS server is not normally used.
- SNTP Server  
IP address of the time server. 0.0.0.0 is displayed when the IP address is not defined.
- SNMP Trap+  
IP address of a trap send destination and whether the IP address is valid or invalid
- E-mail Address  
E-mail send destination and whether it is valid or invalid

### 11.4.5 Operation page

**! Caution**

Do not use the remote panel to perform cleaning in an environment other than a remote environment, in which cleaning cannot be instructed from the operator panel or backup software.

**! Caution**

Do not perform any of the operations described below during operation of the tape library (backup or restoring operation) with the backup software.

#### 11.4.5.1 Drive cleaning frame [administrator]

[Basic menu] → [Operation] → [Cleaning]

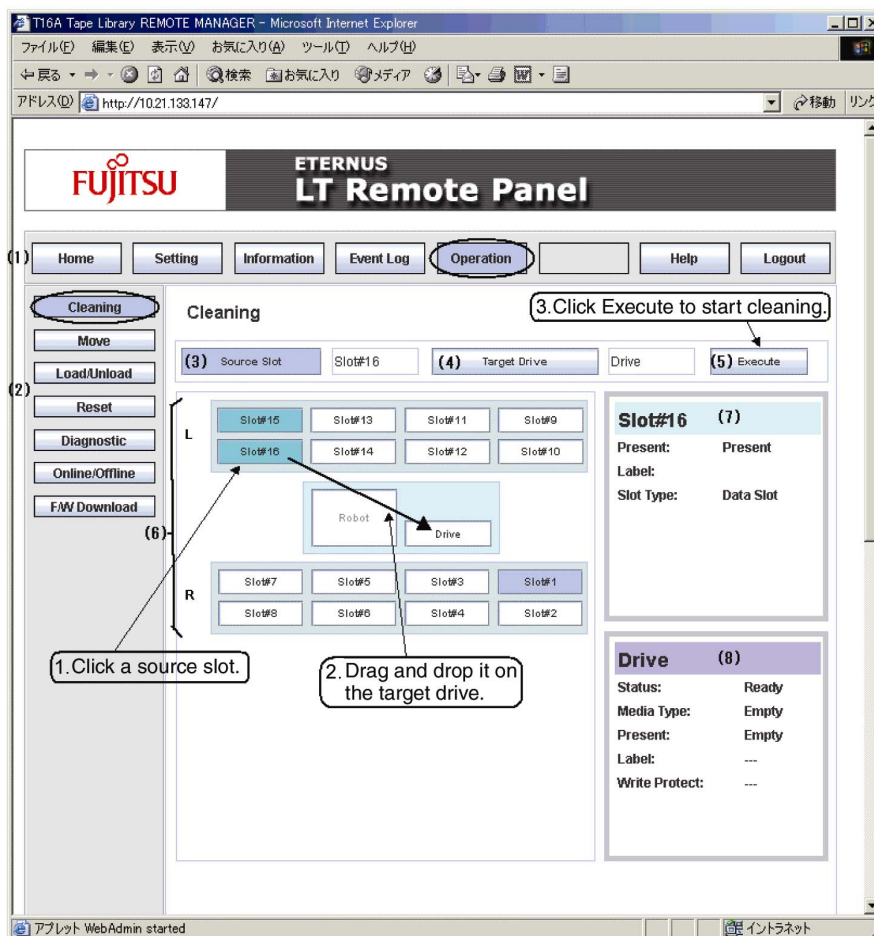


Figure 11.22 Drive cleaning frame

**[Function]**

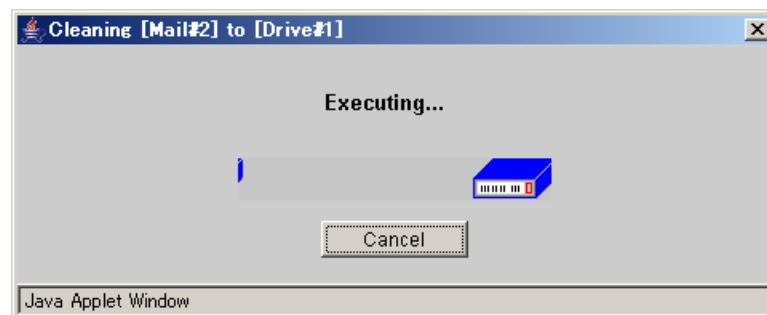
This function loads the cleaning tape from the specified slot to the specified drive to clean the drive. After the drive cleaning completes, the cleaning tape is returned to the original slot.

**Usage 1:**

- 1) From the server console, stop the backup software service.
- 2) Click the slot containing a cleaning tape in the slot map and drag it to the drive. (This operation automatically sets (4) and (5).)
- 3) Click the Execute button to start the cleaning.

**Usage 2:**

- 1) From the server console, stop the backup software service.
- 2) Click the Source Slot button.
- 3) Click the slot containing a cleaning tape in the slot map.
- 4) Click the Target Drive button.
- 5) Click the drive to be cleaned in the slot map.
- 6) Click the Execute button to start the cleaning.



**Figure 11.23 Cleaning is in progress**

**[Display contents]**

- (1) Basic menu
- (2) Submenu of loader operation page
  - Cleaning  
Button to the drive cleaning frame (see [Section 11.4.5.1](#))
  - Move  
Button to the tape cartridge move frame
  - Load/Unload  
Button to the load/unload frame
  - Reset  
Button to the reset frame

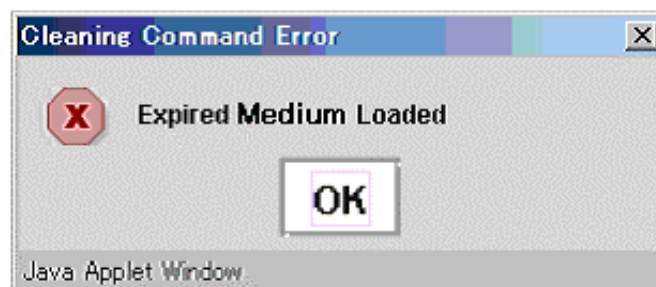
- Diagnostic  
Button to the diagnosis frame
  - Online/Offline  
Button to the online/offline switching frame (see [Section 11.4.5.2](#))
  - F/W Download (unsupported)  
Button to the FW download frame
- (3) Cleaning tape slot select button (Source Slot)  
Click this button and then select the source slot containing a cleaning tape from the slot map.
  - (4) Cleaning drive select button (Target Drive)  
Click this button and then select the drive to be cleaned from the slot map.
  - (5) Execute button  
Click this button to start cleaning.  
The progress of the operation (cleaning, complete, or error) is displayed in a window.
  - (6) Slot map  
The slot map displays the same slot configuration as the Physical View. Select a source slot and target drive from this map.
  - (7) Source slot information  
Information on the slot selected as the source slot is displayed.
  - (8) Target drive information  
Information on the slot selected as the target drive is displayed.

 **Caution**

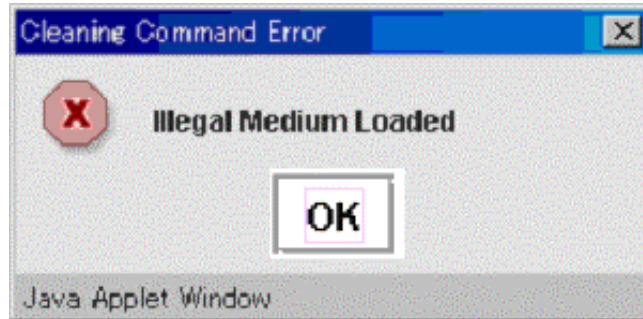
**Cleaning malfunction**

If the "Cleaning Command Error" message appears, the drive has not been cleaned. Retry the cleaning operation.

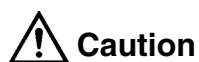
- If an attempt is made to use a cleaning cartridge more times than the specified use-count limit, cleaning is not performed. In such cases, the cleaning cartridge is returned to the source slot, and the error message shown below appears. If the error message appears, remove the cleaning cartridge, replace it with a new one, and perform the cleaning operation again.



- If a data cartridge is accidentally used for cleaning, cleaning is not performed, the data cartridge is returned to the source slot, and the error message shown below appears. If the error message appears, perform the cleaning operation again with a cleaning cartridge.



### 11.4.5.2 Online/Offline switching frame [administrator]



#### Caution

#### Data destruction

Do not perform any of the operations described below during operation of the tape library (backup or restoring operation) with the backup software.

