C144-E229-04EN

ETERNUS LT230
Tape Library
(LT23JFC1U, LT23JFE1U, LT23JLC1U)

User's Guide

FUJITSU

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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RADIO FREQUENCY INTERFERENCE STATEMENT

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.

Measures against instantaneous voltage drop

The LT230 may be affected by instantaneous voltage drop due to lightning strikes or other factors. To protect the LT230 against instantaneous voltage drop, the user should preferably provide an AC uninterruptible power supply or the like for the LT230.

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有毒有害物质元素名称及其含量及部件

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	○	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363－2006 规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363－2006 规定的限量要求。

Revision History

(1/1)

Edition	Date	Revised location (type) (*1)	Revision
01	March 31, 2008	–	–
02	June 16, 2008	1.1 (Modification)	SCSI model added to Section 1.1, "Tape Library"
		1.2 (Modification)	Specifications related to LTO Ultrium 3 added to Section 1.2, "Tape Drive"
		3.2 (Addition)	Section 3.2, "SCSI Cable," added
		4.2.3 (Modification)	Descriptions for SCSI models added to Section 4.2.3, "Main menu"
		7.3 (Modification)	Description modified in Section 7.3, "Outline of the Remote Panel"
		A.1 (Modification)	Specifications of models LT23JFC1U and LT23JLC1U added to Appendix A.1, "LT230 Tape Library"
		A.2 (Modification)	SCSI models added to Appendix A.2, "List of Defaults"
		B.1 (Modification)	Description modified in Appendix B.1, "Options"
03	December 12, 2008	1.2 (Modification)	Description of encryption function added
		B.1.7 (Addition)	Addition of "Key Management Function"
		Appendix C (Modification)	Addition of error codes
04	August 28, 2009	Appendix F (Addition)	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

Thank you for purchasing the ETERNUS LT230 tape library.

Before using the LT230, read this manual and other manuals that supplied with the server unit and backup software to run the LT230 normally.

This manual describes basic operations and handling of the ETERNUS LT230 tape library.

The purpose of this manual is to provide an overview and specifications of the ETERNUS LT230 tape library (hereinafter simply called "tape library," "library," or "this unit" in this manual), requirements and procedures for housing this unit in the system for use, and a procedure for cleaning 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 LT230 tape library 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 LT230.

Organization of this manual

This manual has nine 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, FC cables, and AC power cables, how to turn the power on and off, and how to start up and shut down the system.

Chapter 4 Operator Panel

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

Chapter 5 Configuring the LT230

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 Ethernet Function

Outlines the Ethernet functions of this device and explains how to use these functions.

Chapter 7 Remote Panel

Explains how to set and operate the remote panel.

Chapter 8 Maintenance

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

Chapter 9 Points to be Checked at Occurrence of Problems

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 and Accessories

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

Appendix C Tape Library Error Codes

Lists tape library error codes.

Appendix D Drive Error Codes

Lists drive error codes.

Appendix E Event List

Lists tape library events.

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	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)			

Long title	Abbreviation		
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® 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)			
Red Hat® Enterprise Linux® AS (v.4 for Itanium)	Red Hat Enterprise Linux AS (v.4 for Itanium)		
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

Safety Precautions

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.

Warning	Failure to heed this sign could result in serious injury or death.
Caution	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.

Warning label

- Content of label

  [Warning about heavy object]

  The LT230 tape library (rack-mount type) is heavy (weighing at least 42 kg).

  Therefore, be careful when moving the tape library.

  [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:

Caution against placing objects on the tape library


- 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.

Class 1 laser warning label

The figure below shows a Class 1 laser warning label (caution). Note that this label is attached to fibre channel models only.

Class 1 laser warning label (caution)

- Content of label

  [Caution]

  Do not look directly into the laser beam when the FC interface connector cable is disconnected.

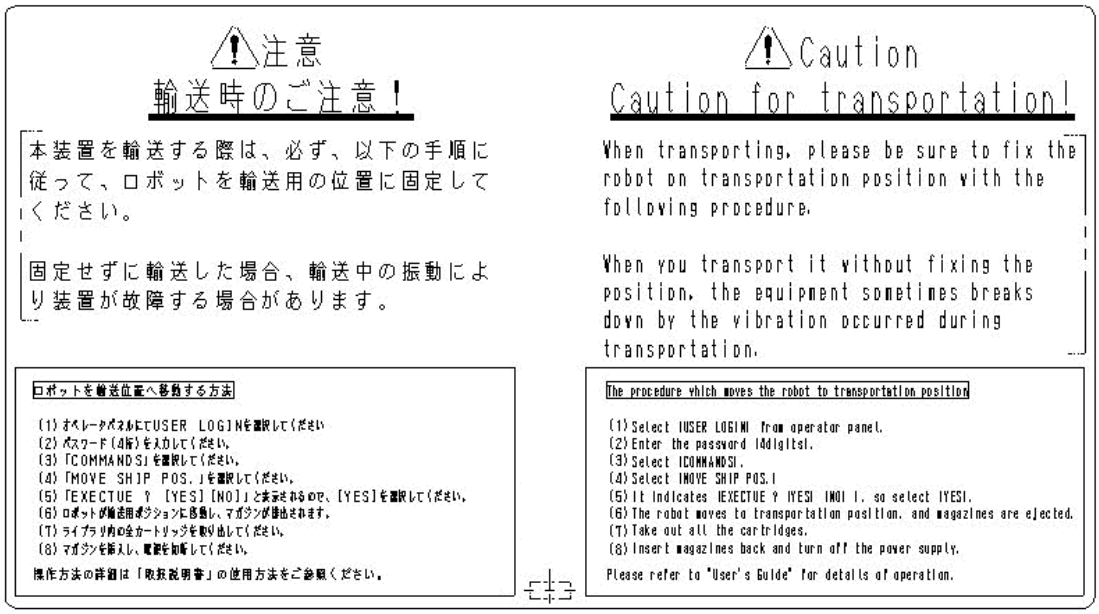
- Location of label

  The label shall be located on the top surface of the drive module.

Transport warning label (caution)

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

Transport warning label (caution)



- 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 LT230 by themselves. Ask Fujitsu to dispatch one of its engineers or an engineer authorized by Fujitsu for maintenance work.

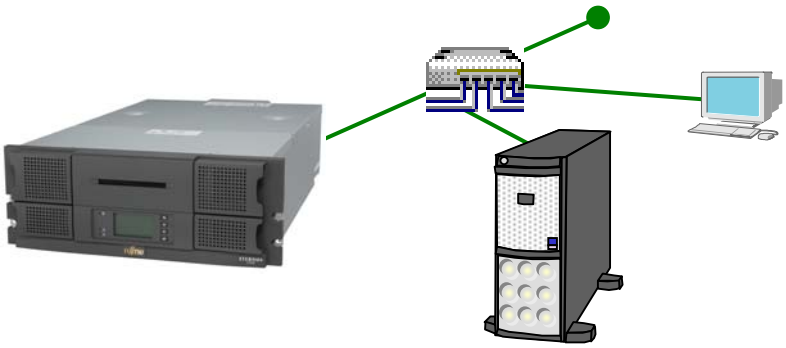
For maintenance, Fujitsu maintenance personnel may bring a maintenance tool (e.g., personal computer) for diagnostic use and connect it to the customer's LT230.

The maintenance personnel may connect the maintenance tool to the LT230 in one of the following three ways:

1) Connecting the maintenance personnel's personal computer (FST) directly to the LT230

2) Connecting the customer's personal computer directly to the LT230

3) Connecting the customer's personal computer to the LT230 via a network



- Maintenance of the LT230 requires a personal computer on which Java has been installed with Java policies set.

  (Java installation and policy setup are required to collect log information on the LT230 and update the tape library firmware.)
- If the maintenance personnel's personal computer cannot be connected to the LT230, the customer must provide a personal computer for maintenance use.

Handling the LT230

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 LT230 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 LT230. 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 LT230, 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 LT 230 from the outlet. Using the product or leaving it plugged in during a lightening 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 theLT230 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 LT230 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 LT230 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 LT230 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 LT230 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 LT230. 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 LT230 and cause a fire.
- Do not place any heavy objects on top of the LT230. Also, do not expose the LT230 to shock or vibration. Doing so may cause the LT230 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 LT230 and Packing Materials

If you need to dispose of the LT230, follow the instructions provided by maintenance personnel.

Connectable equipment

Only connect the equipment specified by Fujitsu to the LT230. Connecting other equipment to the LT230 may result in injury to users and bystanders, or property damage.

Expendable Supplies

Use Fujitsu-designated expendable supplies for the LT230. Using other materials may result in injury to users and bystanders or damage to their property.

Modification or Reconditioning of the LT230

Do not modify the LT230 or overhaul a used product. Doing so may result in injury to users and bystanders or damage to their property.

Moving or relocating the LT230

Before moving or relocating the LT230, contact your sales representative or a Fujitsu maintenance service center.

- The user must execute "MOVE SHIP POS." in the COMMANDS menu and move the robot to the shipping position before moving or relocating the LT230.
- As this device is quite heavy, exercise caution when handling it.
- Take out all remaining tape cartridges from the library.

LCD unit (operator panel)

The LCD unit (operator panel) in the LT230 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 the relevant domestic laws and regulations 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

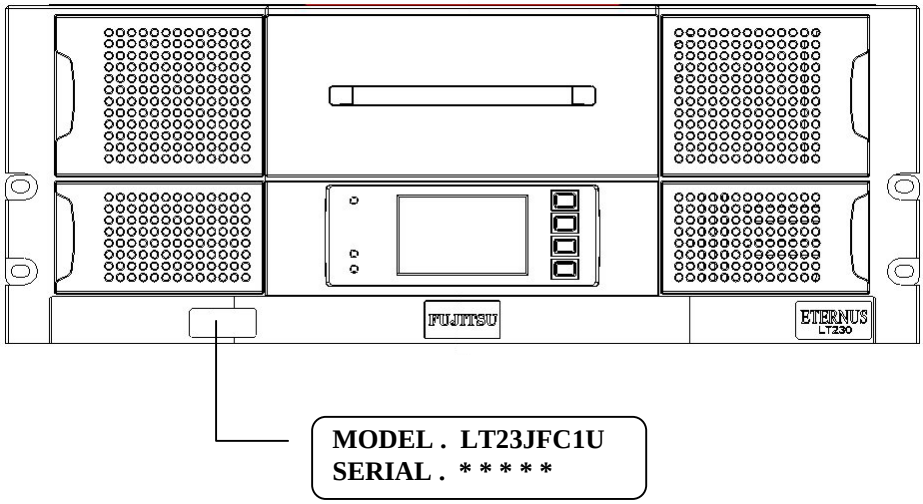
The phenomena described below may occur on the LCD of the LCD unit in the LT230. Note that these phenomena do not result from a faulty LCD, but are due to its characteristics.

- 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.

Manual Organization

ETERNUS LT230 Tape Library User's Guide (C144-E229) (This Manual)	1 Overview 2 Installation 3 Connection Method and Notes on Connection 4 Operator Panel 5 Configuring the LT230 6 Ethernet Function 7 Remote Panel 8 Maintenance 9 Points to be Checked at Occurrence of Problems A Specifications B Options and Accessories C Tape Library Error Codes D Drive Error Codes E Event List F OpenSSL License G World Time Zones
ETERNUS LT230 Tape Library Setup Guide (C144-E211)	1 Before Use 2 Connecting This Device 3 Setup 4 Fibre Channel Connection 5 Setting the Operating System 6 Setting Backup Software 7 Tuning Backup Performance
ETERNUS LT230 Tape Library Monitoring Software Setup (C144-E214)	1 Setting up SNMP 2 Setting up Monitoring Software 3 Confirming the SNMP Trap Settings 4 Event List

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Illustrations

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Chapter 1 Overview

This chapter provides information about major hardware components and loader.

The ETERNUS LT230 tape library is an automatic tape management system that contains one or two tape drives. The tape library can accommodate up to 40 tape cartridges.

The tape drive mounted in this library is compliant with the LTO Ultrium 3 or LTO Ultrium 4 specifications.

1.1 Tape Library

1.1.1 Names and features of components

1.1.1.1 LT230 tape library

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

- Front View

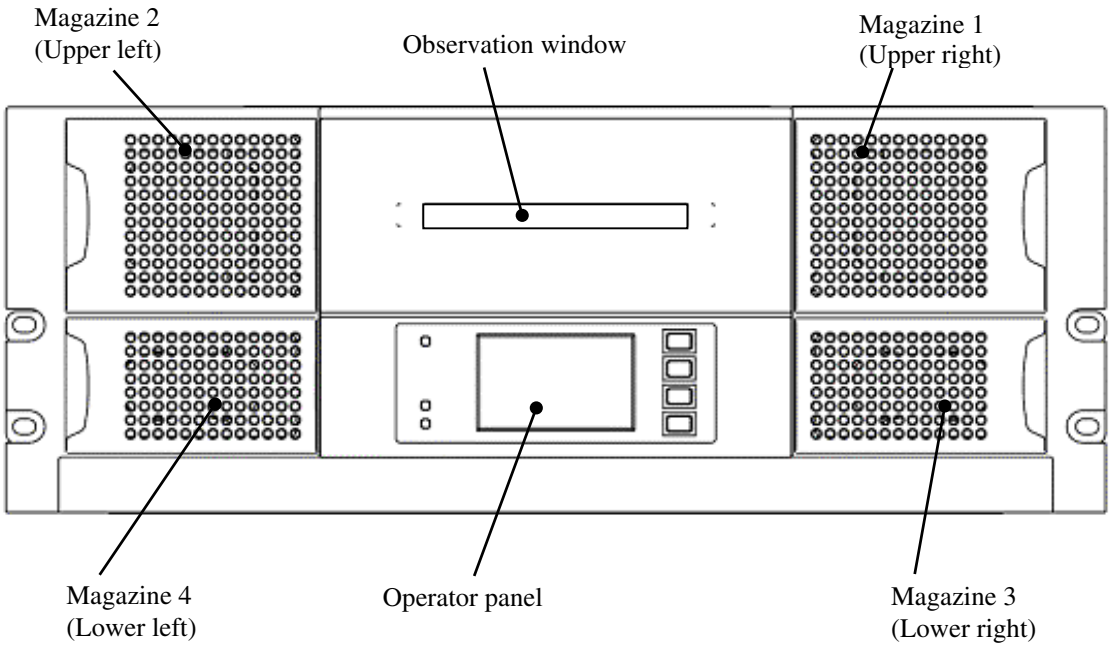
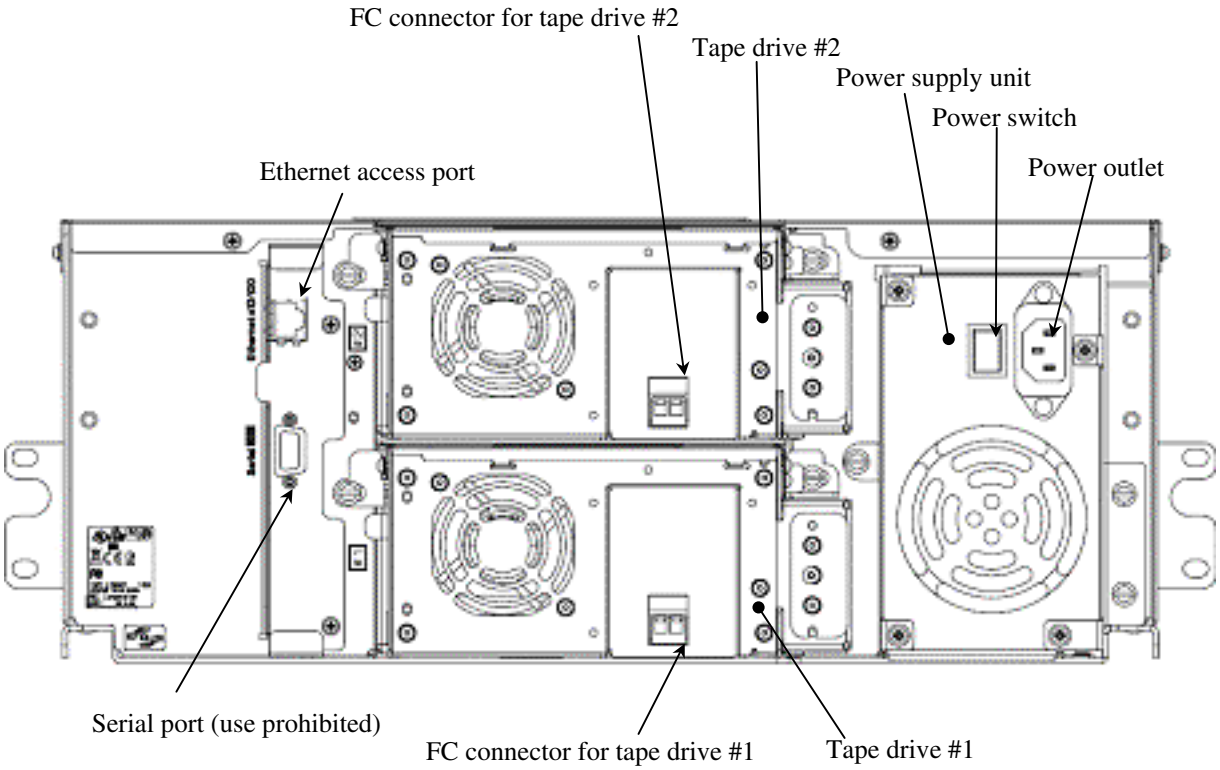


Figure 1.1 Components on the Front of the tape library

- Rear View

[FC model]



[SCSI model]

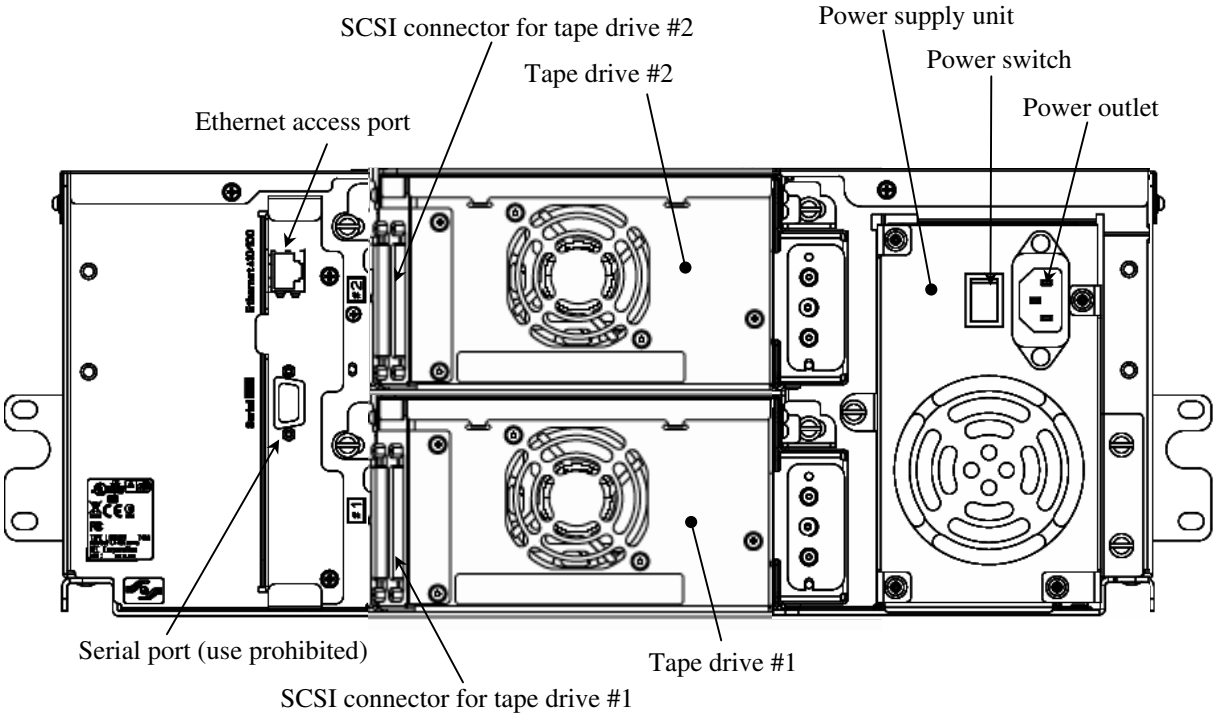


Figure 1.2 Components on the Rear of the tape library

1.1.1.2 Operator panel

The components of the operator panel on the front panel of the LT230 are explained below.

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 (upward)/Select value	
(6)		Move cursor (downward)/Select value	
(7)		Select/Enter button on the operator panel	
(8)	Screen	Operator panel screen	Section 4.2

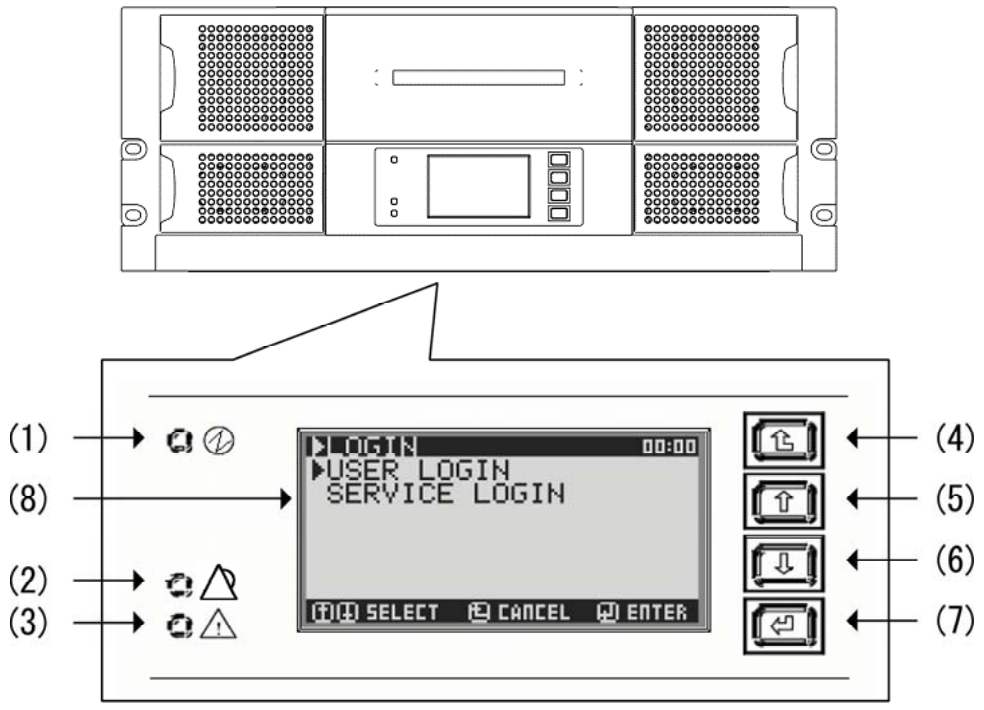


Figure 1.3 Operator panel detailed view

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 to warn the user that the cleaning cartridge has been used to capacity (i.e., that it has been used up to the maximum number of times) when a request is issued to clean the drive or when a request is issued to replace the cleaning cartridge. This indicator goes off when ALARM LED OFF is selected. (See (2), "COMMANDS Menu," in Section 4.2.3.)
	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.

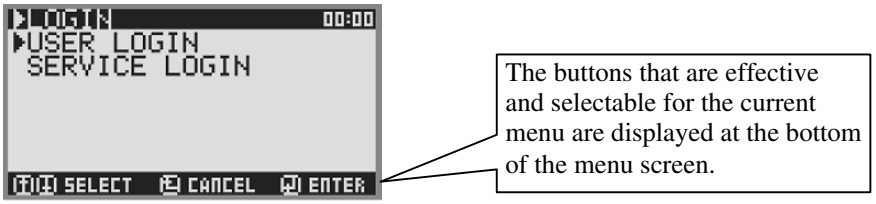
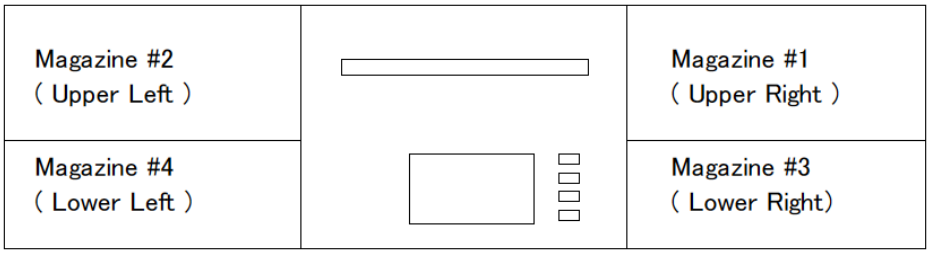


Table 1.3 Buttons on the operator panel

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.
		Select/Enter button	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:



* Two mailboxes in a row (slots #39 and #40) are provided on the front of magazine #4, and they are enabled with a setting on the operator panel.

Figure 1.4 Magazine slot number

The magazine slot numbers are defined as follows:

Magazine #2 (Upper Left)	22	19	16	13
	23	20	17	14
	24	21	18	15
Magazine #4 (Lower Left)	39	37	35	33
	40	38	36	34
Magazine #1 (Upper Right)	10	7	4	1
	11	8	5	2
	12	9	6	3
Magazine #3 (Lower Right)	31	29	27	25
	32	30	28	26

← Library front Library back face →

Figure 1.5 Allocation of magazine slot number

1.1.2.1 Data slot

A data slot is used to store a data cartridge.

1.1.2.2 Mailbox (Mail slot)

A mailbox is a slot that enables a tape cartridge to be inserted into and ejected from a library when the library is online.

The mailboxes are available when MAIL BOX Enable/Disable is set to Enable (ON) on the operator panel.

When the mailboxes are enabled, magazine slots #39 and #40 are respectively allocated to mail slots #1 and #2.

⚠ Caution

Opening a mailbox triggers a 20-second countdown that is displayed on the operator panel. Be sure to close the mailbox before this countdown completes.
If a mailbox is left open for 20 seconds or more and the tape library receives a command from the host system, a buzzer sounds to alert the user.

1.1.2.3 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. The same mechanism operates also when a mailbox is used.

1.2 Tape Drive

The Ultrium 3 tape drive 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 LTO Ultrium 4 data cartridge used in the LTO Ultrium 4 tape drive can contain up to 800 GB of data (in non-compression mode).(*)

* Only the fourth-generation LTO Ultrium 4 data cartridge can store 800 GB of data. One third-generation LTO Ultrium 3 data cartridge can store up to 400 GB of data.

Table 1.4 Specifications of LTO Ultrium data cartridge

Data cartridge type		LTO Ultrium 3 data cartridge	LTO Ultrium 4 data cartridge
Capacity	Non-compression mode	400 GB (nominal)	800 GB (nominal)
	Data compression mode (2:1)	800 GB (nominal)	1600 GB (nominal)

Table 1.5 Specifications of LTO Ultrium tape driver

No.	Item	Specification	
1	Drive type	LTO Ultrium 3 tape drive	LTO Ultrium 4 tape drive
2	Data transfer rate	80 MBps (160 MBps [*1])	120 MBps (240 MBps [*1])
3	Interface	SCSI, Fibre Channel	Fibre Channel
4	Height (thickness) of the drive	Full height	
5	Encryption function	Not supported	Supported [*2]

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

*2 Using the Ultrium 4 tape drive encryption function requires backup software that supports the hardware encryption feature, or the key management function option, which is available as an option for this unit. Moreover, note that the encryption function is effective only when using an LTO Ultrium 4 data cartridge on an LTO Ultrium 4 drive. The encryption function cannot be used with an LTO Ultrium 1, LTO Ultrium 2, or LTO Ultrium 3 data cartridge.

Figure 1.6 LTO Ultrium tape drive

1.3 Tape Cartridge

This section describes specifications, handling methods, and notes concerning the tape cartridges that are used in the tape library.

1.3.1 Ultrium tape cartridge specifications

The LT230 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.

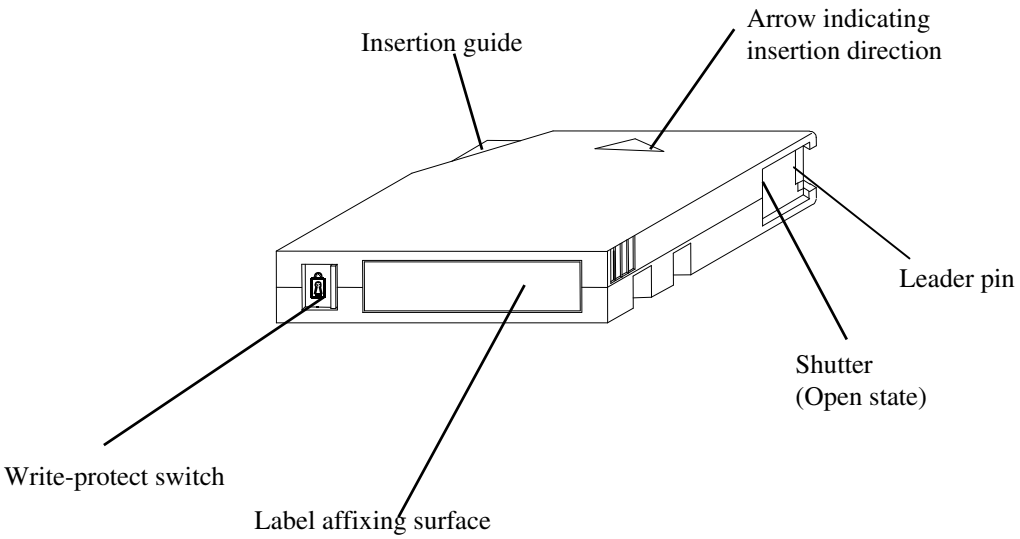


Figure 1.7 LTO Ultrium tape cartridge

Table 1.6 Tape cartridge specifications

Product name	Ultrium 2 data cartridge	Ultrium 3 data cartridge	Ultrium 3 data cartridge WORM (*2)	Ultrium 4 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	102.0 × 105.4 × 21.5 mm				

*1 The storage capacity value in the specification is a nominal value. The value in ( ) is the storage capacity when data is compressed by 2:1.

*2 WORM (Write Once Read Many) refers to a type of data cartridge that can be written only once. Once written, data on this type of cartridges cannot be erased or overwritten. To use a configuration in which LT230 drive is linked with backup software, software that supports WORM cartridges is required.

*3 Using the Ultrium 4 tape drive encryption function requires not only an Ultrium 4 data cartridge, but also backup software that supports the hardware encryption function. Alternatively, the key management function option, which is available as an option for this unit, can be used in place of the backup software.

*4 The cleaning cartridge can be used up to 50 times for the Ultrium 3 or Ultrium 4 tape drive.

*5 For information on tape drive compatibility with data cartridges, see Table 1.7.

Table 1.7 Tape drives and tape drive compatibility with tape cartridge

Data cartridge	Storage capacity (*1)	Tape drive	
		LTO Ultrium 3	LTO Ultrium 4
LTO Ultrium 1	100 GB (200 GB)	Reading enabled	Cannot be used
LTO Ultrium 2	200 GB (400 GB)	Reading and writing enabled (*2)	Reading enabled
LTO Ultrium 3	400 GB (800 GB)	Reading and writing enabled	Reading and writing enabled (*3)
LTO Ultrium 3 WORM	400 GB (800 GB)	Reading and writing enabled	Reading and writing enabled (*3)
LTO Ultrium 4	800 GB (1,600 GB)	Cannot be used (*4)	Reading and writing enabled

*1 The storage capacity value in the specification is a nominal value. The value in ( ) is the storage capacity when data is compressed by 2:1.

*2 LTO Ultrium 2 data cartridges are written in the Ultrium 2 format.

*3 LTO Ultrium 3 data cartridges are written in the Ultrium 3 format.

*4 The Ultrium 4 data cartridge cannot be used in an Ultrium 3 tape 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 cartridge write-protect switch.

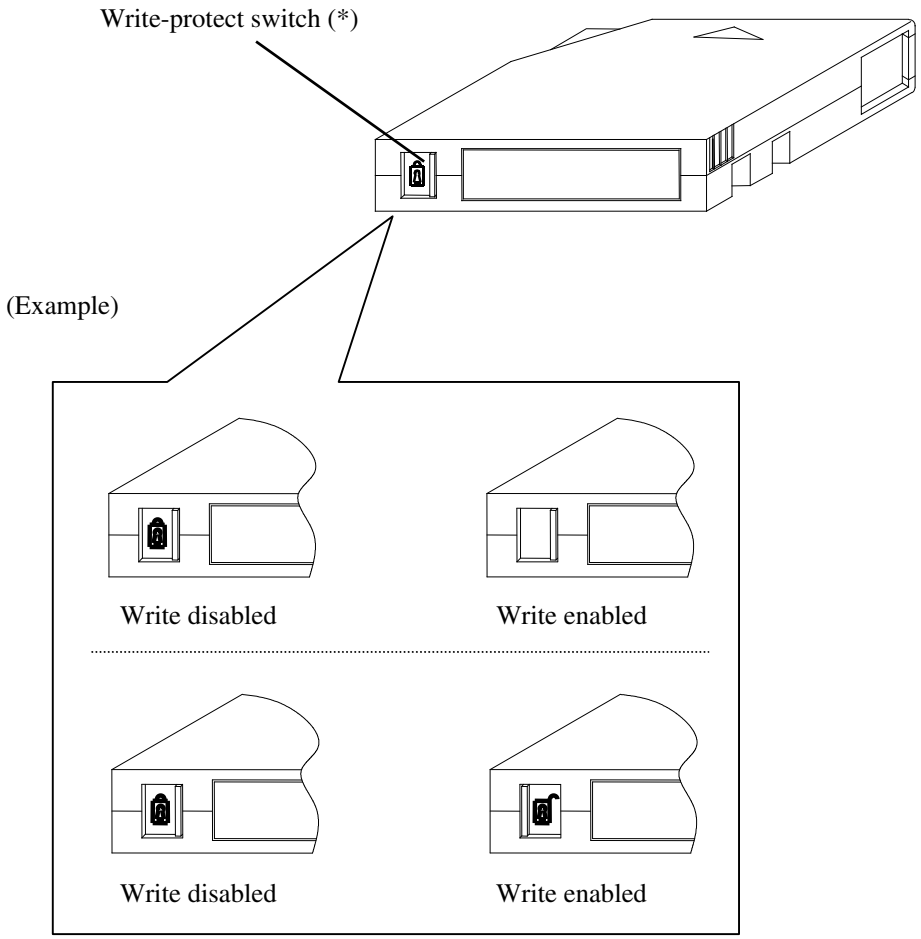


Figure 1.8 Cartridge write-protect settings

* 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 service life 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 service life 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 cartridge 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.

○: The leader pin is latched.

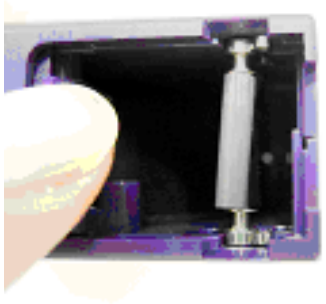
×: The leader pin has come off without being latched.

(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.

○: The clip is fitted correctly.

×: 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 tape cartridge

- The tape drive of the LT230 is a dedicated unit for LTO Ultrium tape cartridges. Tape cartridges such as DLT, 8 mm, and DDS cannot 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 8, "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 LT230.
  - 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 a 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.
- To use a cleaning cartridge, fix it in place in the library unit. Do not use a cleaning cartridge that has been used in another library unit.

1.3.3.4 Notes on handling

- Do not stack tape cartridges high because they may be damaged if they fall over (stack volumes up to six high). If a tape cartridge is mistakenly damaged if it falls over, perform data migration immediately after data recovery and then discard the damaged tape cartridge.
- The servo 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, if the data on the tape has been deleted, the cartridge 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 the cartridge has been used. Thus, this problem cannot be resolved by cleaning the tape. Because those constituents tend to melt with increasing temperature and humidity levels at which the tape cartridge is stored, sufficient attention needs to be paid to the storage environment conditions. Dispose of cartridges whose tape binder constituents have adhered to the head.
- 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 tape cartridges brought from an external environment after letting them adjust to the operating environment conditions for as long as the external storage period (up to 24 hours) to avoid exposing them to rapid environment changes.
- Transport the tape cartridges by storing them in a container such that they can be protected from flood, dirt, magnetic fields, temperature changes, vibration, and shock.

Table 1.8 lists the environment conditions for transporting tape cartridges.

Table 1.8 Environment conditions for transporting the tape cartridges

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, tape cartridges should be stood upright for storage.
- Keep tape cartridges away from environments exposed to direct sunlight or large quantities of dust.
- Do not place tape cartridges 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 tape cartridges containing recorded data.

Table 1.9 Environment conditions for storing tape cartridges

Item	Condition
Temperature	-16 to 32°C
Humidity	5 to 80 %RH
Max wet bulb temperature	26°C max
Magnetic field	4000 A/m or less
Others	No condensation

1.4 Bar Code Label Handling

By affixing the bar code label to the tape cartridge, 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.

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.

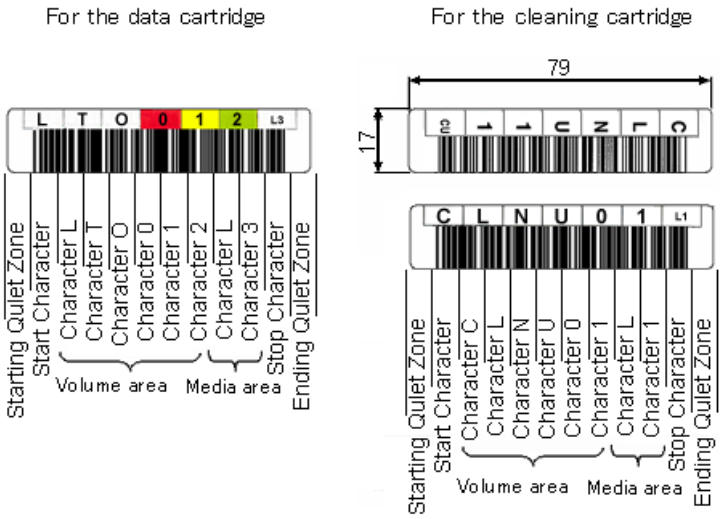


Figure 1.9 Bar code label string

(1) Specifying the volume area

A string of six optional characters can be specified in the volume area, excluding "CLNxxx", "DGxxx", 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	Cartridge type
L1	Ultrium 1 data cartridge 100 GB (without compression) 200 GB (with compression)
L2	Ultrium 2 data cartridge 200 GB (without compression) 400 GB (with compression)
L3	Ultrium 3 data cartridge 400 GB (without compression) 800 GB (with compression)
LT	Ultrium 3 data cartridge WORM 400 GB (without compression) 800 GB (with compression) (not supported)
L4	Ultrium 4 data cartridge 800 GB (without compression) 1,600 GB (with compression)

Note: The "L1" data cartridge cannot be used in an LTO Ultrium 4 tape drive.

