

# ***AIT Drive***

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User's Guide

*AIT-2 Turbo TAPE DRIVE*  
***SDX-560V Series***

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Your AIT TAPE DRIVE is assigned a Model No. ATDNA3A for regulatory compliance certifications.

The number is indicated on the model number label on your drive along with the rated voltage and current.

## **VORSICHT**

### **Für Kunden in Deutschland**

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- Wohngegenden
- Gewerbegebiete
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(Diese Ausrüstung erfüllt die Bestimmungen der Norm EN55022, Klasse B.)

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이 기기는 가정용으로 전자파 적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

기기의 명칭 (모델명) : ATDNA3A  
인증받은자의 상호 : SONY KOREA Corp.  
제조년월일 : 별도표시  
제조사/제조국가 : SONY CORP./일본,중국

## IMPORTANT SAFEGUARDS

For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.

Carefully observe all warnings, precautions and instructions on the appliance, or the one described in the operating instructions and adhere to them.

## USE

**Power Sources** – This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of electrical power, consult your dealer or local power company.

**For the unit with a three-wire grounding type ac plug:**

If you are unable to insert the plug into the outlet, contact your electrician to have a suitable plug installed. Do not defeat the safety purpose of the grounding plug.

**AC Power cord: (for AC mains operating unit only)**

The AC power cord should have appropriate safety approvals or marking for the country in which the equipment will be used. Consult your dealer or local power company.

**Cleaning** – Unplug the unit from the wall outlet before cleaning or polishing it. Do not use liquid cleaners or aerosol cleaners. Use a cloth lightly dampened with water for cleaning the exterior of the unit.

**Object and Liquid Entry** – Never push objects of any kind into the unit through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

## INSTALLATION

**Water and Moisture** – Do not use power-line operated units near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.

**Power-Cord Protection** – Route the power cord so that it is not likely to be walked on or pinched by items placed upon or against them, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

**Accessories** – Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to a child or an adult, and serious damage to the unit. Use only a cart stand tripod, bracket, or table recommended by the manufacturer.

**Ventilation** – The slots and openings in the cabinet are provided for necessary ventilation. To ensure reliable operation of the unit, and to protect it from overheating, these slots and openings must never be blocked or covered.

- Never cover the slots and openings with a cloth or other materials.
- Never block the slots and openings by placing the unit on a bed, sofa, rug or other similar surface.
- Never place the unit in a confined space, such as a bookcase, or built-in cabinet, unless proper ventilation is provided.

## SERVICE

**Damage Requiring Service** – Unplug the unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled or objects have fallen into the unit.
- If the unit has been exposed to rain or water.
- If the unit has been subject to excessive shock by being dropped, or the cabinet has been damaged.
- If the unit does not operate normally when following the operating instructions. Adjust only those controls that are specified in the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to normal operation.
- When the unit exhibits a distinct change in performance - this indicates a need for service.

**Servicing** – Do not attempt to service the unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer to all servicing to qualified service personnel.

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# SDX-560V Tape Drive

The Sony SDX-560V drive is a high capacity data storage device using Advanced Intelligent tape (AIT) technology. The SDX-560V drive achieves high data reliability through Read-After-Write, an additional level of Error Correction Code, and other features.

The Sony SDX-560V drive stores data on tape using a standard format called AIT (Advanced Intelligent Tape) and ALDC formats.

# Introduction

## Product Features

	SDX-560V
Data Capacity	80 GB uncompressed (with AIT-2 Turbo 186 m tape) 208 GB compressed* (with AIT-2 Turbo 186 m tape)
Transfer Rate (sustained)	12 MB/s uncompressed

\* Assuming a 2.6 : 1 compression ratio.

(The compression ratio varies according to the type of data.)