[Basic menu] → [Operation] → [Online/Offline]

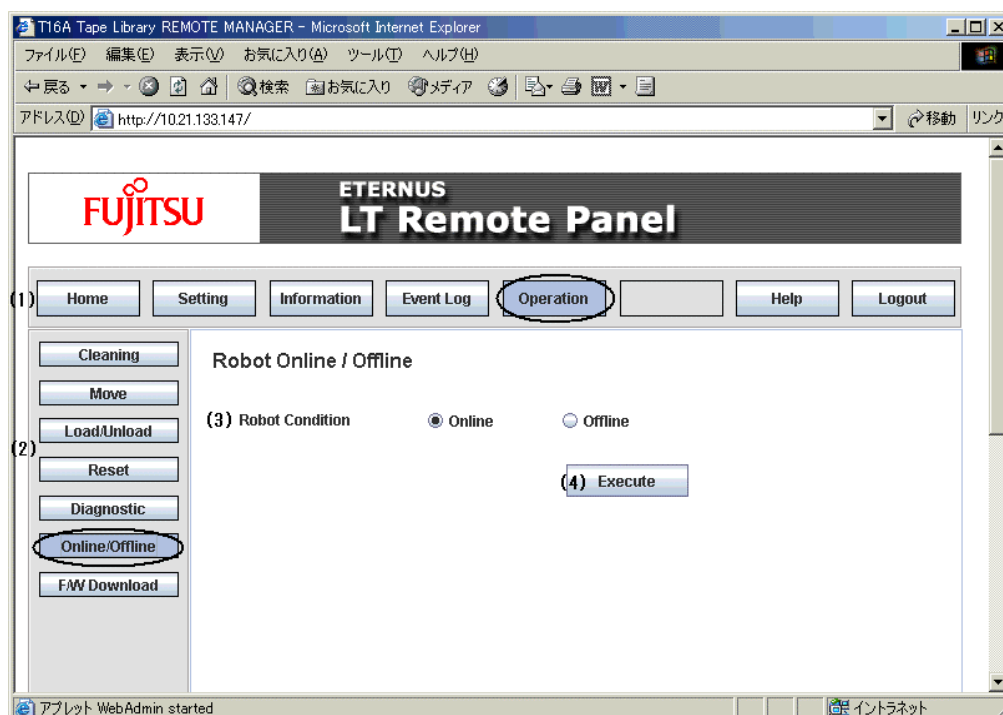


Figure 11.24 Online/Offline switching frame

#### [Function]

This function sets the robot of the library to online or offline.

#### [Display contents]

- (1) Basic menu
- (2) Submenu of loader operation page
- (3) Online/offline setting
  - Online/Offline
  - Specify Online or Offline.
- (4) Execute button
  - Click this button to set the robot to the specified mode (online or offline).

### 11.4.5.3 F/W Download frame (Do not use)

[Basic menu] → [Operation] → [F/W Download]

### 11.4.6 Help page [general user] [administrator]

[Basic menu] → [Help]

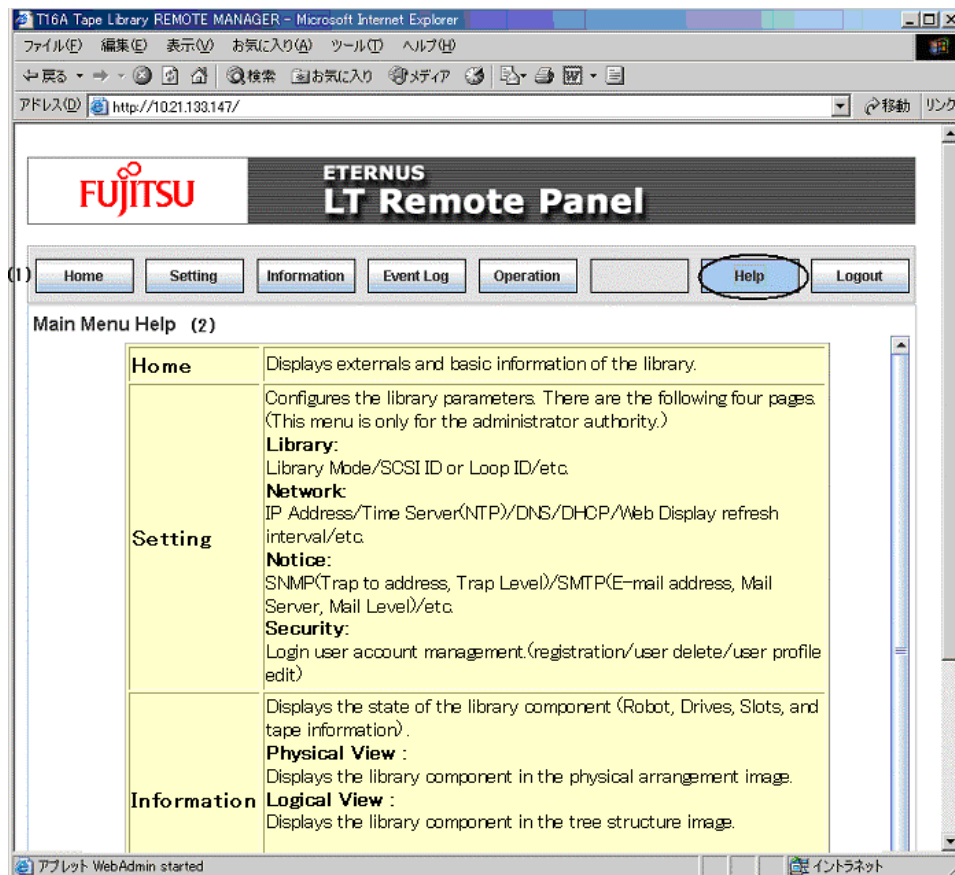


Figure 11.25 Help page

#### [Function]

The Help page displays an outline of the function of each frame.

#### [Display contents]

- (1) Basic menu
- (2) Help information

## 11.4.7 Logout page [general user] [administrator]

[Basic menu] → [Logout]

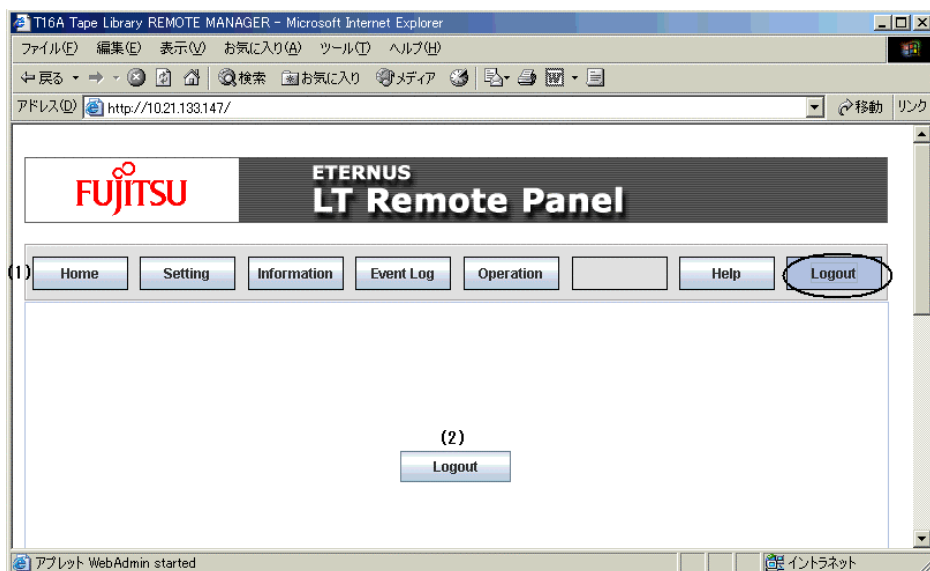


Figure 11.26 Logout page

### [Function]

This page allows the user to log out from the remote panel.

### [Display contents]

- (1) Basic menu
- (2) Logout button

### [Explanation of operation]

Click the Logout button to log out from the remote panel and display the login page.



# Chapter 12 Maintenance

**12.1 Cleaning the Tape Drive Head**

**12.2 Cleaning the Magazine Filter**

**12.3 Cleaning the Front Panel of the Tape Library**

**12.4 Operation Required at Parts Replacement**

**12.5 User's Work after Replacement of a Part**

This chapter explains the cleaning functions of the tape library and the method of tape library maintenance.