(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 correctly to the designated area (to the recessed area next to the write-protect switch) on the tape cartridge. The bar code label must be to the right of the write-protect switch and the bar code field of the label must be in the lower part of the label as shown in Figure 1.10. If the label is improperly positioned or aligned, the bar code may not be identified. After affixing the label, secure it in the recessed area by rubbing it firmly against the area. Particularly rub the label edges firmly to ensure that they do not peel off.
- To replace the label, peel the old label from the tape cartridge and then affix a new one.

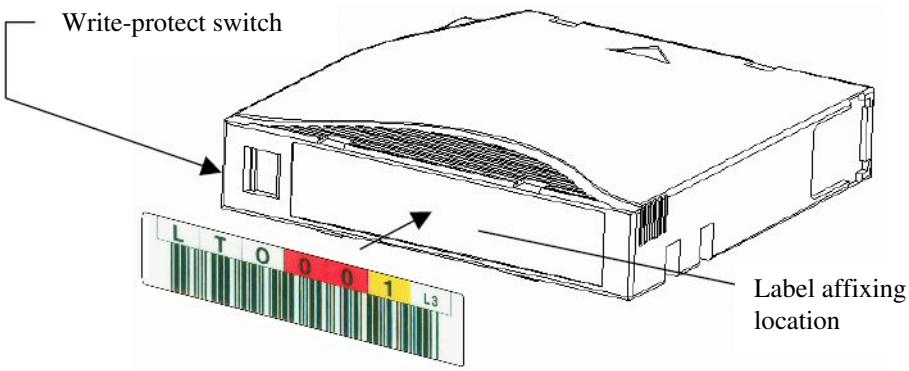


Figure 1.10 Bar code label affixing location

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 to 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.

Caution

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

Chapter 2 Installation

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

⚠ Caution

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 Notes on Installation on the rack

The rack to install a unit must satisfy the conditions 1 to 4 shown below.

Check the conformance by drawings or by actual measurement before installation.

- 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 2.1 and 2.2.
- The inner dimension of the rack must satisfy the conditions shown in Figure 2.3 and Table 2.1.

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

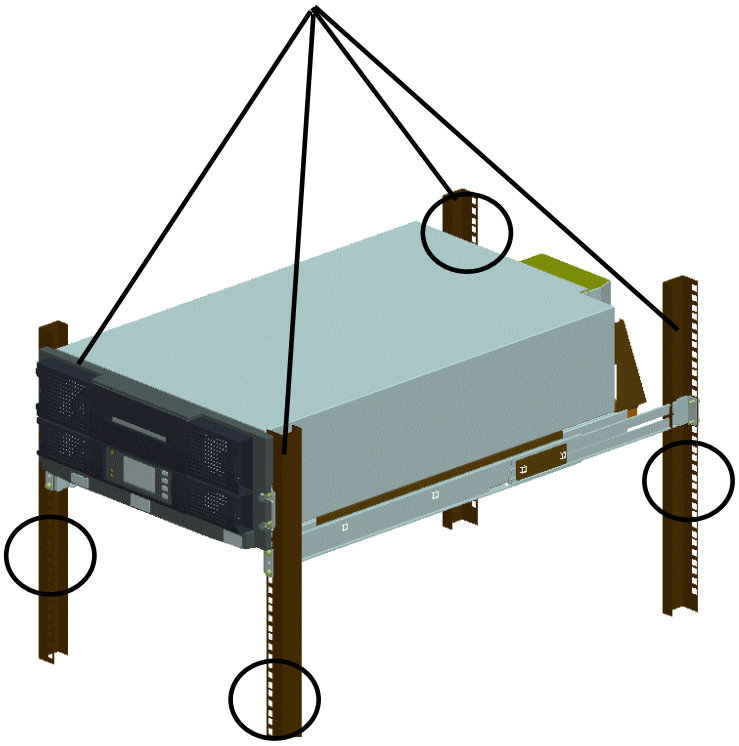


Figure 2.1 Shape of securing portion

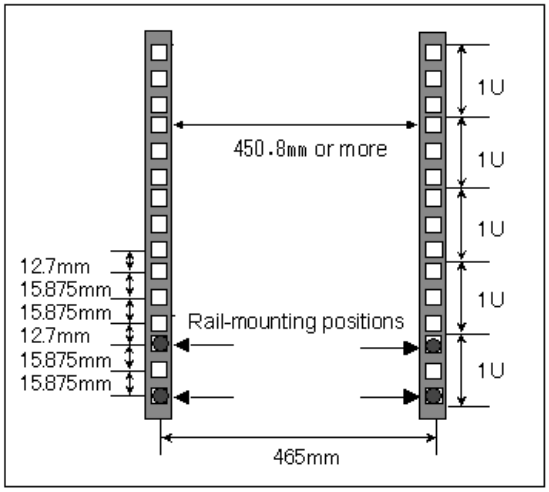
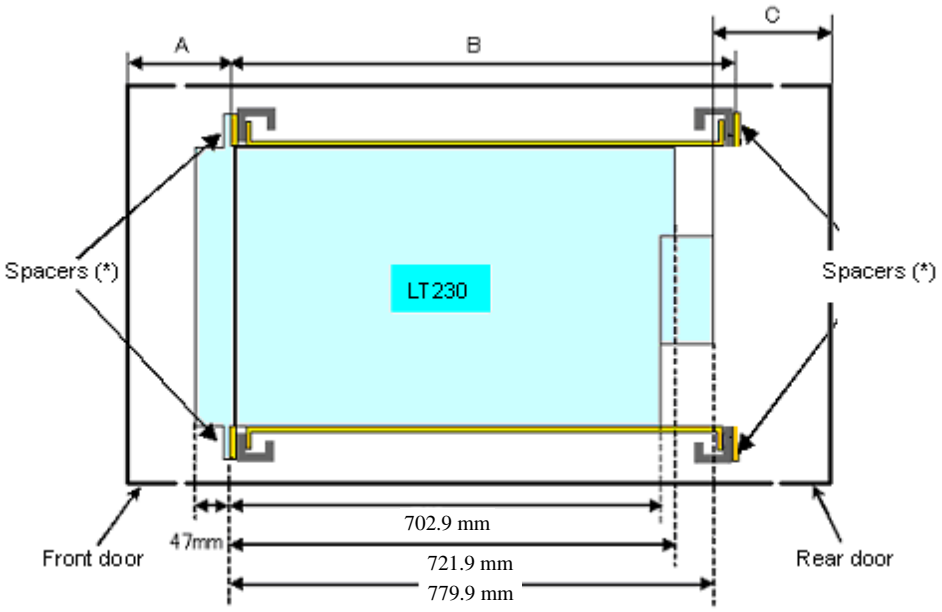


Figure 2.2 Shape of securing portion (front and rear)

Table 2.1 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	640 to 865 mm
C	From the rear of the unit to the inside of the rear door	60 mm or more



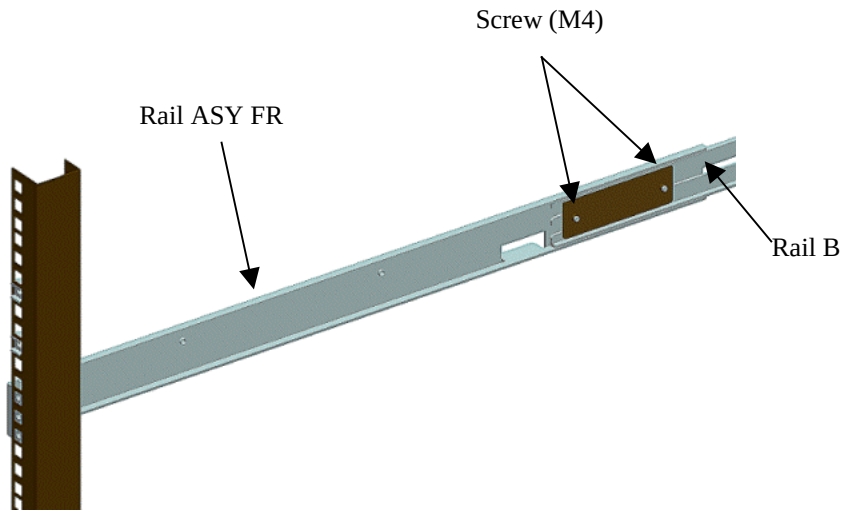
* Use the spacers only when rails are mounted. Do not use the spacers for the fixed parts of the LT230 and when the rack columns have round mounting holes.

Figure 2.3 Dimensions of the rack

2.1.1.2 Installation of side housing

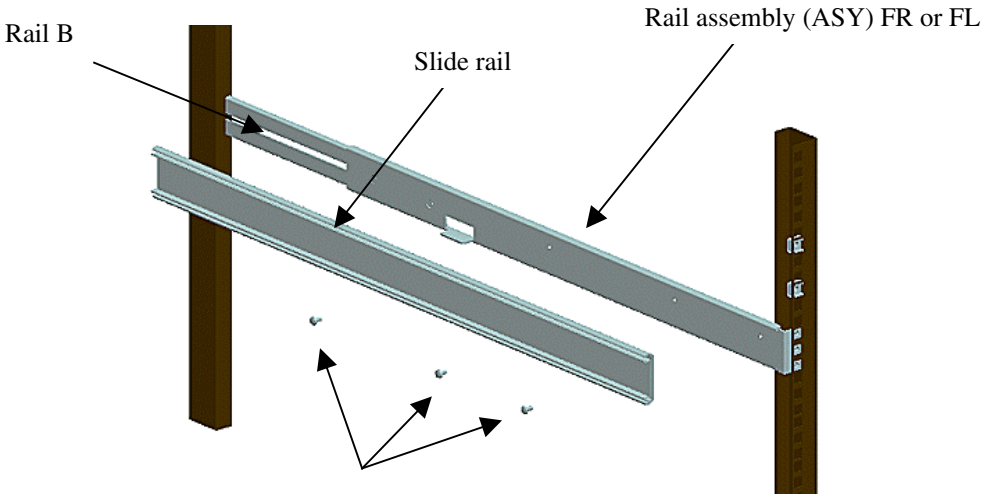
Take the following steps to install the rail ASY FR and rail ASY FL into the rack.

1) First determine the mounting dimensions. Loosen the two flat head screws that connect the rail ASY FR and rail B, adjust the assembly length to the rack mounting pitch, and then fasten the screws.

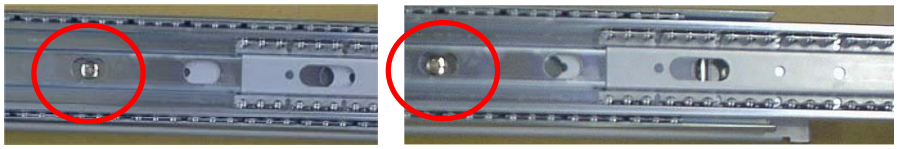


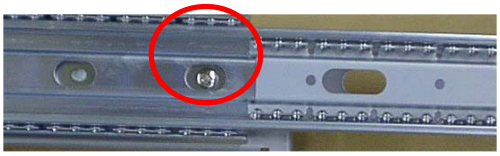
2) Similarly, loosen the two flat head screws that connect the rail ASY FL and rail B, adjust the assembly length to the rack mounting pitch, and then fasten the screws.

3) Fasten the slide rail to each rail ASY FR and ASY FL with four screws (M4). In this case, use the through-holes of the slide rail to fasten the rail to each rail assembly (rail ASY) while moving the slide rail.



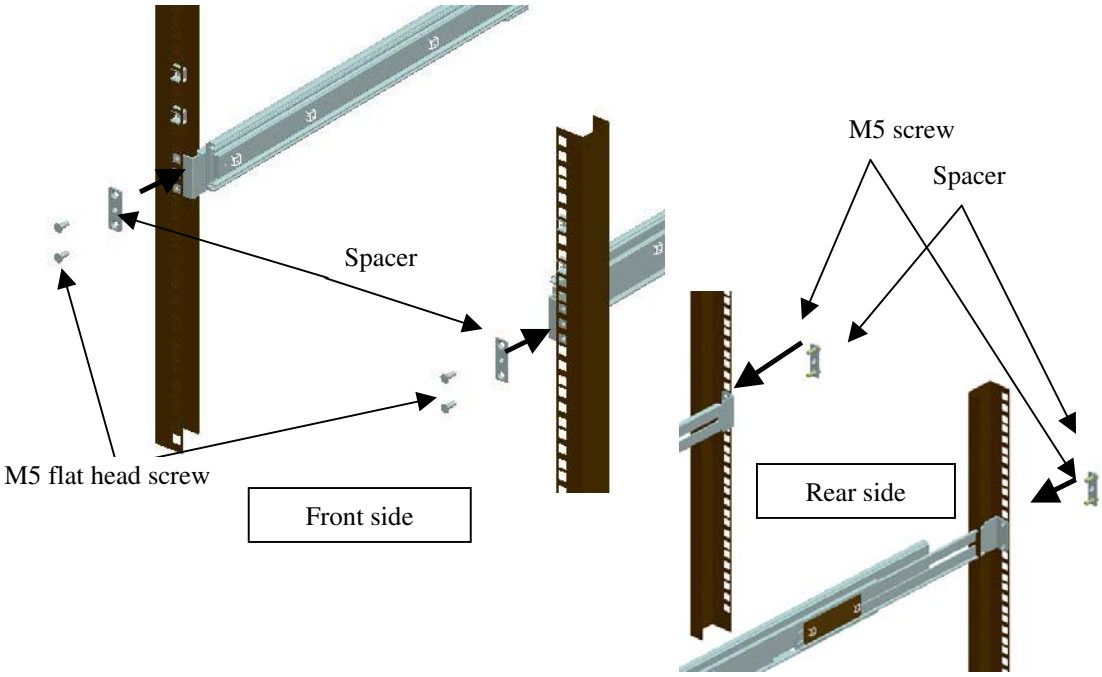
Detailed view



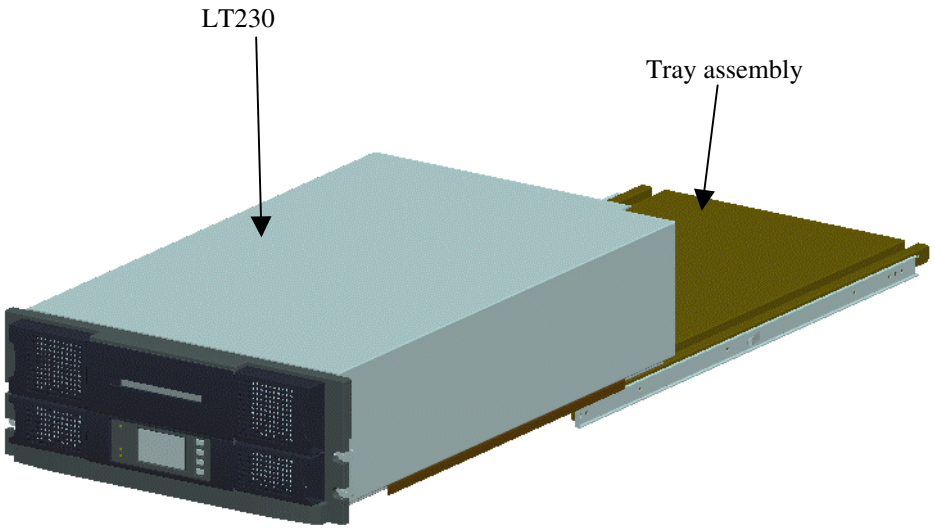


4) Mount each of the assembled rack rail assemblies (ASY FR and ASY FL) on the rack column with a spacer and screws. Use the M5 flat head screws for the front side and the M5 polished screws (with a spring) for the rear side.

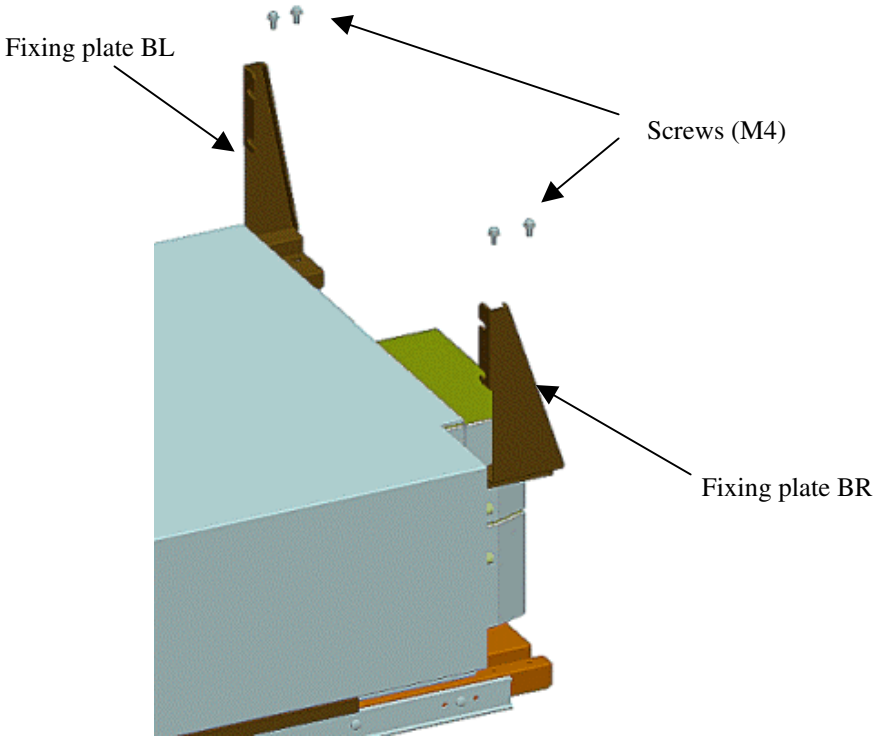
* Do not use the spacers when the rack has round mounting holes.

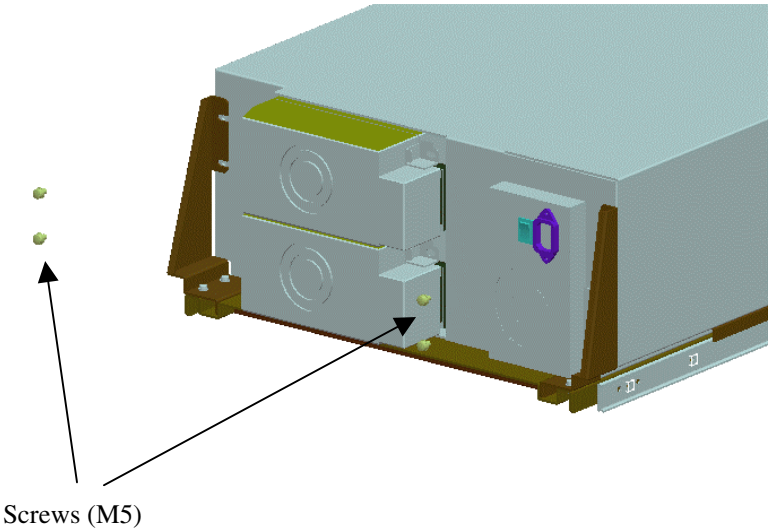


5) Put the LT230 on the accompanying tray assembly and fix the LT230 with the fixing plates BR and BL.

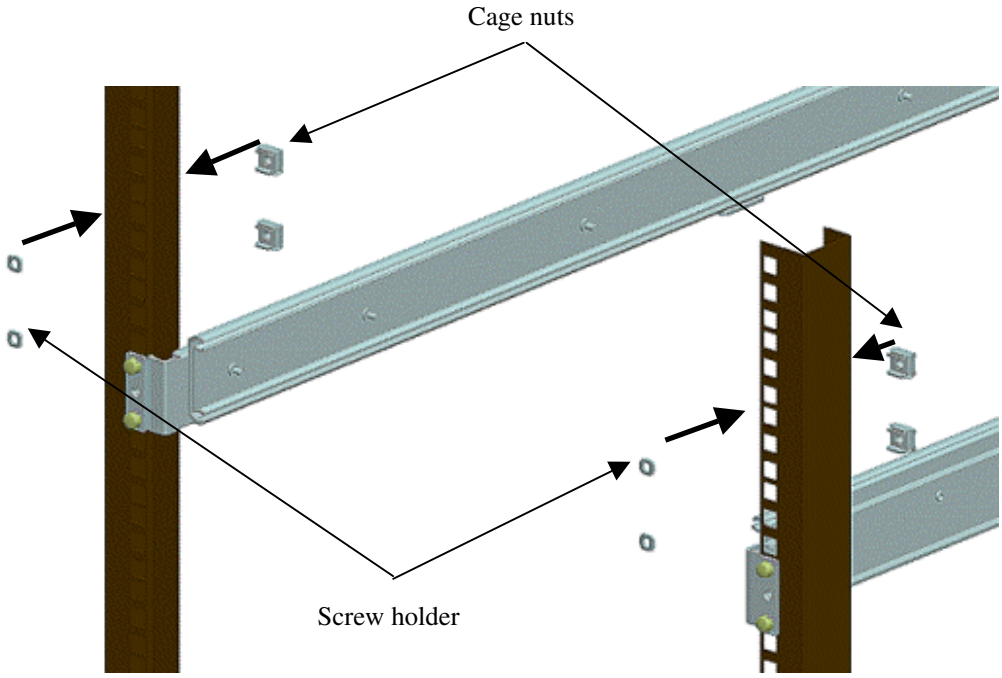


6) Fix the LT230 to the tray assembly by using the fixing plates BE and BL.





7) Fit the cage nuts onto the racks. Fit the tray assembly of the LT230 into the slide rails and insert the screw holders into the square holes before fixing the LT230 in position.



* Do not use the screw holders when the rack has round mounting holes.

2.1.2 Installation of tape library

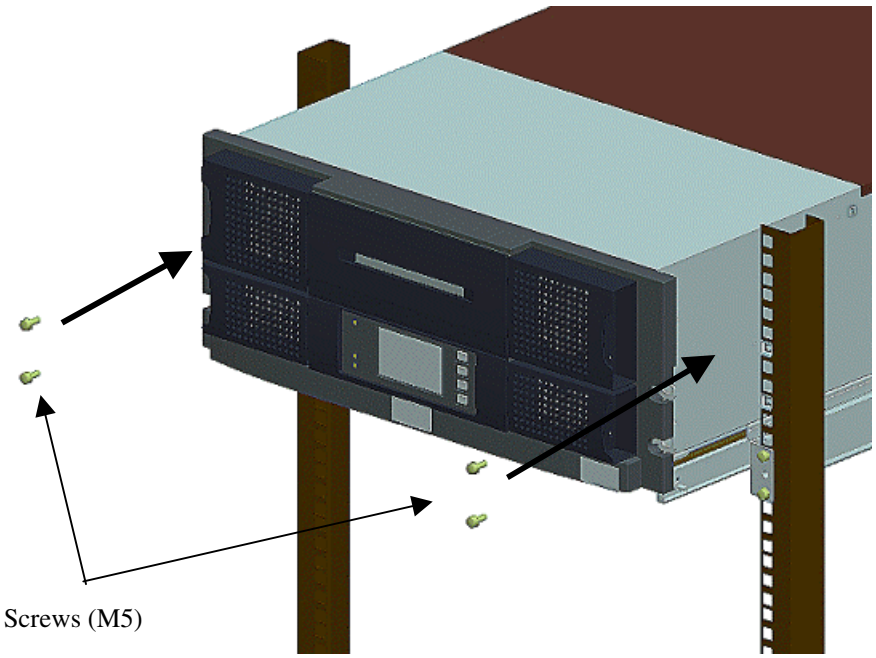
Caution

Injury or damage to the library
The tape library (contains one tape drive) weighs about 40 kg. For your safety, note the following when installing the tape library in the rack:
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 tape cartridges from the tape library to reduce the unit weight before starting installation work.

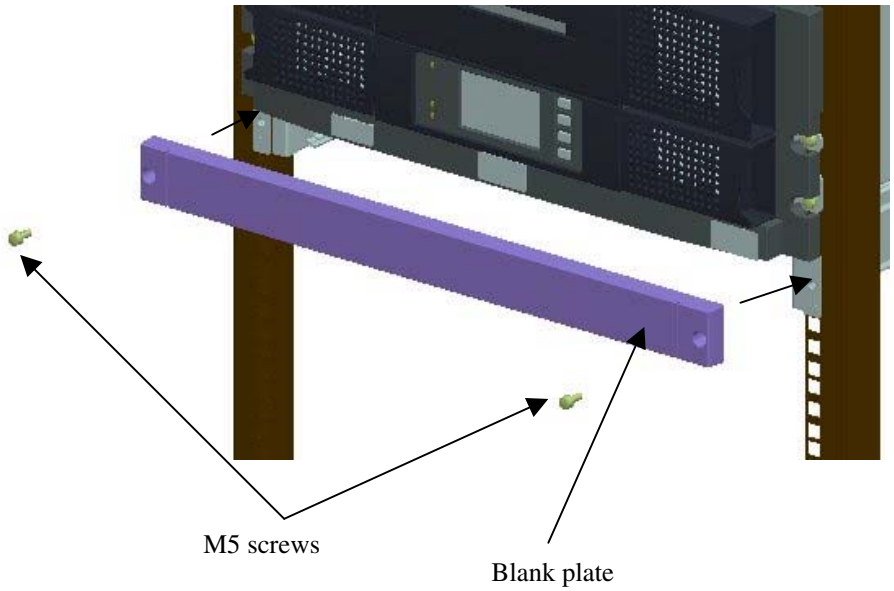
Caution

Injury or damage to the library
When installing the tape library and other devices in the rack, place the heaviest of the devices at the bottom of 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 coming into contact with the screws on the rack-mount kit.
2) Use the four M5 screws to secure the tape library to the rack.



3) Place the blank plate before the front ends of the rack rails to cover it and fasten the plate with two M5 screws.



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.

⚠ Caution

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.

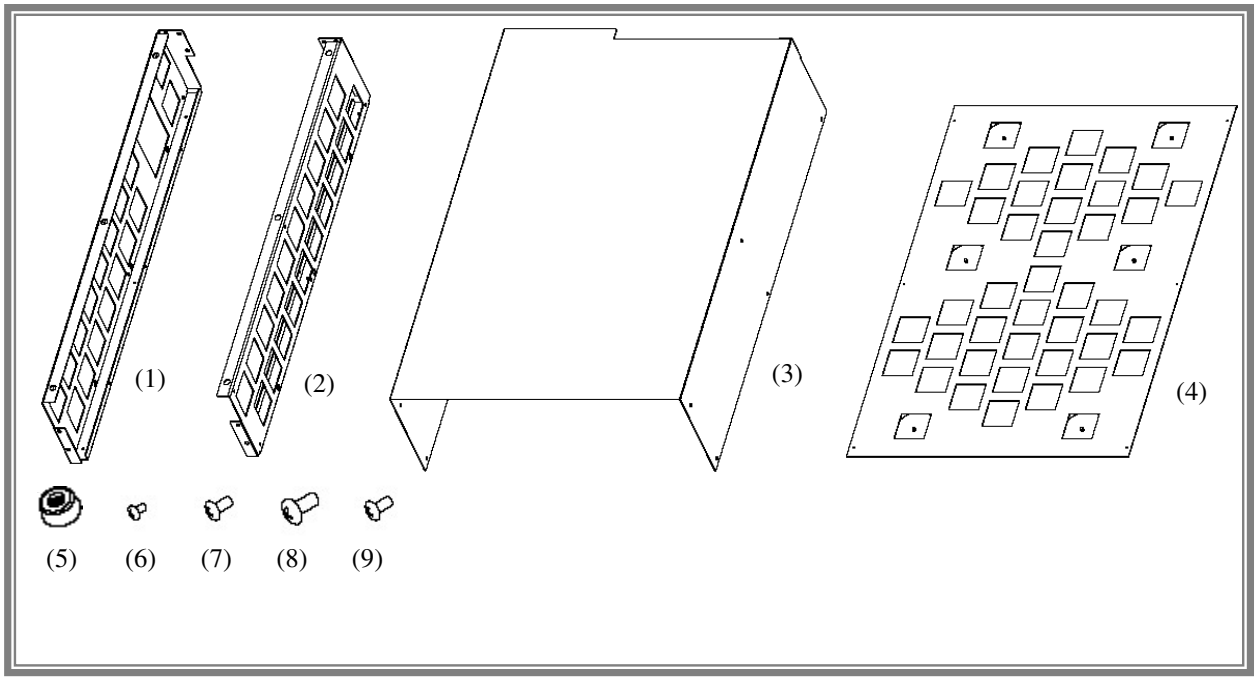


Figure 2.4 Components of the desktop kit

Table 2.2 Components of the desktop kit

No.	Name	Quantity
(1)	Desktop cover (L)	1
(2)	Desktop cover (R)	1
(3)	Desktop cover	1
(4)	Desktop bottom cover	1
(5)	Rubber foot	6
(6)	Screw (M3)	12
(7)	Screw (M4)	6
(8)	Screw (M5)	8
(9)	Black screw (M4)	12

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.

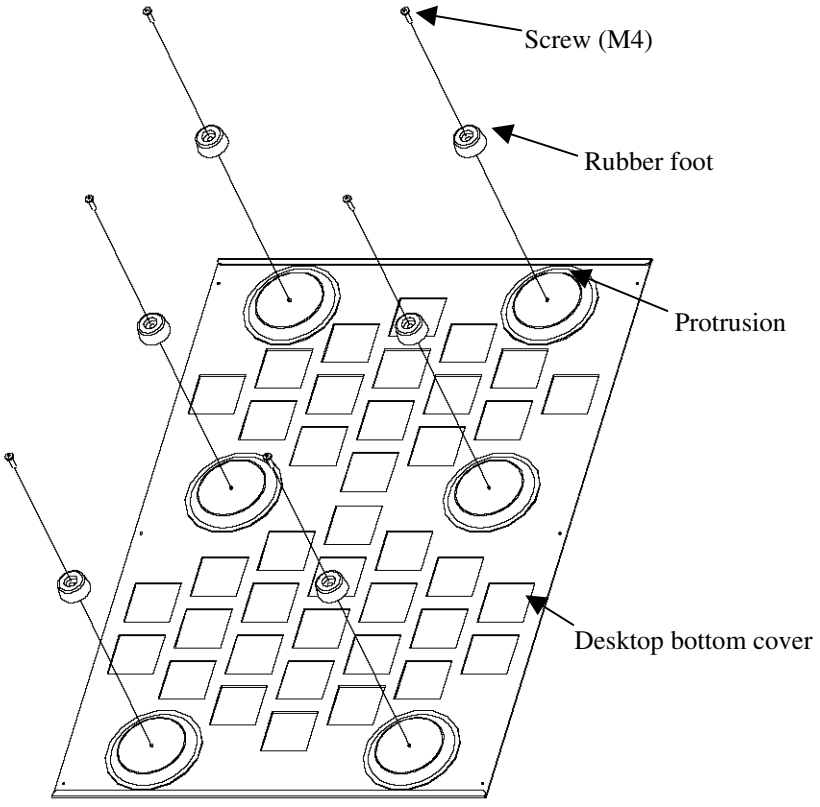


Figure 2.5 Fixing the rubber stopper

2) Affix the left and right desktop covers (L and R) to the desktop bottom cover respectively with three M3 screws.

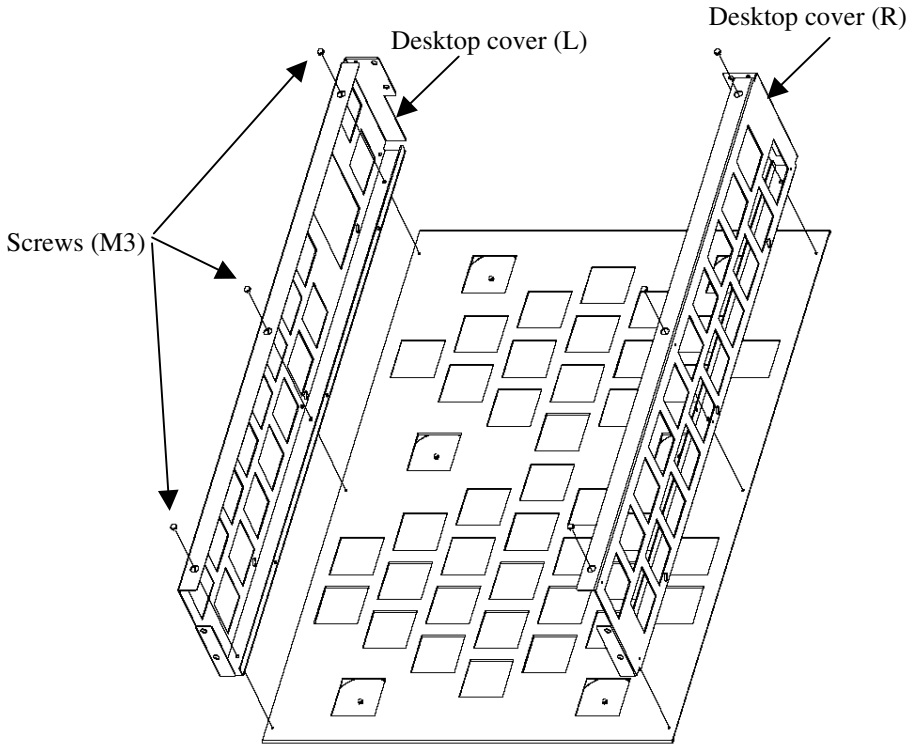


Figure 2.6 Affixing the left and right desktop covers (L and R)

3) Insert the tap library in place between the left and right desktop covers. Affix each desktop cover to the side of the tape library with three M3 screws, and then secure the front and the rear of the tape library respectively with four M5 screws.

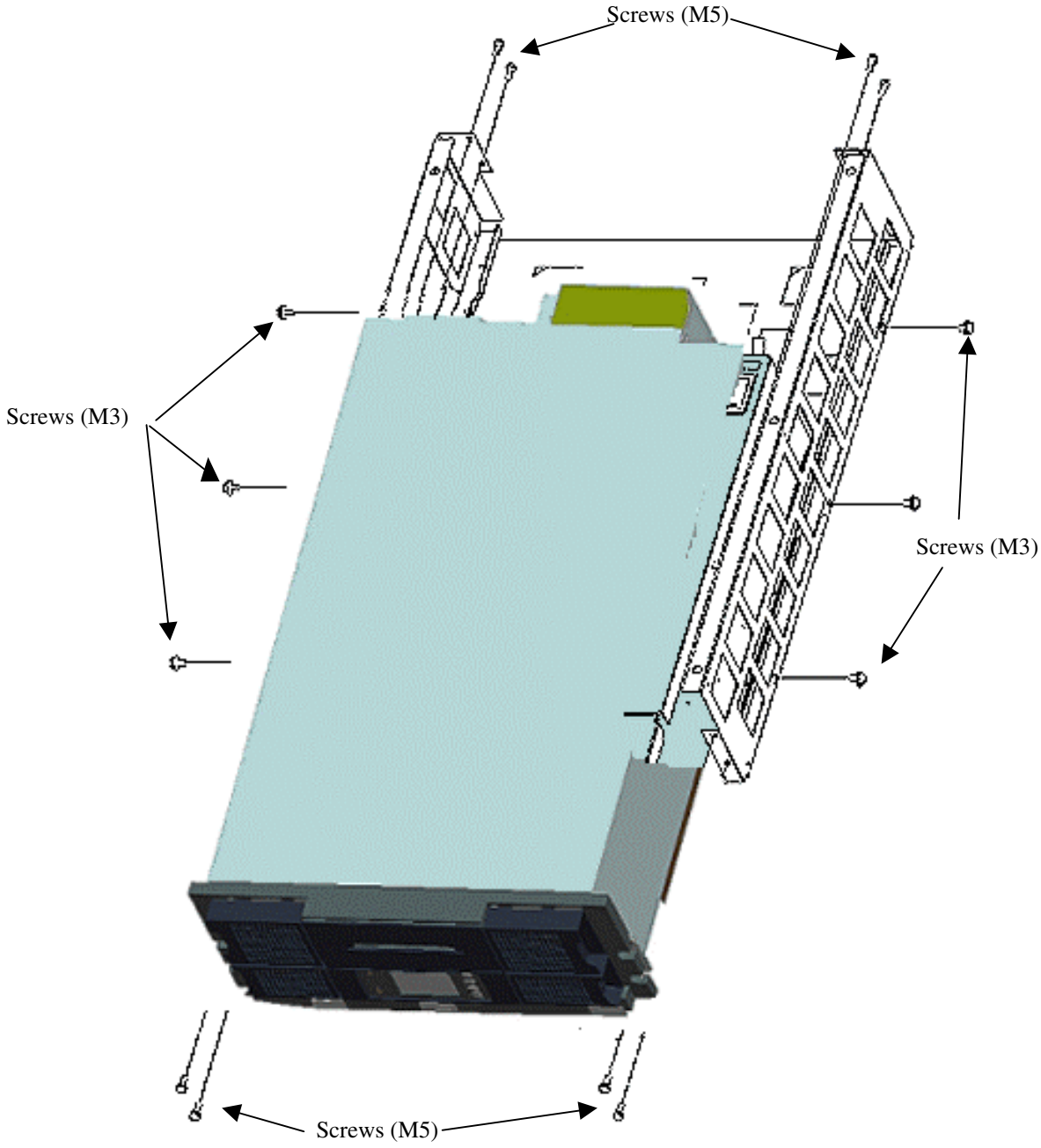


Figure 2.7 Affixing the tape library to the desktop cover assembly

4) Place the desktop cover in place on the top of the tape library and secure its sides and rear with ten black M4 screws.