- Supported Format : AIT-E Turbo, AIT-1, AIT-1 Turbo, AIT-2 and AIT-2 Turbo
- Burst Transfer Rate 100 MB/s Ultra DMA (mode 5)
- Large 12 MB Buffer Memory
- 3.5" Standard Height, 5.25" Half Height
- ATA/ATAPI-6 Interface
- Frame Rewrite Function
- Three levels of Error Correction Code (ECC)
- High Speed search (120 times normal Read/Write speed)
- Random Read, Append Write

## Precautions

### Installation

Avoid placing the drive in a location subject to:

- high humidity
- high temperature
- mechanical shock and vibration
- direct sunlight

### Operation

- Do not move the drive while it is operating. It may cause malfunction.
- Avoid exposing the drive to sudden changes from low to high temperatures. This may cause water condensation to collect inside the drive. If the ambient temperature should suddenly rise while the drive is turned on, wait at least one hour before turning on the drive. If you attempt to operate the drive immediately after a sudden increase in temperature, a malfunction may occur.
- Turning off the power to the drive while it is writing to tape may cause the tape to become unreadable. All previously negotiated parameters will be lost, whenever power to the drive is cycled.

### Transportation

- Keep the original packing materials to facilitate transportation of the drive.
- Always remove the data cartridge before moving the drive. After removing the drive from the computer, repack the drive into its original packing.

## Useable Cartridges

The SDX-560V can be used with data cartridges marked with the AIT-E Turbo, AIT-1 Turbo, AIT-2 Turbo, AIT-1 or AIT-2 logo.

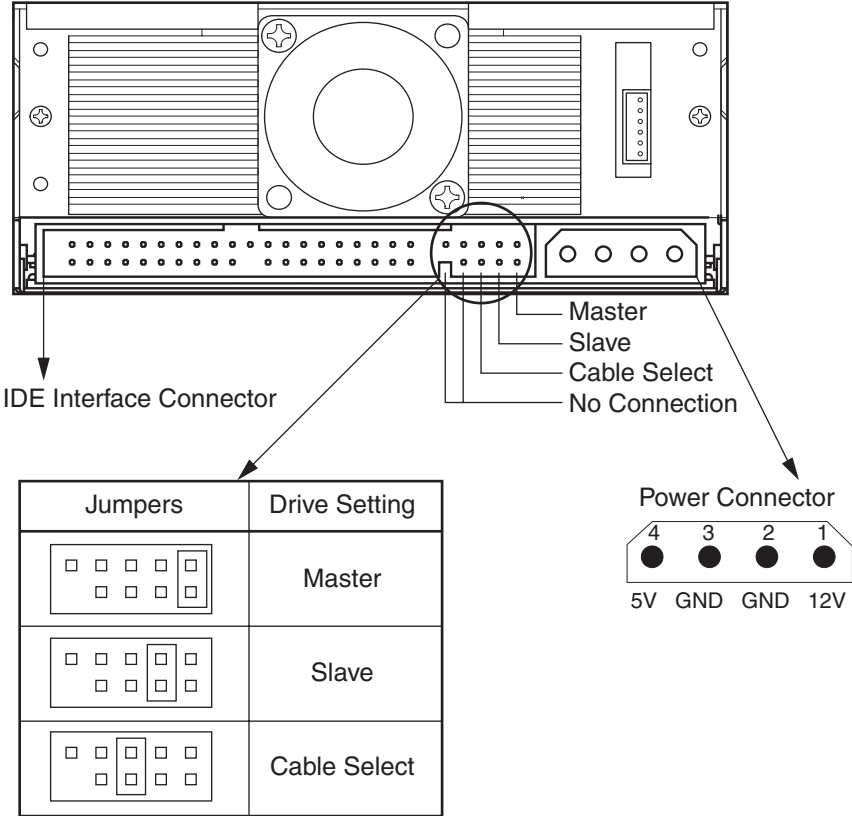


### Notes

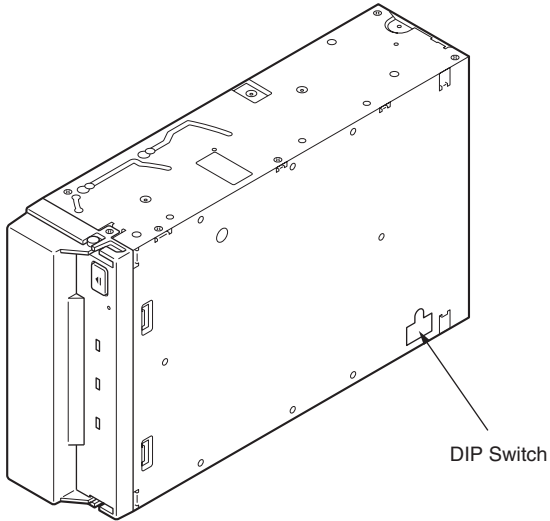
- Be sure to use only the cartridges designed specifically for AIT.
- Do not use anything but AIT cartridges with this system, as doing so can damage the AIT drive. Although commercially available 8 mm videotapes resemble AIT cartridges in appearance, they have entirely different specifications and cannot be used.