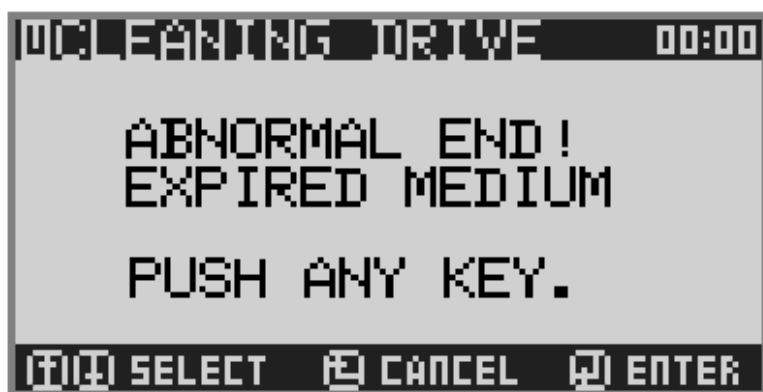
## 12.1 Cleaning the Tape Drive Head

The magnetic head of the tape drive installed in the tape library is stained by the tape and collects airborne dust while the tape drive is used to read and write data on many tape cartridges. A magnetic head that is stained or covered with dust is likely to cause errors in reading and writing data.

To prevent read and write errors caused by stains and dust, the magnetic head of the tape drive must be cleaned with a cleaning cartridge.

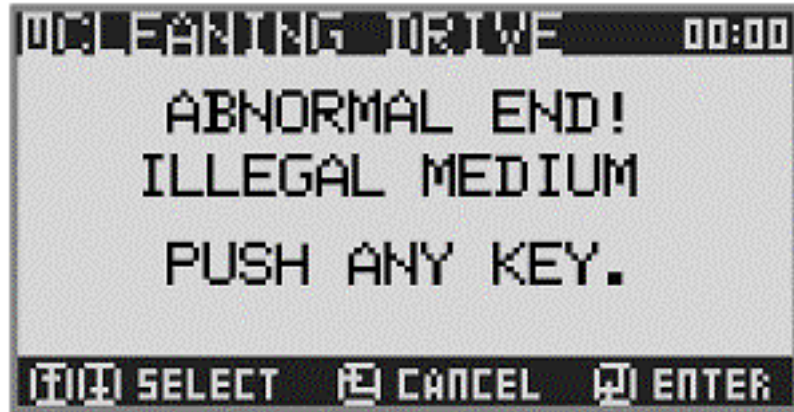
### 12.1.1 Cleaning cartridge

- Use the dedicated cleaning cartridge for the tape drive to be cleaned.
- A cleaning cartridge for an Ultrium3 drive can be used up to about 50 times. Replace the cleaning cartridge when it has been used nearly 50 times.
- The cartridge memory (LTO-CM) built into the cleaning cartridge records the number of times the cleaning cartridge has been used. The number of times cannot be checked from the outside of the cleaning cartridge.
- Keep a separate record of how many times the cleaning cartridge has been used.
- If you attempt to clean the magnetic head with a cleaning cartridge that has already reached the use limit, an error message appears and cleaning is not performed. When the error message appears, replace the cleaning cartridge with a new one, and perform cleaning operation again.



If a data cartridge is accidentally used for cleaning, cleaning is not performed. In such case, the data cartridge is returned to the source slot, and the error message shown below appears.

If the error message appears, perform the cleaning operation again with a cleaning cartridge.



 **Caution**

**Faulty operation**

Using a cleaning cartridge that has reached the use limit will not clean the tape drive head.

### 12.1.2 Timing of cleaning

- When the Alarm indicator (yellow) in the operator panel is on:  
The Alarm indicator (yellow) goes off after cleaning has been performed.  
Note: Even if the Alarm indicator (yellow) is on, you can continue tape library operation. However, you should clean the tape drive head as soon as possible to ensure consistent backup operation.
- Periodically:  
Clean the tape drive head every three months as standard.

### 12.1.3 Cleaning methods

Manual cleaning and automatic cleaning are available as two methods of cleaning the magnetic head of the tape drive. Manual cleaning is operated from the operator panel. Automatic cleaning is performed automatically based on the number of cleaning times set in advance by backup software. The standard cleaning method for this tape library is manual cleaning.

The cleaning operation with the backup software requires a cleaning cartridge to always be mounted in the tape library. In this case, the maximum number of data tape cartridges the tape library can accommodate is therefore reduced by one.

### 12.1.3.1 Manual cleaning

#### (1) Cleaning using from the operator panel

- 1) Stop the backup software operation through operation from the server console.
- 2) Check that the cleaning cartridge is appropriate to the target drive and its use count limitation has not been reached.
- 3) Eject the magazine and insert the cleaning cartridge into the slot.
- 4) Select [TOP OF MENU] → [COMMANDS].



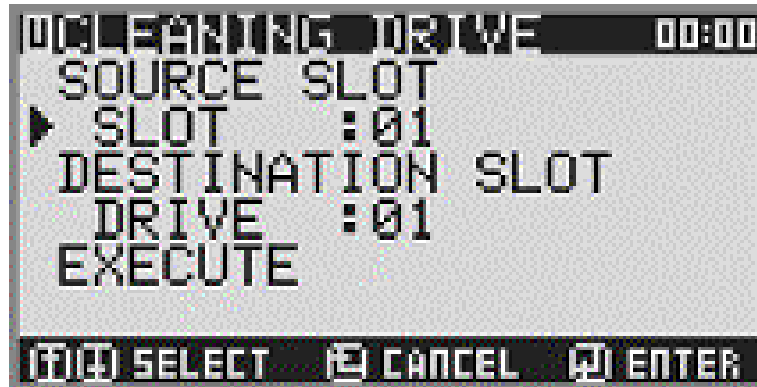
- 5) Select [COMMANDS] → [CLEAN DRIVE].



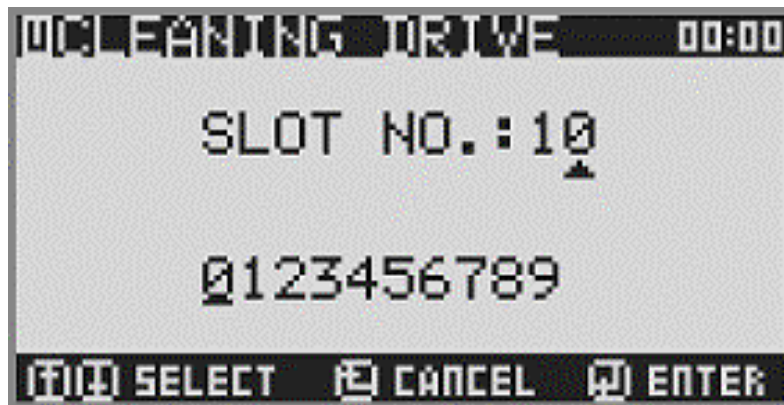
- 6) The following screen appears when you select [CLEAN DRIVE].



- 7) Select the slot that contains the cleaning cartridge by using the cursor.



- 8) Specify the slot number.



- 9) Select [EXECUTE] by using the cursor.



- 10) Selecting [EXECUTE] displays the following message. To execute cleaning, select [YES]. To not execute cleaning, select [NO].



- 11) Selecting [YES] displays the following message. Cleaning is executed automatically.



Note: This message indicates that cleaning is in progress. Operation from the panel is disabled until this message ceases to be displayed. When this message ceases to be displayed, cleaning is complete, and the cleaning cartridge has been returned to its original slot.

- 12) Eject the magazine and remove the cleaning cartridge.  
(Refer to [5.2.1, "Removing magazine."](#))

## (2) Cleaning using the remote panel

For information on executing cleaning using the remote panel, refer to [11.4.5.1, "Drive cleaning frame \[administrator\]."](#)

### 12.1.3.2 Cleaning operation with the backup software

You can make settings with the backup software to perform automatic cleaning with a cleaning cartridge inserted into a magazine slot of the tape library.

For information on how to make settings with the backup software, refer to the manual for the backup software to be used.

Note: A special setup is required for automatic cleaning with NetVault.  
For information on the setup, see [Section 8.6.3.3, "Cleaning the tape drive."](#)

#### (1) Cleaning with the backup software during backup

The cleaning operation with the backup software must not be performed during a backup operation (i.e., during backup or restoration operation).

Some types of backup software allow you to make settings to perform cleaning during a backup operation. However, actual cleaning will be performed after the backup operation is completed.



#### **Equipment damage or data destruction**

Making an inappropriate setting for automatic cleaning with the backup software may cause damage to the tape library or tape cartridges or stored data to be lost. Before making a setting for automatic cleaning, make sure that the setting is appropriate.



The operator panel displays "CLEAN" indicating that the cleaning operation with the backup software is in progress. The remote panel displays nothing to indicate that the cleaning operation is in progress. Login to the remote panel may be disabled during cleaning by backup software. Login is enabled after the cleaning is completed.

## 12.2 Cleaning the Magazine Filter

The magazine of this tape library has a filter to protect the magazine from dust or contaminant.

Clean the magazine filters about once per year so that it may not be clogged.