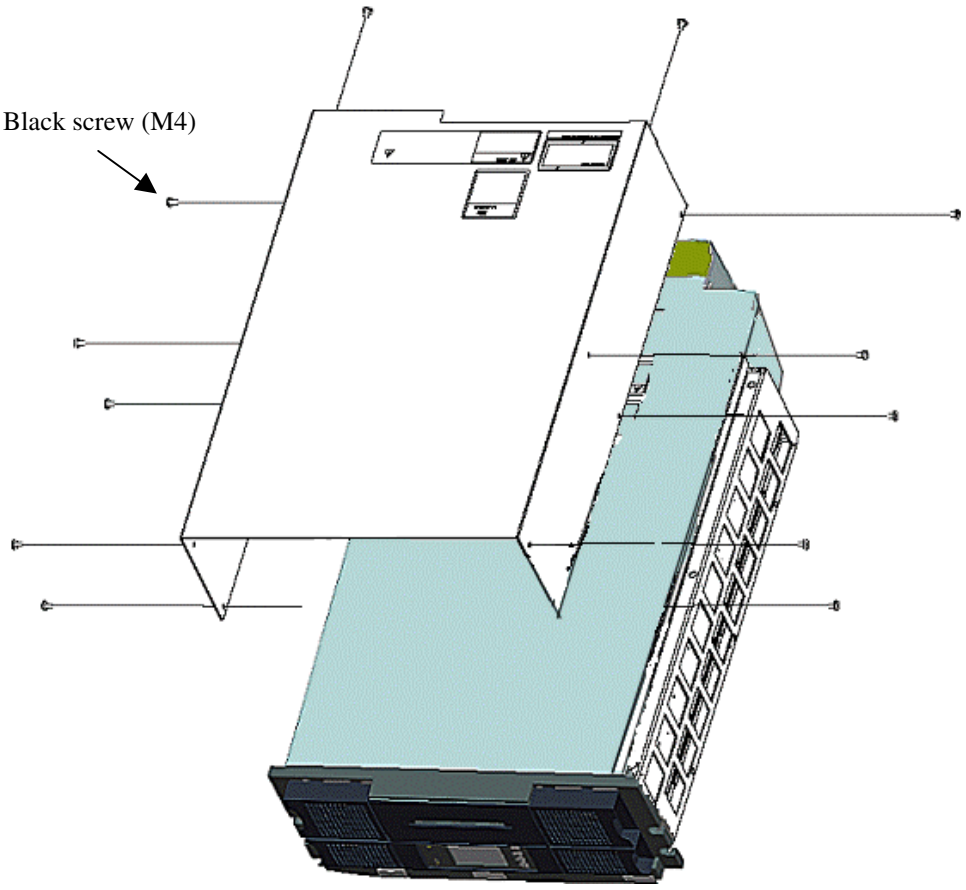


Figure 2.8 Covering the tape library

2.3 Installation Floor Space

2.3.1 Rack-mount type

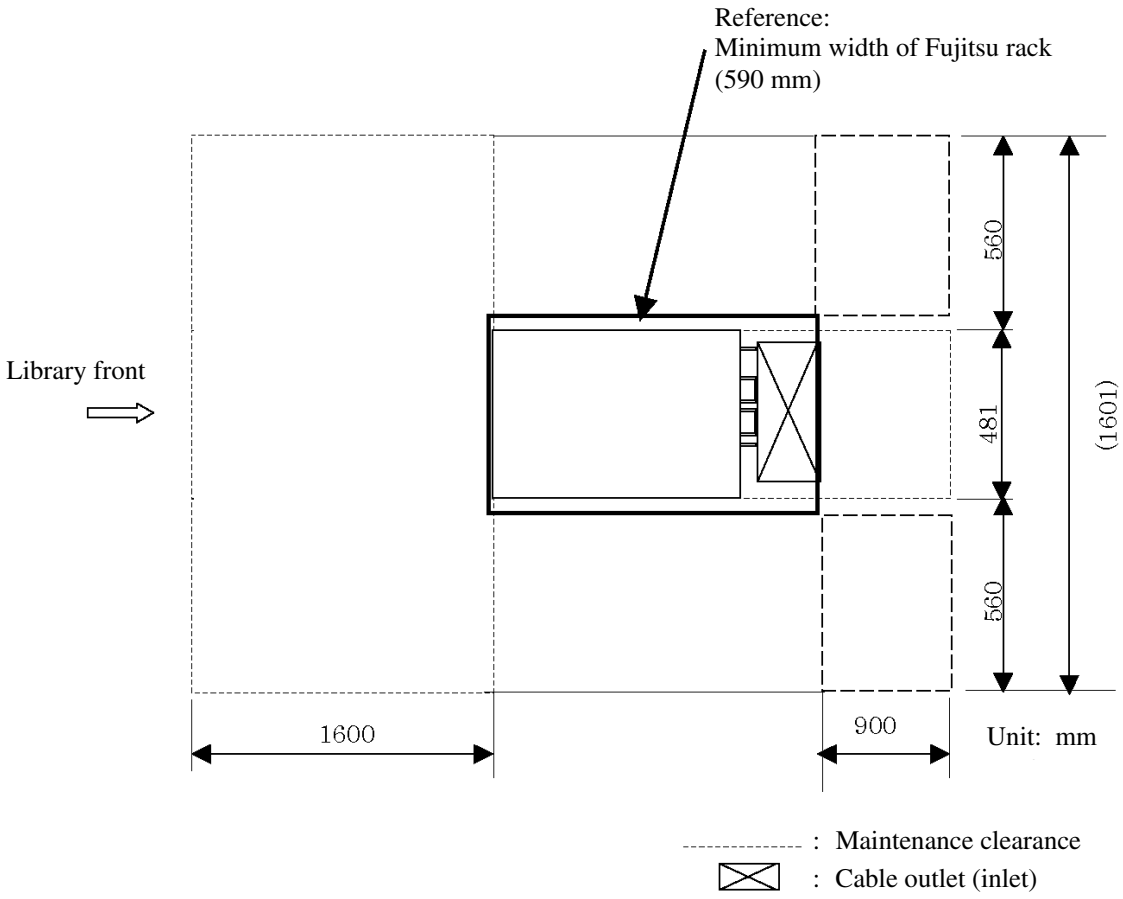


Figure 2.9 Rack-mount type unit installation clearances

Notes:

1) Hold the maximum height of the library mounted in a rack to 1000 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) Be careful not to let the rack topple over owing to the weight (maximum weight) of the tape library during the maintenance work.

3) The widthwise maintenance clearance depends upon the dimensions of the rack on which the tape library is mounted.

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

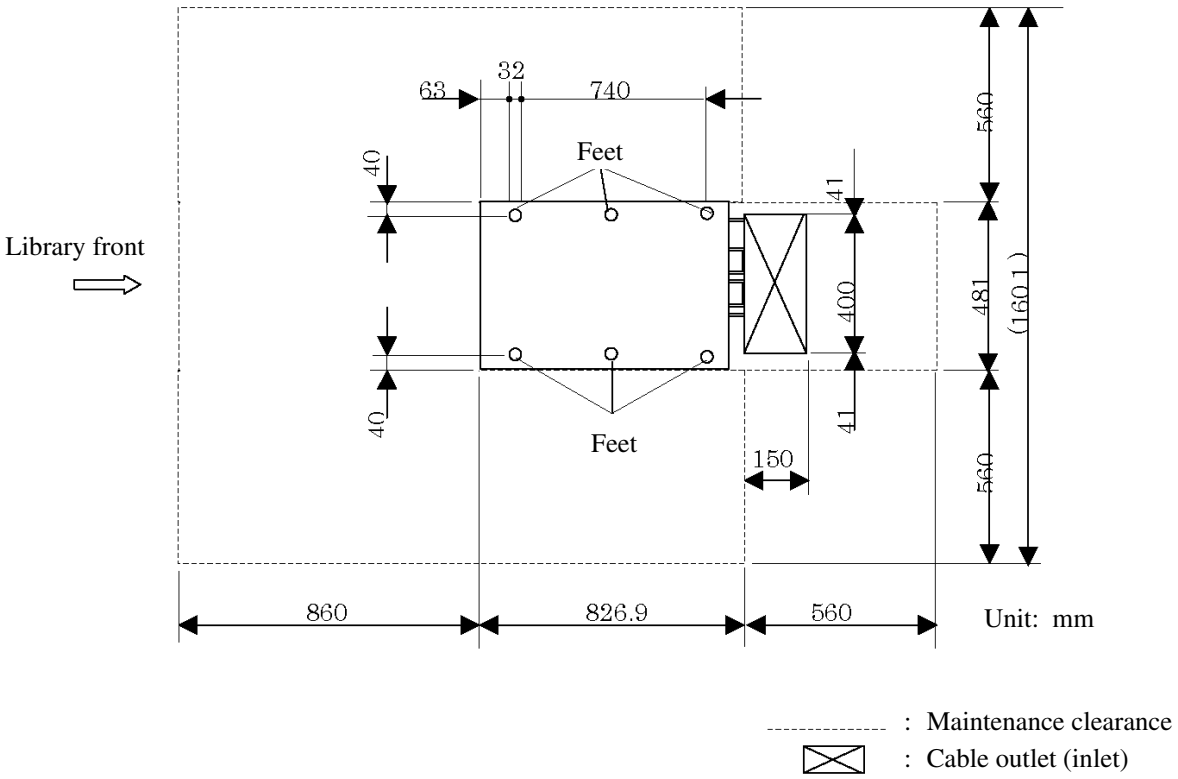


Figure 2.10 Stand-alone type unit installation clearances

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 LT230 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.

⚠ Caution

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.

⚠ Caution

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

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

3.1 Fibre Channel (FC) Cable

3.1.1 Fibre Channel cable specification

Use the Fibre Channel cables listed in Table 3.1 to connect the LT230 of the FC model to a server.

Table 3.1 Fibre Channel cables

Specification	Length	Cable coating	Description
Fibre Channel cable	5 m to 100m	Coated	LC-LC connector (to be procured separately)
Fibre Channel cable	2 m to 15 m	Not coated	LC-LC connector (to be procured separately) *

* Mainly used for connection in a single rack that is installed in an office.

3.1.2 Fibre Channel connector of the tape library

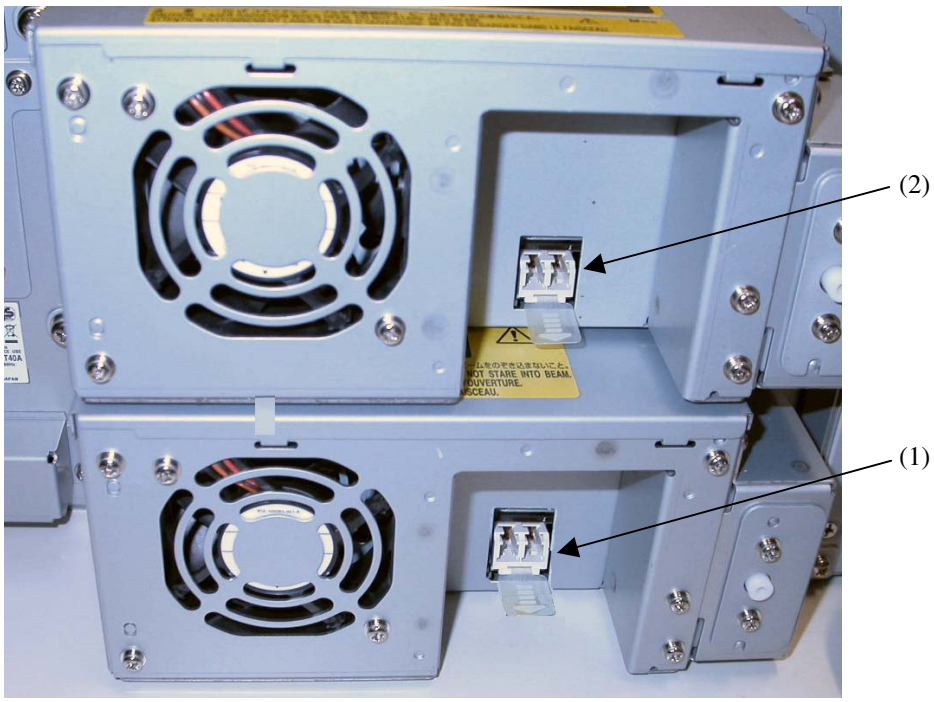


Figure 3.1 Fibre Channel connectors of the tape library side

Table 3.2 Fibre Channel connector shapes

No.	FC connector	Shape
(1)	Drive #1	Dual LC connector
(2)	Drive #2	Dual LC connector

3.1.3 Fibre Channel cable connection

Connect the tape library to a server with a Fibre Channel cable.

1) Connect the Fibre Channel cable to the connector of drive #1. When two drives are mounted, connect the Fibre Channel cable to the connector of drive #2, either.

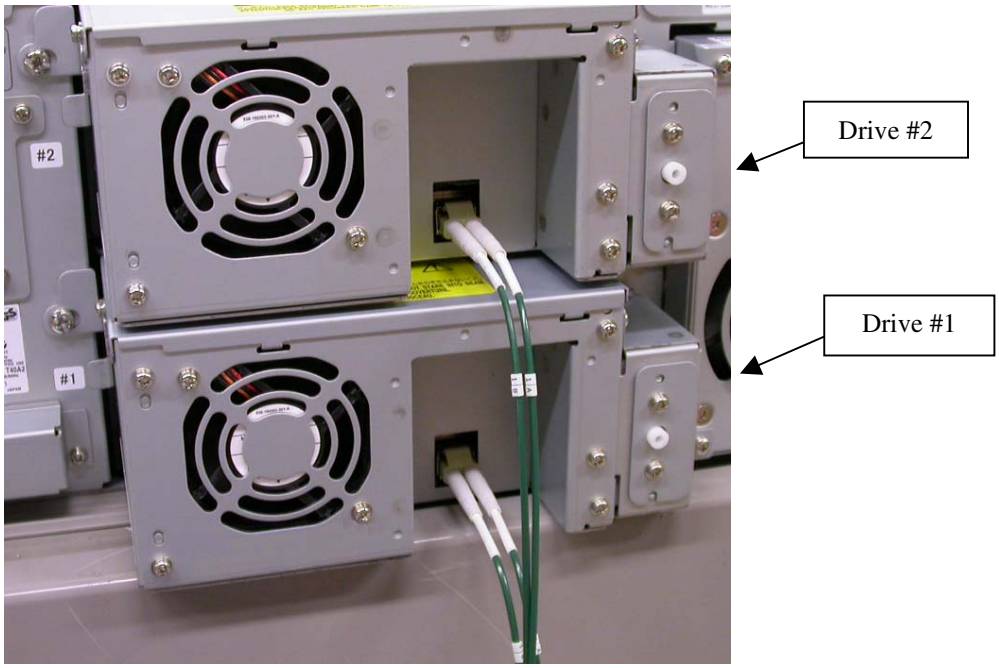


Figure 3.2 Connecting Fibre Channel cables to the tape library

2) After connecting the cables, make sure the cables are connected normally.

   Remark 1: For information on connecting FC cables to a server, see the manual for the server.

   Remark 2: The path of drive #1 is used both as the data transfer path of drive #1 and the robot control path of the tape library.

3.2 SCSI Cable

3.2.1 SCSI cable and terminator specifications

Use the SCSI cables and terminators that are listed in Table 3.3 or shown in Figure 3.3 to connect the tape library to a server.

Table 3.3 SCSI cables and terminators

No.	Specification	Length	Description
A	SCSI cable	5 m or less (*1)	Tape-library-to-server connection (to be procured separately) Half-pitch 68-pin - half-pitch 68-pin
B	SCSI cable	5 m or less (*1)	Tape-library-to-server connection (to be procured separately) Half-pitch 68-pin - VHDCI 68-pin
C	SCSI cable for daisy chaining	0.15 m	Daisy-chain connection - Connection between drives An optional drive module is supplied with one cable.
D	Terminator	-	LT230 with one drive: One terminator LT230 with two drives: Two terminators

*1 A SCSI cable exceeding 5 meters cannot be used between the tape library and a server.

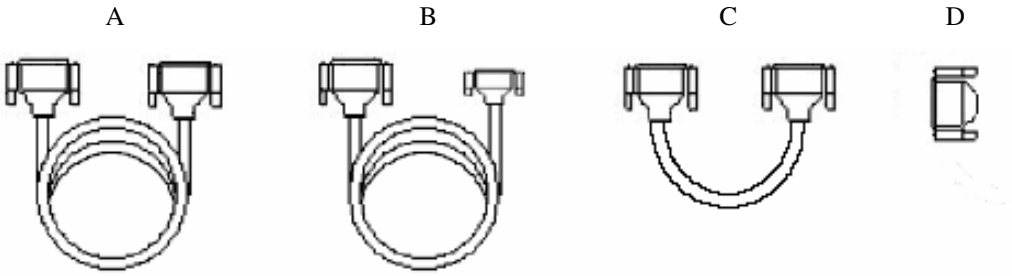


Figure 3.3 SCSI cable types and SCSI terminator

3.2.2 SCSI connectors on the tape library

Figure 3.4 SCSI connectors on the tape library

Table 3.4 SCSI connector shapes

No.	SCSI connector	Shape
(1), (2)	Drive #1	Half-pitch 68-pin
(3), (4)	Drive #2	Half-pitch 68-pin

3.2.3 SCSI cable connection

1) Connect the tape library to a server with a SCSI cable. For information on how to connect the SCSI cable, see below.

2) After connecting the cable, make sure that it is connected normally.

   The connector of a SCSI cable is equipped with screws to secure its connection. Make sure that the connector is secured with the screws.

⚠ Caution

Equipment damage
Do not daisy chain the tape library with another tape library or other SCSI devices.

Remarks: For details on the connection to a server, refer to the manual supplied with the server.

⚠ Caution

Malfunction
Be sure to use one of the connection methods described below to connect the tape library to a server with a SCSI cable.
If a connection method other than those specified is used, a malfunction may occur, such as the server failing to recognize the tape library.

3.2.3.1 Connecting one drive in the tape library

See Table 3.3, and prepare the following items in advance.

Specification	Description	Quantity
SCSI cable A	Use either A or B.	1
SCSI cable B		
Terminator D	-	1

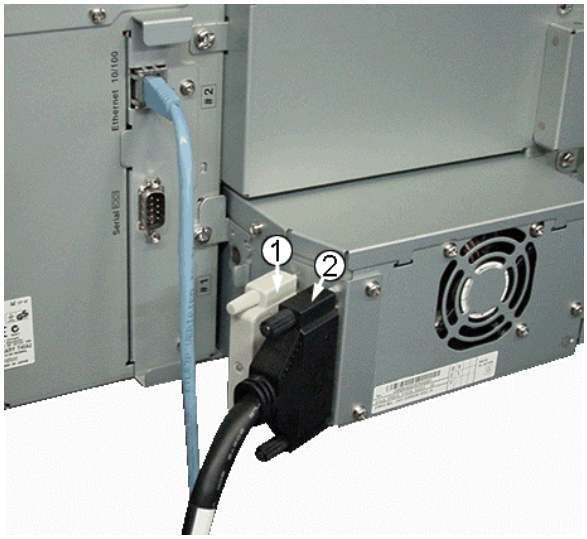


Figure 3.5 Connecting one drive in the tape library

1) Connect SCSI terminator D to connector (1) of the drive.
2) Connect host-connection SCSI cable A or B to connector (2) of the drive.

3.2.3.2 Connecting two drives in the tape library

See Table 3.3, and prepare the following items in advance.

Specification	Description	Quantity
SCSI cable A	Use either A or B.	2
SCSI cable B		
Terminator D	-	2

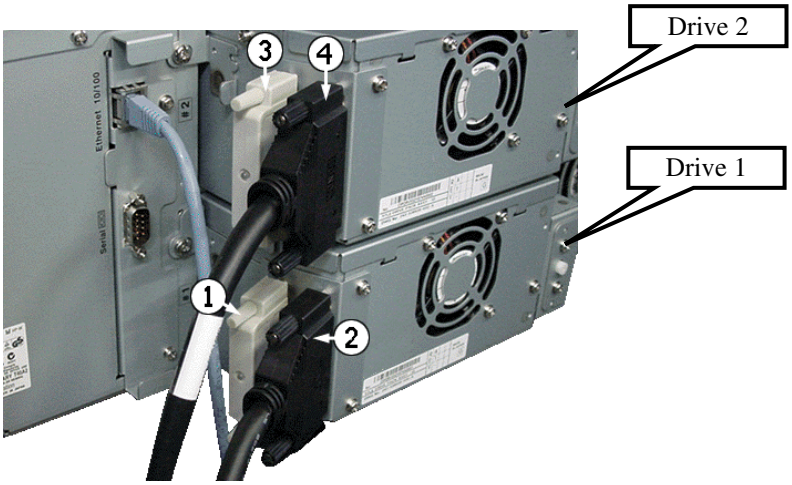


Figure 3.6 Connecting two drives in the tape library

1) Connect the first SCSI terminator D to connector (1) of drive #1.
2) Connect the first host-connection SCSI cable A (or B) to connector (2) of drive #2.
3) Connect the second SCSI terminator D to connector (3) of drive #2.
4) Connect the second host-connection SCSI cable A (or B) to connector (4) of drive #2.

Important

Daisy chaining of drives causes performance to deteriorate. To optimize drive performance, do not connect them in a daisy chain.

3.2.4 SCSI ID setting

The SCSI IDs are set before shipment as follows: (Changing these settings is prohibited)

- Tape drive 1: ID = 01
- Tape drive 2: ID = 02 (only if drive #2 is mounted)

3.3 AC Power

3.3.1 Use conditions for AC power cable

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

3.3.2 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.

No.	Name
(1)	Power switch
(2)	Power outlet
(3)	Power supply unit
(4)	Drive #1
(5)	Drive #2 (when two drives are required)

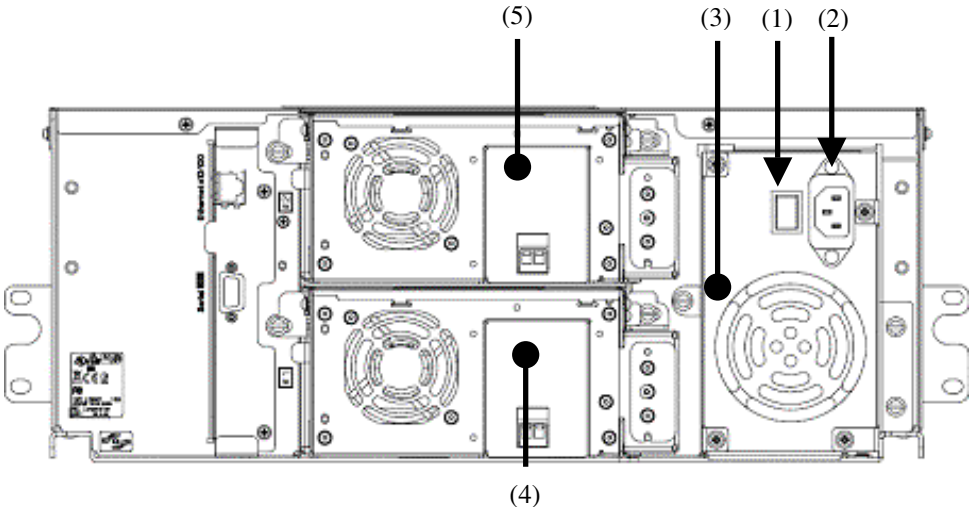


Figure 3.7 Connection of AC power cable

3.3.3 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 On indicator 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.

Remarks: 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.

3.4 Starting and Shutdown of the System

3.4.1 Starting

Turn on power to the tape library (and peripheral units connected to the server) and the server in that order when starting the system. Before turning on the power to the server, make sure that the power to the tape library has been turned on and the tape library has been started.

⚠ Caution

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

3.4.2 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).

⚠ Caution

Malfunction or 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.

3.4.3 Restart

Before rebooting the system, make sure that the library unit is stopped (the robot is stopped, and no tape drive has a tape cartridge in it).

Chapter 4 Operator Panel

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) When the following menu is displayed, enter the user password.

   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

The Menu screen changes to the Status Display screen under the following conditions:

- No button has been clicked for a preset time period on the Menu screen.
- The CANCEL button is clicked on the LOGIN menu

Figure 4.1 shows the Status Display screen.

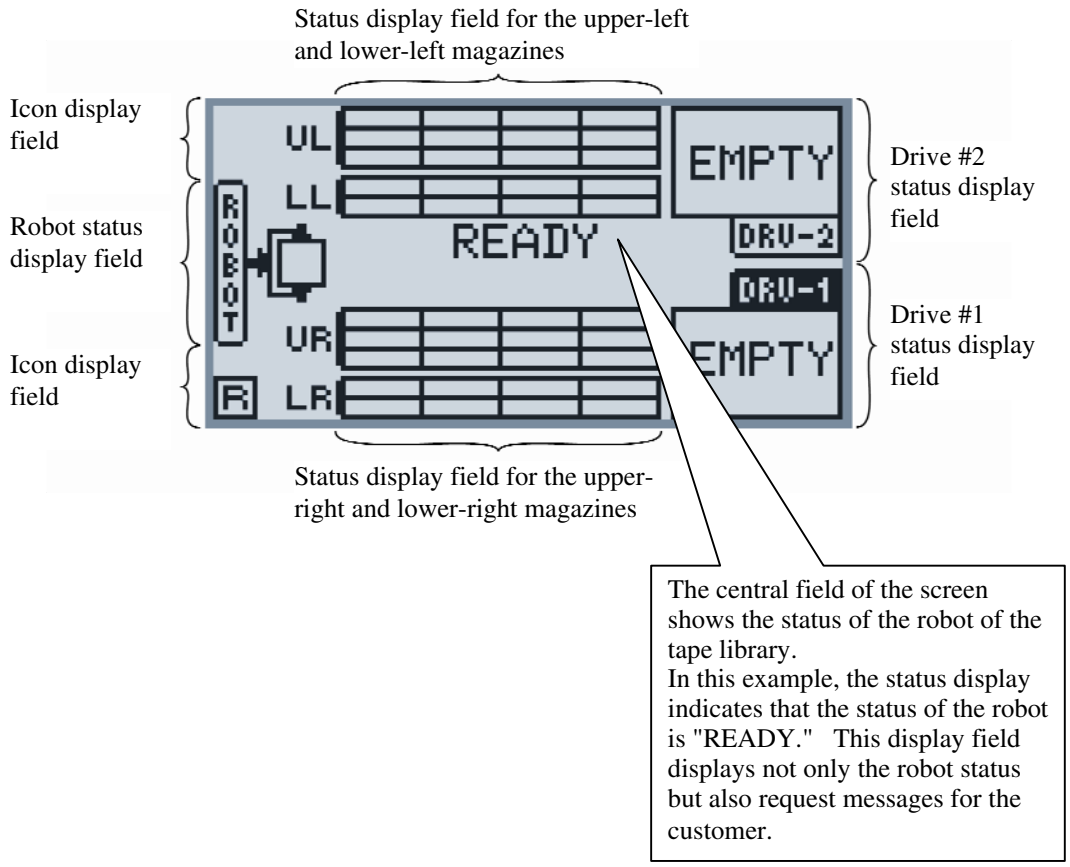


Figure 4.1 Status Display screen

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 Status Display screen

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 (communication with the host is disconnected).

(2) Magazine status display section

Indicates the status of the four magazines installed in the tape library.

Indicates the upper-left magazine.

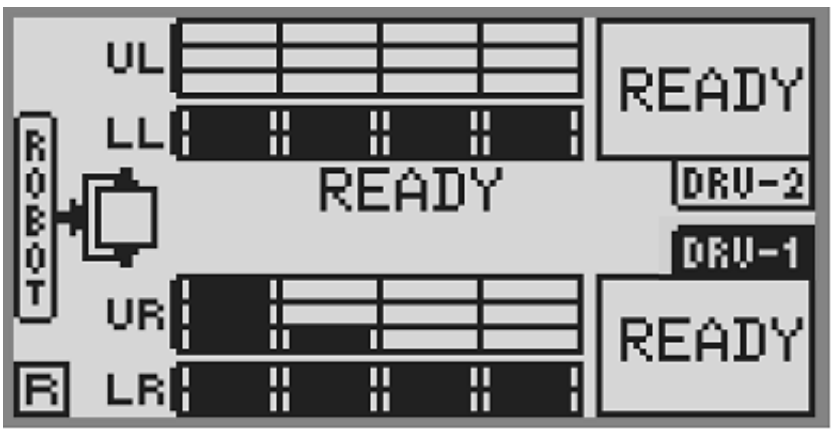
Indicates the lower-left magazine.

Indicates the upper-right magazine.

Indicates the lower-right magazine.

- If the magazine slot contains a tape cartridge, the slot is indicated in solid black.

  The screen below shows that lower-left (LL), upper-right (UR), and lower-right (LR) magazines contain cartridges.



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

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

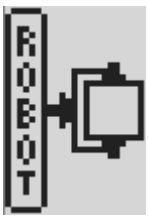
  Therefore, the tape library displays the message "PLEASE LOCK MAGAZINE" requesting the customer to lock the magazine (or insert one into the corresponding slot).

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.

(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

The center part of the operator panel displays the following character strings according to the operation that the robot performs.

Table 4.2 Robot status displayed in the center part of the operator panel (1/2)

Panel display	Explanation
INITIALIZE	The library is being initialized.
POSITION CHECK	The accessor position is being checked.
MAGAZINE CHECK	The magazine position is being checked.
INVENTORY	An inventory is being taken.
READY	The library is ready.
CLEANING...	The drive is being cleaned.
DIAGNOSIS	The accessor mechanism is being tested.
PLEASE LOCK MAGAZINE	Magazine insertion is requested.
PLEASE LOCK MAIL SLOT	Mail slot insertion is requested.
EXCHANGE CLEAN CART.	Cleaning cartridge replacement is requested. *ALARM LED ON
CLEAN DRIVE#1	DRIVE#1 cleaning is requested. *ALARM LED ON
CLEAN DRIVE#2	DRIVE#2 cleaning is requested. *ALARM LED ON
ENDURANCE COUNT OVER	The total number of accessor mechanism actions has reached the endurance count. *ALARM LED ON
DRIVE FAN ALARM	A fan alarm occurred in DRIVE#1 or DRIVE#2. *ALARM LED ON
POWER UNIT ALARM	A fan alarm occurred in the power supply. *ALARM LED ON
*** CHK *** CODE:[xxxx]	The library is in error state (xxxx is a CHK code). ERROR LED ON
MOVE SLOTxx -> SLOTxx	Moving from SLOTxx to SLOTxx

Table 4.2 Robot status displayed in the center part of the operator panel (2/2)

Panel display	Explanation
MOVE SLOTxx -> DRV#1	Moving from SLOTxx to DRIVE#1
MOVE SLOTxx -> DRV#2	Moving from SLOTxx to DRIVE#2
MOVE DRV#1 -> SLOTxx	Moving from DRIVE#1 to SLOTxx
MOVE DRV#1 -> DRV#1	Moving from DRIVE#1 to DRIVE#1
MOVE DRV#1 -> DRV#2	Moving from DRIVE#1 to DRIVE#2
MOVE DRV#2 -> SLOTxx	Moving from DRIVE#2 to SLOTxx
MOVE DRV#2 -> DRV#1	Moving from DRIVE#2 to DRIVE#1
MOVE DRV#2 -> DRV#2	Moving from DRIVE#2 to DRIVE#2
MOVE ROBOT -> SLOTxx	Moving from ROBOT to SLOTxx
MOVE ROBOT -> DRV#1	Moving from ROBOT to DRIVE#1
MOVE ROBOT -> DRV#2	Moving from ROBOT to DRIVE#2

(4) Status display of tape drive

Indicates the status of tape drive installed in the library.

- The indication below indicates that the tape drive status is "READY" or "EMPTY".

Shows the status of drive #2.

This example shows that drive #2 is ready.

Shows the status of drive #1.

This example shows that drive #1 is empty.

The robot in the tape library is controlled via a drive. You can check which drive is used, according to the display as follows:

The robot is not controlled via this drive.

("DRV-1" is displayed with black characters on a white background.)

The robot is controlled via this drive.
("DRV-1" is displayed with white characters on a black background.)

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 on operator panel

Indication	Description
EMPTY	Indicates that no tape cartridge is inserted into the tape drive.
EJECT	Indicates that a 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 Appendix D for error codes for the drive.
CLEAN	Indicates that cleaning of the drive is in progress.
------	Indicates that the drive is not mounted.

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

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 settings of the tape library or tape drive are changed, the following character strings may be displayed in addition to the clock.

- REBOOT : Indicates that either rebooting the library unit or powering the unit off and then on again is required for enabling this setting.
- RESET! : Indicates that either resetting the drive or powering the unit off and then on again is required for enabling this setting.

(4) Menu item

Indicates the menu item. For details, see the menu trees in Section 4.2.3, "Main menu."

(5) Explanation of button

This field shows the functions of buttons used to select or set menu items on-screen. For details, see Section 1.1.1.4.

(6) Scroll bar

Appears when the number of menu items overflows the screen.

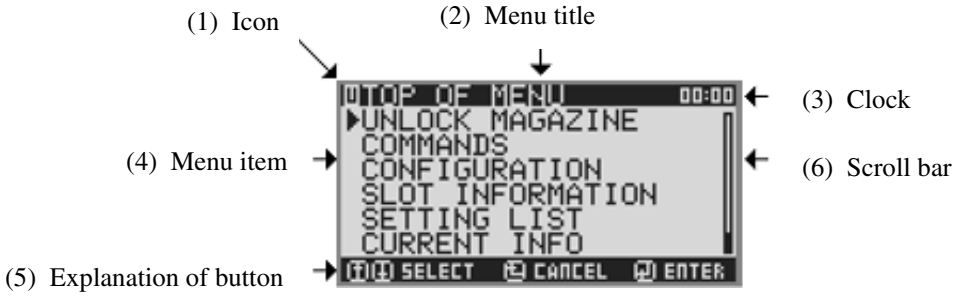


Figure 4.2 [Menu screen] window

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 (communication with the host is disconnected).

4.2.3 Main menu

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

(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
UPPER RIGHT	Displays the cartridges stored in the upper right magazine.
UPPER LEFT	Displays the cartridges stored in the upper left magazine.
LOWER RIGHT	Displays the cartridges stored in the lower right magazine.
LOWER LEFT	Displays the cartridges stored in the lower left magazine.
DRIVE#1	Displays the cartridges stored in drive #1.
DRIVE#2	Displays the cartridges stored in drive #2.
PICKER	Displays the cartridge held by the robot.

(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
LIBRARY		MODEL TYPE / USER SLOT / MAIL BOX / CLEANING SLOT / LIBRARY MODE / SLOT ORIGIN / AUTO LOAD MODE / POWER SAVE / INIT. ELEMENT / MODE SENSE / UNIT ATT. MODE / NEGOTIATION / TAPE ALERT / RECOVER ERROR / STARTUP MODE / ABORT MODE / FAST LOAD MODE / BARCODE READER / AUTO CLEANING / AUTO LOGIN / BACKLIGHT / BUZZER / DATE / TIME / GMT
NETWORK		LINK SPEED /DHCP / IP ADDRESS / SUBNET MASK / GATEWAY / DNS / SNTP / MAC ADDRESS
DRIVE	FC	MODEL / TYPE / LOOP ID / TOPOLOGY / LINK SPEED
	SCSI	MODEL / TYPE / SCSI ID

(6) CURRENT INFO Menu

Use this menu to check the current settings related to the network and the drives.

Submenu item		Description
NETWORK		IP ADDRESS / GATEWAY
DRIVE	FC	PORT TYPE / TOPOLOGY / LINK SPEED / N_PORT ID
	SCSI	BUS MODE / SCSI ID

(7) LOGOUT Menu

Returns to LOGIN menu.

(8) REVISION Menu

Displays revisions of firmware in the tape library and drives that are connected to the tape library.

Table 4.5 Items displayed in the REVISION Menu

Submenu items		Description
LIBRARY		VENDOR ID / PRODUCT ID / FW REV. / SERIAL NO. / MAC ADDRESS
DRIVE	FC	VENDOR ID / PRODUCT ID / FW REV. / SERIAL NO. / WWNODENAME / WWPORTNAME
	SCSI	VENDOR ID / PRODUCT ID / FW REV. / SERIAL NO.

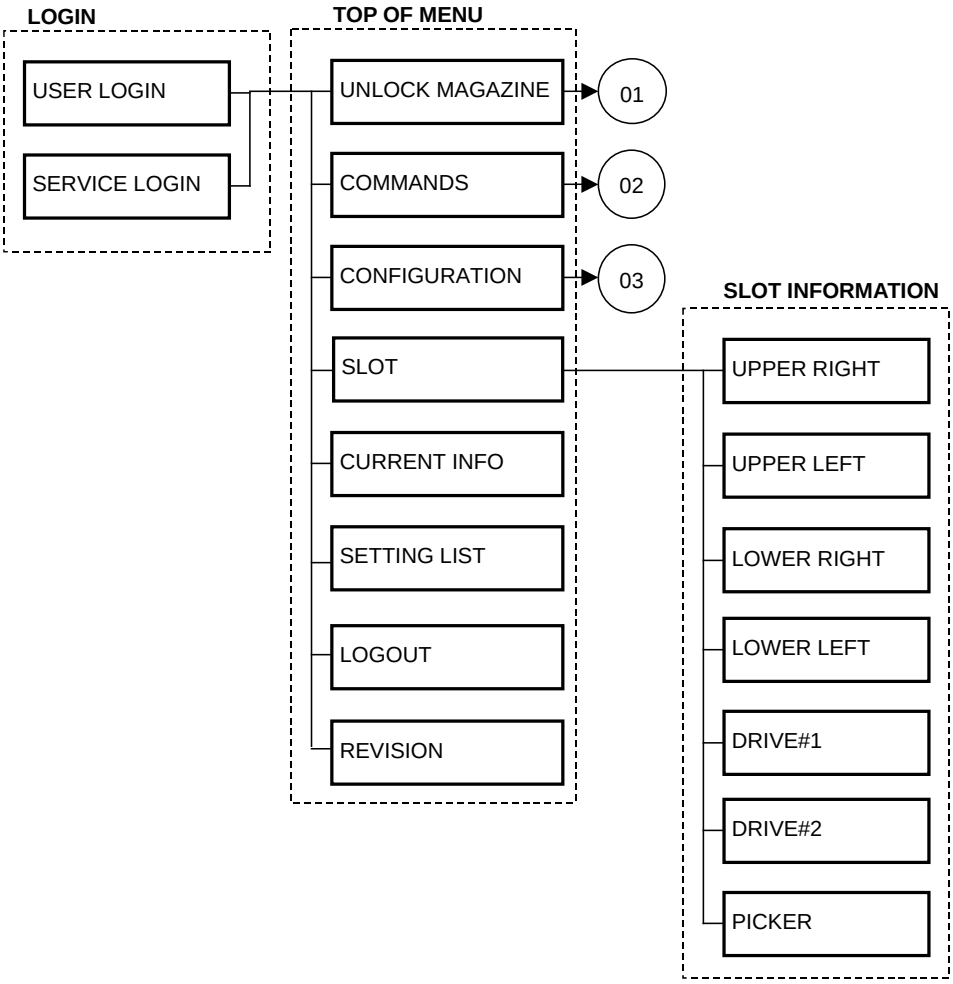


Figure 4.3 Menu tree of TOP OF MENU

01 UNLOCK MAGAZINE Submenu

Submenu item	Description
MAIL BOX	Unlocks the mailbox. This function is used to enable loading the mailbox with a cartridge or unloading a cartridge from the mailbox. (See Section 5.1.4.)
ALL MAGAZINES	Unlock all the magazines. Unlocking the magazine allows you to take all the magazines out of the library. (See Section 5.3.1).
SELECT MAGAZINE	Allows you to select a magazine you want to unlock. When selected, this menu shows UPPER RIGHT, UPPER LEFT, LOWER RIGHT, and LOWER LEFT for the selection of a magazine to unlock. (See Section 5.3.1.)