# Installation

## Jumper Setting



## Option Switches (DIP Switch)



### DIP Switch Positions

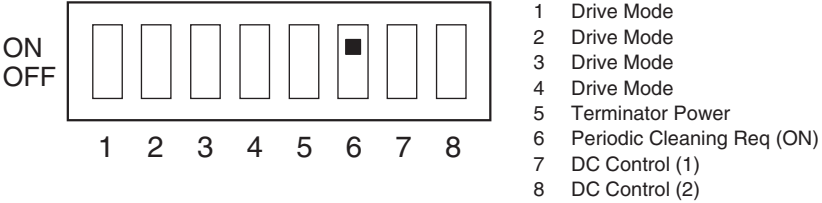
#### Default



- 1 Drive Mode (OFF)
- 2 Drive Mode (OFF)
- 3 Drive Mode (OFF)
- 4 Drive Mode (OFF)
- 5 Reserved (OFF)
- 6 Periodic Cleaning Req (ON)
- 7 DC Control (1) (ON)
- 8 DC Control (2) (OFF)

## Cleaning Request Mode

Periodic cleaning requests can be enabled by a DIP switch.



When switch 6 is ON, cleaning requests are enabled. When enabled, the “CLEANING REQUEST” LED on the front panel lights after every 100 hours of operation.

When this LED lights, clean the drive with a head cleaning cartridge.

### Note

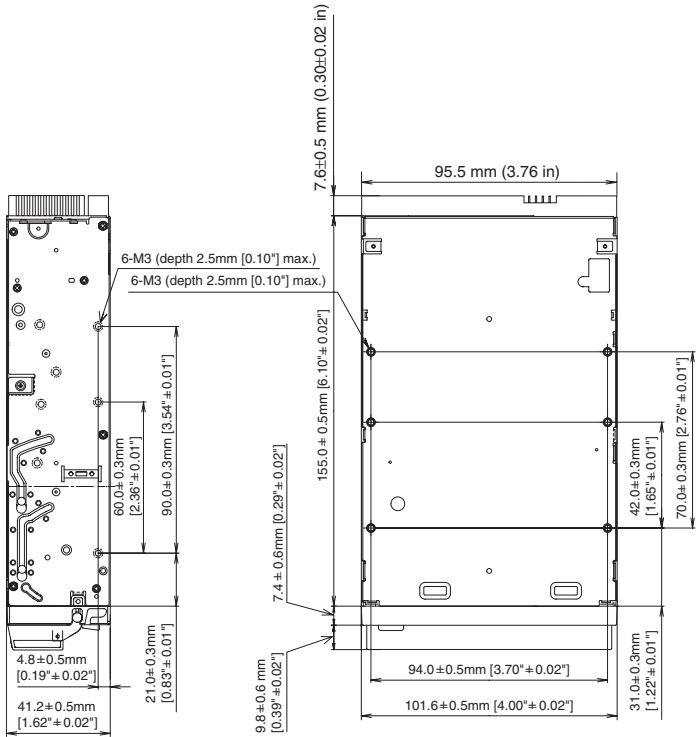
To maintain the drive in optimum condition in environments affected by dust and other contaminants, we recommend keeping cleaning requests enabled.