- 1) When cleaning the magazine filter, use a vacuum cleaner to vacuum dust or dirt off the magazine bezel.
- 2) Place the nozzle of the vacuum cleaner against the holes in the magazine bezel, and move the nozzle horizontally in the direction of arrows shown in the figure below.
- 3) Perform cleaning three times along each arrow.



Holes in the magazine bezel

## 12.3 Cleaning the Front Panel of the Tape Library

If the front panel of the tape library is stained or covered with dust, lightly wipe the surface of the front panel with a dry, soft cloth. If the front panel is stained heavily, dip the cloth in water or a neutral detergent, squeeze out the cloth, and then wipe the surface of the front panel with the cloth. When a neutral detergent has been used to clean the front panel, dip the cloth in water, squeeze out the cloth, and then wipe off any neutral detergent residue left on the surface with the cloth. When wiping the front panel, use sufficient care to prevent water from entering the inside of the tape library.

Do not use the following cleaning materials, which may cause paintwork to peel or printed characters to fade:

- Highly volatile substances, e.g., thinner or benzine
- Commercially available cleaner containing alcohol
- Chemical duster

## 12.4 Operation Required at Parts Replacement

Before replacing a part other than the magazine and air filter to recover from tape library failure, be sure to stop the backup software and turn off the tape library power.

After a part has been replaced in the tape library, you may have to reboot the server.

## 12.5 User's Work after Replacement of a Part

After a faulty part has been replaced in the tape library, the user may be requested to perform the following operations:

- Rebooting the server (when rebooting is necessary)
- Re-setting of backup software (if required)



# Chapter 13 Points to be Checked at Occurrence of Trouble

**13.1 Malfunctions**

**13.2 Abnormalities**

**13.3 When Requesting Maintenance**

**13.4 How to Recover from Trouble Due to Operation Error**

**13.5 Notes on Use**

**13.6 Inquiries about the LT210/LT220**

This chapter explains the points to be checked should problems occur in the tape library and how to recover from the problems.

## 13.1 Malfunctions

Check each component of the library according to troubleshooting briefly described in [Table 13.1](#).

**Table 13.1 Troubleshooting**

Symptom	Action
The library does not turn on. Nothing is displayed on operator panel.	Make sure that all the power switches of the library are turned on (I). Make sure that all the AC cords are correctly connected. Check if electricity is supplied to the outlet.
Request for cleaning the drive is repeatedly displayed.	Replace the cleaning cartridge with new one and perform cleaning. If the problem recurs, it may be caused by the data cartridge being used. Replace the data cartridge with a new one.
Cartridge is caught by the drive or the accessor.	Check the error message on operator panel and take a note of it. Contact your service representative.
Fail to take the cartridge out of the drive.	Contact your service representative.
The ERROR indicator (red) is continuously lit.	Check the error message on operator panel and take a note of it. Contact your service representative.

## 13.2 Abnormalities

- If the tape library generates smoke, an abnormal smell, or abnormal noise, quickly turn off the power switch of the tape library for power-off, and then disconnect the power plug from the outlet. Using a tape library with such an abnormality may result in fire.
- If the tape library fails or is damaged, turn off the power switch of the tape library for power-off, and then disconnect the power plug from the outlet.
- Note that turning off the power of the tape library during operation may destroy the data stored in the tape library.

## 13.3 When Requesting Maintenance

When you request the maintenance service to repair the tape library or replace its parts, record and retain the trouble information, such as lamp indications and the messages displayed on the operator panel LCD. The information is useful for maintenance work.

For maintenance, Fujitsu maintenance personnel may bring a maintenance tool (e.g., personal computer) for diagnostic use and connect it to the customer's LT210/LT220.

The maintenance personnel may connect the maintenance tool to the LT210/LT220 in one of the following three ways:

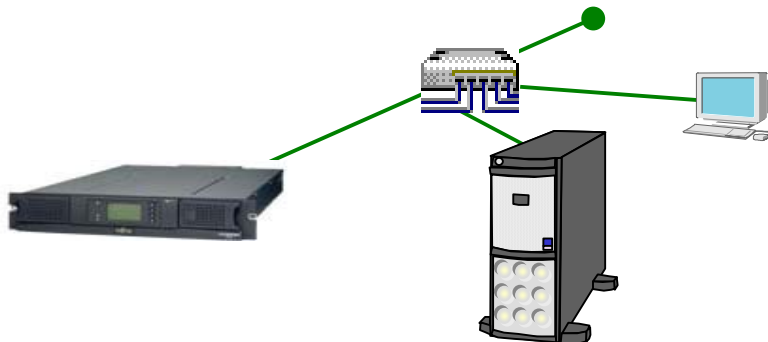
- 1) Connecting the maintenance personnel's personal computer (FST) directly to the LT220



- 2) Connecting the customer's personal computer directly to the LT210/LT220



- 3) Connecting the customer's personal computer to the LT210/LT220 via a network



- Maintenance of the LT210/LT220 requires a personal computer on which Java has been installed.  
(Java installation is required to collect log information on the LT210/LT220 and update the tape library firmware.)
- If the maintenance personnel's personal computer cannot be connected to the LT210/LT220, the customer must provide a personal computer for maintenance use.

## 13.4 How to Recover from Trouble Due to Operation Error

### 13.4.1 Mistakenly moving a cartridge in the tape library during backup software operation

If you mistakenly perform a cartridge operation (e.g., MOVE TAPE) on the operator panel of the tape library while the backup software is operating, the actual cartridge status in the tape library becomes inconsistent with the cartridge information managed by the backup software. If this occurs, follow the procedure below to update the cartridge information.

#### Important

For details of the operation procedure, refer to the manual for the backup software.

#### 13.4.1.1 When using VERITAS NetBackup (Solaris™ OS, Windows, or Linux)

[Windows]

- 1) Start up the GUI.
- 2) Right-click "Media" in the left side of the window to open the Robot Inventory window (when barcode labels are used for tape cartridges).
- 3) Select "Update volume configuration" and "Preview updates," click the [Start] button, and then confirm the information to be updated.
- 4) A dialog box asking you whether to update the information appears. Click [OK] to update.

[Solaris]

- 1) Start up the GUI.
- 2) Right-click "Media" in the left side of the window to open the Robot Inventory window (when barcode labels are used for tape cartridges).
- 3) Select "Preview updates of volume configuration," click the [Start] button, and then confirm the information to be updated.
- 4) After confirming the information, select "Update volume configuration," and then click the [Start] button.

#### 13.4.1.2 When using NetWorker

When using NetWorker, follow the recovery procedure below.

- 1) Perform a reset.  
# nsrjb -HE
- 2) Perform an inventory operation.  
# nstjb -I

### 13.4.1.3 When using ARCserve Backup (Windows)

When using BrightStor ARCserve Backup (Windows), perform the recovery operation below.

- 1) Perform inventory operation by using the inventory function of the Device Management of ARCserve.

### 13.4.1.4 When using other backup software

Perform the operation similar to inventory operation by using the backup software in use.

#### **Important**

For details of the operation with other backup software, refer to the manual for the backup software in use. Confirm the operation beforehand and perform it.

## 13.4.2 Mistakenly Shutting Off the Power during Backup Software Operation

### 13.4.2.1 When using barcode labels for tape cartridges

If the power is mistakenly shut off during operation of the backup software, turn on the power to the tape library, operate the operator panel to return the tape cartridge loaded in the drive to its corresponding slot, and then perform the inventory operation with the backup software.

### 13.4.2.2 When NetVault operation is performed

If, during NetVault operation, the power is shut off with a data cartridge loaded in the drive, recover the system as follows:

- 1) Turn on the power to the tape library.
- 2) Stop the NetVault daemon.
- 3) Operate the operator panel of the tape library to remove the data cartridge from the drive.
- 4) Start the NetVault daemon again.

### 13.4.3 Occurrence of CHK 0222 during a cartridge operation in the library

When specific backup software is used (Tivoli Storage Manager, Backup Exec, or NetVault), the software always operates with exclusive control of the tape drive so as to exclude access from elsewhere. Consequently, the tape drive cannot be operated from the operator panel of the library unit in this state. Attempting to perform such an operation causes a library unit error (CHK 0222: Prevent Medium Removal).

If the CHK 0222 error occurs, the backup software is using the tape drive exclusively. Check the backup software operation, and cancel exclusive control by following the appropriate procedure.

For details, see the relevant backup software manual.

Note: If NetVault is used, execute the [Open Door] command or stop NetVault services to cancel exclusive control.



If the CHK 0222 error occurs, the library unit must be turned off and on to cancel the prevent status.



#### **Data destruction**

If the CHK 0222 error occurs during a backup software operation and the tape cartridge is removed, the cartridge information managed by the backup software will not match the actual cartridge status in the library unit. Accordingly, the inventory operation of the software will be required.

