

## Introduction

Thank you for purchasing the M2512A optical disk drive. Your drive provides up to 230 megabytes of rewritable disk storage, using either 128 MB or 230 MB diskettes. You can install the drive on any Macintosh, IBMPC/AT, or UNIX computer equipped with a SCSI-2 host adapter and associated device drivers. This guide covers PC/AT installation with an Adaptec host adapter, and Macintosh installation with a Charismatic Anubis driver.

## Cautions

When sold as a subassembly, the M2512A drive is not required to meet FCC Rules Section 15. The end user is responsible for guaranteeing that the drive meets the EMI requirements of the system in which it is installed. Typically, this is accomplished through proper grounding and shielding.

The M2512A drive requires careful handling. Follow these guidelines:

- Keep the drive upright and level at all times.
- Avoid exerting pressure on any drive surface.
- Work on a soft surface such as a rubber mat.
- If the temperature difference between the packaged drive and the install location is more than 10° F, let the drive sit at the install location for two hours before installation to allow the temperature to equalize.
- Always touch a grounded object to discharge static electricity from your body before handling the drive.

## Unpacking

Follow the handling guidelines outlined above.

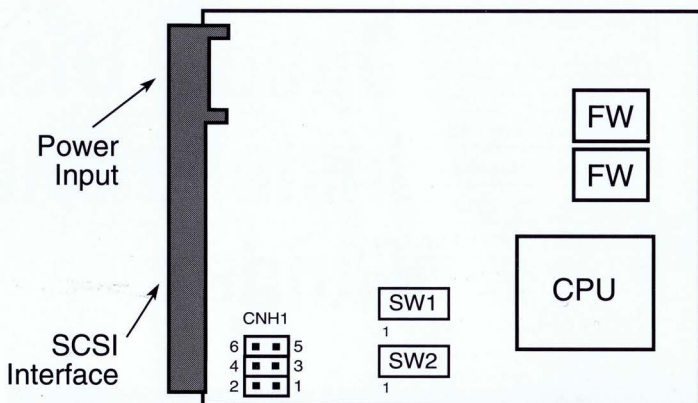
The package should contain the M2512A drive, a cartridge ejecting tool, and this guide.

Examine the drive for signs of damage. In case of a problem, contact your dealer immediately.

## Preparing the Drive

This section describes how to set switches SW1 and SW2, and set the jumpers on CNH1. The illustration below shows the switch locations.

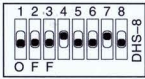
### Layout



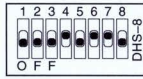
## Settings

### SW1

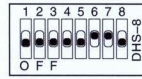
Switch 1 sets the SCSI ID and some drive functions. If your system has two or more SCSI devices, each device must have a unique ID. The illustrations show the factory settings and the recommended settings for IBM PC, UNIX, and Macintosh computers. These settings work for the majority of systems. See the section **Technical Data** for a table detailing all possible SW1 settings.



Factory settings



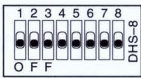
IBM PC and UNIX



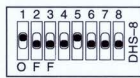
Macintosh

### SW2

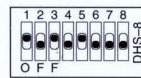
Switch 2 sets additional drive functions. The illustrations show the factory settings and the recommended settings for IBM PC, UNIX, and Macintosh computers. These settings work for the majority of systems. See the section **Technical Data** for a table detailing all possible SW2 settings.



Factory settings



IBM PC and UNIX



Macintosh

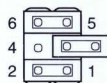
### CNH1 - Termination power

Switch CNH1 uses shorting bars to set the power source and to enable or disable termination. Pins 1 through 4 set whether power is supplied by drive power, by the host system, or by both. When shorted, pins 5 and 6 enable termination; when open, termination is disabled.

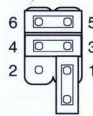
The illustrations show the possible settings for the power source. The factory setting is for power supplied by both sources. The illustrations all show termination as enabled. See the next section for information on setting termination.