## Data Compression Control DIP switch

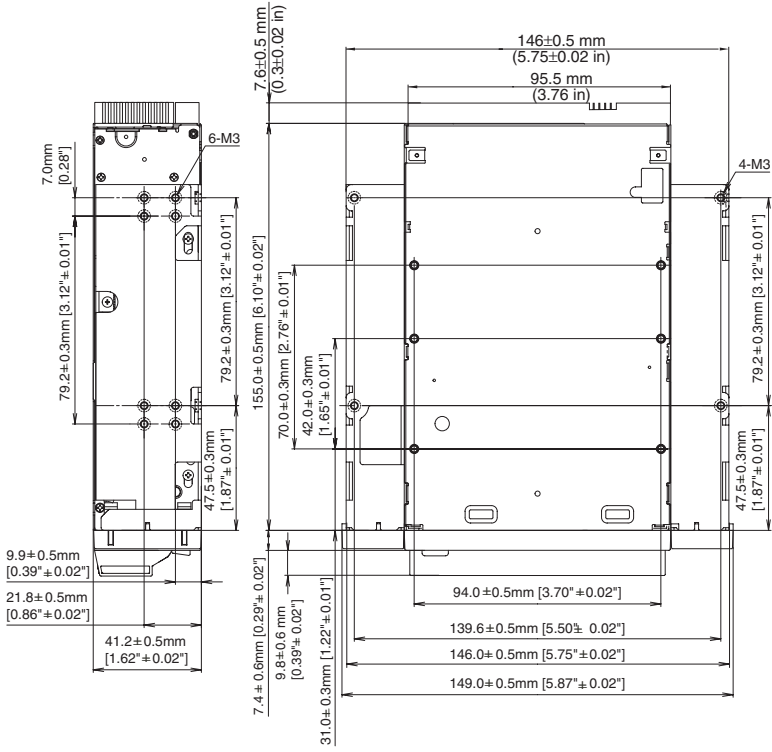
Data compression can be selected by DIP switches. Data compression is enabled while position 7 [DC Control (1)] is ON. Control by host can be disabled when position 8 [DC Control (2)] is ON.

# Mounting Holes

For 3.5" Standard Height



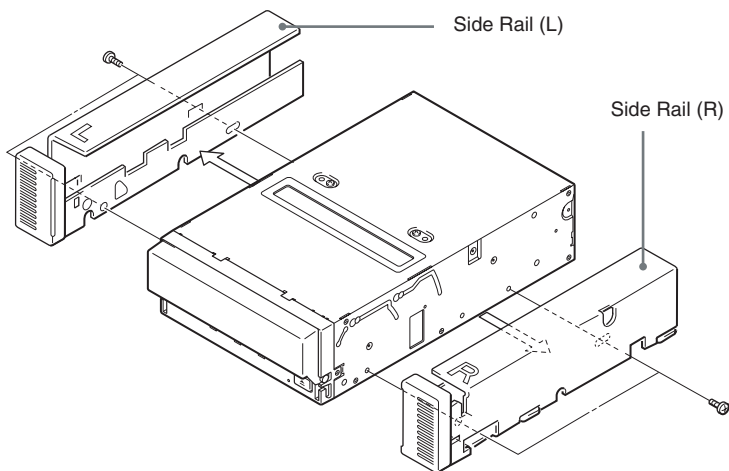
# For 5.25" Half Height



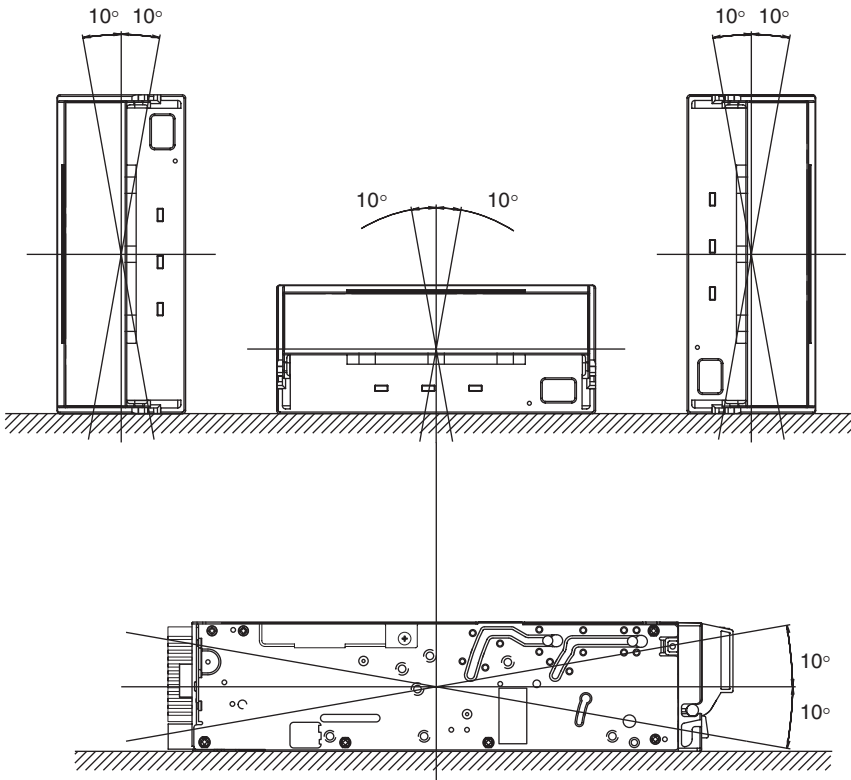
## Reconfiguring from 5.25" Model to 3.5" Model