## 13.5 Notes on Use

### 13.5.1 Restart of the server when power to the tape library is turned off

If only the power to the tape library is turned off, the server needs to be restarted. To restart the system, first turn on the power to the tape library and the peripheral devices connected to the server. After confirming that the tape library has started, turn on the power to the server to start the system.

## 13.6 Inquiries about the LT210/LT220

If you have any questions about the LT210/LT220, ask your Fujitsu SE or sales representative. For the latest information on the LT210/LT220, refer to the Web site at the following URL:

<http://www.fujitsu.com/global/services/computing/storage/>





# Appendix A Specifications

**A.1 LT210/LT220 Tape Library**

**A.2 List of Defaults**

This appendix provides the specifications and initial settings of the LT210/LT220 Tape Library.

## A.1 LT210/LT220 Tape Library

**Table A.1 LT210 tape library specifications**

Item		Specification	
Model name		LT21JLD1U	
Number of stored cartridge volumes		8	
Applicable cartridge media (*1)		LTO Ultrium1, LTO Ultrium2, and LTO Ultrium3 tape cartridges	
Storage capacity (max)	LTO Ultrium3	3.2 TB (non-compressed) 6.4 TB (compressed at 2:1)	
Data transfer rate	LTO Ultrium3	60 MB/s (in the non-compression mode) 120 MB/s (in the compression mode)	
Installed tape drive	Type	LTO Ultrium3 tape drive	
	Number of installed drives	1	
Key management function option		Not supported	
External dimensions	Rack-mounted	Height	89 mm
		Width	481 mm
		Depth	826 mm
	Stand-alone	Height	113 mm
		Width	482 mm
		Depth	826 mm
Weight	Rack-mounted	25 kg or less	
	Stand-alone	33 kg or less	
SCSI interface		Ultra160 LVD	
Logical unit number (LUN)	Library controller	Value: 1	
	Tape drive	Value: 0	
Input voltage		AC 100-240 V	
Power frequency		50/60 Hz	
Power consumption (max)		110 W (with one drive installed)	
Noise	Standby	44 dBA	
	Operating	56 dBA	
Environmental requirement	[During operation]	Ambient temperature	10 °C to 35 °C
		Relative humidity	20 % to 80 %RH
		Highest wet bulb temperature	26 °C
	[During non-operation *2]	Ambient temperature	-30 °C to 60 °C
		Relative humidity	10 % to 90 %RH
		Highest wet bulb temperature	26 °C
	[During transportation *3]	Ambient temperature	-23 °C to 49 °C
		Relative humidity	20 % to 80 %RH
		Highest wet bulb temperature	26 °C
Service life of tape library		5 years	

\*1 The LTO Ultrium1 data cartridge is read-only

\*2 Does not include a cartridge.

\*3 Includes a cartridge.

Table A.2 LT220 tape library specifications (1)

Item		Specification		
Model name		LT22JLD1U		
Number of stored cartridge volumes		16		
Applicable cartridge media (*1)		LTO Ultrium1, LTO Ultrium2, and LTO Ultrium3 tape cartridges		
Storage capacity (max)	LTO Ultrium 3	6.4 TB (non-compressed) 12.8 TB (compressed at 2:1)		
Data transfer rate	LTO Ultrium 3	60 MB/s (in non-compression mode) 120 MB/s (in compression mode)		
Installed tape drive	Type	LTO Ultrium3 tape drive		
	Number of installed drives	1		
Key management function option		Not supported		
External dimensions	Rack-mounted	Height	89 mm	
		Width	481 mm	
		Depth	826 mm	
	Stand-alone	Height	113 mm	
		Width	482 mm	
		Depth	826 mm	
Weight	Rack-mounted	25 kg or less		
	Stand-alone	33 kg or less		
SCSI interface		Ultra160 LVD		
Logical unit number (LUN)	Library controller	Value: 1		
	Tape drive	Value: 0		
Input voltage		AC100-240V		
Power frequency		50/60Hz		
Power consumption (max)		110 W (with one drive installed)		
Noise	Standby	44dBA		
	Operating	56dBA		
Environmental requirement	[During operation]	Ambient temperature	10°C to 35°C	
		Relative humidity	20% to 80%RH	
		Highest wet bulb temperature	26°C	
	[During non-operation *2]	Ambient temperature	-30°C to 60°C	
		Relative humidity	10% to 90%RH	
		Highest wet bulb temperature	26°C	
	[During transportation *3]	Ambient temperature	-23°C to 49°C	
		Relative humidity	20% to 80%RH	
		Highest wet bulb temperature	26°C	
Service life of tape library		5 years		

\*1 The LTO Ultrium1 data cartridge is read-only.

\*2 Does not include a cartridge.

\*3 Includes a cartridge.

Table A.3 LT220 tape library specifications (2)

Item		Specification	
Model name		LT22JLE1U	
Number of stored cartridge volumes		16	
Applicable cartridge media (*1)		LTO Ultrium2, LTO Ultrium3, and LTO Ultrium4 tape cartridges	
Storage capacity (max)	LTO Ultrium 4	12.8 TB (without compression) 25.6 TB (with compression at 2:1)	
Data transfer rate	LTO Ultrium 4	120 MB/s (without compression) 240 MB/s (with compression at 2:1)	
Installed tape drive	Type	LTO Ultrium4 tape drive	
	Number of installed drives	1	
Key management function option		Supported	
External dimensions	Rack-mounted	Height	89 mm
		Width	481 mm
		Depth	826 mm
	Stand-alone	Height	113 mm
		Width	482 mm
		Depth	826 mm
Weight	Rack-mounted	25 kg or less	
	Stand-alone	33 kg or less	
SCSI interface		Ultra160 LVD Ultra320 LVD	
Logical unit number (LUN)	Library controller	Value: 1	
	Tape drive	Value: 0	
Input voltage		AC100-240V	
Power frequency		50/60Hz	
Power consumption (max)		110 W (with one drive installed)	
Noise	Standby	44dBA	
	Operating	56dBA	
Environmental requirement	[During operation]	Ambient temperature	10°C to 35°C
		Relative humidity	20% to 80%RH
		Highest wet bulb temperature	26°C
	[During non-operation (*2)]	Ambient temperature	-30°C to 60°C
		Relative humidity	10% to 90%RH
		Highest wet bulb temperature	26°C
	[During transportation (*3)]	Ambient temperature	-23°C to 49°C
		Relative humidity	20% to 80%RH
		Highest wet bulb temperature	26°C
Service life of tape library		5 years	

\*1 The LTO Ultrium2 data cartridge is read-only.

\*2 Does not include a cartridge.

\*3 Includes a cartridge.

## A.2 List of Defaults

The table below lists the defaults.

**Table A.4 LT210 tape library list of defaults (1/2)**

Category of setting	Setting item	Default	
LOADER SETTING	ONLINE/OFFLINE	ONLINE	
	DATE/TIME	GMT	+9
	FAST LOAD MODE (*)		OFF
	SLOT ORIGIN (*)		01
	USER SLOT (*)		8
	LOADER MODE (*)	RANDOM	ON
	↑	SEQUENTIAL	OFF
	UNIT ATT. MODE (*)		OFF
	MODE SENSE (*)		18B
	TAPE ALERT (*)		ON
	RECOVER ERROR (*)		OFF
	STARTUP MODE (*)		ON
	INIT. ELEMENT (*)		OFF
DRIVE SETTING	DRV. SCSI ID (*)	01	
LOADER OPTION	AUTO CLEANING (*)	OFF	
NETWORK SETTING	LINK SPEED	AUTO	
	DHCP	OFF	
	IP ADDRESS	192. 168. 002. 001	
	SUBNET MASK	255. 255. 255. 000	
	GATEWAY	000. 000. 000. 000	
	DNS SERVER	255. 255. 255. 255	
	SNTP SERVER	OFF	

Note: Do not change the value of the setting item marked with an asterisk from the default.

Changing said value from the default may cause a tape library malfunction.