Factory setting:  
power supplied by drive  
power and host controller



Power supplied by  
drive power



Power supplied by  
host controller

## Configurations and SCSI Termination

The figure below illustrates the termination requirements when connecting the M2512A drive and other SCSI devices to a host system. The device at each end of a SCSI daisy chain must be terminated.

For the M2512A drive, termination is enabled by shorting pins 5 and 6 on CNH1. The drive is shipped with termination enabled. If you install the M2512A drive in the middle of a SCSI daisy chain, remove the shorting bar to disable the termination.



Terminator installed



Termination disabled



Termination enabled

## Physical Installation

This section illustrates installation of the drive in an IBM PC/AT computer. Be sure to follow the handling guidelines described earlier under **Cautions**. In particular, Fujitsu recommends the use of an antistatic mat and wrist strap during installation.

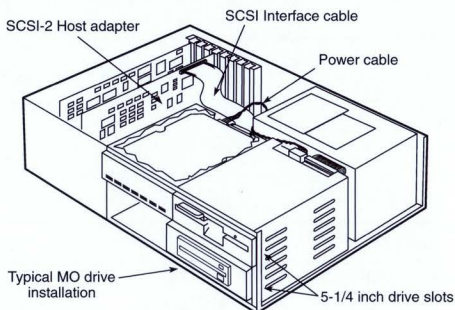
In Macintosh and UNIX systems, optical disk drives are typically installed in an external box. External box installations are available from third-party resellers.

### Notes on IBM PC/AT Installation

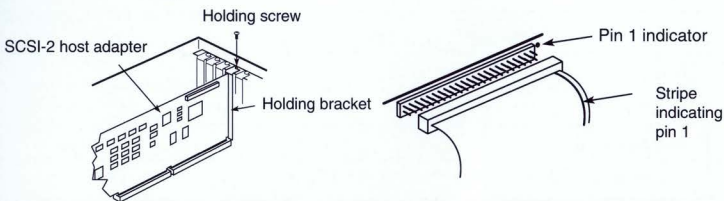
The M2512A drive can be installed in a 3.5-inch drive slot, or in a 5.25-inch drive slot by using a universal 5.25-inch mounting frame for 3.5-inch drives, available from Fujitsu. You also need a SCSI-2 host adapter card with a compatible 50-pin SCSI cable. To maintain proper operating temperature, provide adequate air flow. Fujitsu recommends that you use a dual-shutter bezel (part number CA01004-E341).

**Caution:** Turn off computer power before beginning installation.

### Typical installation configuration

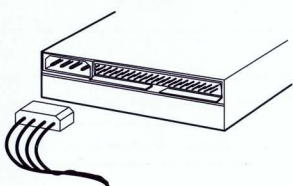


### Installation steps

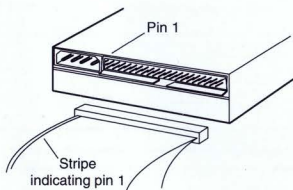


1. Install SCSI-2 host adapter.

2. Connect SCSI cable to host adapter.



3. Attach power cable to drive.



4. Connect SCSI cable to drive.

5. Slide drive into drive slot and install holding screws.

## Preparing Your System Software and the Optical Disk

This section gives sample procedures for:

- Setting up your system to use the M2512A drive
- Formatting and partitioning the optical disk

The sample procedures are for the IBM PC Adaptec optical disk driver and the Macintosh Charismac Anubis driver. Both kits are available separately from Fujitsu.