You can reconfigure the 5.25" model to the 3.5" model yourself.

- 1** Remove the 2 screws for each side rail.
- 2** Take the side rail off.



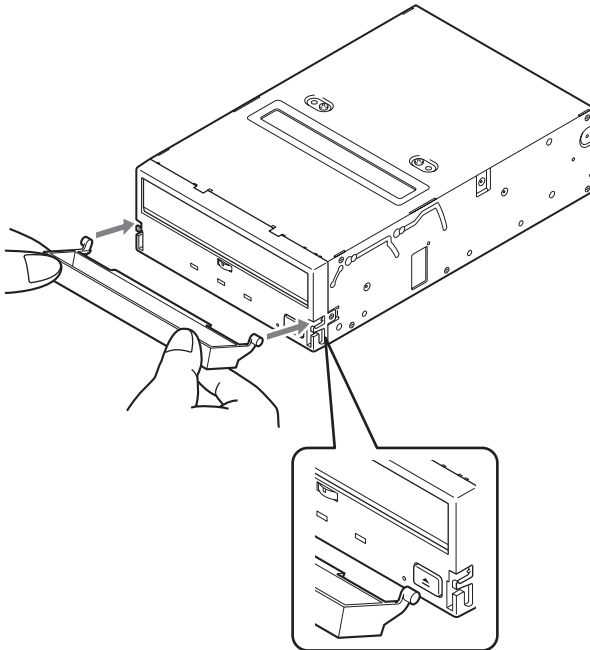
# Orientation



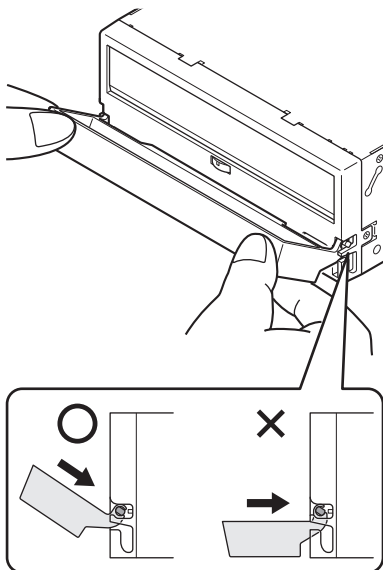
# Attaching and Removing the Dust Cover

## Attaching the Dust Cover

- 1 Align the dust cover's hinge clips (one on each side) with the pins of the drive bezel.
  - The dust cover should be positioned so that the magnets\* on the cover's back face the drive bezel.
  - \* This magnet does not affect the tape of the cartridge.
  - Holding the dust cover at an angle as shown in the figure below, set the hinge clips on top of the bezel pins, positioning them so that they bracket the pins.



- 2** Press down at an angle on each side in turn until you hear the hinge clips click into place.



**Caution**

Do not press the dust cover in horizontally from the front. Doing so could cause the dust cover to break.