**Table A.4 LT210 tape library list of defaults (2/2)**

Category of setting	Setting item		Default
PANNEL SETTING	ENERGY SAVE	BACK LIGHT	600 (seconds)
		POWER SAVE	10 (minutes)
	LCD CONTRAST		05
	BUZZER		ON
	PASSWORD	User	1234
	AUTO LOGIN		OFF
Remote panel	Administrator	Account	Admin
		Password	1234
	General user	Account	User
		Password	user

Table A.5 LT220 tape library list of defaults (1/2)

Category of setting	Setting item	Default	
LOADER SETTING	ONLINE/OFFLINE	ONLINE	
	DATE/TIME	GMT	+9
	FAST LOAD MODE (*)		OFF
	SLOT ORIGIN (*)		01
	USER SLOT (*)		16
	LOADER MODE (*)	RANDOM	ON
	↑	SEQUENTIAL	OFF
	UNIT ATT. MODE (*)		OFF
	MODE SENSE (*)		18B
	TAPE ALERT (*)		ON
	RECOVER ERROR (*)		OFF
	STARTUP MODE (*)		ON
	INIT. ELEMENT (*)		OFF
DRIVE SETTING	DRV. SCSI ID (*)	01	
	DRV.SCSI ID (*1)	U160	
LOADER OPTION	BARCODE READER	ON	
	AUTO CLEANING (*)	OFF	
NETWORK SETTING	LINK SPEED	AUTO	
	DHCP	OFF	
	IP ADDRESS	192. 168. 002. 001	
	SUBNET MASK	255. 255. 255. 000	
	GATEWAY	000. 000. 000. 000	
	DNS SERVER	255. 255. 255. 255	
	SNTP SERVER (*)	OFF	

Note Do not change the value of the setting item marked with an asterisk from the default.

\*1 Only for the model name LT22JLE (model with a mounted LTO Ultrium4 drive)

Table A.5 LT220 tape library list of defaults (2/2)

Category of setting	Setting item		Default
PANNEL SETTING	ENERGY SAVE	BACK LIGHT	600 (seconds)
		POWER SAVE	10 (minutes)
	LCD CONTRAST		05
	BUZZER		ON
	PASSWORD	User	1234
	AUTO LOGIN		OFF
Remote panel	Administrator	Account	Admin
		Password	1234
	General user	Account	User
		Password	user

Remarks: Do not change the marked setting values.  
A change to the setting values may cause a problem in device operation.

\*1 Only for the model name LT22JLE (model with a mounted LTO Ultrium4 drive)



# Appendix B Options

**B.1 Options**

**B.2 Supplied Consumables**

This section outlines options and accessories available for LT210/LT220 Tape library.

## B.1 Options

### B.1.1 Cartridge magazine

Name	Description
Magazine	Right Magazine for LT210
Magazine L	Left Magazine for LT220
Magazine R	Right Magazine for LT220

### B.1.2 Stand-alone conversion kit

Name	Description
Stand-alone Conversion Kit	Kit to convert from rack-mount type into stand-alone type

### B.1.3 SCSI cable

Name	Length	Description
SCSI cable	5 m or less	(68-pin half-pitch)-(68-pin half-pitch) SCSI cable for LVD
SCSI cable	5 m or less	(68-pin VHDCI)-(68-pin half-pitch) SCSI cable for LVD

### B.1.4 Key management function option

Name	Description
Key management function option	<p>The key management function option enables the encryption function on the LT22JLE1 model that has a mounted LTO Ultrium4 tape drive.</p> <p>Data encrypted on LTO Ultrium4 data cartridges can be registered with this option so that backup software need not be used to manage them.</p> <p>To manage the data cartridges, barcode labels must be affixed on them.</p>

## B.2 Supplied Consumables

### B.2.1 LTO Ultrium data cartridge

Name	Description
Ultrium4 data cartridge	LTO Ultrium4 data cartridge with 800 GB of memory (without compression) Unit of purchase: 1 tape cartridge
Ultrium4 WORM data cartridge (*1)	LTO Ultrium4 WORM data cartridge with 800 GB of memory (without compression) Unit of purchase: 1 tape cartridge
LTO Ultrium 3 data cartridge	LTO Ultrium 3 data cartridge of 400 GB memory (non-compressed)
LTO Ultrium 3 data cartridge WORM (*1)	WORM data cartridge of 400 GB memory (non-compressed) for LTO Ultrium 3
LTO Ultrium 2 data cartridge	LTO Ultrium 2 data cartridge of 200 GB memory (non-compressed)

Note: To use the WORM function in conjunction with backup software, you must use backup software that supports the WORM function.

### B.2.2 Others

Item	Remarks
LTO Ultrium 1 cleaning cartridge U	Cleaning cartridge for LTO Ultrium tape drive About 50 repetitive cleaning runs
Bar code label ULB (laminated)	Barcode labels for LTO Ultrium tape drive



# Appendix C LT210/LT220 Tape Library Error Codes

**C.1 Tape Library Error Codes**

**C.2 Drive Access Error Codes**

This appendix explains the error codes that are used for the LT210/LT220 tape library. The contents of error codes may be changed for improvement without prior notice.

## C.1 Tape Library Error Codes

**Table C.1 Library Error Codes (1/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0000	There is no valid error code information.	-
0001	At power-on initialization, a micro code error is detected.	-
0002	At power-on initialization, a RAM (base area) error is detected.	-
0003	At power-on initialization, a RAM (buffer area) error is detected.	CHK 0003
0004	Reserved	-
0005	Reserved	-
0006	Reserved	-
0007	Reserved	-
0008	Usable drives could not be detected.	CHK 0008
0009	Reserved	-
000A	Reserved	-
000B	Reserved	-
000C	Reserved	-
000D	Reserved	-
000E	Reserved	-
000F	Reserved	-

**Table C.1 Library Error Codes (2/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0010	Information acquisition went wrong from the DHCP server.	-
0011	Time acquisition went wrong from the time server.	-
0012	Reserved	-
0013	Reserved	-
0014	Reserved	-
0015	Reserved	-
0016	Reserved	-
0017	Reserved	-
0018	Reserved	-
0019	Reserved	-
001A	Reserved	-
001B	Reserved	-
001C	Reserved	-
001D	Reserved	-
001E	Reserved	-
001F	Reserved	-

**Table C.1 Library Error Codes (3/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0020	ADI I/F detected a transmission data error. (NAK reception)	-
0021	Detected a reception timeout (Waiting for ACK/NAK reception) in ADI I/F.	-
0022	Detected a response packet reception timeout in ADI I/F.	-
0023	Detected an ENQ reception timeout in ADI I/F.	-
0024	Detected a reception data error in ADI I/F.	-
0025	Detected Drive Offline in ADI I/F.	-
0026	Detected a command execution error in ADI I/F.	-
0027	Detected Drive Busy in ADI I/F.	-
0028	Detected No Drive Inserted in ADI I/F.	-
0029	Reserved	-
002A	Reserved	-
002B	Reserved	-
002C	Detected an ACK IU Wait timeout in ADI I/F.	-
002D	Detected a Response IU Wait timeout in ADI I/F.	-
002E	Detected a Transfer Ready IU Wait timeout in ADI I/F.	-
002F	Detected an illegal error in ADI I/F.	-



**Table C.1 Library Error Codes (4/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0030	Notify the initiator Unit Attention event.	-
0031	Reserved	-
0032	The library is in initial diagnostic state (Becoming Ready state).	-
0033	A command was received from an initiator while the magazine of library is open.	-
0034	A command was received from an initiator while updating the library firmware.	-
0035	During panel operation, a command was received from an initiator, but it cannot be executed.	-
0036	An Information Exception Condition was reported to initiator.	-
0037	Reserved	-
0038	Reserved	-
0039	Reserved	-
003A	Reserved	-
003B	Reserved	-
003C	Reserved	-
003D	Reserved	-
003E	Reserved	-
003F	Reserved	-

**Table C.1 Library Error Codes (5/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0040	A media error was detected when a cartridge was loaded into the drive.	CHK 0040
0041	Reserved	-
0042	Load timeout occurred when a cartridge was loaded into the drive.	CHK 0042
0043	Reserved	-
0044	A used cleaning media was inserted into the drive.	-
0045	Reserved	-
0046	Reserved	-
0047	Reserved	-
0048	Reserved	-
0049	Reserved	-
004A	Reserved	-
004B	Reserved	-
004C	Reserved	-
004D	Reserved	-
004E	Reserved	-
004F	Reserved	-

**Table C.1 Library Error Codes (6/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0050	A timeout error occurred while waiting for a response from barcode reader.	CHK 0050
0051	A barcode reader is disconnected.	CHK 0051
0052	An illegal data was sent to barcode reader.	CHK 0052
0053	An illegal data was received from barcode reader.	CHK 0053
0054	A barcode reader is busy.	CHK 0054
0055	Changed settings in initial setting of barcode reader, but the changed value is not reflected.	CHK 0055
0056	Reserved	-
0057	Reserved	-
0058	Reserved	-
0059	Reserved	-
005A	Reserved	-
005B	Reserved	-
005C	Reserved	-
005D	Reserved	-
005E	Reserved	-
005F	Reserved	-