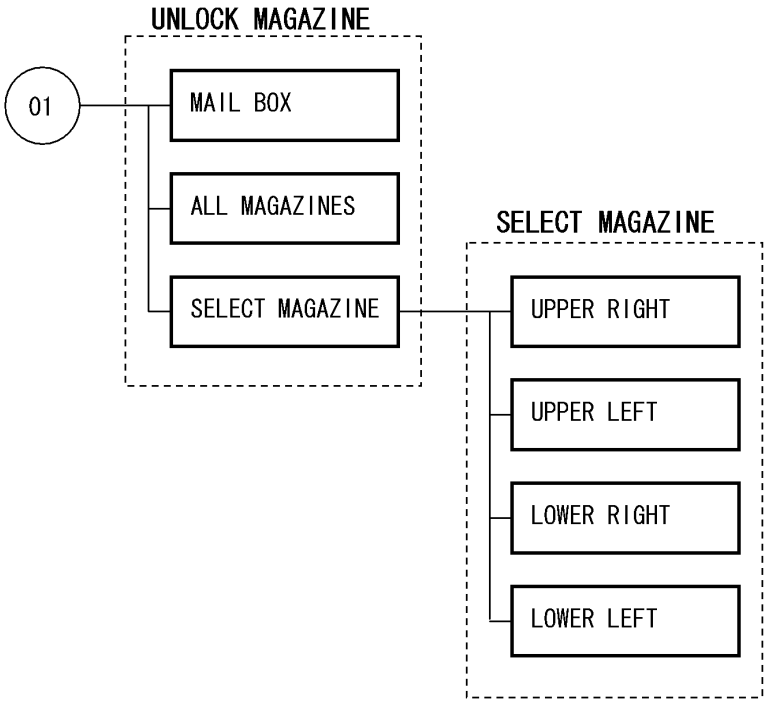


Figure 4.4 Menu tree of UNLOCK MAGAZINE

02 COMMANDS Submenus

Submenu item	Description
MOVE TAPE	You can move a cartridge from one slot to another slot in the tape library by specifying a source slot type and number and a destination slot type and number.
UNLOAD DRIVE	You can unload a cartridge from a drive when the cartridge is loaded in the drive.
CLEAN DRIVE	You can clean a drive. To clean a drive, a cleaning cartridge must be pre-loaded in the tape library. Specify the slot number that contains the cleaning cartridge and the number of the drive you want to clean. (See Section 8.1.3.1.)
ALARM LED OFF	The Alarm indicator is turned on when a failure occurs such as at a request for tape drive cleaning or cleaning cartridge replacement. In this case, you can turn off the Alarm indicator after eliminating the failure cause or error status.
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	You can reboot the tape library. You can select the online or offline status of the rebooted tape library before rebooting the tape library. (See Section 5.6.)

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

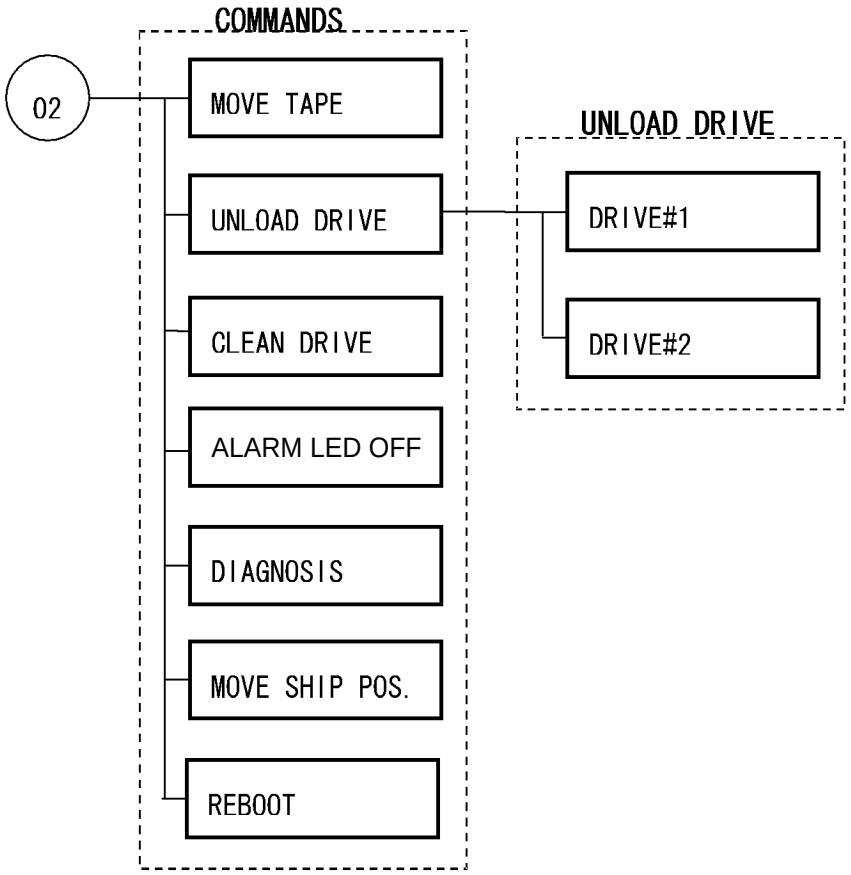


Figure 4.5 Menu tree of COMMANDS

03 CONFIGURATION Submenus

Submenu item	Description
LIBRARY SETTING	Use this menu to configure the tape library.
DRIVE SETTING	Use this menu when providing various drive settings.
LIBRARY OPTION	Use this menu when setting barcode reader.
PANNEL SETTING	Use this menu when providing various settings of operator panel.
NETWORK SETTING	Use this menu to set various network-related items.
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 [Fibre Channel model]

Submenu item	Default	Description
UPDATE FIRMWARE	-	(cannot be used)
CONTROL PATH	Drive#1: ON Drive#2: OFF	Used to select the drive through which the robot of the tape library is to be controlled. (This setting must not be changed.)
POINT TO POINT	Drive#1: ON Drive#2: ON	Used for specifying the topology. Set this item to ON for the drive to be used in Point to Point mode.
LOOP	Drive#1: OFF Drive#2: OFF	Used for specifying the topology. Set this item to ON for the drive to be used in Loop mode.
LOOP ID	Drive#1: 001 Drive#2: 002	Used to specify a 3-digit loop ID for the drive to be used in Loop mode. A loop ID from 000 to 125 can be specified.
LINK SPEED	Drive#1: 04 Drive#2: 04	Used to specify the link speed of each drive. 01: 1Gbps 02: 2Gbps 04: 4Gbps
DRIVE RESET	-	Used to reset the drive and enable the fibre channel setting.

- DRIVE SETTING Menu [SCSI model]

Submenu item	Default	Description
UPDATE FIRMWARE	-	(cannot be used)
CONTROL PATH	Drive#1: ON Drive#2: OFF	Used to select the drive through which the robot of the tape library is to be controlled. (This setting must not be changed.)
SCSI ID	Drive#1: 01 Drive#2: 02	Used to specify the SCSI ID of each drive. (This setting must not be changed.) Note: "Drive #2: 02" is set only if drive #2 is mounted.
DRIVE RESET	-	Used to reset the drive and enable the SCSI setting.

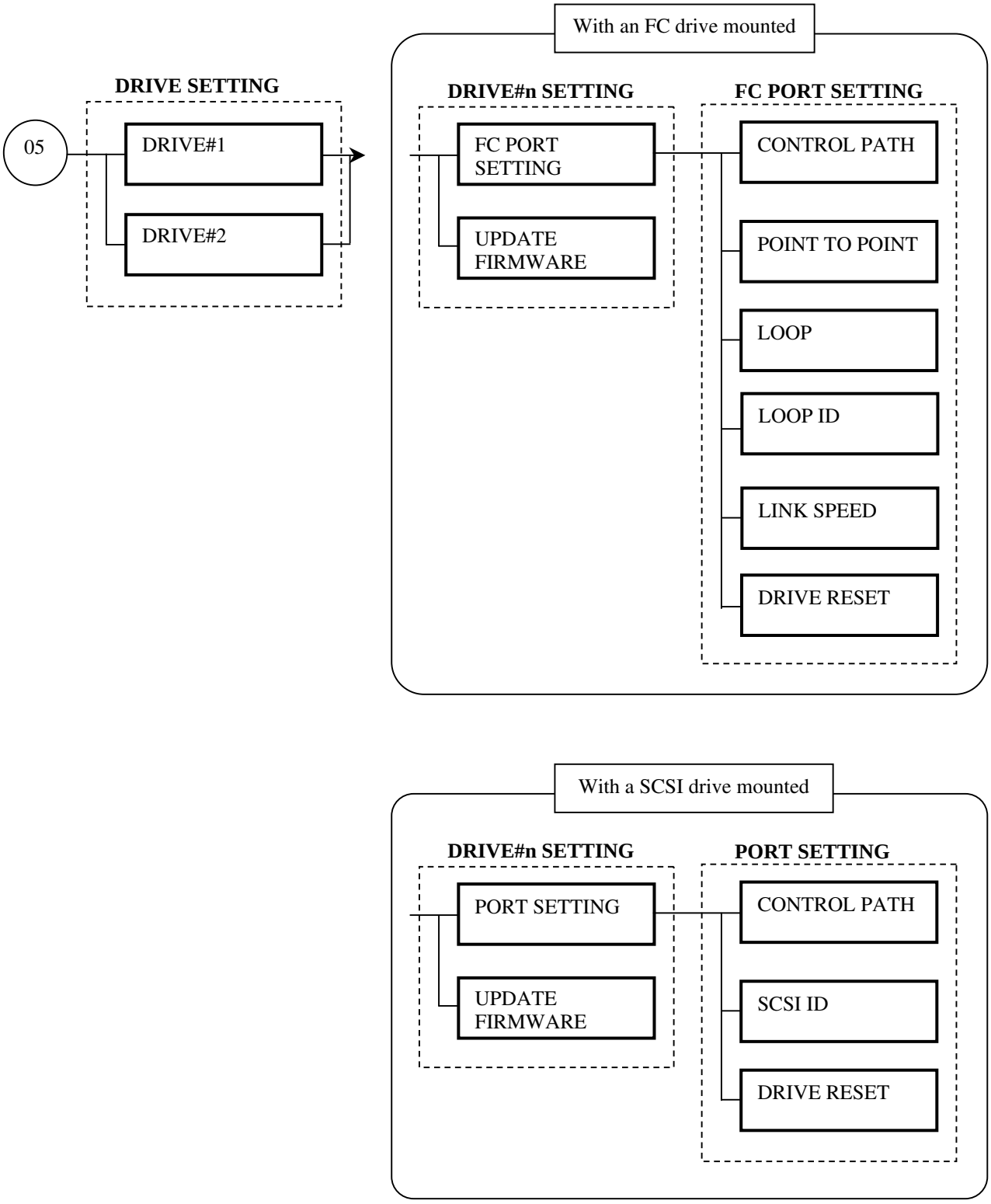


Figure 4.6 MENU tree of DRIVE SETTING

- LIBRARY 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)

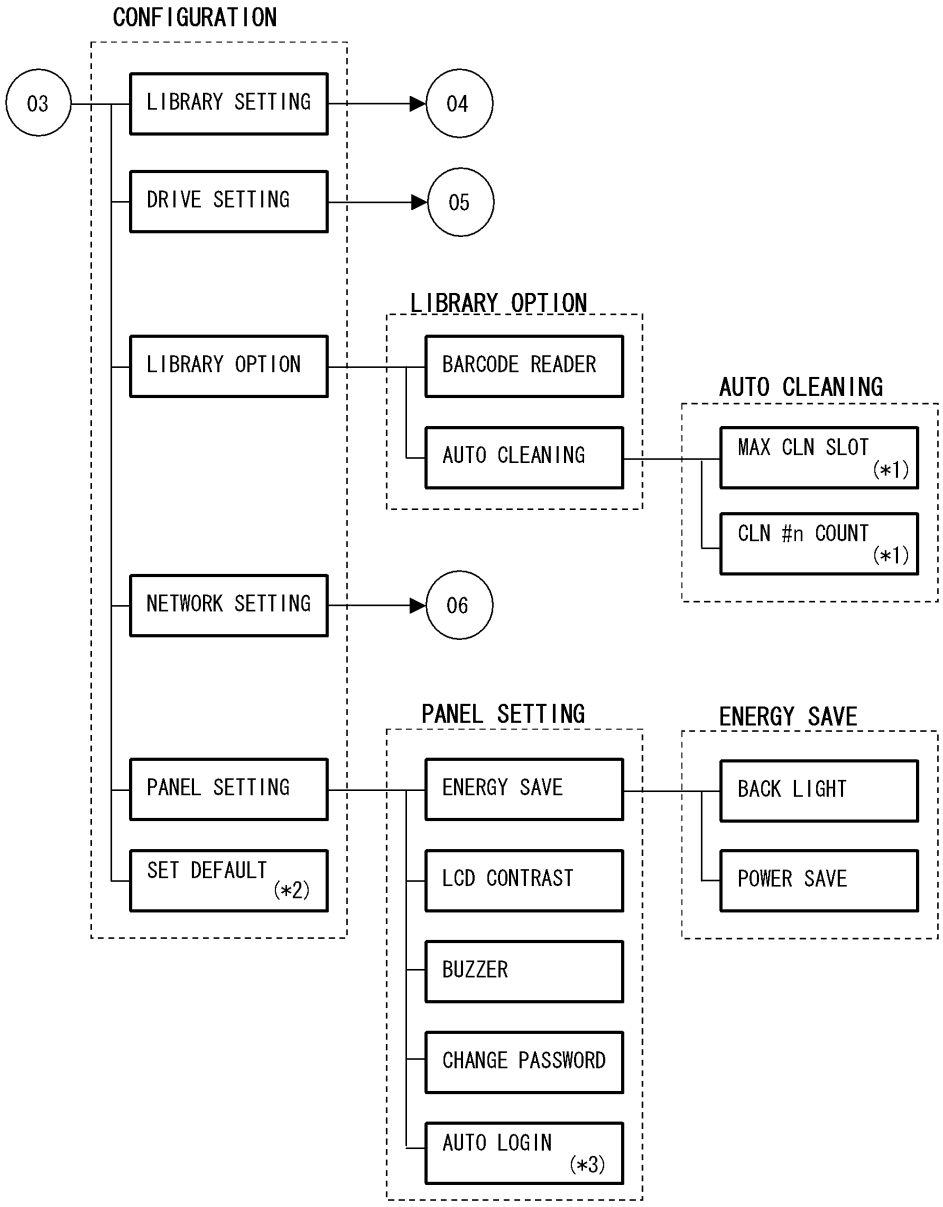
⚠ Caution

Equipment damage
The AUTO CLEANING feature always set to OFF (disabled).
ON (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. The value between 0 and 127 is available.
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 when AUTO CLEANING is set to ON. (cannot be used)

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

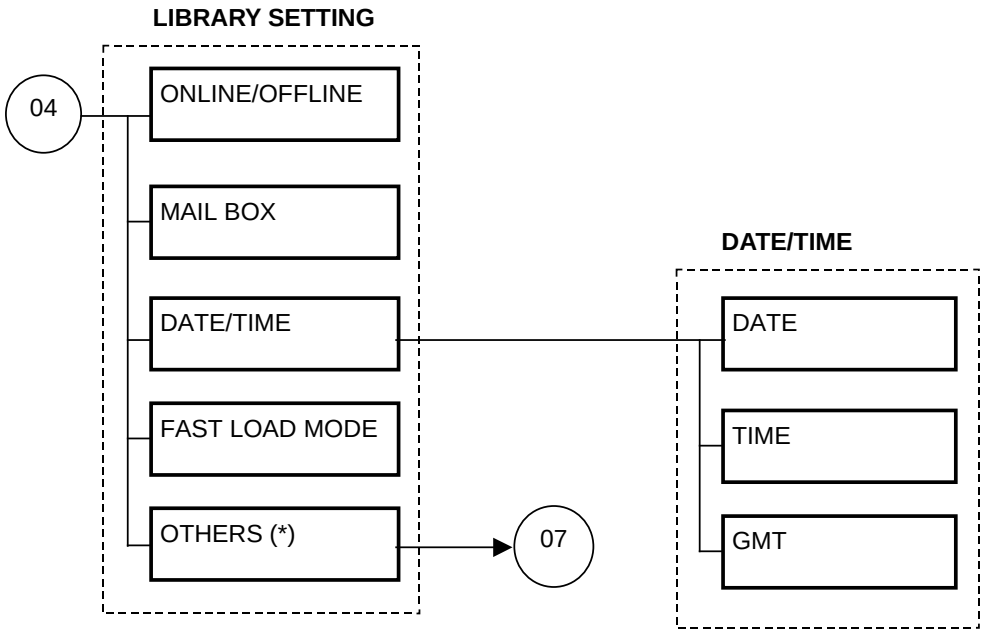
*3 This submenu item is displayed only for user login.

Figure 4.7 CONFIGURATION menu tree

- LIBRARY 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 Section 5.1.3)
MAIL BOX	ON	Set to use or not to use the mailbox (mail slot). (See Section 5.1.4.)
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: +9:00 (Japan) If it is necessary to change the DATE/TIME setting, change the setting to an appropriate one by referring to Appendix G, "World Time Zones."
FAST LOAD MODE	OFF	Adjust the accessor operation while loading the cartridge. (Do not change)

* 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 LIBRARY SETTING

- NETWORK SETTING Menu

Submenu item	Default	Description
LINK SPEED	AUTO	Set the network link speed. To use the automatic setting, select "AUTO."
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 tape 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	The SNTP server can be used. In order to use the SNTP server, change this setting to ON and set the IP address.

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

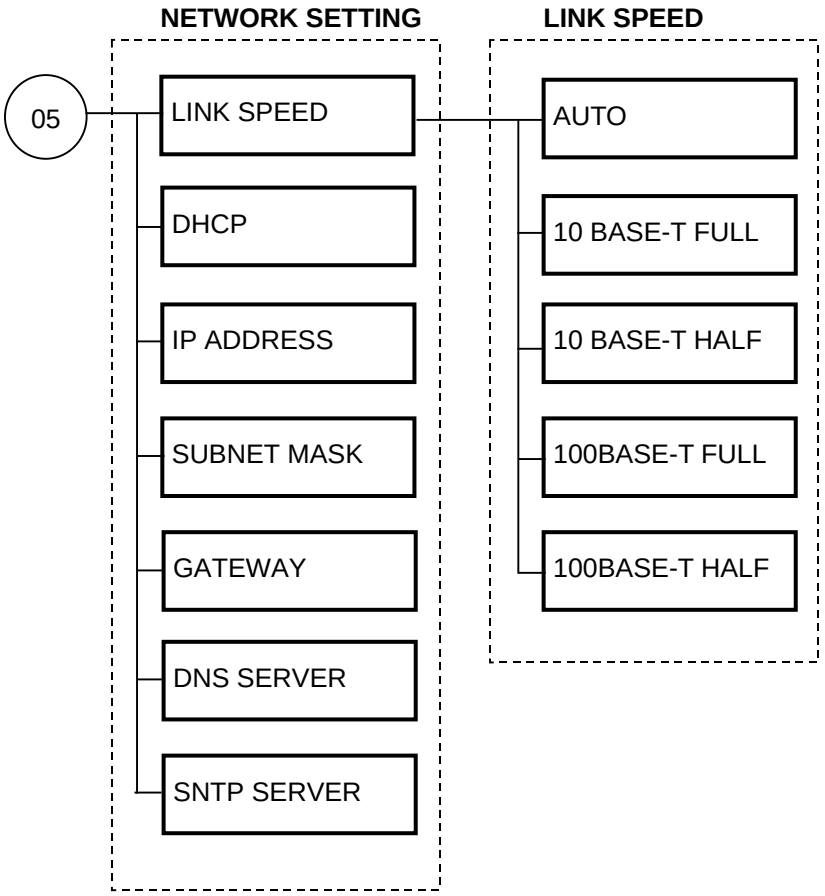
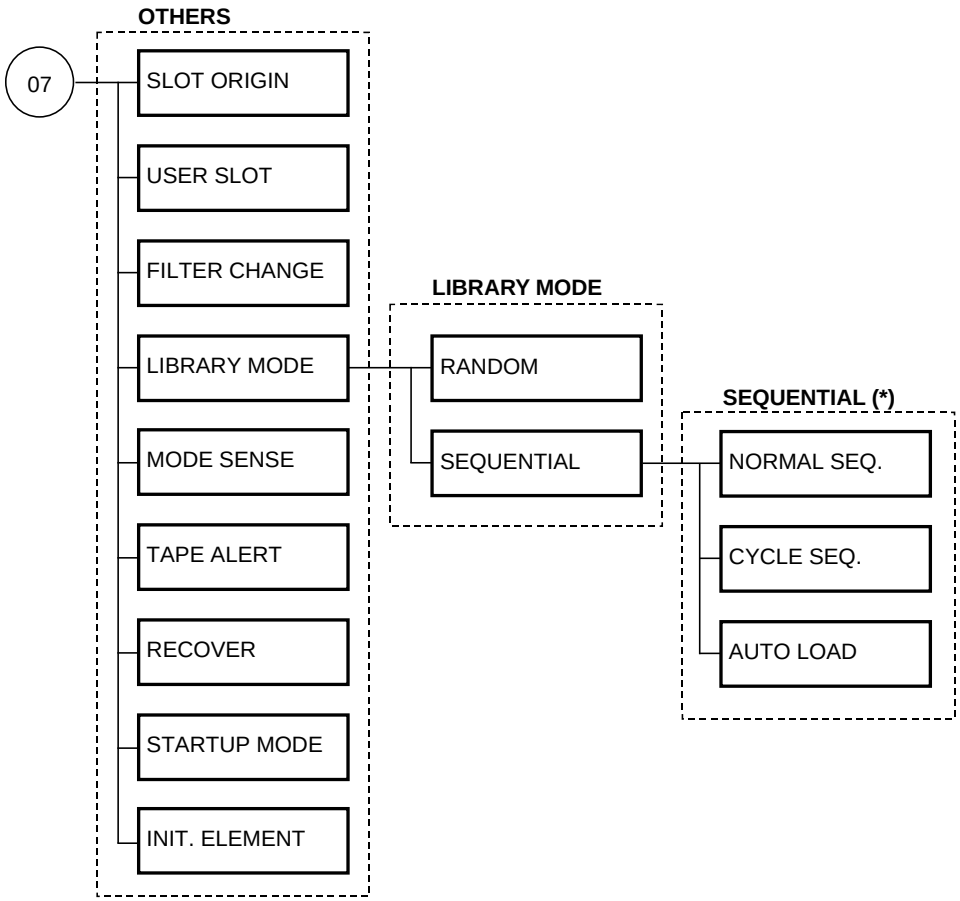


Figure 4.9 Menu tree of NETWORK SETTING

- OTHERS Menu

Submenu item	Default	Description
SLOT ORIGIN	1	Set the Origin number of the slot address to "0" or "1".
USER SLOT	38	You can specify the number of slots (32 to 40 slots) logically. When the Mailbox setting is ON (Enabled), 30 to 38 slots can be specified for the number of slots. For information on the setting method, see Section 5.1.5. Some backup software products allow you to select product grades and optional products according to the number of slots used. With this menu item, you can specify the number of slots that can be used logically according to the product configuration.
FILTER CHANGE	–	You can unlock all magazines when changing a magazine filter.
LIBRARY 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)



* Displayed only when SEQUENTIAL is set to ON.

Figure 4.10 Menu tree of OTHERS

4.2.4 SLOT INFORMATION menu screen

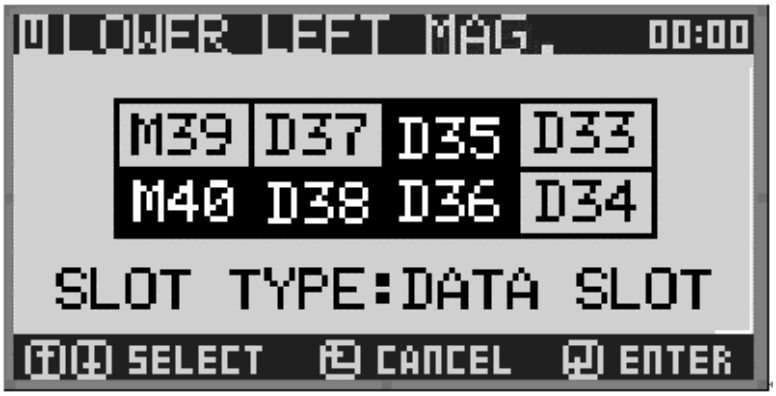
The SLOT INFORMATION menu screen enables you to check the information on the tape cartridges stored in the tape library. This section explains how to check the tape cartridge information with the SLOT INFORMATION menu screen.

1) Select [SLOT INFORMATION] from [TOP OF MENU].

2) When the screen below appears, select the magazine or drive for which tape cartridge information is to be checked.

3) In this example, "LOWER LEFT" (lower-left magazine) is selected as the magazine on which tape cartridge information is to be checked.

The information shown in the screen below indicates that slots #33 to #38 are used as data slots and slots #39 and #40 are used as mail slots.



Indications for individual slots mean the following:

- Black characters against a white background: Unused slot (D33, D34, D37, or M39)
- White characters against a black background: Slot containing a tape cartridge (D35, D36, D38, or M40)
- Blinking characters: Cursor position

4) Move the cursor to a slot indicated by the "white characters against a black background," and then select the slot. When the tape cartridge in the slot carries a barcode label, the name of the label is displayed as shown in the screen below.

   To return to the previous screen, click the button.

5) In the screen shown in step 3), move the cursor to a slot indicated by the "black characters against a white background," and then select the slot. Because the selected slot does not contain a tape cartridge, the display on the screen is as follows:

Chapter 5 Configuring the LT230

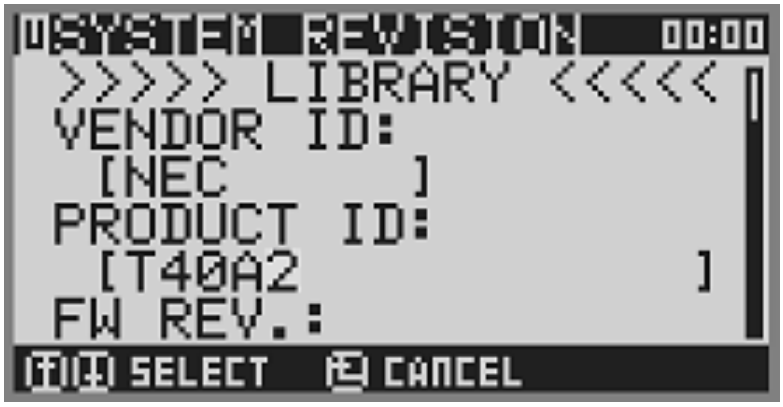
This chapter explains such operating procedures required to operate the tape library as those for viewing configuration data, switching the tape library between online and offline modes, and inserting and removing the magazine and tape cartridges.

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 [LOGIN] → [USER LOGIN].
2) Select [TOP OF MENU] → [REVISION].
3) 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 [TOP OF MENU] → [SETTING LIST].

3) The configuration information of the tape 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.
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

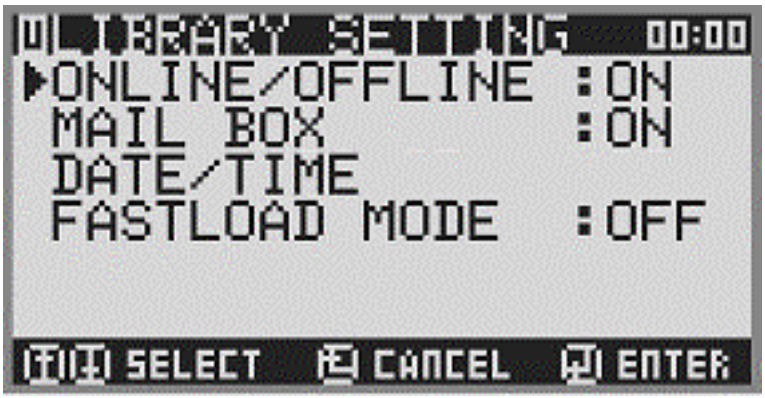
The message that appears after the new password is entered and before a transition to the PANEL SETTING screen is either "PASSWORD CHANGED" or "PASSWORD ERROR." Since the "PASSWORD CHANGED" or "PASSWORD ERROR" message appears for only one second, be sure not to miss it.

5.1.3 Switching ONLINE/OFFLINE

The library normally starts with the online mode. Change to offline mode if you want to operate the tape 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 [LIBRARY SETTING].
4) Select [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.

⚠ Caution

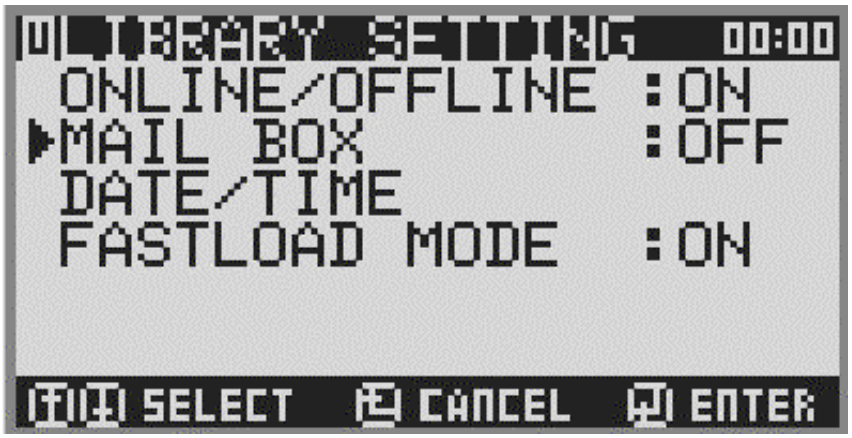
On the Fibre Channel Model, switching the tape library from online mode to offline mode by executing an operation from the operator panel or from a remote panel while a channel is linked disconnects the channel link. If this occurs while the tape library is being operated with the backup software, the running job terminates abnormally.

Before switching the tape library from online mode to offline mode during maintenance or for other purposes, confirm the status of the tape library and the operation on the host.

5.1.4 Setting the Mailbox

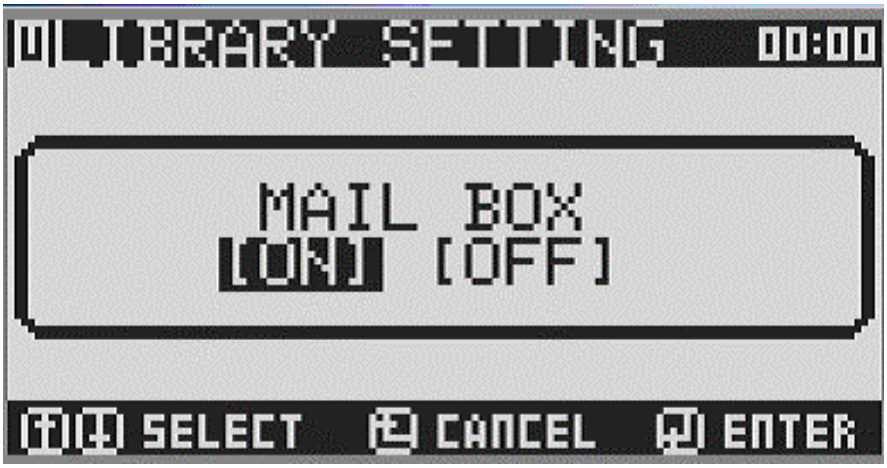
You can use the two slots (slots #39 and #40) on the front of magazine #4 (lower-left magazine) as mailboxes (mail slots). This section explains how to set a mailbox.

1) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.
2) Select [CONFIGURATION] from [TOP OF MENU].
3) Select [LIBRARY SETTING] from [CONFIGURATION].
4) Select [MAIL BOX] from [LIBRARY SETTING].



5) Selecting [MAIL BOX] displays the following message.

   Select [ON] to activate the mailbox.



6) Because setting the mailbox changes the tape library status, a message prompting you to reboot the tape library is displayed when you attempt to exit the LIBRARY SETTING window.

Click [YES].

The tape library is rebooted. After rebooting, the mailbox can be used.

5.1.5 Changing the User Slot Count

Depending on the tape library settings, the slot count can be logically changed. In this section, the slot count setting method is explained.

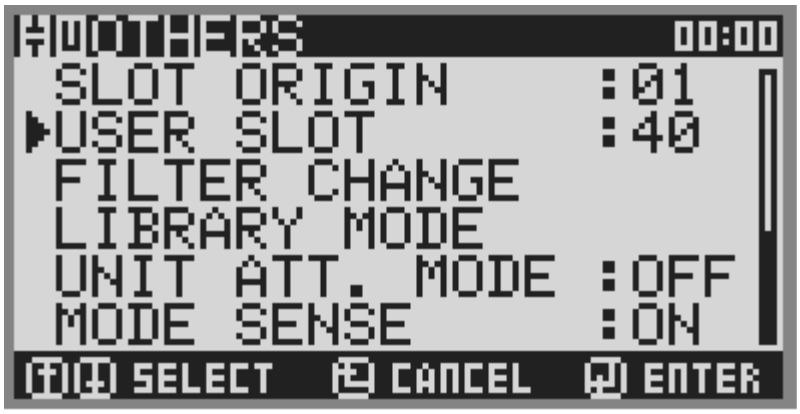
In the following example, the slot count is changed from 40 to 32:

1) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.

2) Switch the tape library from online to offline. For details, see [Switching ONLINE/OFFLINE].

3) Selecting [OFFLINE] displays the menu below. Select [OTHERS] from this menu.

4) Selecting [OTHERS] displays the submenu below. Select [USER SLOT] from this submenu.



5) Here, make the relevant two-digit entry.

* If the mailbox is enabled, a slot count ranging from 30 to 38 can be selected.

5.2 Drive Setting of the Fibre Channel Model

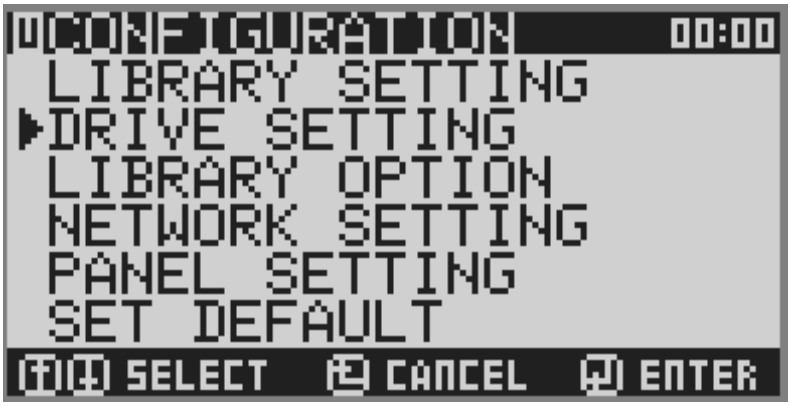
This Section describes Fibre Channel settings for the robot and tape drive sections of the Fibre Channel model.

Note that the communication between the tape library of the Fibre Channel model and the host is temporarily disabled during this setting.

5.2.1 Topology setting

1) Select [CONFIGURATION] from [TOP OF MENU].

2) Select [DRIVE SETTING] from [CONFIGURATION].



3) Select [DRIVE#1] from [DRIVE SETTING] when setting for tape drive #1.

   * Select [DRIVE#2] when setting for tape drive #2.

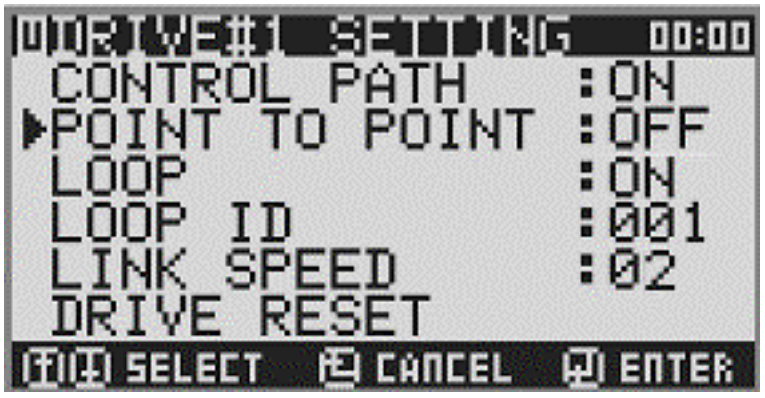
4) Select [FC SETTING] from [DRIVE#1 SETTING].

   * Select [DRIVE#2 SETTING] when drive #2 is selected.

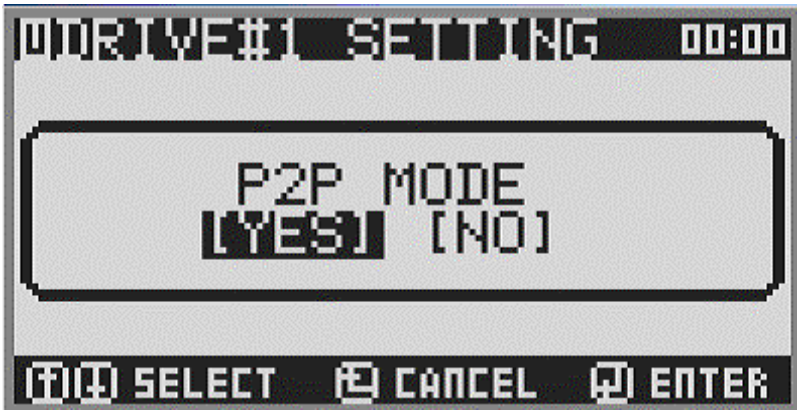
5) Here, set the topology of drive #1.

   To set the "point to point" topology, set [POINT TO POINT] to [ON].

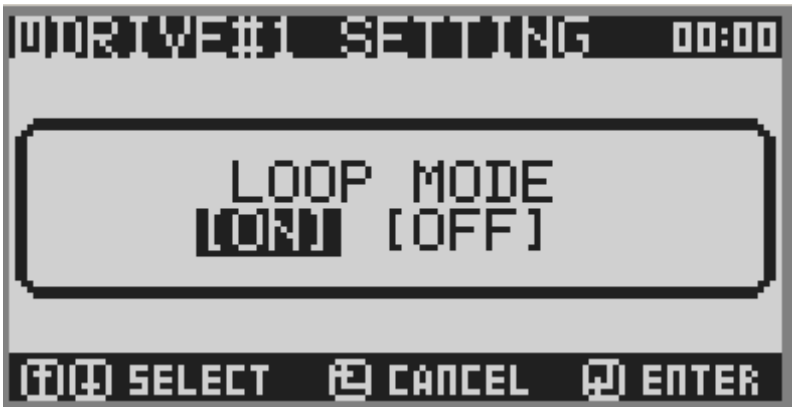
   To set the "loop" topology, set [LOOP] to [ON].



6) When you select [POINT TO POINT], the following screen appears. Select [ON].



When you select [LOOP], the following screen appears. Select [ON].