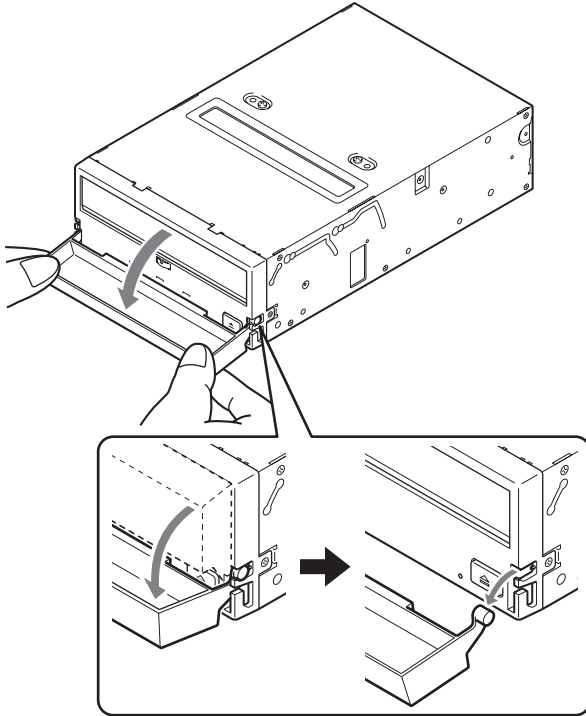
- 3** Close the dust cover.

This completes attachment of the dust cover.

## Removing the Dust Cover

- 1 Open the dust cover.
- 2 Holding the dust cover at both corners, carefully raise the dust cover.

The dust cover hinge clips and drive bezel pins uncouple.



### Note

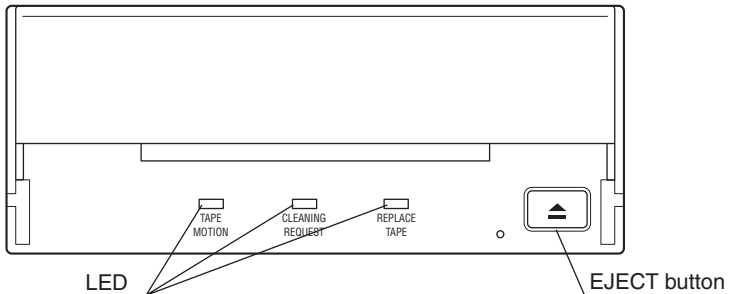
We recommend that you use the drive with the dust cover.

# Operation

## Location of 3 LEDs

There are three LED indications (TAPE MOTION LED, CLEANING REQUEST LED, REPLACE TAPE LED) and an EJECT button on the front panel of the unit.

### Front Panel (for 3.5" Standard Height)



## LED Indication for Drive Status

The LED indicators are defined as follows.

LED			Sense
TAPE MOTION	CLEANING REQUEST	REPLACE TAPE	
	Independent	Independent	Tape Loaded
	Independent	Independent	Tape Access in Progress (write/read)
	Independent	Independent	Tape Access in Progress (others)
Independent		Independent	Cleaning is requested
Independent		Independent	Cleaning is Not Completed
Independent	Independent		Media Error Occurred
			H/W Error Occurred

- on
- Slow  
1 pulse (0.9 sec on/0.3 sec off)
- Fast  
1 pulse (0.3 sec on/0.3 sec off)

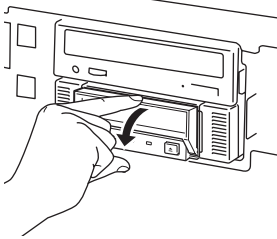
## Drive Operation

### Loading a Cartridge

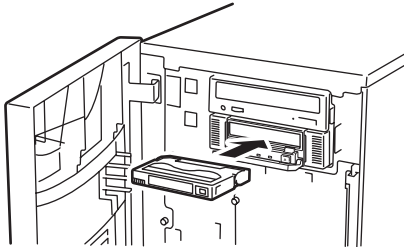
#### Note

While setting the data cartridge, do not turn off the host computer. This may cause a malfunction or damage data.

- 1 Turn on the host computer. Check that the drive's TAPE MOTION LED, CLEANING REQUEST LED and REPLACE TAPE LED go off.
- 2 Open the dust cover.



- 3 Set the AIT data cartridge orientation as shown here and insert it into the data cartridge slot.



By inserting the data cartridge to the extent, it is automatically set in the drive and the TAPE MOTION LED lights.

### Unloading a Cartridge






The cartridge can be removed from the SDX-560V either in response to a ATAPI Unload Command, or by pressing the EJECT bottom.

By pressing EJECT button, the tape is rewound and the cartridge ejected from the slot.