**Table C.1 Library Error Codes (7/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0060	A write error is detected in picker module EEPROM.	CHK 0060
0061	I2C communication error was detected in picker module EEPROM.	CHK 0061
0062	I2C communication abnormally ended in picker module EEPROM.	CHK 0062
0063	A checksum error was detected in picker module EEPROM.	CHK 0063
0064	Reserved	-
0065	Reserved	-
0066	Reserved	-
0067	Reserved	-
0068	Reserved	-
0069	Reserved	-
006A	Reserved	-
006B	Reserved	-
006C	Reserved	-
006D	Reserved	-
006E	Reserved	-
006F	Reserved	-

**Table C.1 Library Error Codes (8/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0070	Calibration failed because the picker contains a media.	CHK 0070
0071	Reserved	-
0072	Calibrated data error	CHK 0072
0073	Calibration failed because the calibration tool is not stored in the drive.	CHK 0073
0074	GET (eject) / CTRG.CHECK (check) / BARCODE READ operation failed because the picker contains a media.	CHK 0074
0075	Store (PUT) operation failed because the picker contains a media.	CHK 0075
0076	Reserved	-
0077	Reserved	-
0078	Reserved	-
0079	Reserved	-
007A	Reserved	-
007B	Reserved	-
007C	In GET (remove a media from drive) operation, a media cannot be ejected because the drive does not enter EJECT state after 200 seconds elapsed.	CHK 007C
007D	In PUT (put a media into drive) operation, a media cannot be put because the drive does not enter MOUNT state after 200 seconds elapsed.	CHK 007D
007E	In PUT (put a media into drive) operation, the drive does not enter SET state after 3 seconds elapsed.	CHK 007E
007F	In GET (remove media from drive) operation or PUT (put media into driver) operation, an error occurred in the interface with the specified drive or the specified drive is not connected.	CHK 007F

**Table C.1 Library Error Codes (9/16)**

Code (H)	Description	Panel indication
0080	X operation error #1 (During movement along the X-axis, the status of the origin sensor at the target stop position was detected incorrectly.)	Display of "CHK 0080"
0081	Reserved	-
0082	Reserved	-
0083	During the movement of the position of XP3 (removing media from the drive or storing media in the drive), the X origin sensor status could not be detected.	CHK 0083
0084	X origin was not detected at initialization.	CHK 0084
0085	An operation timeout was detected during the X offset operation.	CHK 0084
0086	A timeout of the X motor operation was detected.	CHK 0086
0087	Reserved	-
0088	X calibration error #1 (During X calibration, CTRG. sensor OFF was not detected.)	CHK 0088
0089	X calibration error #2 (During X calibration, CTRG. sensor ON was not detected.)	CHK 0089
008A	X calibration error #3 (During X (DRIVE) calibration, X origin sensor OFF was not detected.)	CHK 008A
008B	Reserved	-
008C	Reserved	-
008D	Reserved	-
008E	Reserved	-
008F	X operation is disabled because the magazine was removed.	CHK 008F

**Table C.1 Library Error Codes (10/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0090	Y operation error #1 (During movement along the Y-axis, the status of the origin sensor at the target stop position was detected incorrectly.)	Display of "CHK 0090"
0091	Reserved	-
0092	Reserved	-
0093	Reserved	-
0094	Y origin was not detected at initialization.	CHK 0094
0095	Reserved	-
0096	A timeout of the Y motor operation was detected.	CHK 0096
0097	Reserved	-
0098	Y calibration error #1 (During Y calibration, CTRG. sensor OFF was not detected.)	CHK 0098
0099	Y calibration error #2 (During Y calibration, CTRG. sensor ON was not detected.)	CHK 0099
009A	Reserved	-
009B	Reserved	-
009C	Reserved	-
009D	Reserved	-
009E	Reserved	-
009F	Y operation is disabled because the magazine was removed.	CHK 009F

**Table C.1 Library Error Codes (11/16)**

Code (H)	Description	Panel indication
00A0	S operation error #1 (The specified number of edges was not detected at S movement.)	CHK 00A0
00A1	S operation error #2 (S position sensor was not detected after the S PUT position was moved.)	CHK 00A1
00A2	S operation error #3 (S position sensor was detected after the S GET position was moved.)	CHK 00A2
00A3	Reserved	-
00A4	S origin was not detected at initialization.	CHK 00A4
00A5	An operation timeout was detected during the offset operation.	CHK 00A5
00A6	A timeout of the S motor operation was detected.	CHK 00A6
00A7	Reserved	-
00A8	S calibration error #1 (During S calibration, CTRG. sensor OFF was not detected.)	CHK 00A8
00A9	S calibration error #2 (During S calibration, CTRG. sensor ON was not detected.)	CHK 00A9
00AA	Reserved	-
00AB	Reserved	-
00AC	Reserved	-
00AD	Reserved	-
00AE	Reserved	-
00AF	Reserved	-



**Table C.1 Library Error Codes (12/16)**

Code (H)	Description	Panel indication
00B0	Failed to detect a media in the picker at completion of GET (eject media) operation.	CHK 00B0
00B1	No media is contained in the specified cell (Cell Empty).	CHK 00B1
00B2	A media was detected in the picker at completion of CTRG.CHECK (check media) operation.	CHK 00B2
00B3	A media was detected in the picker at completion of PUT (store media) operation.	CHK 00B3
00B4	Reserved	-
00B5	Reserved	-
00B6	A timeout of the picker motor operation was detected.	CHK 00B6
00B7	Reserved	-
00B8	Picker error #1 (An error was detected when moving the RVS position (PP1). (Picker origin not detected or FWD detected))	CHK 00B8
00B9	Picker error #2 (An error was detected when moving the FWD position (PP2). (Picker origin detected or FWD not detected))	CHK 00B9
00BA	Picker error #3 (An error was detected when moving the Media push/pull position (PP4/PP5). (Picker origin or FWD detected, or Cell Full))	CHK 00BA
00BB	Reserved	-
00BC	The picker origin was not detected at initialization.	CHK 00BC
00BD	Reserved	-
00BE	Picker error #4 (The specified number of edges was not detected when moving the picker.)	CHK 00BE
00BF	GAP status was detected at the completion of picker operation.	CHK 00BF

**Table C.1 Library Error Codes (13/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
00C0	Picker operation is disabled because the magazine was removed.	CHK 00C0
00C1	Reserved	-
00C2	Reserved	-
00C3	Reserved	-
00C4	Reserved	-
00C5	Reserved	-
00C6	Reserved	-
00C7	Reserved	-
00C8	CTRG. calibration error #1 (During CTRG. calibration, CTRG. sensor OFF was not detected.)	CHK 00C8
00C9	CTRG. calibration error #1 (During CTRG. calibration, CTRG. sensor ON was not detected.)	CHK 00C9
00CA	Reserved	-
00CB	Reserved	-
00CC	Reserved	-
00CD	Reserved	-
00CE	Reserved	-
00CF	Reserved	-

**Table C.1 Library Error Codes (14/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
00D0	A checksum error was detected during updating the micro code.	CHK 00D0
00D1	F/W ID error was detected during updating the micro code.	CHK 00D1
00D2	An error detected in boot information at micro code updating.	CHK 00D2
00D3	Reserved	-
00D4	FAN error was detected.	FAN error
00D5	Reserved	-
00D6	Reserved	-
00D7	Reserved	-
00D8	Reserved	-
00D9	Failed to unlock when ejecting a magazine.	CHK 00D9
00DA	Reserved	-
00DB	Reserved	-
00DC	Reserved	-
00DD	Reserved	-
00DE	Drive #1 FAN ALARM was detected.	FAN error
00DF	Reserved	-

**Table C.1 Library Error Codes (15/16)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
00E0	When writing into flash memory, the writing was not finished within 1 ms.	CHK 00E0
00E1	When clearing the sector in flash memory, the clearing was not finished within 10 seconds.	CHK 00E1
00E2	An error was detected in unit configuration data area stored in flash memory.	CHK 00E2
00E3	A checksum error was detected in the data stored in flash memory.	CHK 00E3
00E4	Reserved	-
00E5	Reserved	-
00E6	Reserved	-
00E7	Reserved	-
00E8	Reserved	-
00E9	Reserved	-
00EA	Reserved	-
00EB	Reserved	-
00EC	Reserved	-
00ED	Reserved	-
00EE	Reserved	-
00EF	Reserved	-