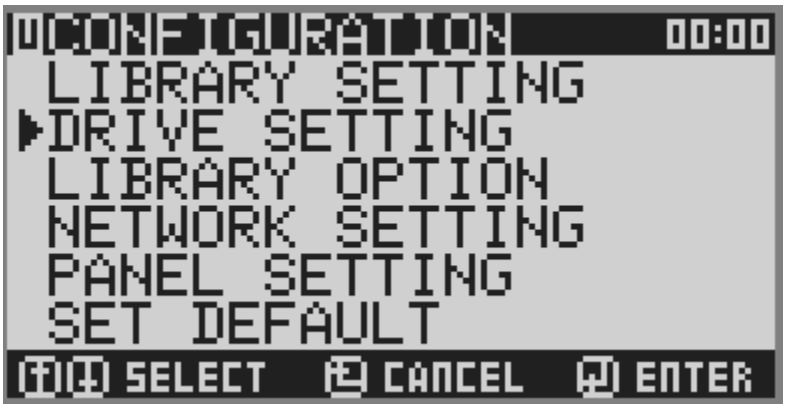


7) After a topology is set, the following message appears. Select [OK]. To enable the Fibre Channel setting, execute DRIVE RESET from the menu or turn off the power to the tape library and then turn it on again.

5.2.2 Loop ID setting

1) Select [CONFIGURATION] from [TOP OF MENU].

2) Select [DRIVE SETTING] from [CONFIGURATION].



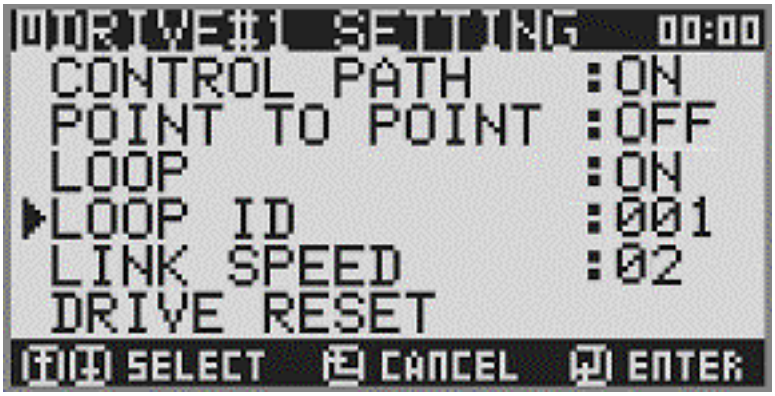
3) Select [DRIVE#1] from [DRIVE SETTING] when setting for tape drive #1.

* Select [DRIVE#2] when setting for tape drive #2.

4) Select [FC SETTING] from [DRIVE#1 SETTING].

* Select [FC SETTING] from [DRIVE#2 SETTING] when drive #2 is selected.

5) Here, set the loop ID of drive #1. Select [LOOP ID].



6) Here, enter three digits of the loop ID of drive #1.

Select each digit by using the ↑ or ↓ button and determine it by using the ↵ button. If the wrong digit is selected, you can undo the selection by using the ↩ button.

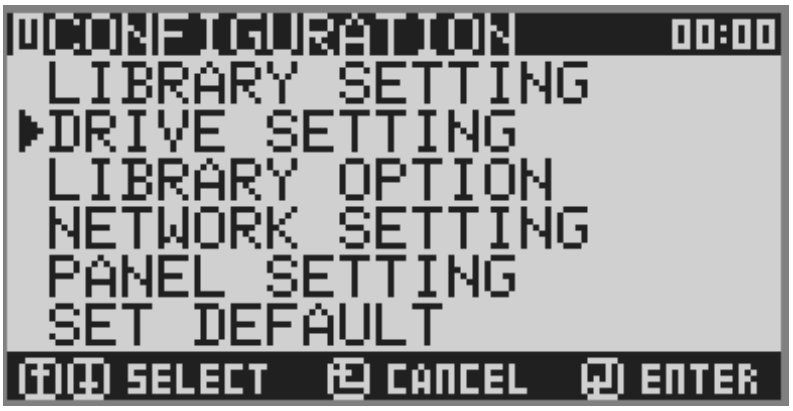
* Loop IDs of 000 to 125 are available.

7) After three digits of the loop ID of drive #1 are entered, the following message appears. Select [OK]. To enable the Fibre Channel setting, execute DRIVE RESET from the menu or turn off the power to the tape library and then turn it on again.

5.2.3 Link speed setting

1) Select [CONFIGURATION] from [TOP OF MENU].

2) Select [DRIVE SETTING] from [CONFIGURATION].



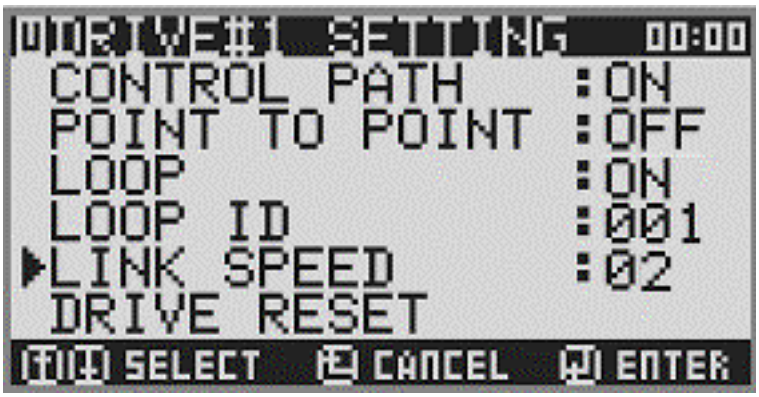
3) Select [DRIVE#1] from [DRIVE SETTING] when setting for tape drive #1.

   * Select [DRIVE#2] when setting for tape drive #2.

4) Select [FC SETTING] from [DRIVE#1 SETTING].

   * Select [FC SETTING] from [DRIVE#2 SETTING] when drive #2 is selected at 3).

5) Here, set the link speed of drive #1. Select [LINK SPEED].



6) Here, select 1 GB/SEC, 2 GB/SEC, or 4 GB/SEC for the link speed of drive #1.

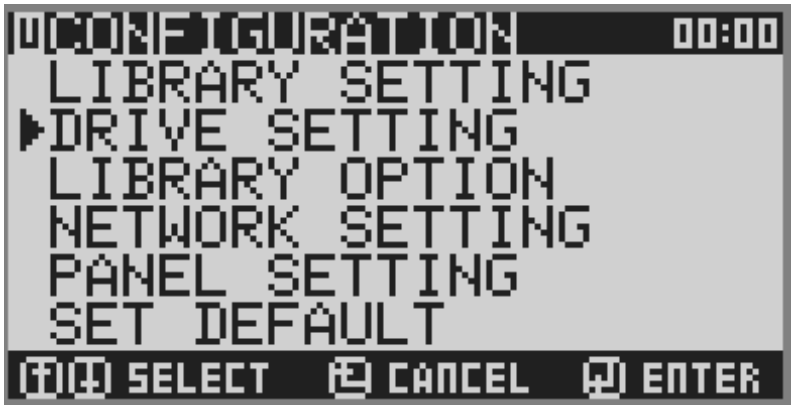
7) After the link speed of the drive is set, the following message appears. Select [OK]. To enable the Fibre Channel setting, execute DRIVE RESET from the menu or turn off the power to the tape library and then turn it on again.

5.2.4 Drive resetting

Drive resetting is required to enable Fibre Channel settings.

1) Select [CONFIGURATION] from [TOP OF MENU].

2) Select [DRIVE SETTING] from [CONFIGURATION].



3) Select [DRIVE#1] from [DRIVE SETTING] when setting for tape drive #1.

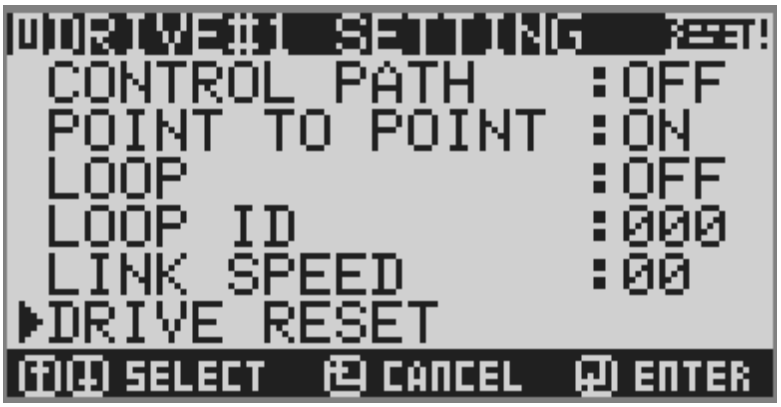
   * Select [DRIVE#2] when setting for tape drive #2.

4) Select [FC SETTING] from [DRIVE#1 SETTING].

* The screen shows [DRIVE#2 SETTING] when DRIVE#2 is selected at 3).

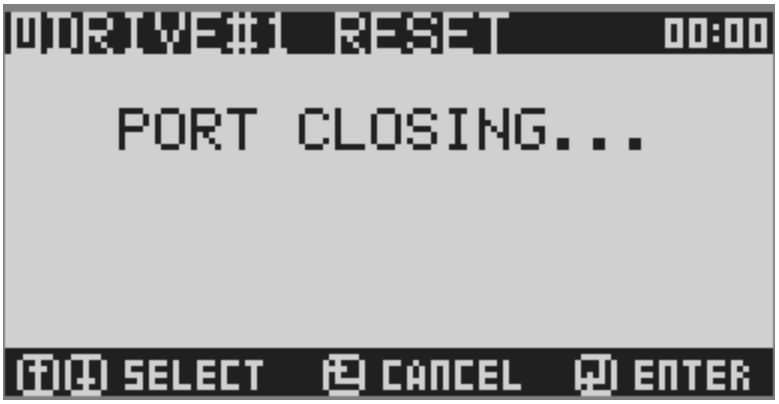
5) Here, select [DRIVE RESET].

* The screen shows [DRIVE#2 SETTING] when DRIVE#2 is selected at 3).



6) The following message appears for confirmation. Select [YES].

7) The following messages appear in the order given and the drive is reset:



5.3 Removing and Inserting Magazines

5.3.1 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:

The backup software prohibits the operator panel from being used to remove a magazine while the  icon is displayed on the status display screen on the operator panel. To remove a magazine in such cases, cancel the removal-prohibited status of the backup software, and then remove the magazine by using the operator panel.

For information on backup software operations, see the relevant software manual. (See Section 4.2.1, "Status display screen.")

Caution

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

Caution

Malfunction
If the magazines in the tape library have been removed from it, the robot will not work. Be sure to return a magazine after it has been removed, or load another magazine.

- **Removing all magazines at a time**

  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**

  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].

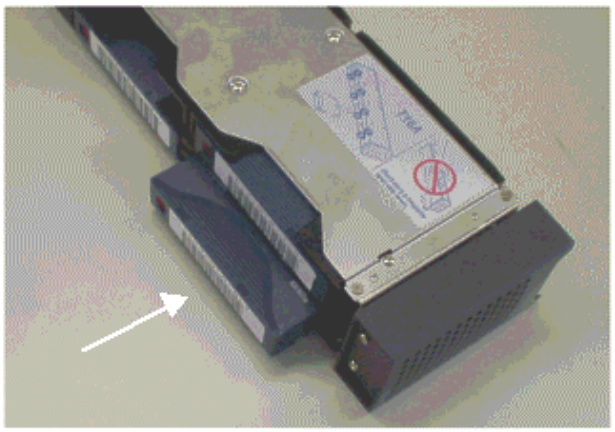
  2) The following screen appears when you select [SELECT MAGAZINE].

     Select the magazine you want to take out.

5.3.2 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 bottom (the side with the reel hub) faces down.
   - The barcode label faces the front.
   - **The cartridge is fully inserted into the slot.**

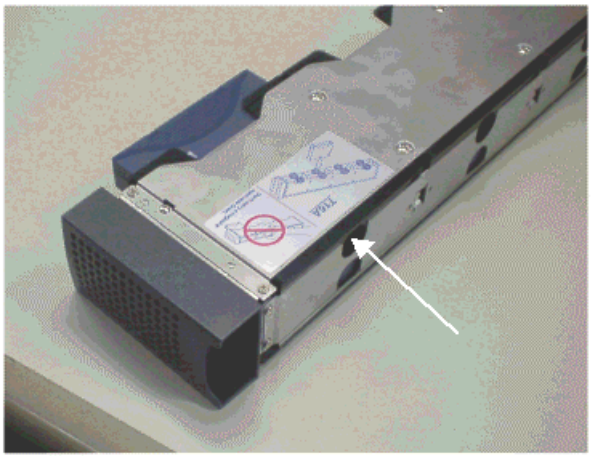


Caution

Equipment damage or Malfunction
If the orientation of the cartridge is incorrect, or the insertion is incomplete, the tape library will not start. An error message may be displayed or the hand or cartridge may be damaged.

5.3.3 Removing cartridge from magazine

1) Remove the cartridge from the hole on the rear of the magazine by pushing the cartridge with your finger. You can remove the cartridges from the magazine slot.



5.4 Inserting Cartridge

The backup software prohibits the operator panel from being used to remove a magazine while the P icon is displayed on the status display screen on the operator panel. To remove a magazine in such cases, cancel the removal-prohibited status of the backup software, and then remove the magazine by using the operator panel.

For information on backup software operations, see the relevant software manual. (See Section 4.2.1, "Status display screen.")

5.4.1 Inserting a cartridge into a mail slot

1) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.
2) Select [UNLOCK MAGAZINE] and then click [ENTER].

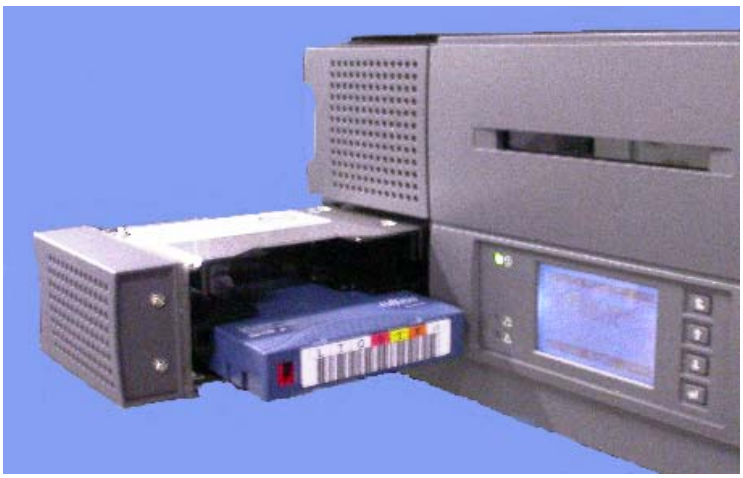
3) Select [MAIL BOX] and then click [ENTER].

   A magazine for the mailbox is unlocked and the mailbox opens.

⚠ Caution

When the mailbox opens, 20 seconds are counted down on the operator panel. Be sure to close the mailbox within 20 seconds. If the tape library receives a command from the host while the mailbox is left open for 20 seconds or longer, the buzzer beeps to alert the user.

4) Insert a cartridge into the mailbox.



Note: Make sure that the cartridge hub is facing downward and the cartridge label is facing you when inserting the cartridge into the mail slot.

5) Close the mailbox.

The accessor checks whether the cartridge is normally set in the slot of the mailbox. If any problem occurs, the accessor shows a related error message on the operator panel.

Note: If an error message is displayed on the operator panel, set the cartridge correctly again or remove the cartridge from the mailbox and close the mailbox.

5.4.2 Inserting cartridge into drive

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.

5.4.2.1 Inserting a cartridge from a mail slot into a drive

This method moves a cartridge from a mail slot to a drive by operating the operator panel. For information on the method of inserting a cartridge into the mail slot, see Section 5.4.1.

Here we explain a method of moving a cartridge using an example of moving a cartridge from slot #2 into drive #2.

1) Stop backup software services from the server console.
2) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.
3) Select [MOVE TAPE] from [COMMANDS].

   The screen below for selecting a source slot and a destination slot appears.

4) Select [SOURCE SLOT] and change the slot type to [MAIL SLOT].

   To move a tape cartridge stored in a magazine slot, select [SLOT] and then specify the number of the magazine slot on the screen that is displayed after [SLOT] is selected.

5) To set a mail slot number, move the cursor to [MAIL] and then click [ENTER].

6) Set a mail slot number.

7) To change the destination slot for a drive, move the cursor to [DESTINATION SLOT] and then click [ENTER].

8) Select [DRIVE] for the slot type.

9) To set a drive number, move the cursor to [DRIVE] and then click [ENTER].

10) Set a drive number.

11) Select [EXECUTE]. The cartridge is moved into the drive

5.5 Removing a Cartridge

Caution

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.

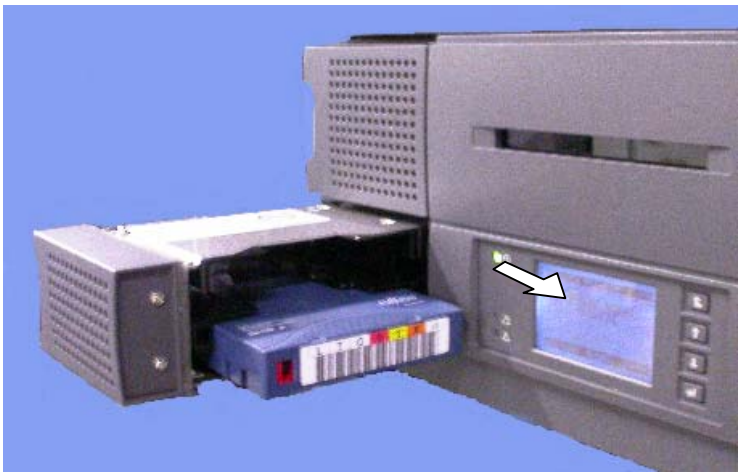
If a tape cartridge is removed accidentally under such conditions, you must perform software inventory operation with the backup software.

5.5.1 Removing a cartridge from the mail slot

5.5.1.1 When a cartridge is set in the mail slot

1) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.
2) Select [MAIL BOX] from [UNLOCK MAGAZINE].

   The mailbox magazine is unlocked and the mailbox opens.
3) Remove the cartridge from the mail slot.



Caution

Operational failures
When the mailbox opens, 20 seconds are counted down on the operator panel. Be sure to close the mailbox within 20 seconds.
If the tape library receives a command from the host while the mailbox is left open for 20 seconds or longer, the buzzer beeps to alert the user.

5.5.1.2 When a cartridge is set in a magazine slot

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.

1) Stop backup software services.
2) Select [USER LOGIN] from [LOGIN]. For details, see Section 4.1.
3) Move the cartridge to the mail slot.

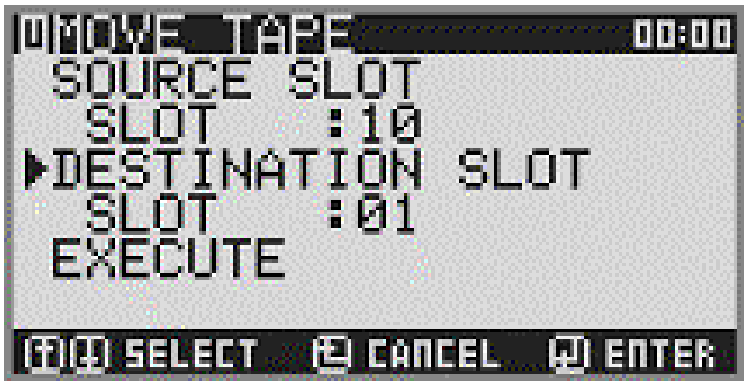
   Select [MOVE TAPE] from [COMMANDS].

   When [MOVE TAPE] is selected, the screen below for selecting a source slot and a destination slot appears.

4) To set a magazine slot number that holds the cartridge you want to move, move the cursor to [SLOT] and then click [ENTER].

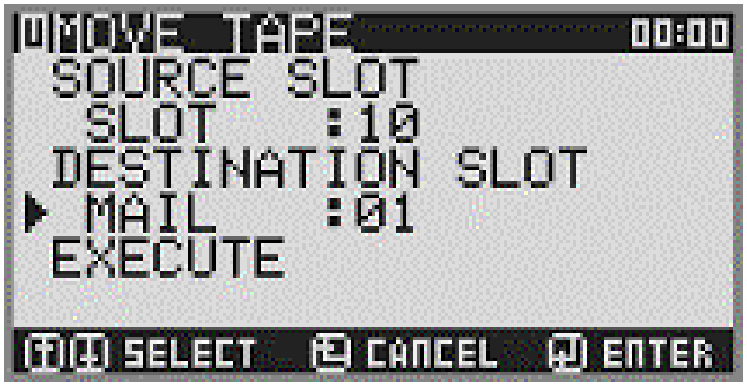
5) Set a magazine slot number that holds the cartridge you want to move.

6) To change the destination slot to the mail slot, move the cursor to [DESTINATION SLOT] and then click [ENTER].



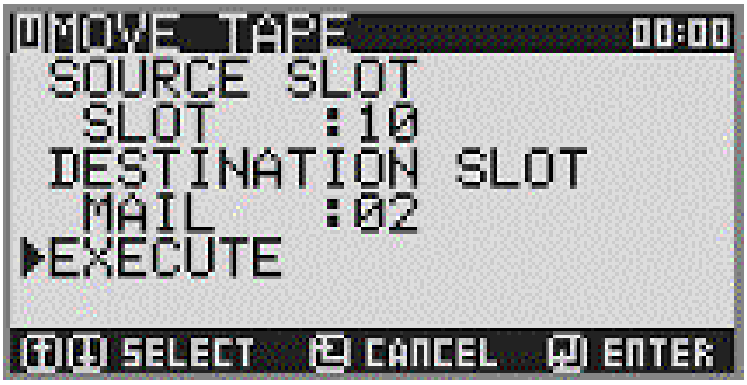
7) Select [MAIL SLOT] for the slot type.

8) To set a mail slot number, move the cursor to [MAIL] and then click [ENTER].



9) Set a mail slot number.

10) Select [EXECUTE]. The cartridge is moved into the mail slot.



11) Select [MAIL BOX] from [UNLOCK MAGAZINE].

The mailbox magazine is unlocked and the mailbox opens.

12) Remove the cartridge from the mailbox slot.

5.5.2 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 tape library).

⚠ 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.

1) Stop backup software services.
2) Select [LOGIN] → [USER LOGIN].
3) Select [COMMANDS] → [UNLOAD 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 [SOURCE SLOT] and [DESTINATION SLOT] is displayed.

   Select [SOURCE SLOT].

6) Specify the slot type of the SOURCE SLOT to [DRIVE].

7) To set a slot number, move the cursor to [SLOT] of [DESTINATION SLOT] and then click [ENTER].

8) Specify the slot number.

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

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

5.6 Rebooting the Library

The library must be rebooted (restarted) in the following cases:

After the library is rebooted, the server must be restarted.

- 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 reset 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 5.1.3)

2) Select [LOGIN] → [USER LOGIN].

3) Select [TOP OF MENU] → [COMMANDS].

4) Select [COMMANDS] → [REBOOT].

5) 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 Ethernet Function

This chapter provides an overview of the Ethernet function of the tape library and explains how the function is used.

6.1 Outline of Connecting Configuration

The connecting configuration below is required to use the Ethernet function.

(1) General

- 10BASE-T or 100BASE-TX LAN

  (Both full duplex and half-duplex are available. A gateway can be used.)

(2) Remote panel

Web browser:

Internet Explorer 6.0 (IE 6.0) is recommended.

Internet Explorer 5.0, 7.0, Mozilla, Netscape, and Firefox 1.0 are also available for connection, but they may cause some garbled characters.

Java:

Java Plug-in 1.6 or later is always required.

Check whether a Java Plug-in has been installed and check its version. If the version is not 1.6 or later, download and install Java Plug-in 1.6 or later from the following website (URL):

http://www.java.com/ or http://www.java.com/ja

(3) SNMP function

SNMP Manager:

Enables reception of traps by Fujitsu ETERNUS SF Storage Cruiser and collection of MIBs with the MIB browser. Various settings are required for monitoring.

(For details of the setting method, see the manual for the relevant software.)

* SNMP : Simple Network Management Protocol

6.2 SNMP Function

6.2.1 Abilities of the SNMP function

This unit supports transmission of SNMP traps and collection of MIB information via SNMP. SNMP traps can be received with the SNMP Manager, while MIB information can be collected with the MIB browser.

6.2.2 Method of setting the SNMP function

6.2.2.1 Tape library setting

(1) Network setting

The tape library must have its IP address and subnet mask set correctly.

When the tape library and SNMP Manager belong to different subnets, a gateway address setting is required.

1) Check and set the IP address, subnet mask, and gateway address of the tape library on the operator panel.
2) Execute ping xxx.xxx.xxx.xxx (where "xxx.xxx.xxx.xxx" is the IP address of the tape library from the server of SNMP Manager and check whether the tape library communicates with SNMP Manager successfully. If the communication is not successful, review the network setting, the network cable connection, and others.
3) Next, check whether the remote panel of the tape library can be monitored correctly with the Web browser of the server of SNMP Manager. If the server of SNMP Manager does not contain a Web browser, you can use another server.

6.2.2.2 SNMP setting

Set the SNMP recipients and report level here.

1) Log in to the remote panel of the tape library with the Web browser of the server of SNMP Manager or the like and open the Event Report setting screen (SNMP).
2) Set the IP address of a SNMP Trap recipient for [Trap To] and check [Valid].
3) If you have multiple recipients, you can set up to four recipients.
4) Check the report level. Initially, a report level is set so that a SNMP trap may be sent when an event that is higher than "warning" in terms of priority (having a lower value) occurs.
5) Confirm the community name. The initial community name is "public."
6) Set a device name (Name), a physical device location (Location), a contact address (Contact), and other information when they must be set in MIB. You can leave them un-specified if they are not required.
7) Finally, click the [Submit] button and make sure that the setting is submitted normally.

6.2.2.3 SNMP Manager setting

Without any particular setting, the tape library can receive traps and collect MIB with the Web browser. However, for higher legibility, you can read a MIB definition file. The MIB definition file will be distributed separately. The MIB definition file is stored on the CD-ROM containing product manuals.

A setting for the ETERNUS SF Storage Cruiser is required to shape traps for display. For details, see the manual of the ETERNUS SF Storage Cruiser.

6.2.3 Items to be reported by the SNMP Trap function

The Expansion Trap reports the following items:

Item	Description
Generic Trap Type	6 (Enterprise Specification) Vendor-specific trap indicating that the expansion trap of the specific trap type is valid
Specific Trap Type	2 (unitEventTrap) Indicates that an event has been registered in the event table of the tape library.
Additional Information	
unitEventUnitId	Indicates the unit ID of a component related to this event. 1: other 2: controller 3: drive1
unitEventId	Indicates an event ID to be used for management of the event table. Zero to "maximum number of events that can be registered in the event table - 1" are available.
unitEventTime	Indicates the actual time at which the event occurred with a character string that is formatted as shown below. MMDDYYYY△HHMMSS (where △ is a space) or null character string if the time is invalid
unitEventType	Indicates the type (priority) of the event. 1: unknown 2: emergency 3: error 4: warning 5: info
unitEventDescr	Indicates the details of the event with a character string. (For details, see Appendix E, "Event List."

6.2.4 Supplemental explanation of the SNMP function

(1) SNMP trap generation timing

The SNMP function reports asynchronous events when recipients are enabled and when an event having a higher priority level than a preset level (having a lower value) occurs. When any other event occurs, the SNMP function does not generate a SNMP trap.

(2) Events that are sent by SNMP

For information on events that are sent by the SNMP trap, see Appendix E, "Event List." Most of the events that are sent are events from the robot section. Events from drives are very few.

Chapter 7 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.

7.1 Network Environment and Setting

7.1.1 Environment required by the remote panel

The following are required to use the remote panel.

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

The following are required to set the remote panel.

- Setting of IP address
- Setting and confirmation of subnet mask and gateway
- Installation of JAVA (see Section 7.1.4, "JAVA settings.")

7.1.2 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) When the screen shown in step 3) appears, turn off and on the library.

6) After the library is turned off and on, the set LINK SPEED value becomes valid.

IMPORTANT

When a communication error occurs for other than the [10 BASE-T HALF] setting, set [10 BASE-T HALF].

7.1.3 Setting of IP Address

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

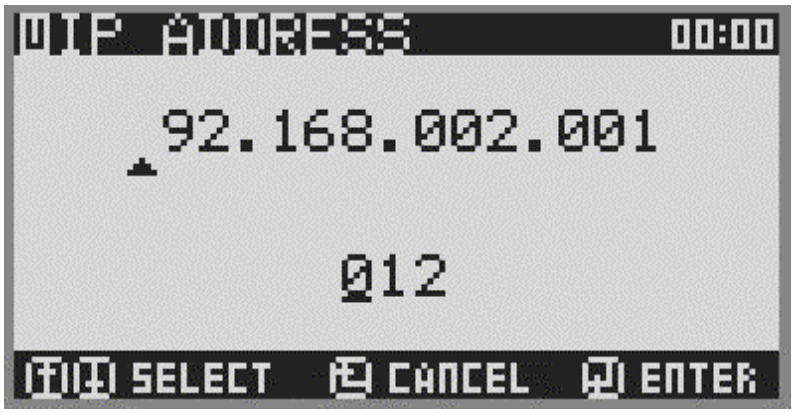
1) Select [LOGIN] → [USER LOGIN].

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.

7.1.4 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.

7.1.4.1 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.

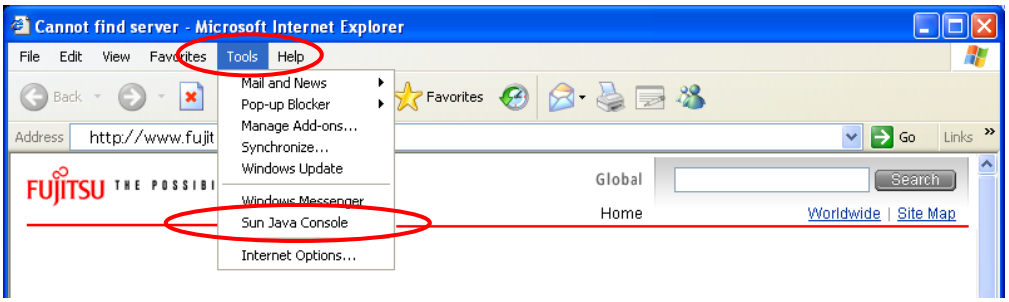
   Sample download file: Java Runtime Environment 6.0 Update 6 (JRE 1.6.0_03)

- Available versions of the Java Runtime Environment (JRE) as JAVA software:

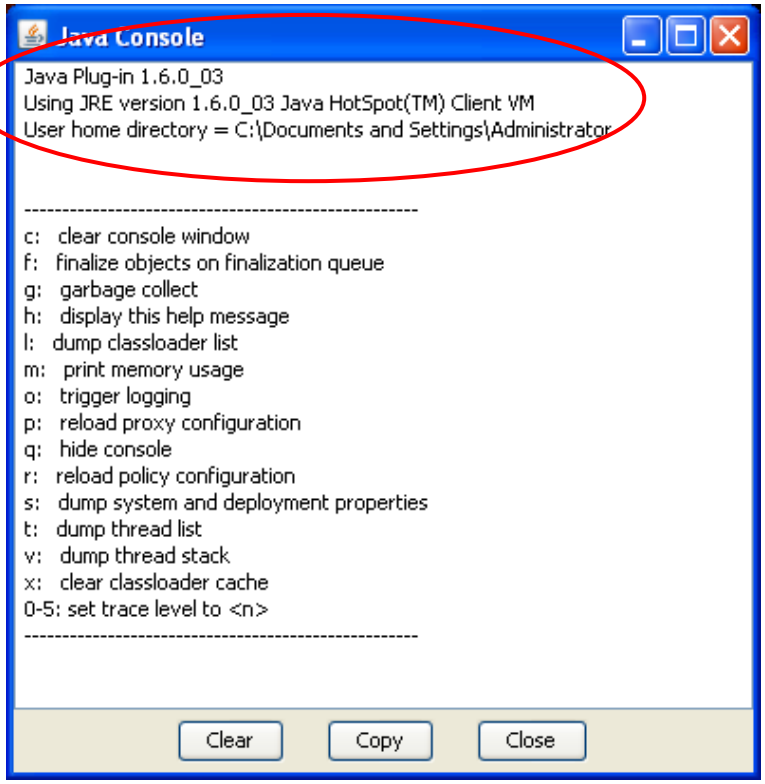
  - JRE 6.0 (JRE 1.6)

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)].

7.2 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 to 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/).

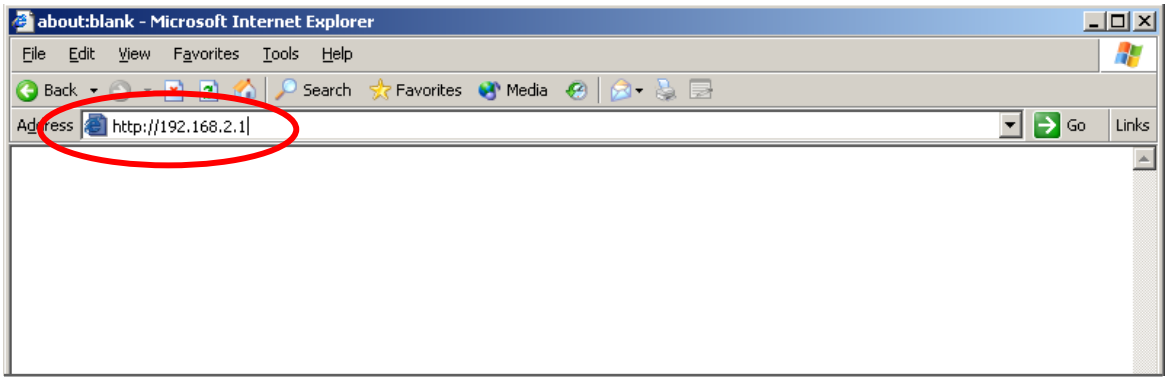


Figure 7.1 Start-up of the remote panel

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.

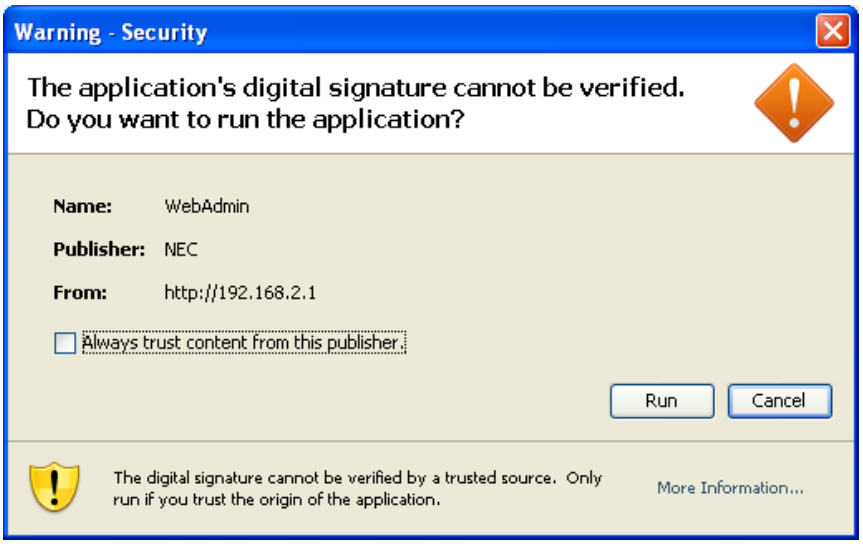


Figure 7.2 [Warning-Security] window

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 7.1.4, "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.

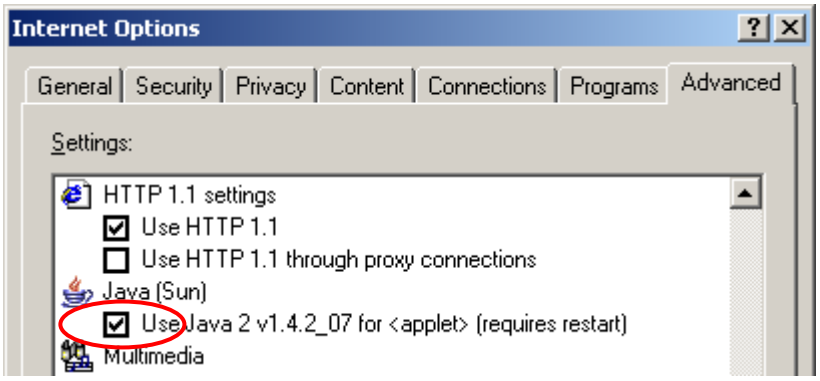


Figure 7.3 Java setting in IE

7.3 Outline of the Remote Panel

7.3.1 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 7.1 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.

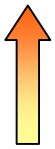
2) Simultaneous login

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) Reports on user setting and logging-in

– For the default (when the device is shipped out from the factory), "Administrator" and "General" are set as access authorities. When using the remote panel, log in with general authority instead of administrator authority.

– The general user (User) and administrator (Admin) passwords can be changed. When you change the password, write it down so as to not forget it later and keep it in a safe place.

7.3.2 WEB Page Format

Each Web page displayed by the browser consists of the banner section and page-specific information section as shown in the figure below. The banner part displays manufacturer's logo and other information.

You can see the page on a monitor having a resolution of 800 x 600, however, a monitor having a resolution of 1280 x 1024 or more is recommended. The main menu displayed depends on access authority of the login user. For details, see Section 7.4, "Specifications of the Remote Panel." On the submenu, the content which corresponds to the function selected in the main menu is displayed.

See the explanation of each page for details.

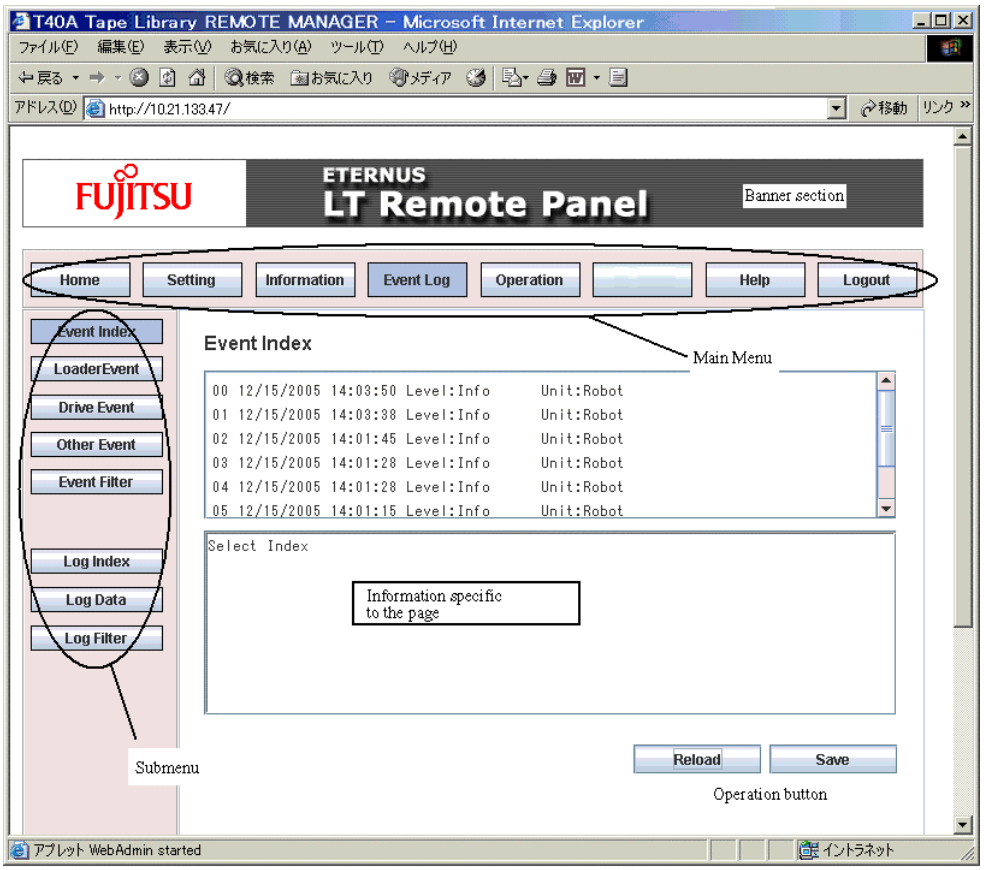


Figure 7.4 [Web page format] window

⚠ 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.