### Procedure for the Adaptec EZSCSI disk driver

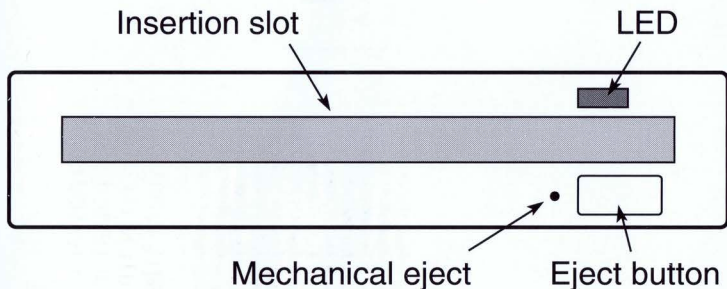
1. Turn on the computer.
2. Enter the computer's setup program and set the drive type for the M2512A drive as "None," or "Not installed" if the Fujitsu drive will be your main drive.
3. Follow the Adaptec DOS installation procedure, which includes modifying the *config.sys* file.
4. Reboot the computer.
5. Insert optical disk cartridge in the M2512A drive.
6. If your optical disk has **not** been preformatted, execute the AFDISK command to partition the disk. Choose the floppy format.
7. Reboot the computer.

### Procedure for the Macintosh Charismac Anubis optical disk driver

1. Open Charismac Anubis and drag Anubis Mounter to the system folder. Click OK.
  2. Insert optical disk cartridge in the M2512A drive.
- If your optical disk has **not** been preformatted, perform these additional steps:
1. Open Anubis Utility.
  2. Select Fujitsu M2512A ID#.
  3. Select Auto Init.
  4. Select Format.
  5. Select "All Mac OS" and click OK.
  6. Enter new volume name and click OK.
  7. When done, quit Anubis and restart Macintosh.
- See *Charismac manual* for detailed setup information and additional features.

## How to Use the M2512A Optical Disk Drive

The illustration below shows the M2512A front panel. Insert cartridges in the drive as you would a standard floppy disk cartridge. The LED lights to indicate disk access by the system.



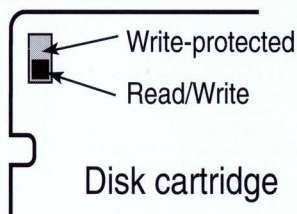
Cartridges can be ejected in three ways:

- 1 By pressing the Eject button on the front of the drive.
- 2 By a SCSI eject command from the host system.
- 3 Mechanically, by inserting the tool supplied with the drive into the hole to the left of the Eject button.

**CAUTION:** *Never* eject cartridge mechanically except in an emergency. If you eject a cartridge mechanically, *do not* move the drive until you have turned power on, inserted a cartridge, and ejected the cartridge using method 1 or 2 to properly lock the actuator.

To write-protect a disk, locate the write-protect switch at the upper-left corner of the disk cartridge. Push the slide switch upward towards the disk edge.

See the documentation supplied with the optical disk cartridge for information on cartridge care and handling, and manufacturer's warranty.



## M2512A Maintenance and Handling

This information will help to guarantee trouble-free operation of your M2512A optical disk drive. Read it carefully.

### Handling

Always follow the handling guidelines stated earlier in this guide when the M2512A disk drive is not installed in the host system.

Do not connect or disconnect cables or reset drive switches when the drive is powered on.

Before moving the host system with the drive installed, be sure that:

- The host system is turned off so that the drive is not powered on.
- No cartridge is in the drive (removing the cartridge locks the head carriage).

### Host System Environment and Drive Storage

Both the host system environment and drive storage locations should meet the environmental specifications listed under **Technical Data**. In particular, avoid quick changes in temperature to minimize the risk of condensation. Store the drive in moisture-proof packaging with desiccant.

### Maintenance

The lens on the drive head and the disk media should be cleaned as needed. Frequent cleaning may be required in a dirty environment.

Use the Fujitsu lens cleaning kit and media cleaning kit for maintenance. Using head cleaning kits from another manufacturer will void the Fujitsu warranty; Fujitsu assumes no responsibility for damage to the drive if head cleaning kits from another manufacturer are used.