**Table C.1 Library Error Codes (16/16)**

Code (H)	Description	Panel indication
00F0	Reserved	-
00F1	Sensor error #1 (During blink check, an error was detected in magazine set sensor (lower left).)	CHK 00F1
00F2	Reserved	-
00F3	Sensor error #2 (During blink check, an error was detected in magazine set sensor (lower right).)	CHK 00F3
00F4	Reserved	-
00F5	Sensor error #3 (During blink check, an error was detected in X position sensor (left).)	CHK 00F5
00F6	Sensor error #4 (During blink check, an error was detected in X position sensor (right).)	CHK 00F6
00F7	Sensor error #5 (During blink check, an error was detected in X origin sensor.)	CHK 00F7
00F8	Reserved	-
00F9	Reserved	-
00FA	Sensor error #6 (During blink check, an error was detected in Y origin sensor.)	CHK 00FA
00FB	Sensor error #7 (During blink check, an error was detected in S position sensor.)	CHK 00FB
00FC	Sensor error #8 (During blink check, an error was detected in S origin sensor.)	CHK 00FC
00FD	Sensor error #9 (During blink check, an error was detected in cartridge sensor.)	CHK 00FD
00FE	Sensor error #10 (During blink check, an error was detected in P forward sensor.)	CHK 00FE
00FF	Sensor error #11 (During blink check, an error was detected in P origin sensor.)	CHK 00FF

## C.2 Drive Access Error Codes

**Table C.2 Drive Access Error Codes (1/4)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0200	An illegal data was sent to drive. (NAK was detected.)	CHK 0200
0201	A timeout error occurred while waiting for response from drive.	CHK 0201
0202	An illegal data was received from drive.	CHK 0202
0203	Drive is disconnected.	CHK 0203
0204	Drive failed to execute a command.	CHK 0204
0205	Drive is busy.	CHK 0205
0206	Drive failed to execute a command because of unmounting	CHK 0206
0207	Reserved	-
0208	Reserved	-
0209	Reserved	-
020A	Reserved	-
020B	Reserved	-
020C	Reserved	-
020D	Reserved	-
020E	Reserved	-
020F	Reserved	-

**Table C.2 Drive Access Error Codes (2/4)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0210	Reserved	-
0211	Reserved	-
0212	Reserved	-
0213	Reserved	-
0214	Reserved	-
0215	Reserved	-
0216	Reserved	-
0217	Reserved	-
0218	Reserved	-
0219	Reserved	-
021A	Reserved	-
021B	Reserved	-
021C	Reserved	-
021D	Reserved	-
021E	Reserved	-
021F	Reserved	-

**Table C.2 Drive Access Error Codes (3/4)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0220	A timeout error occurred when ejecting a media from drive.	CHK 0220
0221	A SCSI ID setup of drive went wrong.	CHK 0221
0222	Media could not be ejected because Drive #1 is in Prevent Medium Removal status.	CHK 0222
0223	Reserved	-
0224	Reserved	-
0225	Reserved	-
0226	Reserved	-
0227	Reserved	-
0228	Reserved	-
0229	Reserved	-
022A	Reserved	-
022B	Reserved	-
022C	Reserved	-
022D	Reserved	-
022E	Reserved	-
022F	Reserved	-



**Table C.2 Drive Access Error Codes (4/4)**

<b>Code (H)</b>	<b>Description</b>	<b>Panel indication</b>
0230	Reserved	-
0231	Reserved	-
0232	Reserved	-
0233	Reserved	-
0234	Reserved	-
0235	Reserved	-
0236	Reserved	-
0237	Reserved	-
0238	Reserved	-
0239	Reserved	-
023A	Reserved	-
023B	Reserved	-
023C	Reserved	-
023D	Reserved	-
023E	Reserved	-
023F	Reserved	-



# Appendix D Drive Error Codes

## D.1 Error Codes for LTO Ultrium Drive

This appendix explains the error codes that are used for the drive installed in the LT210/LT220 tape library. The description of the meaning of error codes may be changed for improvement without prior notice.

If a drive error occurs, the Alarm LED goes on.

## D.1 Error Codes for LTO Ultrium Drive

If a drive error occurs, the Alarm LED goes on.

### D.1.1 List of error codes

Code	Description
0	No error: This code appears in any of the following cases: The power of the tape drive is turned off and then on again. The diagnosis is completed normally. Note: While the tape operates normally, the single character blinks.
1	Cooling problem: The tape drive detects that the temperature exceeds the recommended operating range.
2	Power problem: The tape drive detects that the external supply power approaches to the limit of the recommended voltage range (under drive operation) or exceeds the recommended voltage range (under no drive operation).
3	Firmware problem: The tape drive detects a firmware error.
4	Firmware or tape drive problem: The tape drive detects a firmware error or tape drive hardware failure.
5	Tape drive hardware problem: The tape drive detects a tape drive hardware tape path error or a read/write error. To protect the drive and/or tape not to be damaged, do not insert a tape newly if the cartridge has been ejected completely.
6	Tape drive/media error: The drive detects an error but it cannot be identified whether the error is caused by the drive hardware or the tape cartridge.
7	Media error (high frequency of occurrence): The tape drive detects an error caused by the defective tape cartridge.
8	Tape drive/SCSI bus error: The tape drive detects a fault in the tape drive hardware or SCSI bus.
9	Tape drive/RS-422 error: The tape drive detects a fault in the tape drive hardware or RS-422 connection.
A	Tape drive hardware problem: The operation of the tape drive is degraded but the tape drive can operate continuously.
B	Undefined
C	Cleaning request
D	Undefined
E	This error does not occur in any SCSI drive.
F	This error does not occur in any SCSI drive.

# Appendix E Event List

## E.1 Event List

This appendix lists and explains LT210/220 tape library events. The explanations of the events may be changed for improvement without prior notice.

## E.1 Event List

The events reported via SNMP are listed below. The character strings shown may be changed in an F/W Revision.

Event		Event level	Message
Library error	Fatal error	emergency, 2	ROBOT01 Broken CHK=XXXX (*1)
	Other	warning, 4	ROBOT01 Warning CHK=XXXX (*1)
Drive error	Fatal error	emergency, 2	DRIVE01 Broken CHK=XXXX (*2)
	Other	warning, 4	DRIVE01 Warning CHK=XXXX (*2)
Loader Maintenance		warning, 4	ROBOT01 Loader Maintenance
Cleaning request received from drive		warning, 4	DRIVE01 CleaningRequest
Inventory started		info,5	ROBOT01 Inventory
Library operating mode changed		info,5	ROBOT01 ModeChange to RANDOM or ROBOT01 ModeChange to SEQUENTIAL
Tape cartridge move started		info,5	ROBOT01 MoveStart XXXX to YYYY (*3) (*5)
Tape cartridge move completed		info,5	ROBOT01 MoveComplete XXXX to YYYY (*4) (*5)
Library placed in Not Ready state		info,5	ROBOT01 NotReady
Drive placed in Not Ready state		info,5	DRIVE01 NotReady
Library placed in Online state		info,5	ROBOT01 Online
Drive placed in Online state		info,5	DRIVE01 Online
Operation executed to unlock magazine		info,5	ROBOT01 MagazineUnlock
SCSI reset occurred		info,5	ROBOT01 SCSIReset
Bus Device Reset received		info,5	ROBOT01 BusDeviceReset

\*1 XXXX: Robot error code

\*2 XXXX: Drive error code  
([IBM drive] Code displayed on seven-segment LED)

\*3 XXXX: Source element  
YYYY: Target destination element

\*4 XXXX: Source element  
YYYY: Destination element

\*5 "Slot??" for a magazine slot, "Drive?" for a drive, or "Picker" for the picker is inserted as the element name.

# Appendix F OpenSSL License

## F.1 License provisions

This appendix lists the provisions of the software library license used in the control software for this product.

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```
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\*

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\*

\* This product includes cryptographic software written by Eric Young  
\* (eay@cryptsoft.com). This product includes software written by Tim  
\* Hudson (tjh@cryptsoft.com).

\*

\*/

## Appendix G World Time Zones

+13:00	Nukualofa
+12:00	Fiji, Kamchatka, Marshall Islands, Auckland, Wellington
+11:00	Magadan, Solomon Islands, New Caledonia
+10:00	Brisbane, Melbourne, Sydney, Guam, Port Moresby, Vladivostok, Hobart
+09:30	Adelaide, Darwin
+09:00	Tokyo, Osaka, Sapporo, Seoul, Yakutsk
+08:30	Moluccas Islands
+08:00	Beijing, Chongqing, Urumqi, Hong Kong, Perth, Singapore, Taipei
+07:00	Bangkok, Jakarta, Hanoi
+06:30	Yangon (Rangoon)
+06:00	Almaty, Dacca
+05:30	Mumbai (Bombay), Kolkata (Calcutta), Chennai (Madras), New Delhi, Colombo
+05:00	Islamabad, Karachi, Ekaterinburg, Tashkent
+04:30	Kabul
+04:00	Abu Dhabi, Muscat, Tbilisi
+03:30	Tehran
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