## Write-protecting a Cartridge

Cartridges can be write-protected by sliding the tab on the back of the cartridge. In this state, data can be read from the tape but not written onto it.



AIT-1	AIT-E Turbo	Using your fingernail, push the switch in the direction of the arrow to protect the tape from writing or accidental erasure.
	AIT-1 Turbo	
	AIT-2	
	AIT-2 Turbo	Return the switch to its original position to re-enable writing.
		
		

## Using a Cleaning Cartridge

To keep the AIT drive in top condition, clean the head as needed using a head cleaning cartridge with the AIT logo. When the head needs cleaning, the CLEANING REQUEST indicator lights.

### How to Clean

- 1 Load the head cleaning cartridge (SDX1-CL) into the AIT drive. Cleaning starts automatically.
- 2 After about 15 seconds, cleaning will stop and the cartridge will be ejected automatically.

#### Caution

Do not rewind the cleaning cartridge and reuse it. When you reach the end of the cartridge, dispose it and buy a new cleaning cartridge with the AIT logo.

## Storage Precautions

- Keep cartridges in their cases when not in the drives.
- Avoid storing cartridges in dusty locations, in direct sunlight, near heaters or air conditioners, or in humid locations.
- Do not place cartridges on dashboards or in car storage trays.

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# Interface Implementation

## Supported ATA Commands

- ATAPI SOFT RESET (0x08)
- EXECUTE DRIVE DIAGNOSTIC (0x90)
- ATAPI PACKET COMMAND (0xA0)
- ATAPI IDENTIFY DEVICE (0xA1)
- STANDBY IMMEDIATE (0xE0)
- IDLE IMMEDIATE (0xE1)
- CHECK POWER MODE (0xE5)
- SLEEP (0xE6)
- SET FEATURE (0xEF)

## Supported ATAPI Packet Commands

Mandatory ATAPI command set:

Supporting most of all SCSI commands in the AIT Tape Drive.

- ERASE
- INQUIRY
- LOAD/UNLOAD
- LOCATE
- LOG SELECT
- LOG SENSE
- MODE SELECT
- MODE SENSE
- READ
- READ POSITION
- REQUEST SENSE
- REWIND
- SPACE
- TEST UNIT READY
- WRITE
- WRITE BUFFER
- WRITE FILEMARK

# Specification

## Product Specifications

### Dimensions

	3.5"	5.25"
Height	41.2 mm (1.62 in)	41.2 mm (1.62 in)
Width	101.6 mm (4.0 in)	146.0 mm (5.75 in)
Depth	155.0 mm (6.1 in)	155.0 mm (6.1 in)

### Mass

3.5"	780 g (27.5 oz.)
5.25"	1050 g (37.0 oz.)

### Temperature and Humidity Range

#### Temperature

Operating	5 °C to 40 °C ( $\Delta T < 10$ °C/h) (41 °F to 104 °F ( $\Delta T < 18$ °F/h))
Non-Operating (mech.)	- 40 °C to 70 °C ( $\Delta T < 20$ °C/h) (- 40 °F to 158 °F ( $\Delta T < 36$ °F/h))
Non-Operating (tape)	- 40 °C to 45 °C ( $\Delta T < 20$ °C/h) (- 40 °F to 113 °F ( $\Delta T < 36$ °F/h))

#### Humidity

Operating	20 to 80% RH, non-condensing Maximum wet bulb temperature : 26 °C (78.8 °F)
Non-Operating (mech.)	5 to 95% RH ( $\Delta RH < 30\%/h$ ) Maximum wet bulb temperature : 45 °C (113 °F)
Non-Operating (tape)	20 to 80% RH ( $\Delta RH < 30\%/h$ )

## Power Requirements

Voltage	Max Ripple	Current	
		Typical	Maximum
5 V +/- 5 %	100 mVp-p	1.4 A	1.7 A
12 V +/- 10 %	150 mVp-p	0.5 A	1.2 A

## Air-cooling Requirement

Surrounding temperature	< 40 °C (104 °F)
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Clean air flow is recommended to minimize the possibility of data loss.

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# Sony Contacts

**For further information, please contact:**

**Sony Electronics Inc., Tape Storage Solutions (USA)**

URL: <http://www.storagebysony.com>

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