**Please fill out this warranty form and return it to Fujitsu Computer Products of America.**

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

SERIAL #: \_\_\_\_\_

Date purchased: \_\_\_\_\_

My Fujitsu drive will be used in a:

New system  System upgrade

My system is:

IBM PC  Macintosh

Other: \_\_\_\_\_

I heard about Fujitsu products from:

Business associate  Consultant

Reseller recommendation

Advertising/direct mail/trade show

Other: \_\_\_\_\_

I purchased my Fujitsu drive from:

Reseller  Distributor

Mail order  Other: \_\_\_\_\_

I purchased my Fujitsu drive for these reasons  
(check all that apply):

Reliability  Performance

Capacity  Price

Fujitsu reputation/brand name

Recommendation

*Thank you for your time.*

**BUSINESS REPLY MAIL**

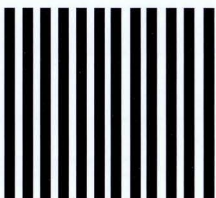
FIRST CLASS MAIL PERMIT NO. 7446 SAN JOSE, CA

POSTAGE WILL BE PAID BY ADDRESSEE

**Fujitsu**

FUJITSU COMPUTER PRODUCTS OF AMERICA  
ATTN: MAILSTOP E-3  
2904 ORCHARD PARKWAY  
SAN JOSE, CA 95134-2009

NO POSTAGE  
NECESSARY IF  
MAILED IN THE  
UNITED STATES



## Technical Data

### Functional Specifications

Data transfer rate	
Maximum sustained x-fer	1.3 - 2.1 MB/s
Synchronous maximum	5.0 MB/s
Asynchronous maximum	3.4 MB/s
Average seek time	30 ms $\pm$ 5 ms (media dependent)
Average latency	8.3 ms
Rotational speed	3600 rpm
Cache size	237 kilobytes read/write
Interface	SCSI-2 (SCSI-ICCS compliant)
Mean time between failures (MTBF)	40,000 hours with power on
Component life	5 years

### Physical and Environmental Specifications

Power requirements	+5V DC $\pm$ 5% 1.4 A typical; 2.0 A maximum
Dimensions	
Height	25.4 mm (1.0 inch)
Width	101.6 mm (4.0 inches)
Depth	146.0 mm (5.7 inches)
Weight	470 g (1 lb)
Ambient temperature	
Operating	5° C to 45° C (41° F to 113° F)
Non-operating	-20° C to 60° C (-4° F to 140° F)
Gradient	Less than 15° C (27° F) per hour
Relative humidity	
Operating	10% to 85% (non-condensing)
Non-operating	5% to 90% (non-condensing)
Vibration	
Operating	0.3 G maximum (5 Hz to 500 Hz)
Non-operating	1.0 G maximum (5 Hz to 500 Hz)
Shock resistance	
Operating	2 G maximum (10 ms)
Non-operating	50 G maximum (10 ms)
Altitude	
Operating	3,000 meters (10,000 feet)
Non-operating	12,000 meters (40,000 feet)
Acoustic noise	40 dB at 1 meter (3.3 feet)



## Technical Data *continued*

### SCSI ID and Drive Function Settings (SW1)

Key#	Function	Key On	Key Off
01	SCSI ID (see table below)	————	————
02			
03			
04	SCSI data bus parity check	Enabled	Disabled
05	Synchronous data transfer request	Drive	Host
06	Device type mode	MO	Fixed disk
07	Spindle automatic stop mode	Enabled	Disabled
08	LED mode	Reverse	Normal

SCSI ID	SW1-01	SW1-02	SW1-03
0 (default)	Off	Off	Off
1	Off	Off	On
2	Off	On	Off
3	Off	On	On
4	On	Off	Off
5	On	Off	On
6	On	On	Off
7	On	On	On

### Drive Function Settings (SW2)

Key#	Function	Key On	Key Off
01	Write cache mode	Enabled	Disabled
02	Not used	————	————
03	Mac Mode	Enabled	Disabled
04	Write verify	Disabled	Enabled
05	SCSI type	SCSI 2	SCSI 1
06	SDP (for next)	Enabled	Disabled
07	Not used	————	————
08	Factory test (Not to be set by user)	Enabled	Disabled

## Suppliers of Optical Disk Driver Software

The companies listed below are known by Fujitsu to offer optical disk driver software. However, Fujitsu does not guarantee the compatibility of the software with the M2512A optical disk drive. Contact the company for compatibility information.