7.3.3 Page tree

Screen after logging-in are hierarchically structured as shown in Figure 7.5.

The basic menu is displayed in common in all screens with screens grouped by their functions. The submenu shows individual functions for a function group that is selected on the basic menu. The submenu is linked to respective functions.

[Fibre Channel model]

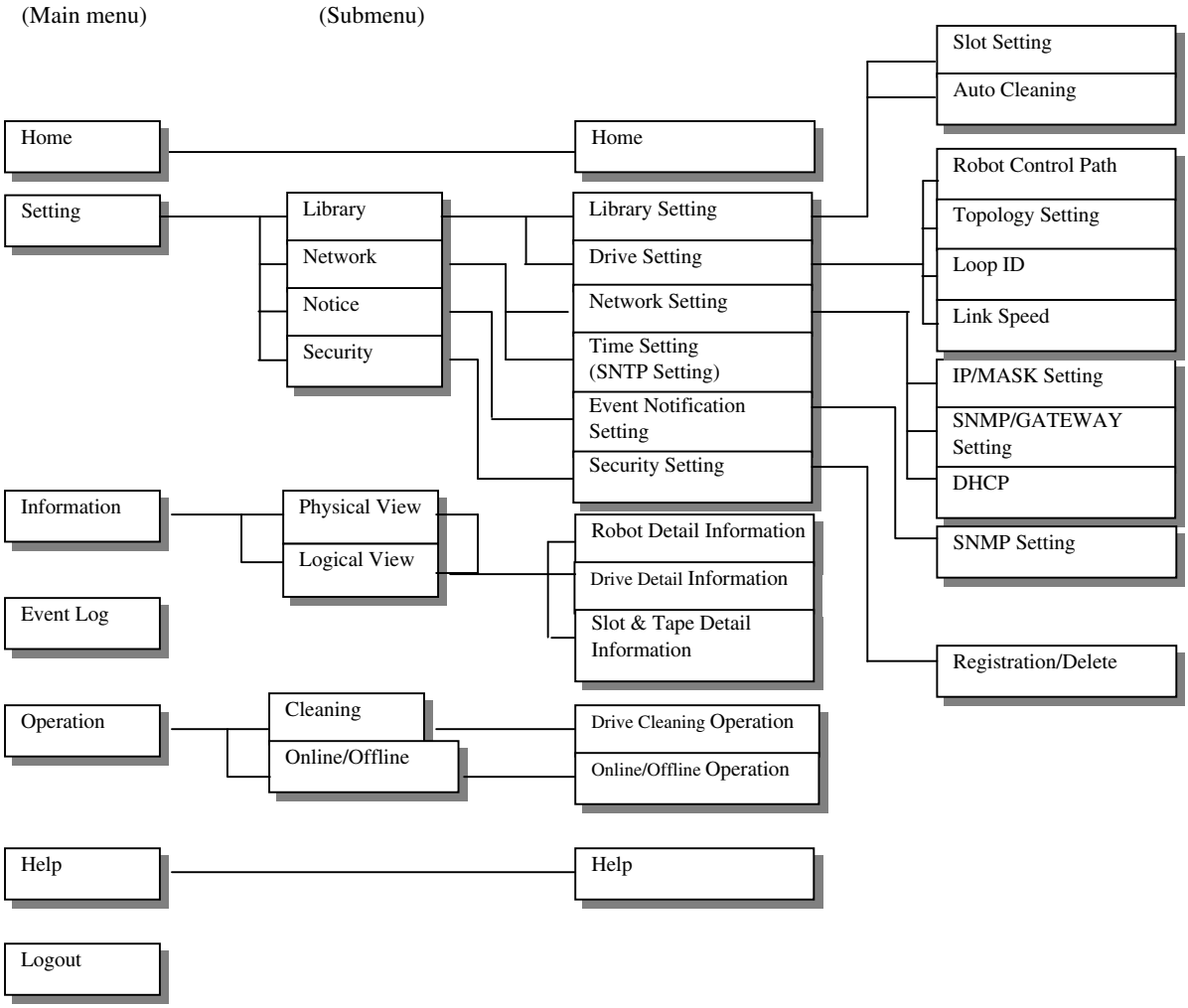


Figure 7.5 Page tree (Fibre Channel model)

[SCSImodel]

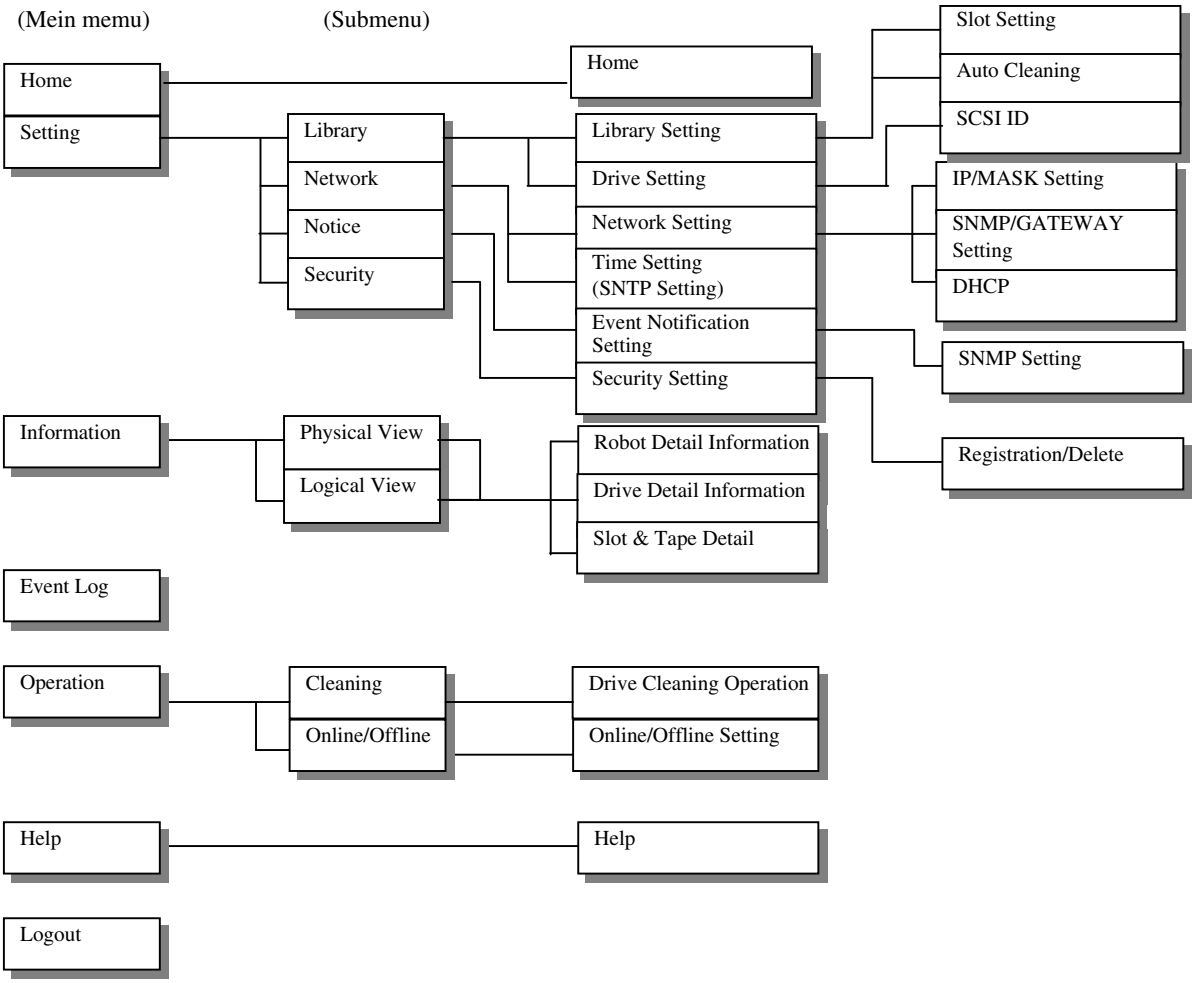


Figure 7.6 Page tree (SCSI model)

7.3.4 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 7.2 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].

7.4 Specifications of the Remote Panel

7.4.1 Login screen [General use] [Administrator]

[Function]

This screen enables logging-in to the remote panel.

The user is authenticated by a user name and password. Access authorities for administrator and general user are identified by user names. The login screen jumps to the home screen.

[Display contents]

(1) Account/user name

Enter the user name of the user logging in. (The account can be created on the Security Setting screen.) (See 7.4.3.4.)

(2) Password/password

Enter the password for the user name. Each entered character is displayed by an asterisk "*." (The passwords are case-sensitive.)

(3) Login button

When this button is clicked, the screen jumps to the home screen when the entered user name and password are valid.

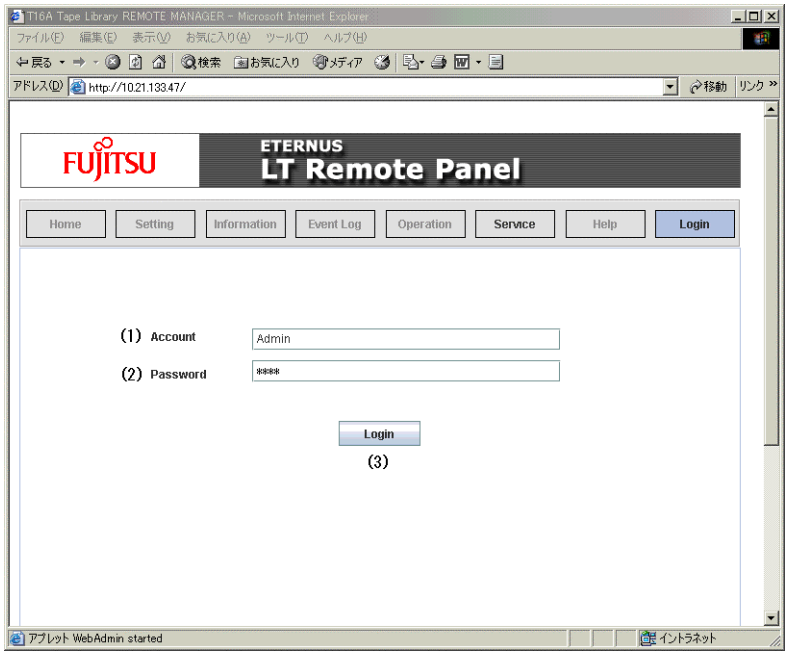


Figure 7.7 Login screen (with user name and password entered)

Caution

Login to the remote panel may be disabled during drive cleaning by backup software. Login is enabled after the cleaning is completed.

If the user name and the password are invalid, the following message appears and you cannot log in:

Figure 7.8 Login failure screen

7.4.2 Home screen [General user] [Administrator]

[Basic menu] → [Home]

[Function]

This is a starting page after the user logs in.

This screen displays the external view, basic information, and basic menu of the tape library with which a connection has been established. When a function is selected from the basic menu, the screen jumps to the setting screen of the selected function.

[Display contents]

(1) Basic menu

This menu contains buttons to jump to related screens. The types of buttons depend upon user authorities.

(2) External view of tape library

This field shows the external view of the tape library. This field shows "Data Downloading…" until the reception of the entire picture data of the tape library is completed.

(3) Library information data

a)	Product Name	Name of the tape library ("T40A2")
b)	FW Revision	Revision of firmware (FW) of the tape library
c)	Serial Number	Serial number of the tape library
d)	Number of Robots	Number of robots (always "1")
e)	Number of Slots	Number of slots

f)	Number of Drives	Number of tape drives ("1" or "2")
g)	World Wide Name (Drive #1)	World wide name of drive #1
h)	WW Port 0 Name (Drive #1)	World wide port name of drive #1
i)	World Wide Name (Drive #2)	World wide name of drive #2
j)	WW Port 0 Name (Drive #2)	World wide port name of drive #2
k)	Applet Revision	Java Applet revision

Note: Items g) to j) are displayed with the fibre channel model only.

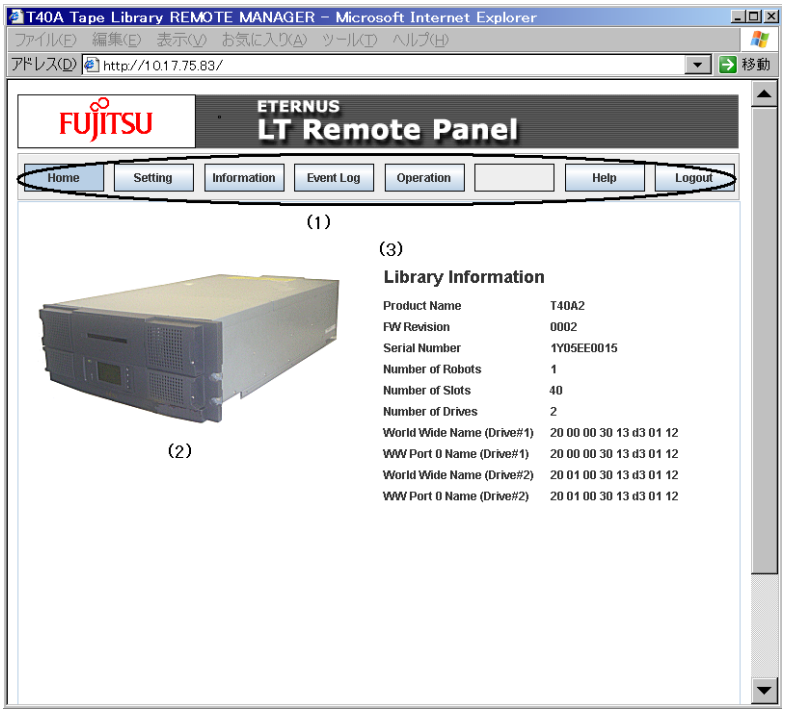


Figure 7.9 Home screen (for Administrator)

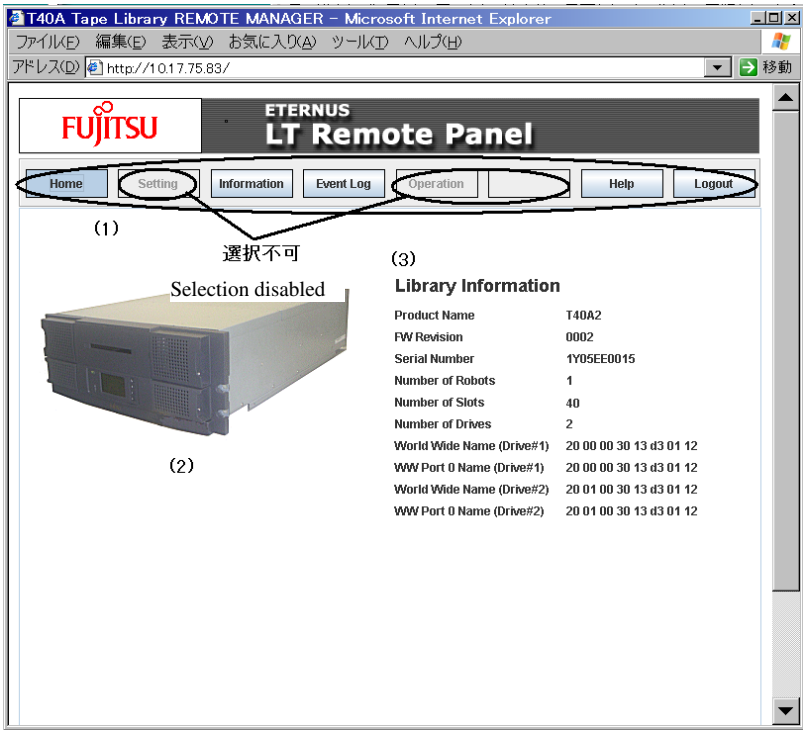


Figure 7.10 Home screen (for General user)

7.4.3 Setting screens

7.4.3.1 Library setting screen [Inhibited]

[Basic menu] → [Setting] → [Library]

[Function]

This screen enables the user to confirm and change setting values related to the robot control section and the entire tape library such as SCSI ID. To change the setting, the mode of the tape library must be changed from Online to Offline.

[Display contents]

(1) Basic menu

(2) Submenu of setting screens

The submenu is linked to the following four screens:

- Library Button to call the Library setting screen (See 7.4.3.1.)
- Network Button to call the Network setting screen (See 7.4.3.2.)
- Notice Button to call the Event Report setting screen (See 7.4.3.3.)
- Security Button to call the Security setting screen (See 7.4.3.4.)

(3) Library information data

- Library mode [Do not change]

  The initial value is "Random Mode."
- Mailbox [Do not change]

  The initial value is "Enable."
- Barcode Reader [Do not change]

  The value is always "Enable."
- Auto Cleaning [Inhibited]
- Number of Cleaning Slots (Do not change)

(4) Drive setting of the SCSI model

Confirm the SCSI ID setting of each drive and set it if necessary. Making any changes to the SCSI ID of an unmounted drive will not cause an error.

- Drive No. 1 SCSI ID (change inhibited)

  Set the SCSI ID of drive 1. (The initial value is "1.")
- Drive No. 2 SCSI ID (change inhibited)

  Set the SCSI ID of drive 2. (The initial value is "2.")

(5) Drive setting of the fiber channel model

Confirm the setting of drive FC interface and set it if necessary. Making any changes to the setting of a non-existent drive will not cause an error.

- Drive #1

Control Path	The initial value is "Enable."
Topology	The initial value is "P2P."
Loop ID	The initial value is "1."
Link Speed	The initial value is "4 Gbps."

- Drive #2

Control Path	The initial value is "Disable."
Topology	The initial value is "P2P."
Loop ID	The initial value is "2."
Link Speed	The initial value is "4 Gbps."

(6) Robot setting

Here, you check and make robot-related settings.

- Power Save Mode (min)

  (Initial value: Enable, 5 min)

  Note: A value of 128 or more is invalid.

- Unit Attention Condition Buffering [Do not change.]

  (Initial value: Disable)

- Mode Sense page #1F Length [Do not change.]

  (Initial value: 18 Bytes)

- Recovered Error reporting [Do not change.]

  (Initial value: Disable)

- Tape Alert Mode [Do not change.]

  (Initial value: Enable)

- SDTR/WDTR Auto Negotiation [Do not change.]

  (Initial value: Disable)

(7) Reload button

Used to restore the setting that had been valid before it was last changed.

(8) Submit button

Used to submit settings.

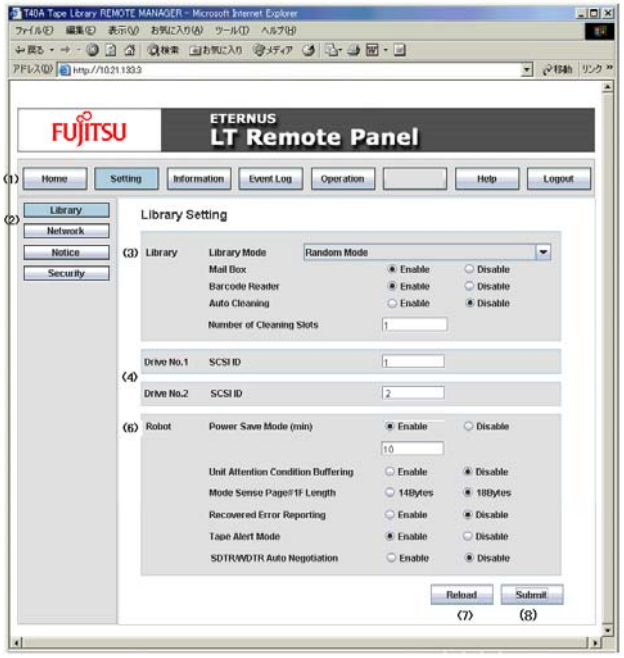


Figure 7.11 Library setting screen (SCSI model)

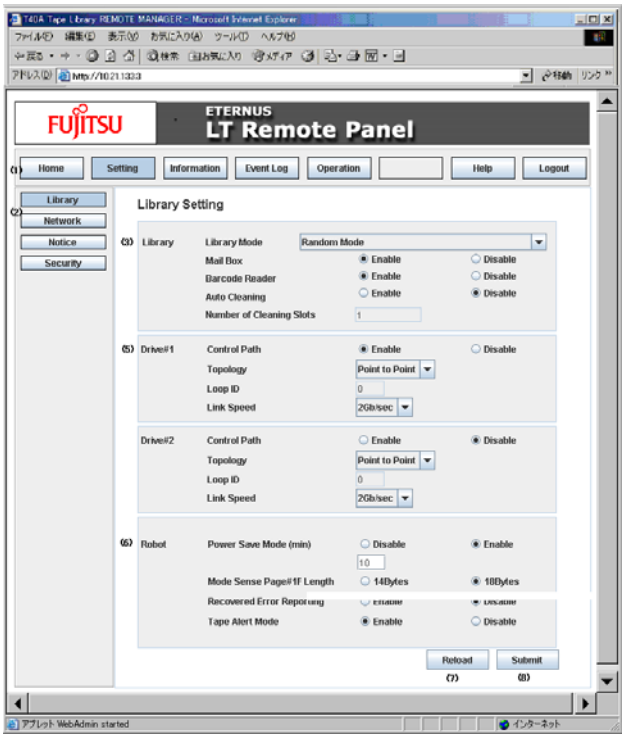


Figure 7.12 Library setting screen (Fibre Channel model)

7.4.3.2 Network setting screen [Inhibited]

[Basic menu] → [Setting] → [Network]

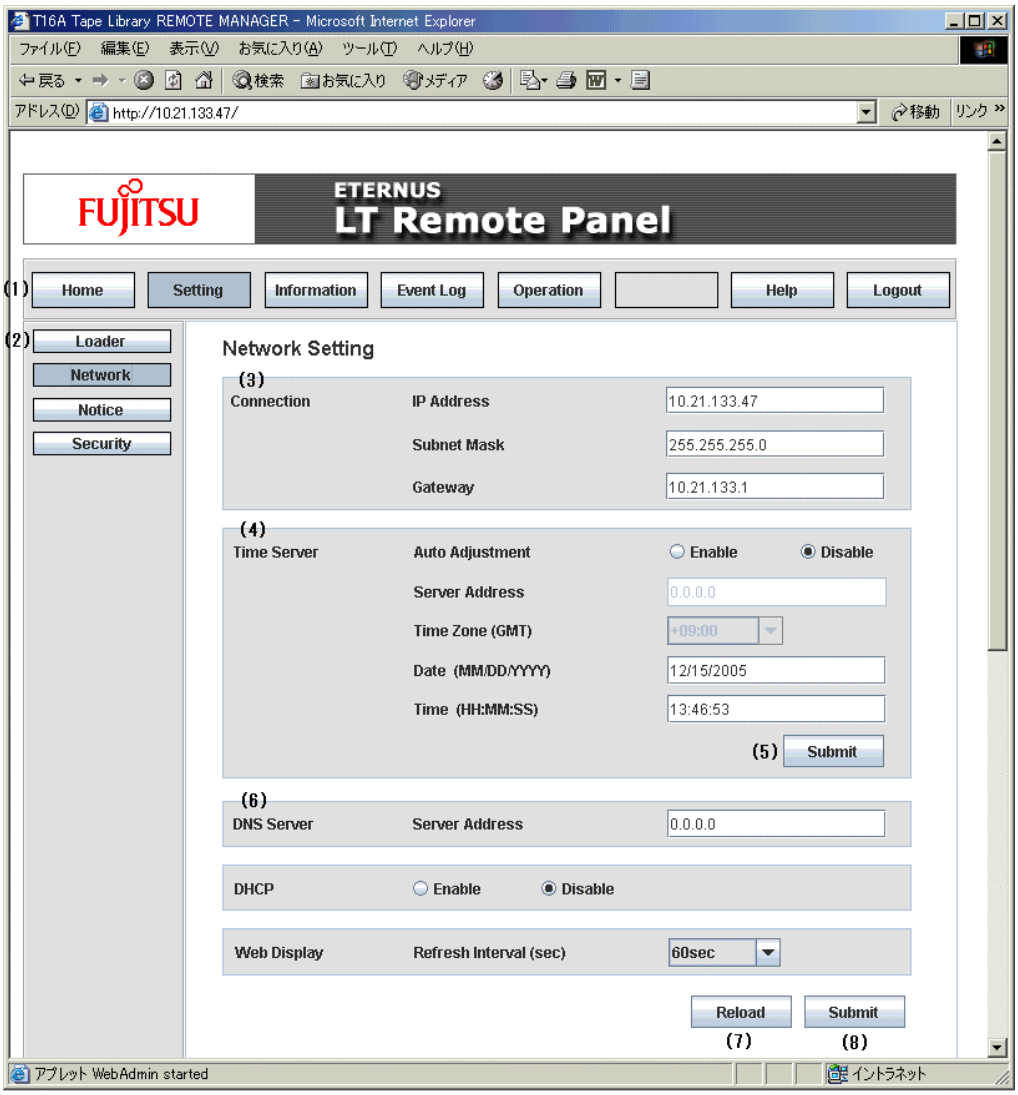


Figure 7.13 Network setting screen

[Function]

This screen enables the user to make a setting to connect the tape library to the network and to specify a connection between the tape library and Time Server and timing for updating the Web screen.

[Display contents]

(1) Basic menu

(2) Submenu of setting screens

(3) Connection/Network connection setting

This section specifies an IP address, subnet mask, and gateway address that are required to connect the tape library to the network.

- IP Address

  (Initial value: 192.168.2.1)

- Subnet Mask

  (Initial value: 255.255.255.0)

- Gateway

  (Initial value: 0.0.0.0)

(4) Time Server setting [cannot be used]

This section specifies information pertaining to enabling/disabling acquisition of time from Time Server (NTP server) and time setting.

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

Used to submit the Time Server setting.

(6) Setting of other items

- DNS Server

  (Initial value: 0.0.0.0)

- DHCP

  (Initial value: Disable)

- Web Display

  Refresh interval (sec)

(7) Reload button

Used to restore the setting that had been valid before it was last changed.

(8) Submit button

Used to submit respective settings.

7.4.3.3 Event notice setting screen (SNMP) [Administrator]

[Basic menu] - [Setting] - [Notice] - [SNMP setting]

[Function]

This function specifies a report of an event that occurred in the LT230 and sent via SNMP.

[Display contents]

(1) Basic menu

(2) Submenu of setting screens

(3) Screen switching tab

This tab switches between the SNMP setting screen and the E-mail setting screen.

(4) SNMP setting

This item specifies the entire SNMP-related setting.

- Community

  Specify the community name of SNMP (using up to 32 characters). (Initial value: "public")

- Name

  Specify the name of the unit (using up to 32 characters). (Initial value: "NULL"(blank))

- Location

  Specify the physical location of the unit (using up to 32 characters). (Initial value: "NULL")

- Contact

  Specify the contact address (using up to 32 characters). (Initial value: "NULL")

(5) SNMP Trap recipient setting

- SNMP

  Specify items related to trap recipients. Up to 4 recipients can be specified.

- Valid

  Check "Valid" to enable the Trap To setting.

- Trap To

  Specify the IP address of the Trap recipient (in the decimal XXX.XXX.XXX.XXX format).

(6) SNMP notice level setting

Specify a threshold level to determine the notification of SNMP Trap.

- Trap Level

  Specify a threshold level to send a trap.

  – Select one of unknown, emergency, error, warning, and info.

  – When "unknown" is selected, only unknown events are sent.

  – When "info" is selected, all events are sent. (Initial value: "warning")

(7) Reload button

Used to restore the setting that had been valid before it was last changed.

(8) Submit button

Used to submit settings.

When the Submit button is clicked, the entered values are checked and submitted when they are valid.

(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.

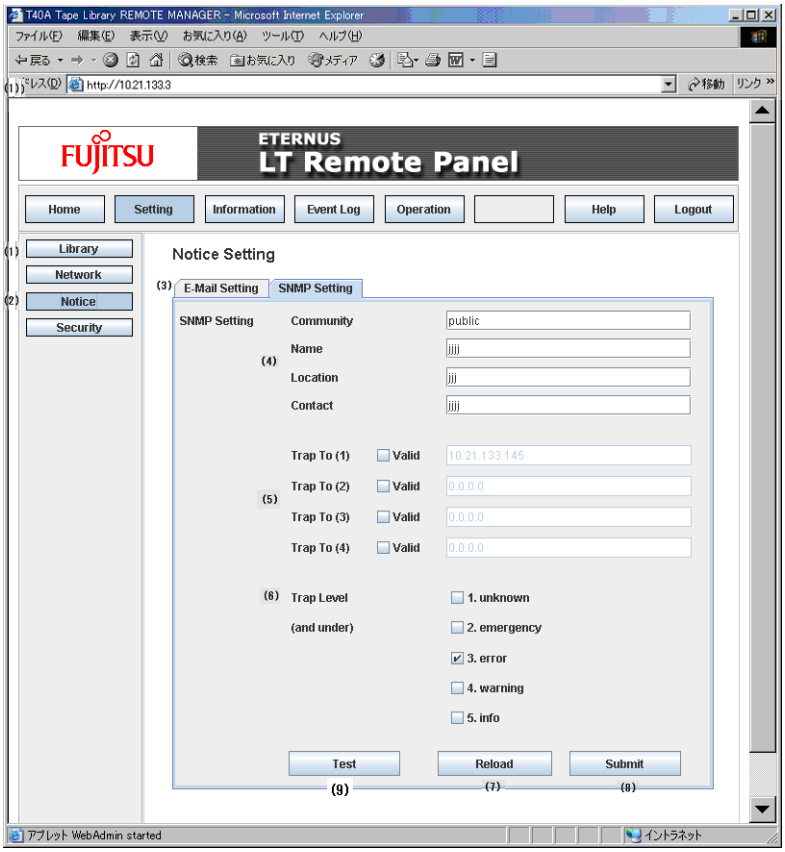


Figure 7.14 Event notification setting screen (SNMP)

7.4.3.4 Security setting screen [Administrator]

[Basic menu] → [Setting] → [Security]

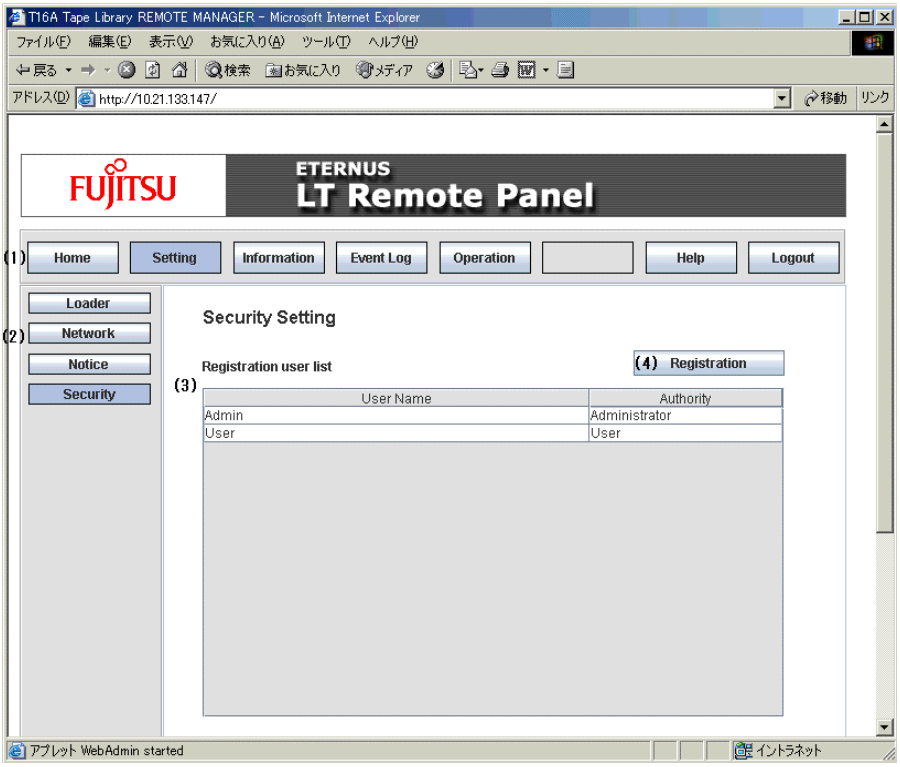


Figure 7.15 Security setting screen

[Function]

This screen displays a list of users that can log in, add, change, and delete a user.

[Display contents]

(1) Basic menu

(2) Submenu of setting screens

(3) Registration user list (List of registered users)

This field displays a list of registered users (user names and user authorities). When you click one of the user names in the list, a user setting screen (the next page) opens and you can change the setting.

(4) Registration button (User registration button)

This button is used to add a new user to the user registration list. When you click the [Registration] button, the user registration screen opens. Specify required items on the screen to add a new user.

When you click the [Registration] button or a user name in the list, the user-setting screen opens and you can add, change, and delete a login user.

7.4.3.5 User setting screen [Administrator]

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

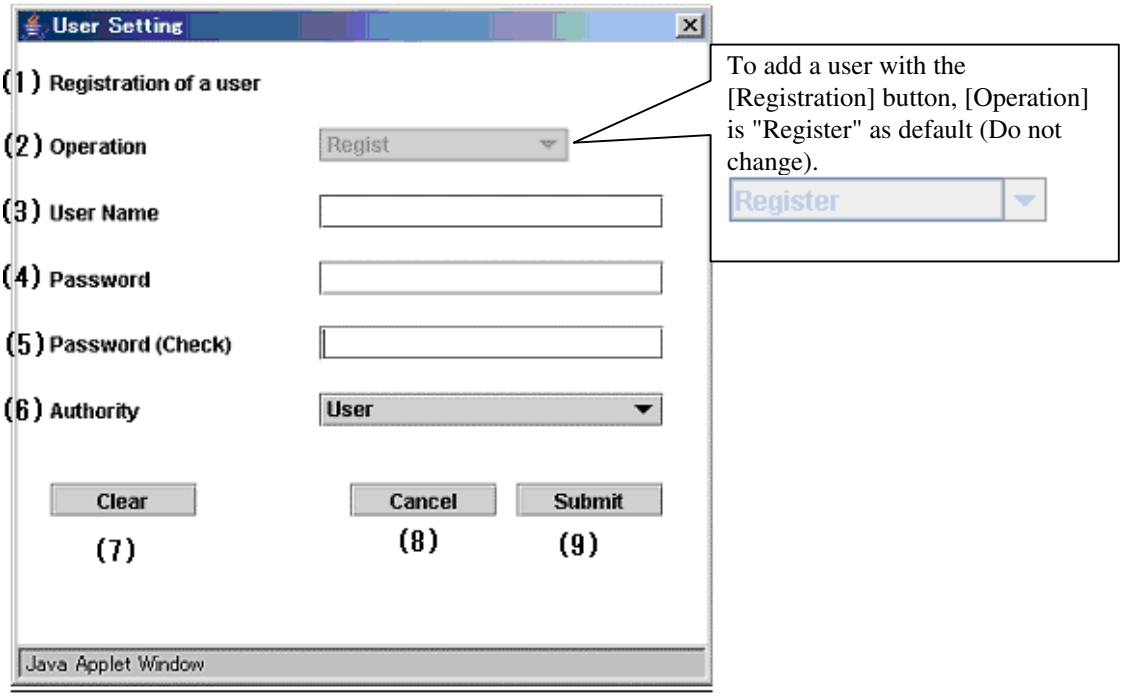


Figure 7.16 User setting screen

[Function]

This screen is opened from the security-setting screen and used to add, change, and delete a login user.

[Display contents]

(1) User Name

Select a user name for a user whose setting you want to change from the list box. This box displays "Registration of a user" when a new user is added.

(2) Operation setting

Specify an operation to change or delete a user setting in a list format.

- Change

  Changes the content of registration (password and user level only).

- Delete

  Deletes a registered user.

* For addition of a new login user, this field shows "Register" and you cannot select any other operation.

(3) User Name setting

For changing or deleting a user setting, this field shows the user name of a registered user. (Do not change.)

For adding a new user, this field shows a blank for entering any user name.

(4) New password setting

Specify a new password. (The password is case-sensitive.)

(5) New password setting (for re-entry)

(6) User Level setting

Select a user level (access authority) in the list box.

- Administrator

  Administrator

- User

  General user

(7) Clear button

Used to reset the entered value to the initial value.

(8) Cancel button

Used to cancel the entered value. The screen is closed without registering it.

(9) Submit button

When you click the [Submit] button after entering data for the setting items, the content of user registration is changed.

7.4.4 Information screen

7.4.4.1 Physical display screen [General user] [Administrator]

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

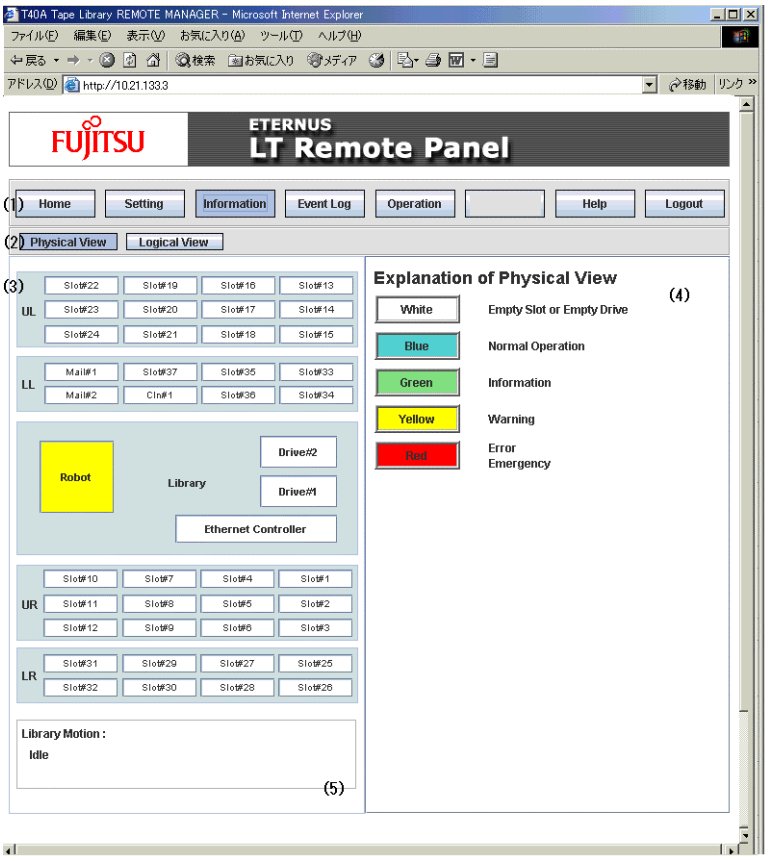


Figure 7.17 Physical display screen

[Function]

This screen displays the status of library components such as robot, drives, and slots (including tape information) visually (with an installation image of the tape library). This screen displays the normal/abnormal status of each component and the tape storage status of each slot by color-coding for ease of identification.