### For IBM PC/AT and Compatibles

Adaptec	(800) 869-8833
Data Technology Corporation	(408) 262-7700
Distributed Processing Technology	(407) 830-5522
Pro Comp	(216) 234-6387
Bus Logic	(408) 492-9090
Future Domain	(714) 253-0400
Trantor	(800) 869-8833
Ciprico	(612) 559-2034
Core International	(407) 997-6033

### For Apple Macintosh

Charismac	Anubis	(916) 885-4420
Software Architects	Formatter One	(206) 252-6897
FWB Software	FWB Hard Disk Toolkit	(415) 474-8055

### For UNIX

Introl Corporation	(612) 788-9391
Optisys (for PC)	1-800-327-1271

## Fujitsu Optical Hotline

For all your optical disk needs, call the **Fujitsu Optical Hotline:**

**1-800-735-4510**

Product listing
230 MB MO media (Mac/PC/Unformatted)
128 MB MO media (Mac/PC/Unformatted)
Disk cleaning kit
Head cleaning disk
Extra power supply for DynaMO (110 volt)
Daisy chain SCSI adaptor for DynaMO
PC SCSI connection kit (makes Mac/basic DynaMO PC compatible)
Mac SCSI connection kit (makes PC/basic DynaMO Mac compatible)
PC SCSI cable (external installation)
Mac SCSI cable (external installation)
Bare drive internal 5.25-inch bay mounting kit

*All brand names and product names are trademarks or registered trademarks of their respective holders.*

## **CompuServe (US only)**

Start connecting with Fujitsu Computer Products of America and other CompuServe members by calling **800-524-3388** and asking for representative #506. If you are already a CompuServe member, enter GO FCPA to access the Fujitsu Section of the PC Vendor J Forum on CompuServe.

**Get online technical support.** Tap into the wealth of knowledge from our veteran product support staff via CompuServe. Now that you are an FCPA customer, you can get answers to your technical questions, and download installation tips and configuration information quickly and easily.

**Share information with other users.** Start a dialog with FCPA and other users of Fujitsu products—scanners, printers, hard drives, optical drives, and tape products. Find out what other people are doing, and give us feedback that will help shape our future offerings.

## **Technical Assistance**

In case of a problem, first contact your local Fujitsu dealer. If the dealer is unable to solve the problem, contact the Fujitsu Technical Assistance Center: Monday through Friday – 7:00 a.m. to 5:00 p.m. PST.

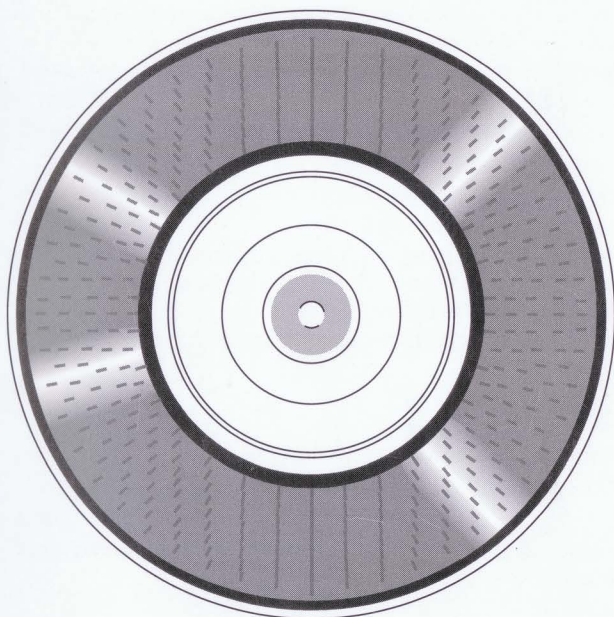
**Fujitsu Technical Assistance: 1-408-894-3950**



FUJITSU COMPUTER PRODUCTS OF AMERICA, INC.  
2904 Orchard Parkway  
San Jose, California 95134

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**M2512A**  
**Optical Disk**  
**Installation**  
**Guide**

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