To display a component's detailed information, click the component (device). The detailed information screen for each device is displayed in the right frame.

[Display contents]

Physical internal configuration image of the tape library

(1) Basic menu

(2) Submenu of information screens

Used to switch between the physical display screen (Physical View) and the logical display screen (Logical View).

(3) Physical status image of the library

This field displays the physical image of components in the tape library.

- UL, LL, UR, and LR

  These fields respectively show the status of respective magazines. No part in these fields is linked to a screen.

- Slot #XX and Cln#X

  This field displays the slot status. When Slot #XX or Cln#X is clicked, detailed slot and tape information is displayed in the right frame of the screen. (See 7.4.4.5.)

- Library

  This field shows the status of the entire tape library. No part in this field is linked to a screen.

- Robot

  This field shows the status of the robot section. When [Robot] is clicked, the detailed robot information screen is displayed in the right frame of the screen. (See Section 7.4.4.3.)

- Drive

  This field shows the status of the drive section. When [Drive] is clicked, the detailed drive information screen is displayed in the right frame of the screen. (See Section 7.4.4.4.)

- Ethernet Controller

  This field shows the Ethernet-related status. When [Ethernet Controller] is clicked, the detailed controller information screen is displayed in the right frame of the screen. (See Section 7.4.4.6.)

(4) Information display screen

When a device (Robot, Slot, Drive, or Ethernet Controller) is selected in the physical status image of the tape library, this field shows the status of the selected device. When no device is selected, this field shows an explanation of statuses classified by color.

(5) Operation information display screen

This screen shows the operating status of the tape library with colors and character strings (Initializing, Idle, Magazine Checking, Move Medium from Slot#XX to Slot#XX, Unlock Detecting, etc.).

White	Empty Slot or Empty Drive	Normal status (no media)
Blue	Normal Operation	Normal status (with media)
Green	Information	Display information (normal)
Yellow	Warning	Caution
Red	Error/Emergency	Error or emergency

Figure 7.18 Operation information display screen

7.4.4.2 Logical display screen [General user] [Administrator]

[Basic menu] → [Information] → [Logical view]

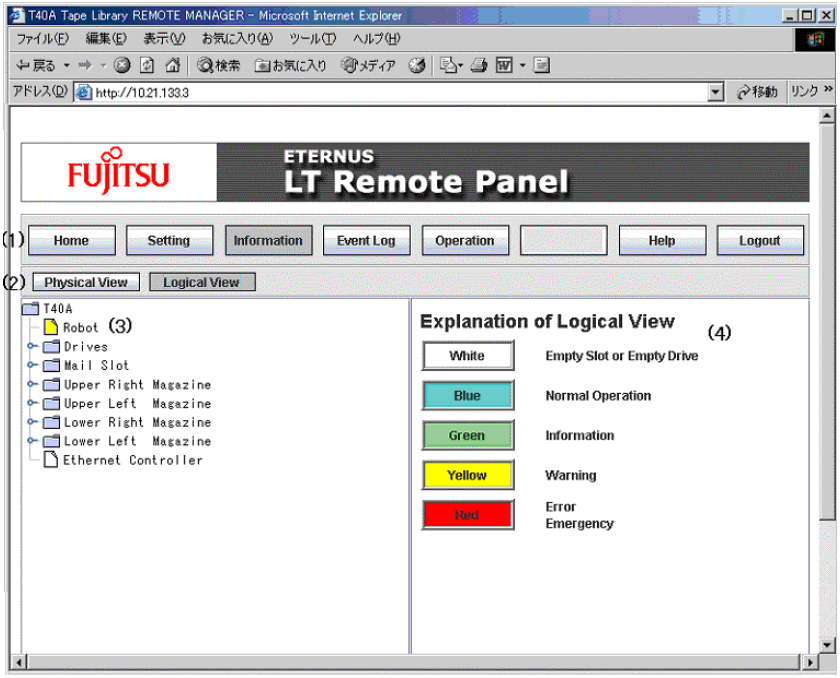


Figure 7.19 Logical display screen

[Function]

This screen hierarchically displays the status of components (robot, drives, slots (including tape information), etc.) of the tape library in groups. Basically, this screen has the same function as that of the physical display screen.

When you click a component whose detailed information you want to view, its detailed information screen is displayed in the right frame.

[Display contents]

(1) Basic menu

(2) Submenu of setting screens

Used to switch between the physical display screen (Physical View) and the logical display screen (Logical View).

(3) Logical status image of the library

This field displays the Explorer-like logical image of the components in the tape library.

This field shows a tree of groups of component types (robot, drives, magazines, and slots). When a group contains multiple components (drives and slots), the components are displayed in a hierarchical level under the group level. Icon  or  is placed in the left side of each group icon when it contains multiple components. Icon  does not display items in the lower hierarchical level. Icon  displays items in the lower hierarchical level.

Items to be displayed are as follows: (When all the items do not fit on the screen, they are displayed by scrolling.)

- Robot

  Used to display the status of the robot section. When [Robot] is clicked, the detailed robot information screen is displayed in the right frame. (See Section 7.4.4.3.)

- Drives (Drive#1 and Drive#2)

  Used to display the status of drives. When [Drives] is clicked, the detailed drive information screen is displayed in the right frame. (See Section 7.4.4.4.)

- Upper Right Magazine, Upper Left Magazine

  Lower Right Magazine, Lower Left Magazine

- Used to display the status of each magazine. No screen is linked to these items. When you click  of a magazine, slots in the magazine are displayed.

- Slot#XX

  Used to display the status of the slots. When you click [Slot#XX], the detailed slot and tape information screen is displayed in the right frame. (See Section 7.4.4.5.)

- Ethernet Controller

  Used to display the Ethernet-related status. When [Ethernet Controller] is clicked, the detailed controller information screen is displayed in the right frame of the screen. (See Section 7.4.4.6.)

(4) Information display screen

When a library component (device) such as Robot, Slot, Drive, and Ethernet Controller is selected, the status of the selected device is displayed.

When a logical status image (Logical View) is selected, the status of the selected device is displayed.

7.4.4.3 Detailed robot information screen [General user] [Administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Robot]

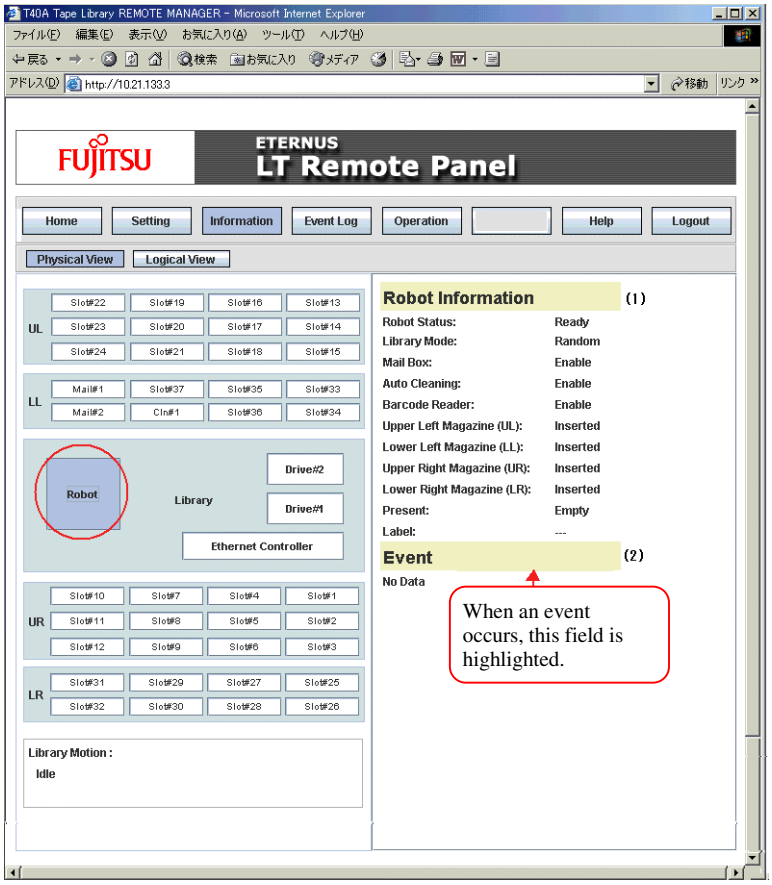


Figure 7.20 Detailed robot information screen (Physical View)

[Function]

This screen displays the status of the robot.

This screen is displayed in the right frame of each of the physical display screen and the logical display screen.

[Display contents]

(1) Detailed robot information (Robot Information)

This field shows the current status of the robot.

- Robot Status

  Status of the robot (Ready, Prevent Medium Removal, Unknown Condition, etc.)

  – Ready: Ready state

  – Prevent Medium Removal: Occupied by backup software

  – Unknown Condition: Unknown status

- Library Mode

  Mode of the tape library (Random, etc.)

- MAIL Box

  Availability of mailbox (Enable or Disable)

- Auto Cleaning [Inhibited]

  Availability of the Auto Cleaning function (Enable or Disable)

- Barcode Reader

  Availability of the barcode reader (Enable or Disable)

- UL (Upper Left Magazine), LL (Lower Left Magazine)

  UR (Upper Right Magazine), and LR (Lower Right Magazine)

- Status of respective magazines (Inserted or Unlocked)

- Present

  Existence or absence of tape cartridge in the robot (hand or picker) (Empty or Present)

- Label

  Label name of a tape cartridge in the robot (hand or picker) or "---" when no tape cartridge is in the robot

- Control Path

  Drive of the library robot control path (Drive#1, Drive#2)

(2) Robot event information

- Event

  Displays error event information or the like regarding errors occurring in the robot (No Data, Emergency (CHECK:XXXX), ETC.). When updated, the data is highlighted.

7.4.4.4 Detailed drive information screen [General user] [Administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Drive]

Example of detailed drive information screen of the Fibre Channel drive

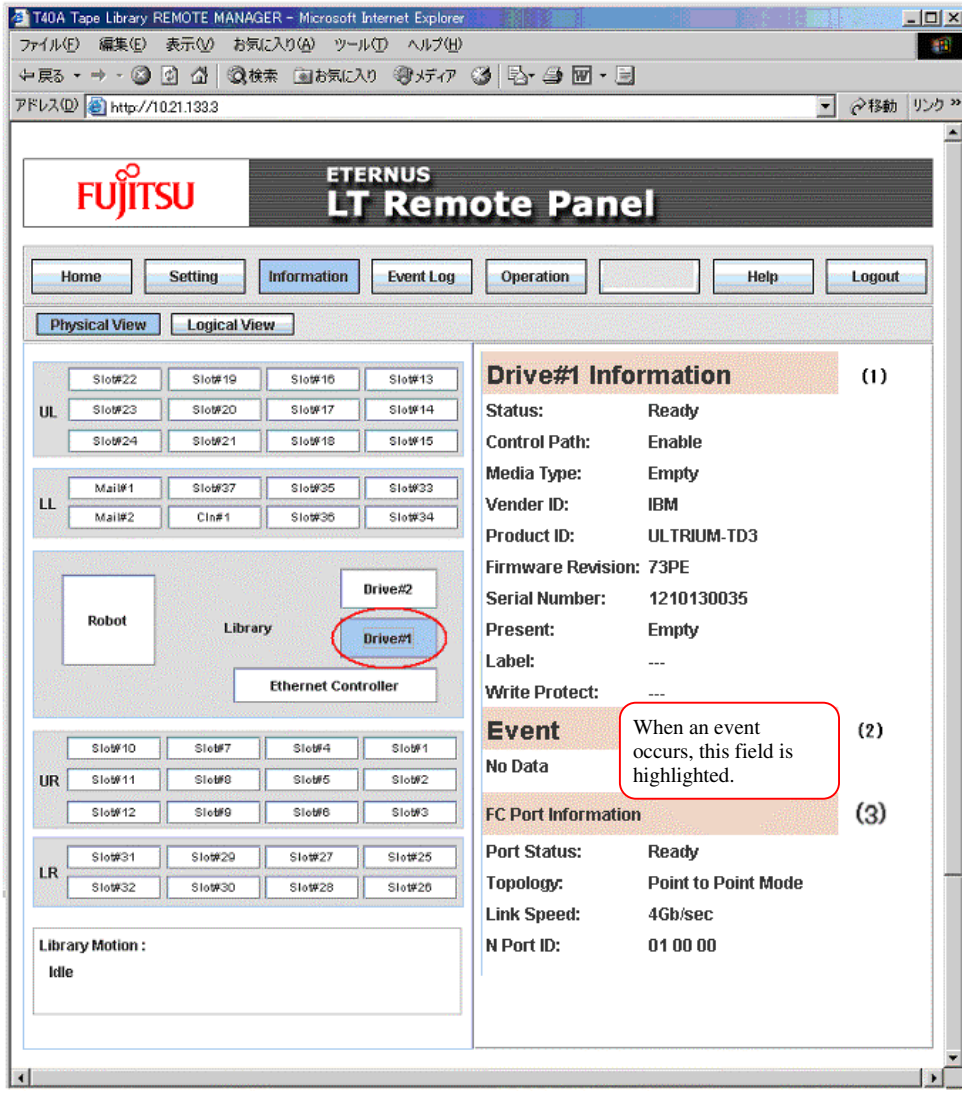


Figure 7.21 Detailed drive information screen (Physical view)

[Function]

This screen displays the status of the selected drive.

The screen is displayed in the right frame of the Physical View or Logical View window.

[Display contents]

(1) Detailed drive information

- Status

  Status of the selected drive (Ready, Loading, Threading, etc.), or "---" if the selected drive has not been installed yet

- Control Path

  "Enable" or "Disable" for the library (robot) control path.

  The robot is controlled via an enabled drive.

- Media Type

  Type of tape cartridge in the drive (Empty, LTO Generation 3, etc.)

- Vender ID

  ID of the drive vendor (IBM)

- Product ID

  Product name of the drive (ULTRIUM-TD3, etc.)

- Firmware Revision

  Version of firmware (FW) on the drive

- Serial Number

  Serial number of the drive

- Present

  Whether the drive has a tape cartridge in it (Present or Empty)

- Label

  Label name of the tape cartridge in the drive, or "---" if no tape cartridge is in the drive

- Write Protect

  Write Protect status of the tape cartridge in the drive (Protect or Permit), or "---" if no tape cartridge is in the drive

(2) Drive event information

- Event

  Error that occurred in the drive, or an event reporting the replacement of a consumable. The data is highlighted when updated.

(3) Detailed port information for the drive

(1) FC Drive

- Port Status

  Port status of the drive (Ready, No Data, No Login Hosts, etc.)

- Topology

  Type of topology (Point to Point Mode or Loop Mode)

- Link Speed

  FC link speed of the drive (1Gb/sec, 2Gb/sec, or 4Gb/sec)

- N Port ID

  N port ID of the drive

- Loop ID

  Loop ID (1 to 125) of the displayed drive in Loop mode

(2) SCSI drive

- Bus mode

  SCSI bus mode (SE, etc.) of drive

- SCSI ID

  SCSI ID of drive

7.4.4.5 Detailed slot and tape information screen [General user] [Administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Slot#XX]

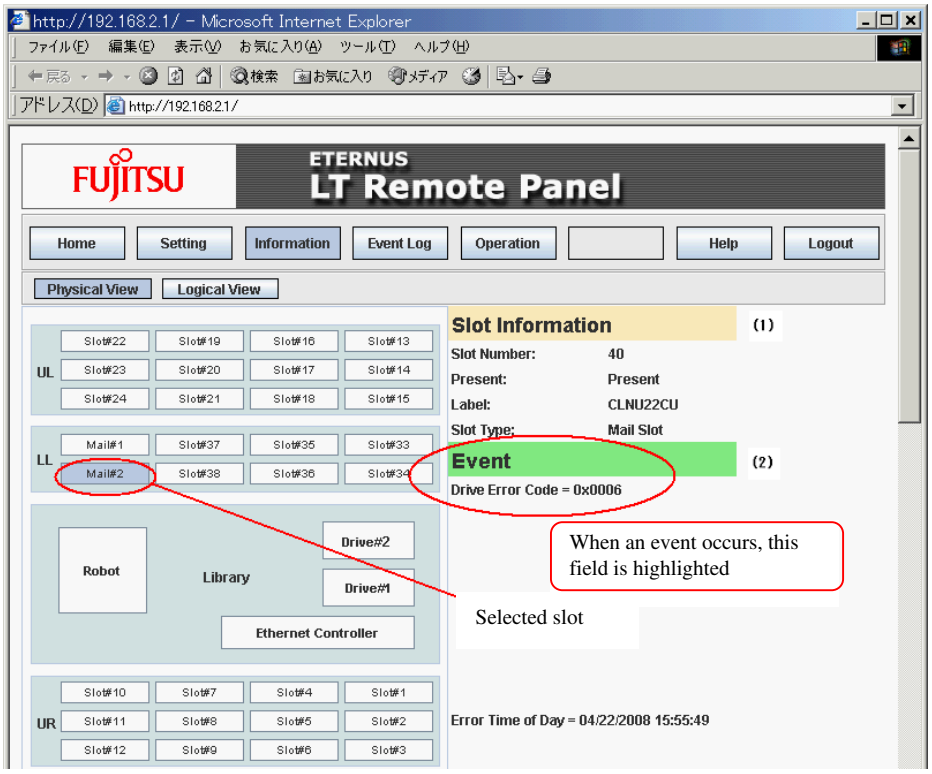


Figure 7.22 Detailed slot and tape information screen (Data slot, Mail slot)

[Function]

This screen displays the status of a selected slot and the status of a tape cartridge in the slot.

[Display contents]

(1) Detailed slot information (Slot Information)

This screen displays information on a slot and a cartridge that is retained in it.

- Slot Number

  Slot number

- Present

  Existence or absence of a cartridge in the slot (Empty or Present)

- Label

  Label name of a tape cartridge in the slot

  "---" when no tape cartridge is in the slot or a blank when the cartridge has no barcode label

- Slot Type

  Type of a slot

  – Data Slot Normal slot (data slot)

  – Not Used Slot that is not available due to volume restriction

  – Mail Slot Mail slot

(2) Tape cartridge event information

- Event

  Event information, such as an error occurring in a tape cartridge stored in a slot, is displayed. This field is highlighted when the information is updated.

7.4.4.6 Detailed controller information screen [General user] [Administrator]

[Basic menu] → [Information] → [Physical View or Logical View] → [Ethernet Controller]

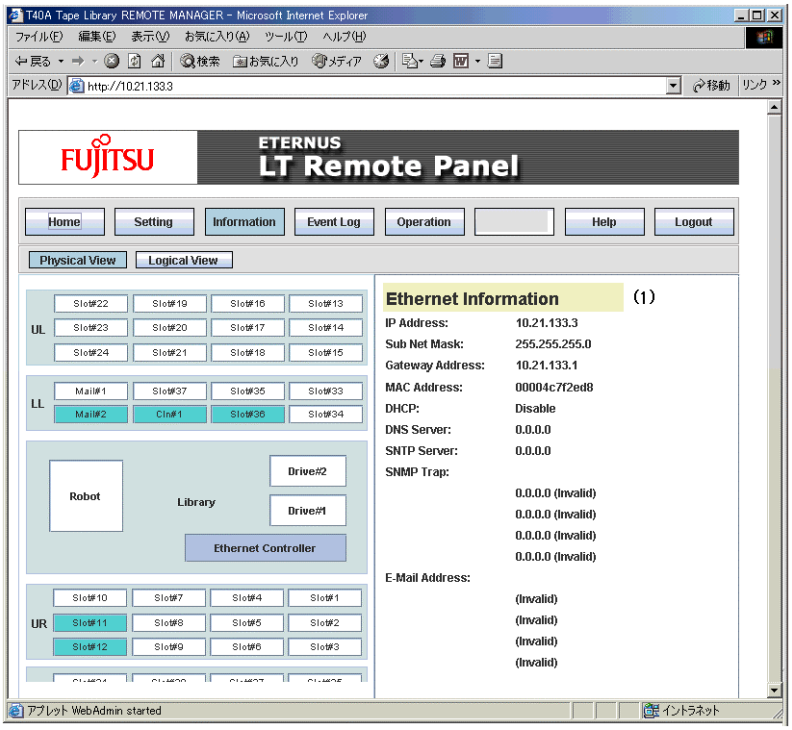


Figure 7.23 Detailed Ethernet controller information screen (Data slot)

[Function]

This screen displays the setting information of the Ethernet Controller.

This screen singly displays data. Use the network setting screen (see Section 7.4.3.2) to change the values of the screen.

[Display contents]

(1) Detailed Ethernet information (Ethernet Information)

This screen shows the following items of the Ethernet controller of the tape library:

- IP Address

  IP address

- Subnet Mask

  Subnet mask

- Gateway Address

  Gateway address

- MAC Address

  MAC address

- DHCP

  Availability of DHCP (Enable or Disable). "Disable" is displayed since DHCP is usually not used.

- DNS Server

  IP address of the DNS server. "0.0.0.0" is displayed since the DNS server is usually not used.

- SNTP Server

  IP address of the time server. "0.0.0.0" is displayed since the SNTP server is usually not used.

- SNMP Trap+

  IP address of a trap recipient and its availability (Valid or Invalid)

- E-mail Address

  IP address of an E-mail recipient and its availability (Valid or Invalid)

7.4.5 Event screens [Use inhibited]

7.4.6 Operation screens

7.4.6.1 Drive Cleaning operation screen [Administrator]

⚠ Caution

Do not use the cleaning function with the remote panel unless cleaning cannot otherwise be done, such as from the operator panel, by the backup software, or in a remote environment.

⚠ 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] → [Cleaning]

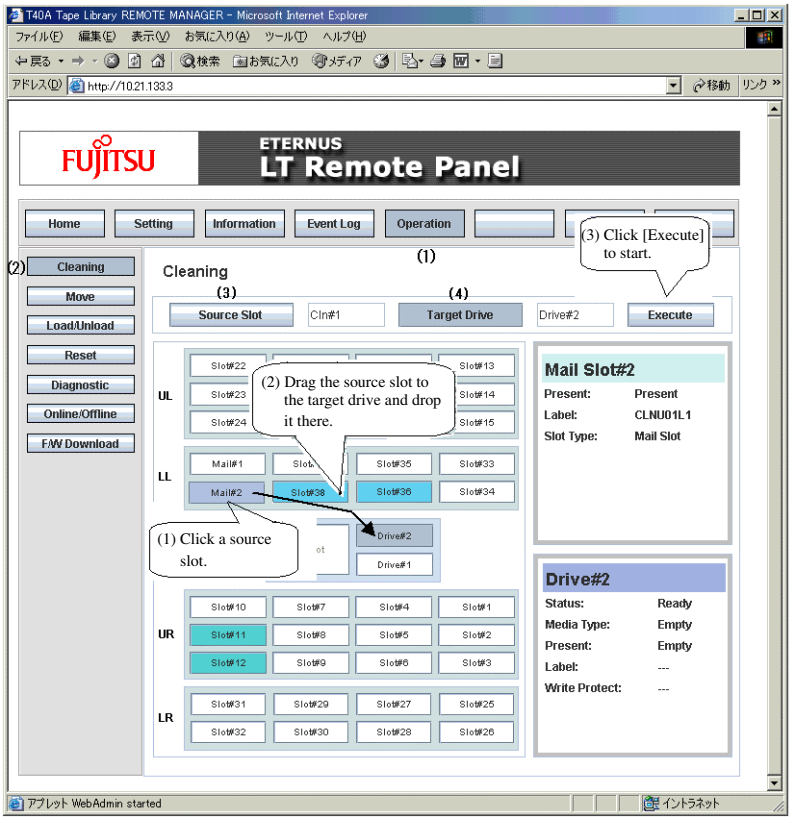


Figure 7.24 Drive Cleaning operation screen

[Function]

The Drive Cleaning function transfers a cleaning cartridge from a specified slot to a specified drive and then cleans the drive. After cleaning the drive, this function returns the cleaning cartridge to its original slot.

Procedure 1:

1) Stop backup software services from the server console.
2) Select and click a source slot that contains a cleaning cartridge in the slot map and drag it to a drive to start the cleaning operation. (Items (3) and (4) are automatically set.)
3) Click the [Execute] button. Drive cleaning starts.

Procedure 2:

1) Stop backup software services from the server console.
2) Click the [Source Slot] button.
3) In the slot map, click a source slot that contains a cleaning cartridge.
4) Click the [Target Drive] button.
5) Click a drive to clean in the slot map.
6) Click the [Execute] button. Drive cleaning starts.

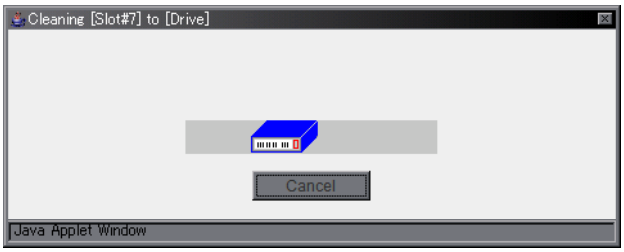


Figure 7.25 Drive cleaning in progress

[Display contents]

(1) Basic menu

(2) Submenu of library operation screens

- Cleaning

  Button for opening the Drive Cleaning operation screen
- Move

  Button for opening the Medium Move operation screen
- Load/Unload

  Button for opening the Load/Unload operation screen
- Reset

  Button for opening the Reset screen

- Diagnostic

  Button for opening the Diagnostic screen

- Online/Offline

  Button for opening the Online/Offline switching screen (See Section 7.4.6.2.)

- F/W Download (Not supported)

  Button for opening the F/W Download screen

(3) Setting a cleaning cartridge storing slot

Select a source slot (that contains a cleaning cartridge) in the slot map.

(4) Setting a drive to be cleaned

Select a target slot (that is to be cleaned) in the slot map.

(5) Execute button

When you click the [Execute] button, drive cleaning starts.

The cleaning progress (Cleaning, Completed, and Failed) is displayed in a pop-up window.

(6) Slot map

The slot map shows slot information like that in the Physical View screen. You select a source slot and a target drive in this slot map.

(7) Source Slot information

Shows slot information for a slot selected as a source slot.

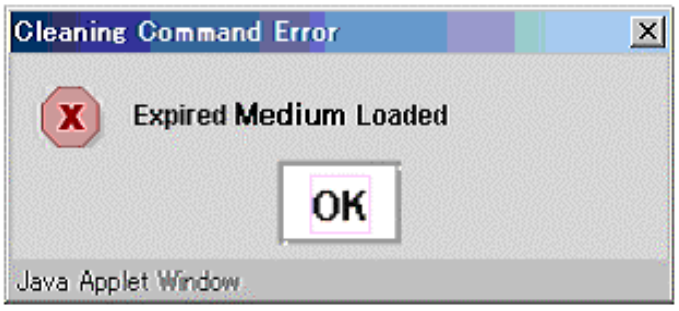
(8) Target Drive information

Shows slot information for a slot selected as a target drive.

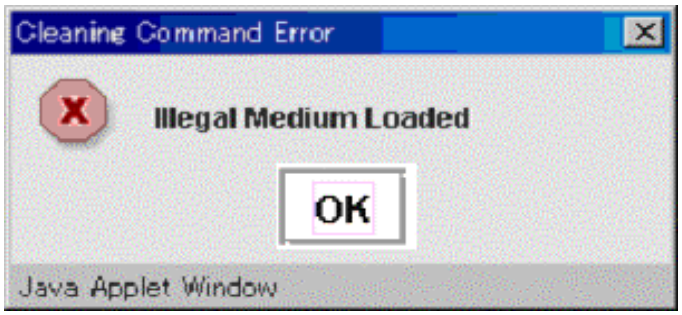
⚠ Caution

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.



7.4.6.2 Online/Offline switching screen [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]

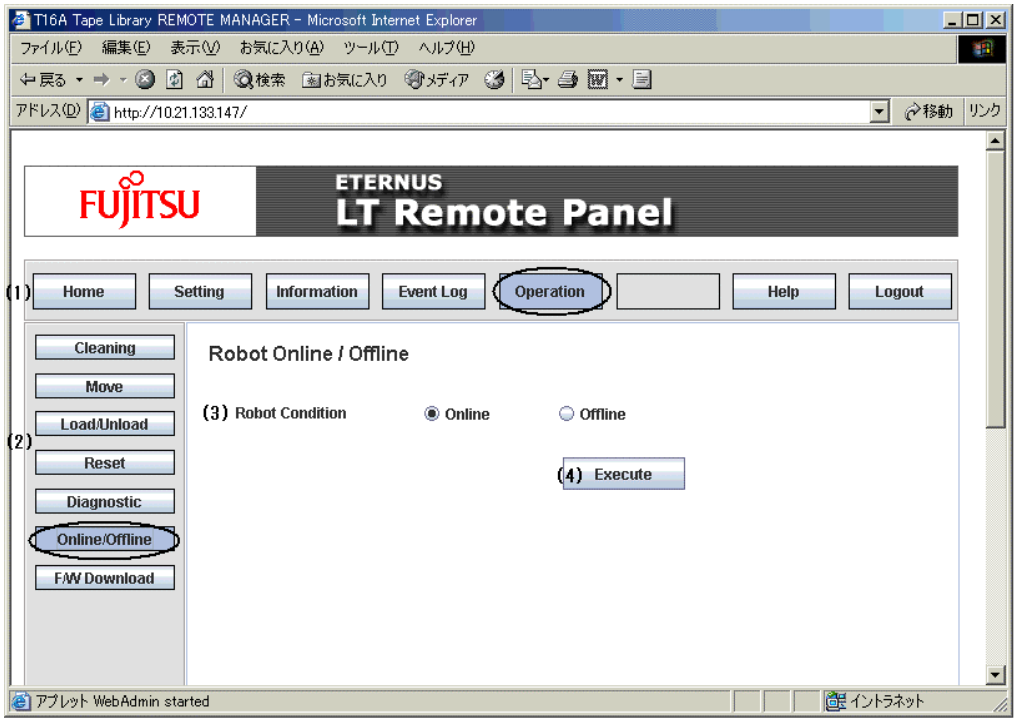


Figure 7.26 Online/Offline screen

[Function]

This function switches between Online and Offline modes of the robot of the tape library.

Note: Before performing this operation, stop backup software services from the server console.

[Display contents]

(1) Basic menu

(2) Submenu of library operation screens

(3) Online/Offline setting

- Online/Offline

  Select Online or Offline.

(4) Execute button

When the [Execute] button is clicked, the robot is set in the specified status (online or offline).

⚠ Caution

On the Fibre Channel Model, switching the tape library from online mode to offline mode by executing an operation from the operator panel or from a remote panel while a channel is linked disconnects the channel link. If this event occurs while the tape library is being operated with the backup software, the running job terminates abnormally.

Before switching the tape library from online mode to offline mode during maintenance or for other purposes, confirm the status of the tape library and the operation on the host.

7.4.6.3 Firmware Download screen [Do not use]

[Basic menu] → [Operation] → [F/W Download]

7.4.7 Help screen [General user] [Administrator]

[Basic menu] → [Help]

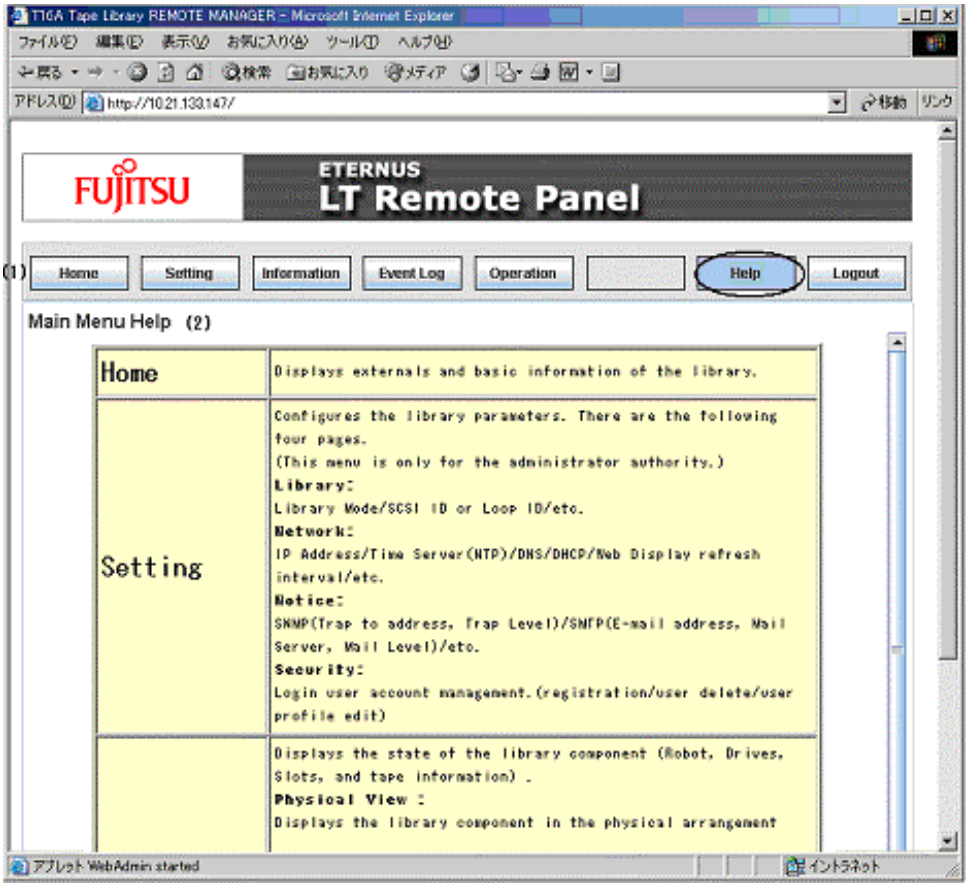


Figure 7.27 Help screen

[Function]

This screen displays the outline of functions of the respective screens.

[Display contents]

(1) Basic menu

(2) Content of Help

7.4.8 Logout screen [General user] [Administrator]

[Basic menu] → [Logout]

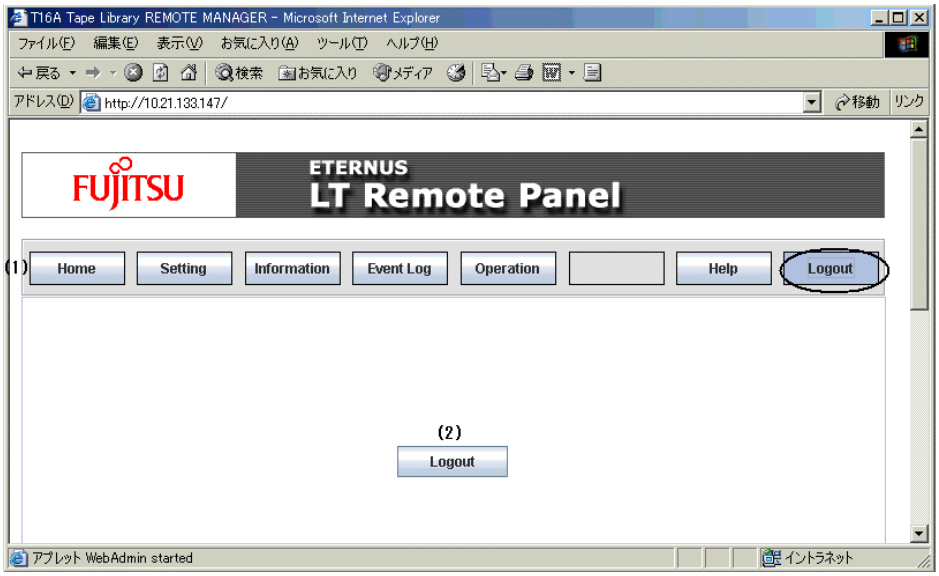


Figure 7.28 Logout screen

[Function]

This screen logs out the remote panel.

[Display contents]

(1) Basic menu

(2) Logout button

[Operation]

Click the [Logout] button to log out from the remote panel and jump to the login screen.

Chapter 8 Maintenance

This chapter explains the cleaning functions of the tape library and the method of tape library maintenance.

8.1 Cleaning the Tape Drive Head

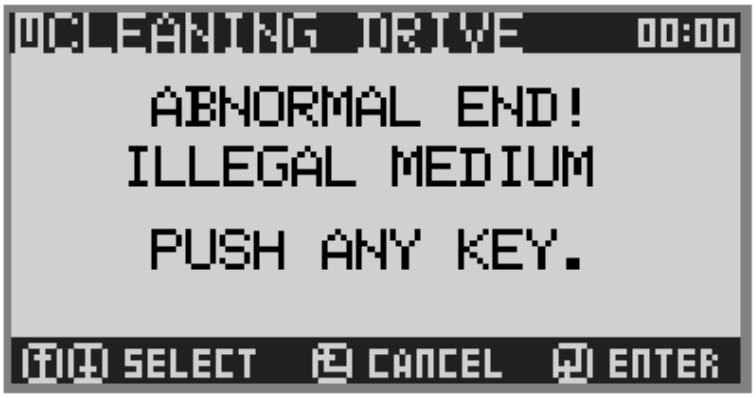
The magnetic head of the tape drive installed in the tape library is stained by the tape and collects airborne dust while the tape drive is used to read and write data on many tape cartridges. A magnetic head that is stained or covered with dust is likely to cause errors in reading and writing data.

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.

8.1.1 Cleaning cartridge

- Use the dedicated cleaning cartridge for the tape drive to be cleaned.
- A cleaning cartridge can be used up to about 50 times. Replace the cleaning cartridge when it has been used nearly 50 times.
- The internal cleaning memory (LTO-CM) of each cleaning cartridge records the number of times the cleaning cartridge has been used. However, you cannot visually check the record from outside the cleaning cartridge. Neither can you check the number of times that the cleaning cartridge has been used in the library unit. Keep a separate record of the number of times that the cleaning cartridge has been used.
- 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. In such cases, 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.

8.1.2 Timing of cleaning

- When the Alarm indicator (yellow) in the operator panel is on:

  To turn off the Alarm indicator, select "ALARM LED OFF" from the COMMANDS menu after performing cleaning.

  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.

8.1.3 Cleaning methods

The LT230 tape library uses, as standard, manual cleaning that is operated from the operator panel. There are two methods of cleaning the magnetic head of the tape library: "Manual cleaning" that is operated from the operator panel or remote panel and "Automatic cleaning" that is performed automatically according to the number of cleaning times specified by software.

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.

Also, if a cleaning cartridge is cyclically used for cleaning as set by the backup software, the cleaning cartridge may be used excessively (more than necessary). Such usage results in an inefficient use of cleaning cartridges, which can only be used a limited number of times.

If possible, perform manual cleaning from the operator panel or with the backup software.

8.1.3.1 Manual cleaning

(1) Cleaning operation 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.

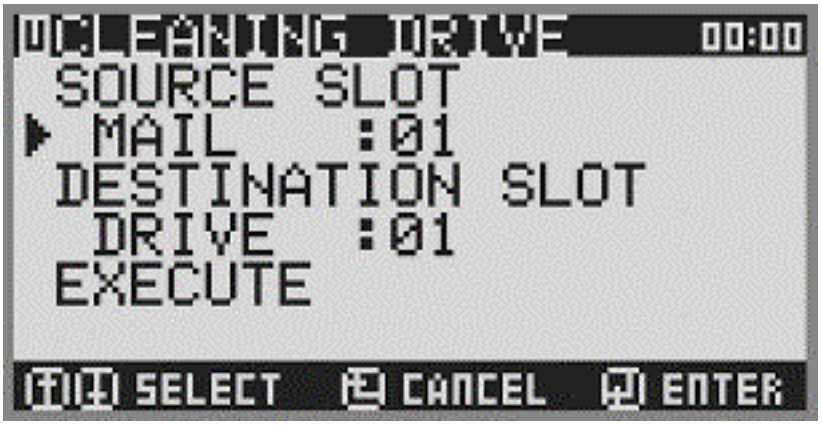
   If use of the mailbox has been enabled by the corresponding setting, insert the cleaning cartridge into its mail slot. (See Section 5.4.1.)
4) Select [TOP OF MENU] [COMMAND].

5) Select [COMMANDS] → [CLEAN DRIVE]

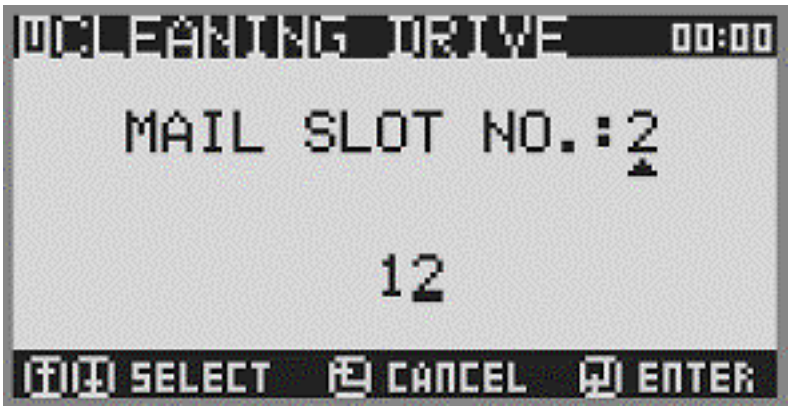
6) When [CLEAN DRIVE] is selected, the screen shows the following:

7) When [SOURCE SLOT] is selected, the following screen appears. Select [MAIL SLOT]. (Select [SLOT] when a cleaning cartridge is stored in the magazine slot.)

8) To change the number of a mail slot that contains the cleaning cartridge, move the cursor to [MAIL].

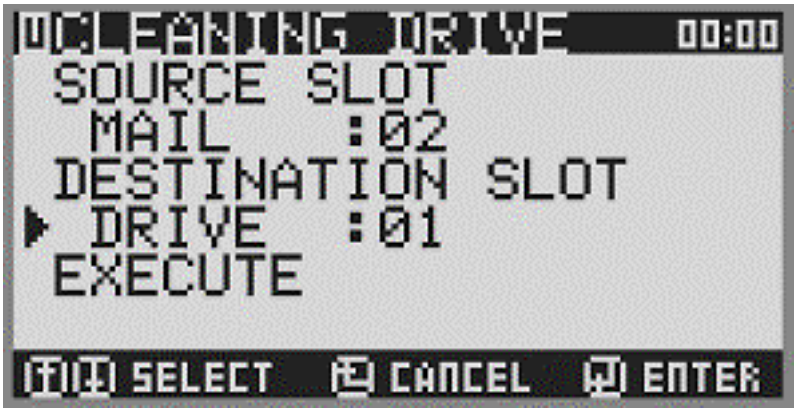


9) Specify a mail slot number (or a magazine slot number when the tape cartridge is stored in a magazine slot).

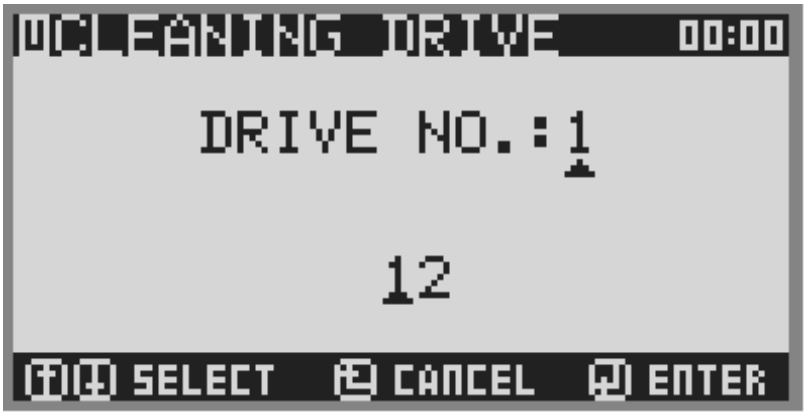


Select each digit by using the ↑ or ↓ button and determine it by using the ↵ button. If the wrong digit is selected, you can undo the selection by using the ← button.

10) Move the cursor to [DRIVE] and specify the number of a drive you want to clean.

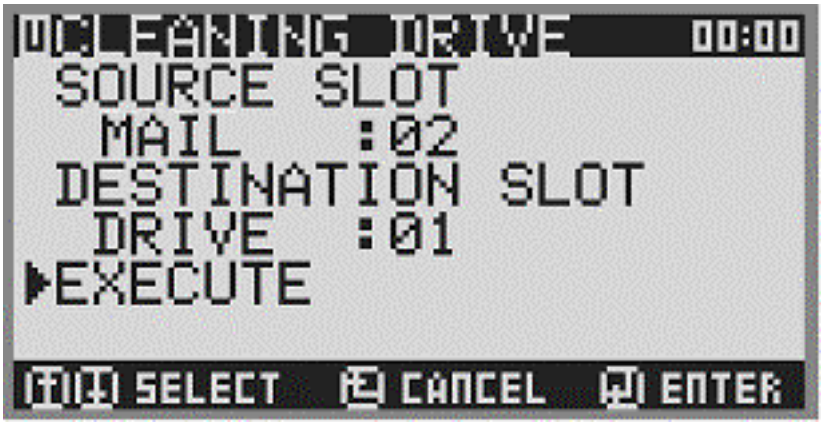


11) Here, specify the number (one digit) of the tape drive to be cleaned.



Select each digit by using the ↑ or ↓ button and determine it by using the ↵ button. If a wrong digit is selected, you can undo the selection by using the ↩ button.

12) To execute cleaning, select [EXECUTE].



13) When [EXECUTE] is selected, the following message appears:

To start cleaning, select [YES].

To cancel cleaning, select [NO].

14) When [YES] is selected, the following message appears:

This message indicates that cleaning is in progress. You cannot operate the panel until this message disappears.

When cleaning is complete, this message disappears and the cleaning cartridge is in the original slot.

15) Remove the cleaning cartridge from the mail slot. (See Section 5.5.1.)

(2) Cleaning operation from the remote panel

For information on the cleaning operation from the remote panel, see Section 7.4.6.1, "Drive Cleaning operation screen [Administrator]."

8.1.3.2 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 6.6.3.4, "Tape drive cleaning," in the *ETERNUS LT230 Tape Library Setup Guide*.

(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.

⚠ Caution

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.

⚠ Caution

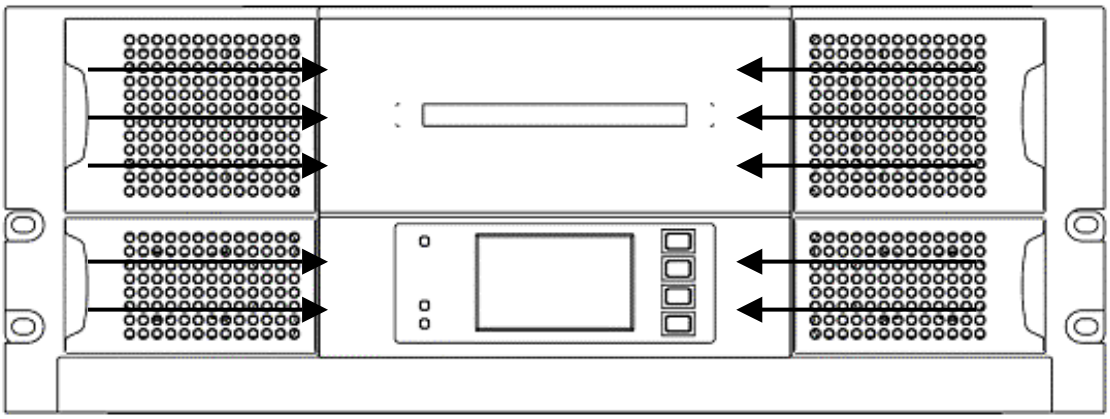
The operator panel displays "CLEAN" indicating that the cleaning operation with the backup software is in progress. The remote panel displays nothing to indicate that the cleaning operation is in progress. Login to the remote panel may be disabled during cleaning by backup software. Login is enabled after the cleaning is completed.

8.2 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.



8.3 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

8.4 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.

8.5 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)
- Reconfiguring the WWN (when a change of WWN is necessary)
- Reconfiguring the zoning of fibre channel switch (when a change of zoning is necessary)

Chapter 9 Points to be Checked at Occurrence of Problems

This chapter explains the points to be checked should problems occur in the tape library and how to recover from the problems.

9.1 Malfunctions

Check each component of the library according to troubleshooting briefly described in Table 9.1.

Table 9.1 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 (|). Make sure that all the AC cords are correctly connected. Check whether power is being 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.
Mailbox cannot be used.	Select [SETTING LIST] and then check the mailbox setting. (See Section 5.1.1.2.) If the mailbox is set to OFF, set it to ON. (See Section 5.1.4.)
Cartridge is caught by the drive or the accessor.	Check the inside of the library through the observation window. Check the error log. 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.

9.2 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.

9.3 When Requesting Maintenance

When you request the maintenance service to repair the tape library or replace its parts, record and retain the information on the problem, such as lamp indications and the messages displayed on the operator panel LCD. The information is useful for maintenance work.

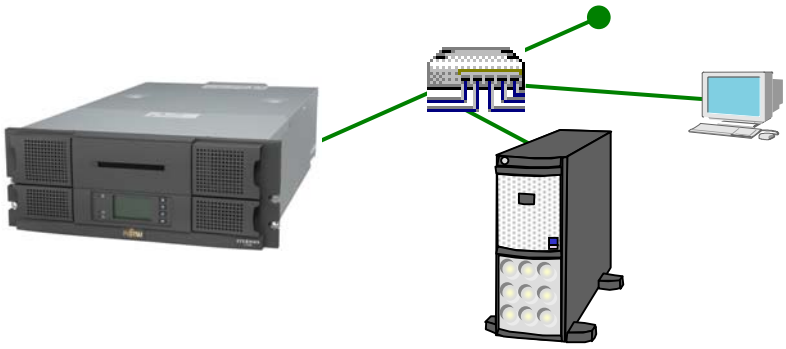
For maintenance, Fujitsu maintenance personnel may bring a maintenance tool (e.g., personal computer) for diagnostic use and connect it to the customer's LT230.

The maintenance personnel may connect the maintenance tool to the LT230 in one of the following three ways:

1) Connecting the maintenance personnel's personal computer (FST) directly to the LT230

2) Connecting the customer's personal computer directly to the LT230

3) Connecting the customer's personal computer to the LT230 via a network



- Maintenance of the LT230 requires a personal computer on which Java has been installed with Java policies set.

  (Java installation and policy setup are required to collect log information on the LT230 and update the tape library firmware.)

- If the maintenance personnel's personal computer cannot be connected to the LT230, the customer must provide a personal computer for maintenance use.

9.4 How to Recover from Problems Due to Operation Error

9.4.1 Mistakenly moving a cartridge in the tape library during backup software operation

If you mistakenly perform a cartridge operation 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.

9.4.1.1 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.

9.4.1.2 When using NetWorker

When using NetWorker, follow the recovery procedure below.

1) Perform a reset.

   # nsrjb -HE

2) Perform an inventory operation.

   # nsrjb -I

9.4.1.3 When using BrightStor 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.

9.4.1.4 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.

9.4.2 Mistakenly Shutting Off the Power during Backup Software Operation

9.4.2.1 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.

9.4.2.2 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.

9.4.3 Occurrence of CHK 0222 (CHK 0322) during a cartridge operation in the library

When specific backup software is used (ETERNUS SF TSM, Symantec 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.

⚠ Caution

If the CHK 0222 error occurs, the library unit must be turned off and on to cancel the prevent status.

⚠ Caution

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.

9.5 Notes on Use

9.5.1 Concurrent execution of multiple nsrjb commands with NetWorker under Solaris 10 OS

If multiple nsrjb commands are executed concurrently when NetWorker is used under Solaris 10 OS, labeling may fail with the error message shown below output. In such cases, reexecute the commands or, when a script has been used, insert a "sleep 5" command between the nsrjb commands in the script to prevent the nsrjb commands from being executed concurrently.

Example of an error message that is output when an attempt has been made to execute the nsrjb commands to label the cartridges in slot #1 and slot #2 and specify media pools "lt230" and "Default" for the respective tape cartridges:

```
# nsrjb -LY -S 1 -b lt230 -m &
# nsrjb -LY -S 1 -b Default -m
nsrjb: SYSTEM error: The device is in use.
```

1) Corrective measure 1

Example of command line

```
# nsrjb -LY -S 1 -b lt230 -m
# nsrjb -LY -S 1 -b Default -m
nsrjb: SYSTEM error: The device is in use.
```

Omit "&" to execute the next command after the preceding command terminates.

2) Corrective measure 2

Example of script

```
nsrjb -LY -S 1 -b lt230 -m
sleep 5
nsrjb -LY -S 2 -b Default -m
```

Insert a sleep command between the nsrjb commands to prevent the nsrjb commands from being executed concurrently.

9.6 Inquiries about the LT230

If you have any questions about the LT230, ask your Fujitsu SE or sales representative. For the latest information on the LT230, refer to the Web site at the following URL:

http://storage-system.fujitsu.com/

Appendix A Specifications

A.1 LT230 Tape Library

(1) LT230 Tape Library (LTO Ultrium 4, Fibre Channel)

Item			Specification
Model name			LT23JFE1U
Number of stored cartridge volumes			40
Applicable cartridge media (*1)			LTO Ultrium 1, LTO Ultrium 2, LTO Ultrium 3 tape, and LTO Ultrium 4 cartridge
Storage capacity (max)		UTO Ultrium 4	32 TB (non-compressed) 64 TB (compressed at 2:1)
Data transfer rate		LTO Unitinum 4	120 MB/s (in the non-compression mode) 240 MB/s (in the compression mode)
Installed tape drive		Type	LTO Ultrium 4 tape drive
		Number of installed drives	1 or 2
External dimensions	Rack-mounted	Height (*2)	222.3 mm (5u)
		Width	481 mm
		Depth	826 mm
	Stand-alone	Height	205 mm
		Width	482 mm
		Depth	826 mm
Weight (*3) (*4)	Rack-mounted (*2)		49.2 kg or less
	Stand-alone		53.2 kg or less
Host interface		Fibre Channel	Fibre Channel 1Gbps/2Gbps/4Gbps
Logical unit number (LUN)		Library controller	Value: 1
		Tape drive	Value: 0
Input voltage			AC100-240V
Power frequency			50/60Hz
Power consumption (max) (*3)			192 W
Noise		Standby	45dBA
		Operating	56dBA

Item			Specification
Environmental requirement	[During operation]	Ambient temperature	10°C to 35°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
	[During non-operation *4]	Ambient temperature	-30°C to 60°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
	[During transportation *5]	Ambient temperature	-23°C to 49°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
Service life			5 years

*1 The LTO Ultrium 2 data cartridge is read-only.

*2 Includes a rack-mount tray (1U, 8 kg).

*3 When mounting two drives

*4 Does not include a cartridge. (reference: about 2.5 kg per 10 volumes)

*5 Include a cartridge.

(2) LT230 Tape Library (LTO Ultrium 3, Fibre Channel)

Item			Specification
Model name			LT23JFC1U
Number of stored cartridge volumes			40
Applicable cartridge media (*1)			LTO Ultrium 1, LTO Ultrium 2, and LTO Ultrium 3 tape cartridge
Storage capacity (max)		UTO Ultrium 3	16 TB (non-compressed) 32 TB (compressed at 2:1)
Data transfer rate		LTO Ultrium 3	80 MB/s (in the non-compression mode) 160 MB/s (in the compression mode)
Installed tape drive		Type	LTO Ultrium 3 tape drive
		Number of installed drives	1 or 2
External dimensions	Rack-mounted	Height (*2)	222.3 mm (5u)
		Width	481 mm
		Depth	826,9 mm
	Stand-alone	Height	205 mm
		Width	481 mm
		Depth	826,9 mm
Weight (*3) (*4)	Rack-mounted (*2)		49.2 kg or less
	Stand-alone		53.2 kg or less
Host interface		Fibre Channel	Fibre Channel 1Gbps/2Gbps/4Gbps
Fibre Channel model logical unit number (LUN)		Library controller	Value: 1
		Tape drive	Value: 0
Input voltage			AC100-240V
Power frequency			50/60Hz
Power consumption (max) (*3)			192 W
Noise		Standby	45dBA
		Operating	56dBA

Item			Specification
Environmental requirement	[During operation]	Ambient temperature	10°C to 35°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
	[During non-operation *4]	Ambient temperature	-30°C to 60°C
		Relative humidity	10% to 90%RH
		Highest dry bulb temperature	26°C
	[During transportation *5]	Ambient temperature	-23°C to 49°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
Service life			5 years

*1 The LTO Ultrium 1 data cartridge is read-only.

*2 Includes a rack-mount tray (1U, 8 kg).

*3 When mounting two drives

*4 Does not include a cartridge. (reference: about 2.5 kg per 10 volumes)

*5 Include a cartridge.

(3) LT230 Tape Library (LTO Ultrium 3, SCSI)

Item			Specification
Model name			LT23JLC1U
Number of stored cartridge volumes			40
Applicable cartridge media (*1)			LTO Ultrium 1, LTO Ultrium 2, and LTO Ultrium 3 tape cartridge
Storage capacity (max)		UTO Ultrium 3	16 TB (non-compressed) 32 TB (compressed at 2:1)
Data transfer rate		LTO Ultrium 3	800 MB/s (in the non-compression mode) 160 MB/s (in the compression mode)
Installed tape drive		Type	LTO Ultrium 3 tape drive
		Number of installed drives	1 or 2
External dimensions	Rack-mounted	Height (*2)	222.3 mm (5u)
		Width	481 mm
		Depth	826,9 mm
	Stand-alone	Height	205 mm
		Width	481 mm
		Depth	826,9 mm
Weight (*3) (*4)	Rack-mounted (*2)		49.2 kg or less
	Stand-alone		53.2 kg or less
Host interface		SCSI model	SCSI Ultra-2 LVD/Single-ended
Fibre Channel model logical unit number (LUN)		Library controller	Value: 1
		Tape drive	Value: 0
Input voltage			AC100-240V
Power frequency			50/60Hz
Power consumption (max) (*3)			192 W
Noise		Standby	45dBA
		Operating	56dBA

Item			Specification
Environmental requirement	[During operation]	Ambient temperature	10°C to 35°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
	[During non-operation *4]	Ambient temperature	-30°C to 60°C
		Relative humidity	10% to 90%RH
		Highest dry bulb temperature	26°C
	[During transportation *5]	Ambient temperature	-23°C to 49°C
		Relative humidity	20% to 80%RH
		Highest dry bulb temperature	26°C
Service life			5 years

*1 The LTO Ultrium 1 data cartridge is read-only.

*2 Includes a rack-mount tray (1U, 8 kg).

*3 When mounting two drives

*4 Does not include a cartridge. (reference: about 2.5 kg per 10 volumes)

*5 Include a cartridge.

A.2 List of Defaults

The table below lists the defaults.

Fibre Channel model list of defaults (1/2)

Category of setting	Setting item		Default
LIBRARY SETTING	ONLINE/OFFLINE		ONLINE
	MAIL BOX		ON
	DATE/TIME	GMT	+09:00
	FAST LOAD MODE (*)		OFF
	SLOT ORIGIN (*)		01
	USER SLOT		38
	LIBRARY MODE (*)	RANDOM	ON
	LIBRARY MODE	SEQUENTIAL	OFF
	UNIT ATT. MODE (*)		OFF
	MODE SENSE (*)		18B
	TAPE ALERT (*)		ON
	RECOVER ERROR (*)		OFF
	STARTUP MODE (*)		ON
	ABORT MODE (*)		OFF
	INIT. ELEMENT (*)		OFF
DRIVE SETTING	Drive#1	CONTROL PATH (*)	ON
		POINT TO POINT	ON
		LOOP	OFF
		LOOP ID	001
		LINK SPEED	04
	Drive#2	CONTROL PATH (*)	OFF
		POINT TO POINT	ON
		LOOP	OFF
		LOOP ID	002
		LINK SPEED	04
LIBRARY OPTION	BARCODE READER		ON
	AUTO CLEANING (*)		OFF

Note: Do not change the value of the setting item marked with an asterisk from the default.

Changing set value from the default may cause a tape library malfunction.

Fibre Channel model list of defaults (2/2)

Category of setting	Setting item		Default
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
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

SCSI model list of defaults (1/2)

Category of setting	Setting item		Default
LIBRARY SETTING	ONLINE/OFFLINE		ONLINE
	MAIL BOX		ON
	DATE/TIME	GMT	+09:00
	FAST LOAD MODE (*)		OFF
	SLOT ORIGIN (*)		01
	USER SLOT		38
	LIBRARY MODE (*)	RANDOM	ON
	LIBRARY MODE	SEQUENTIAL	OFF
	UNIT ATT. MODE (*)		OFF
	MODE SENSE (*)		18B
	TAPE ALERT (*)		ON
	RECOVER ERROR (*)		OFF
	STARTUP MODE (*)		ON
	ABORT MODE (*)		OFF
	INIT. ELEMENT (*)		OFF
DRIVE SETTING	Drive#1	CONTROL PATH (*)	ON
		SCSI ID	01
	Drive#2	CONTROL PATH (*)	OFF
		SCSI ID	02
LIBRARY 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.

Changing set value from the default may cause a tape library malfunction.

SCSI model 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

Appendix B Options and Accessories

This section outlines options and accessories available for LT230 tape library.

B.1 Options

B.1.1 Cartridge magazine

Name	Description
Magazine L	Left lower Magazine for LT230
Magazine R	Right lower Magazine for LT230
Magazine L	Left upper Magazine for LT230
Magazine R	Right upper Magazine for LT230

B.1.2 Tape drive

Name	Description
LTO4 FC drive	LTO Ultrium 4 tape drive for expansion (for LT23JFE1U Fibre Channel model)
LTO3 FC drive	LTO Ultrium 3 tape drive for expansion (for LT23JFC1U Fibre Channel model)
LTO3 SCSI drive	LTO Ultrium 3 tape drive for expansion (for LT23JLC1U SCSI model)

B.1.3 Stand-alone conversion kit

Name	Description
Stand-alone Conversion Kit	Kit to convert from rack-mount type into stand-alone type

B.1.4 Rack-mount kit

Name	Description
Rack-mount kit	Kit to convert from stand-alone type into rack-mount type

B.1.5 Fibre Channel cable

Name	Length	Description
Fibre Channel cable	5 m to 100 m	multimode LC-LC connector
Fibre Channel cable	2 m to 15 m	multimode LC-LC connector (*)

* Not coated. Mainly used for connection in a single rack that is installed in an office.

B.1.6 SCSI cable

Name	Length	Description
SCSI cable	5 m or less	LVD cable: Half-pitch 68-pin - half-pitch 68-pin
SCSI cable	5 m or less	LVD cable: VHDCI 68-pin - half-pitch 68-pin

B.1.7 Key Management Function

Name	Description
Key management function option	This option enables the tape drive encryption function of the LT23JFE1 model with a built-in LTO Ultrium 4 tape drive and manages the encryption keys of the tape library. Using this option enables recording encrypted data on LTO Ultrium 4 data cartridges independently of backup software. For data cartridge management purposes, barcode labels must be attached to the cartridges.

B.2 Accessories

Accessories available for LT230 tape library are listed below.

B.2.1 LTO Ultrium data cartridge

Item	Remarks
LTO Ultrium 4 data cartridge	LTO Ultrium 4 data cartridge of 800 GB memory (non-compressed)
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 20 labels per set

Appendix C Tape Library Error Codes

This appendix explains the error codes that are used for the LT230 tape library. The contents of error codes may be changed for improvement without prior notice.

C.1 Tape Library Error Codes

Table C.1 Tape library Error Codes (1/16)

Code ($_H$)	Description	Panel indication
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.	Display of "CHK 0008"
0009	Reserved	-
000A	Reserved	-
000B	Reserved	-
000C	Reserved	-
000D	Reserved	-
000E	Reserved	-
000F	Reserved	-

Table C.1 Tape library Error Codes (2/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (3/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (4/16)

Code ($_H$)	Description	Panel indication
0030	Reserved	-
0031	Reserved	-
0032	Reserved	-
0033	Reserved	-
0034	Reserved	-
0035	Reserved	-
0036	Reserved	-
0037	Reserved	-
0038	Reserved	-
0039	Reserved	-
003A	Reserved	-
003B	Reserved	-
003C	Reserved	-
003D	Reserved	-
003E	Reserved	-
003F	Reserved	-

Table C.1 Tape library Error Codes (5/16)

Code ($_H$)	Description	Panel indication
0040	A media error was detected when a cartridge was loaded into the drive #1.	Display of "CHK 0040"
0041	A media error was detected when a cartridge was loaded into the drive #2.	Display of "CHK 0041"
0042	Load timeout occurred when a cartridge was loaded into the drive #1.	Display of "CHK 0042"
0043	Load timeout occurred when a cartridge was loaded into the drive #2.	Display of "CHK 0043"
0044	A used cleaning medium was inserted into drive #1.	No display Recorded in the log.
0045	A used cleaning medium was inserted into drive #2.	No display Recorded in the log.
0046	Reserved	-
0047	Reserved	-
0048	Reserved	-
0049	Reserved	-
004A	Reserved	-
004B	Reserved	-
004C	Reserved	-
004D	Reserved	-
004E	Reserved	-
004F	Reserved	-

Table C.1 Tape library Error Codes (6/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (7/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (8/16)

Code ($_H$)	Description	Panel indication
0070	Calibration failed because the picker contains a media.	CHK 0070
0071	A magazine has not been mounted and calibration is disabled.	CHK 0071
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.	Display of "CHK 007F"

Table C.1 Tape 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	Operation timeout was detected during an X offset operation.	CHK 0085
0086	Operation timeout of the X motor 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 Tape library Error Codes (10/16)

Code ($_H$)	Description	Panel indication
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	Operation timeout of the Y motor 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 Tape 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	Operation timeout was detected during an offset operation.	CHK 00A5
00A6	Operation timeout of the S motor 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 Tape 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 slot (Slot 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	Operation timeout of the Picker motor 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 Slot 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 Tape library Error Codes (13/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (14/16)

Code ($_H$)	Description	Panel indication
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	An alarm was detected in the fan for the normal power supply.	FAN error
00D6	An error was detected in the redundant power supply.	Redundant power supply error
00D7	Reserved	-
00D8	A magazine setting error was detected.	CHK 00D8
00D9	Failed to unlock when ejecting a magazine.	CHK 00D9
00DA	The mail box could not be unlocked when it was ejected.	CHK 00DA
00DB	The mail box sensor showed "Ejected" although the LL magazine was mounted. (sensor error)	CHK 00DB
00DC	Reserved	-
00DD	Reserved	-
00DE	Drive #1 FAN ALARM was detected.	FAN ERROR
00DF	Drive #2 FAN ALARM was detected.	FAN ERROR

Table C.1 Tape library Error Codes (15/16)

Code ($_H$)	Description	Panel indication
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 Tape library Error Codes (16/16)

Code ($_H$)	Description	Panel indication
00F0	Sensor Error #1 (With Blink checked, an error was detected in the mail slot position.)	CHK 00F0
00F1	Sensor error #2 (During blink check, an error was detected in magazine set sensor (lower left).)	CHK 00F1
00F2	Sensor Error #3 (With Blink checked, an error was detected in the magazine set sensor (upper left).)	CHK 00F2
00F3	Sensor error #4 (During blink check, an error was detected in magazine set sensor (lower right).)	CHK 00F3
00F4	Sensor Error #5 (With Blink checked, an error was detected in the magazine set sensor (upper right).)	CHK 00F4
00F5	Sensor error #6 (During blink check, an error was detected in X position sensor (left).)	CHK 00F5
00F6	Sensor error #7 (During blink check, an error was detected in X position sensor (right).)	CHK 00F6
00F7	Sensor error #8 (During blink check, an error was detected in X origin sensor.)	CHK 00F7
00F8	Reserved	-
00F9	Reserved	-
00FA	Sensor error #9 (During blink check, an error was detected in Y origin sensor.)	CHK 00FA
00FB	Sensor error #10 (During blink check, an error was detected in S position sensor.)	CHK 00FB
00FC	Sensor error #11 (During blink check, an error was detected in S origin sensor.)	CHK 00FC
00FD	Sensor error #12 (During blink check, an error was detected in cartridge sensor.)	CHK 00FD
00FE	Sensor error #13 (During blink check, an error was detected in P forward sensor.)	CHK 00FE
00FF	Sensor error #14 (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 (1/8)

Code ($_H$)	Description	Panel indication
0200	An illegal data was sent to drive #1. (NAK was detected.)	CHK 0200
0201	A timeout error occurred while waiting for response from drive #1. The tape library cannot be used because the library control path connected from the host via drive #1 as a bridge is also disconnected when "CONTROL PATH = ON" (standard setting) has been specified for drive #1.	CHK 0201
0202	An illegal data was received from drive #1.	CHK 0202
0203	Drive #1 is disconnected. The tape library cannot be used because the library control path connected from the host via drive #1 as a bridge is also disconnected when "CONTROL PATH = ON" (standard setting) has been specified for drive #1.	CHK 0203
0204	Drive #1 failed to execute a command.	CHK 0204
0205	Drive #1 is busy.	CHK 0205
0206	Drive #1 failed to execute a command because of unmounting. The tape library cannot be used because the library control path connected from the host via drive #1 as a bridge is also disconnected when "CONTROL PATH = ON" (standard setting) has been specified for drive #1.	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 (2/8)

Code ($_H$)	Description	Panel indication
0210	An error was detected in Writing in drive #1 module EEPROM.	CHK 0210
0211	An I2C communication error was detected in drive #1 module EEPROM.	CHK 0211
0212	An I2C communication end error was detected in drive #1 module EEPROM.	CHK 0212
0213	A checksum error was detected in drive #1 module EEPROM.	CHK 0213
0214	The drive #1 module EEPROM was not connected.	CHK 0214
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 (3/8)

Code ($_H$)	Description	Panel indication
0220	A timeout error occurred when ejecting a media from drive .	CHK 0220
0221	Reserved	-
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 (4/8)

Code ($_H$)	Description	Panel indication
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	-

Table C.2 Drive Access Error Codes (5/8)

Code ($_H$)	Description	Panel indication
0300	Data sent to drive #2 is invalid. (NAK was detected.)	CHK 0300
0301	Time out occurred while waiting for a response from drive #2	CHK 0301
0302	Data received from drive #2 is invalid.	CHK 0302
0303	Drive #2 is not connected.	CHK 0303
0304	Drive #2 failed to execute a command.	CHK 0304
0305	Drive #2 is busy.	CHK 0305
0306	Drive #2 is not connected and cannot execute a command.	CHK 0306
0307	Undefined	-
0308	Undefined	-
0309	Undefined	-
030A	Undefined	-
030B	Undefined	-
030C	Undefined	-
030D	Undefined	-
030E	Undefined	-
030F	Undefined	-

Table C.2 Drive Access Error Codes (6/8)

Code ($_H$)	Description	Panel indication
0310	A error was detected in writing data in drive #2 module EEPROM.	CHK 0310
0311	A communication error was detected in 12C of drive #2 module EEPROM.	CHK 0311
0312	A communication end error was detected in 12C of drive #2 module EEPROM.	CHK 0312
0313	A checksum error was detected in drive #2 module EEPROM.	CHK 0313
0314	Drive #2 module EEPROM is not connected.	CHK 0314
0315	Undefined	-
0316	Undefined	-
0317	Undefined	-
0318	Undefined	-
0319	Undefined	-
031A	Undefined	-
031B	Undefined	-
031C	Undefined	-
031D	Undefined	-
031E	Undefined	-
031F	Undefined	-

Table C.2 Drive Access Error Codes (7/8)

Code ($_H$)	Description	Panel indication
0320	Time out occurred during ejection of the cartridge from drive #2	CHK 0320
0321	Reserved	-
0322	Drive #2 could not eject the cartridge because of the Prevent Medium Removal setting.	CHK 0322
0323	Undefined	-
0324	Undefined	-
0325	Undefined	-
0326	Undefined	-
0327	Undefined	-
0328	Undefined	-
0329	Undefined	-
032A	Undefined	-
032B	Undefined	-
032C	Undefined	-
032D	Undefined	-
032E	Undefined	-
032F	Undefined	-

Table C.2 Drive Access Error Codes (8/8)

Code ($_H$)	Description	Panel indication
0330	Reserved	-
0331	Reserved	-
0332	Reserved	-
0333	Reserved	-
0334	Reserved	-
0335	Reserved	-
0336	Reserved	-
0337	Reserved	-
0338	Reserved	-
0339	Reserved	-
033A	Reserved	-
033B	Reserved	-
033C	Reserved	-
033D	Reserved	-
033E	Reserved	-
033F	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 LT230 tape library. The description of the meaning of error codes may be changed for improvement without prior notice.

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	Informational message The Fibre Channel port of the tape drive is offline.
F	The tape drive detects that no optical signal is received through the fibre channel.

Appendix E Event List

The following table shows the events reported by SNMP.

The displayed character-string may slightly vary depending on the firmware revision.

Event		Event level	Message
Library error	Fatal error	emergency, 2	ROBOT01 Broken CHK=XXXX (*1)
	Others	warning, 4	ROBOT01 Warning CHK=XXXX (*1)
Drive #1 error	Fatal error	emergency, 2	DRIVE01 Broken CHK=XXXX (*2)
	Others	warning, 4	DRIVE01 Warning CHK=XXXX (*2)
Drive #2 error	Fatal error	emergency, 2	DRIVE02 Broken CHK=XXXX (*2)
	Others	warning, 4	DRIVE02 Warning CHK=XXXX (*2)
Library Maintenance		warning, 4	ROBOT01 Library Maintenance
Reception of a cleaning request from drive #1		warning, 4	DRIVE01 CleaningRequest
Reception of a cleaning request from drive #2		warning, 4	DRIVE02 CleaningRequest
Start of inventory		info,5	ROBOT01 Inventory
Change of library operation mode		info,5	ROBOT01 ModeChange to RANDOM or ROBOT01 ModeChange to SEQUENTIAL
Start of medium transfer		info,5	ROBOT01 MoveStart XXXX to YYYY (*3) (*5)
Completion of medium transfer		info,5	ROBOT01 MoveComplete XXXX to YYYY (*4) (*5)
The library enters Not Ready state.		info,5	ROBOT01 NotReady
The drive #1 enters Not Ready state.		info,5	DRIVE01 NotReady
The drive #2 enters Not Ready state.		info,5	DRIVE02 NotReady
The library enters online state.		info,5	ROBOT01 Online
The drive #1 enters online state.		info,5	DRIVE01 Online
The drive #2 enters online state.		info,5	DRIVE02 Online
Unlock magazine		info,5	ROBOT01 MagazineUnlock
Unlock mailbox		info,5	ROBOT01 MailboxUnlock
Reception of Bus Device Reset		info,5	ROBOT01 BusDeviceReset

NOTE:

*1 XXXX: Robot error code

*2 XXXX: Drive error code (For IBM drive, displayed on 7-segment LED.

*3 XXXX: Source element, YYYY: Target destination element

*4 XXXX: Source element, YYYY: Destination element

*5 Stores an element name. "Slot??" for magazine slot, #Drive?" for drive, or "Picker" for picker.

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+08:30	Moluccas Islands
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+07:00	Bangkok, Jakarta, Hanoi
+06:30	Yangon (Rangoon)
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+04:30	Kabul
+04:00	Abu Dhabi, Muscat, Tbilisi
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+03:00	Baghdad, Kuwait, Nairobi, Riyadh, Moscow, St. Petersburg, Kazan
+02:00	Athens, Helsinki, Istanbul, Cairo, East Europe, Harare, Israel, Pretoria
+01:00	Berlin, Stockholm, Rome, Bern, Brussels, Vienna, Paris, Madrid, Amsterdam, Prague, Warsaw, Budapest
00:00	U.K., Lisbon, Monrovia, Casablanca
-01:00	Atlantic
-02:00	Mid-Atlantic
-03:00	Brasilia, Buenos Aires, Georgetown
-03:30	Newfoundland
-04:00	Atlantic Standard Time (Canada), Caracas, La Paz
-05:00	Eastern Standard Time (U.S., Canada), Bogota, Lima
-06:00	Central Standard Time (U.S., Canada), Saskatchewan, Mexico City, Tegucigalpa
-07:00	Mountain Standard Time (U.S., Canada), Arizona
-08:00	Pacific Standard Time (U.S., Canada), Tijuana
-09:00	Alaska
-10:00	Hawaii
-11:00	Midway Islands, Samoa
-12:00	Eniwetok, Kwajalein

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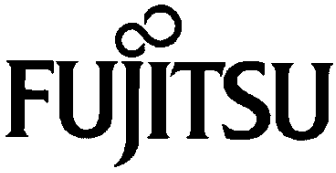
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