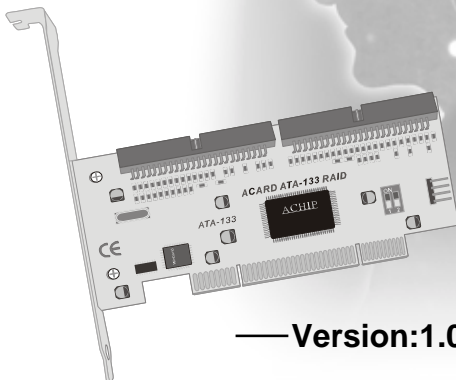


# **ACARD ATA-133 RAID AEC-6880M**

## **PCI-to-IDE ATA-133 RAID 0 Controller for Macintosh**

### **User's Manual**



— Version:1.0 —

**ACARD**  
**TECHNOLOGY**

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# Table of Contents

<b>Chapter 1 Introduction .....</b>	<b>4</b>
1.1 Introduction .....	4
1.2 Feature .....	5
1.3 Specification .....	5
1.3.1 Packing List .....	5
1.3.2 Parts Specification .....	5
 <b>Chapter 2 Hardware Installation .....</b>	 <b>6</b>
2.1 Quick start hardware installation: .....	6
2.2 <i>ACARD ATA-133 RAID</i> adapter compatibility list .....	8
2.3 What you should know before the installation .....	8
2.4 <i>ACARD ATA-133 RAID</i> cable & power installation .....	10
2.5 Configuring <i>ACARD ATA-133 RAID</i> .....	11
 <b>Chapter 3 System Installation .....</b>	 <b>12</b>
3.1 Normal Mode Installation .....	12
3.1.1 Mac OS 9.x installation .....	12
3.1.2 Mac OS X installation .....	14
3.1.3 Verify System Profiler .....	16
3.2 Striping Mode (RAID 0) Installation .....	21
3.2.1 Mac OS 9.x installation: .....	21
3.2.2 Mac OS X installation .....	23
3.2.3 Verify System Profiler .....	25
 <b>Chapter 4 Troubleshooting .....</b>	 <b>30</b>
 <b>Appendix 1 .....</b>	 <b>31</b>

## Chapter 1 Introduction

### 1.1 Introduction

The *ACARD ATA-133 RAID* is the first high performance Hardware RAID Ultra ATA-133 adapter for PCI PowerMac. With on board Open Firmware that supports booting from IDE disks configured as RAID.

The *ACARD ATA-133 RAID* supports all models of PowerMac which have a PCI slot, include PowerMac G3, G4. For PowerMac older than G4, *ACARD ATA-133 RAID* can really boost the disk performance better. The performance can further be improved by using 7200rpm big capacity drive. As compared with the original G4, the improvement can be as high as 300%. For PowerMac G4, *ACARD ATA-133 RAID* will allow Mac to add more IDE drives or to use Hardware RAID by adjust the easy RAID DIP Switch setting.

The *ACARD ATA-133 RAID* adapter is the first Mac add-on card to support ANSI X3T9.2 CAM ATA4/ATA5, data transfer rate up to 133 MB/sec per channel and meets the demand of multimedia, real time video.

It supports the true PnP function, in Mac OS 8.5, OS 9.x and OS X, there are **no software driver needed** for connecting an Ultra ATA 66/100/133 HDD. With the advanced function, the adapter is real user friendly. It coexists with the on board IDE controller. On board BIOS supports system to boot from ATA HDD.

## **1.2 Feature**

- A standalone PCI-to-IDE RAID 0 controller
- At a normal mode as IDE devices extension
- Supports Ultra ATA 66/100/133 HDD
- Supports OS: Mac OS 8.5, OS 9.x and OS X
- Cost effective and high performance

## **1.3 Specification**

### **1.3.1 Packing List**

When you open the *ACARD ATA-133 RAID* cabinet, check the following packing list.

- One *ACARD ATA-133 RAID*
- Two ATA-133 Cables
- One Y-splitter Cable for Power
- Two hard disk mounting kits & eight Screws
- One User's Manual

### **1.3.2 Parts Specification**

**Power requirement** - voltage : 3.3VB+/- 2%  
current : 0.5A Max.

**Environment** -                      Temperature  
    Operating 0 °C to 70 °C  
    Storage -20 °C to 85 °C

**Humidity**                      -      15% to 90%

**Dimentions**                      -      Models:      AEC-6880M  
    Width:          14 cm  
    Height:        4.7 cm

**Connectors**                      -      Dual 40 pins IDE internal connectors

## **Chapter 2 Hardware Installation**

The hardware installation is a simple Hardware RAID host adapter installation. Please follow the following instruction.

Before installing an IDE device into the *ACARD ATA-133 RAID*, IDE device is adjusted by Jumper setting as “Master” or “Slave” mode. As hard drive may contain some data which might cause the Mac OS installation problems under a **striping mode** processing. Adjusting *ACARD ATA-133 RAID* DIP Switch for a **normal mode** first.

When attaching an IDE hard drive on *ACARD ATA-133 RAID*, which already contains data or any version of Mac OS, it is strongly recommend that backup the old data before installing the adapter . Due to the RAID card commands are different than the ON-Board IDE controller to hard drive, hard drive must be initialized first under **normal mode** of *ACARD ATA-133 RAID*. After processing “initialize” under **normal mode**, adjust *ATA-133 RAID* DIP Switch tom a **striping mode** to process drive “initial-ize” again.

### 2.1 Quick start hardware installation:

1. Open the Mac's case (Please refer to Mac's manual)
2. Choose an empty PCI slot and plug in *ACARD ATA-133 RAID* adapter
3. Fix hard drive in the Mac
4. Connect ATA-133 cable from adapter to hard drive
5. Close the Mac case

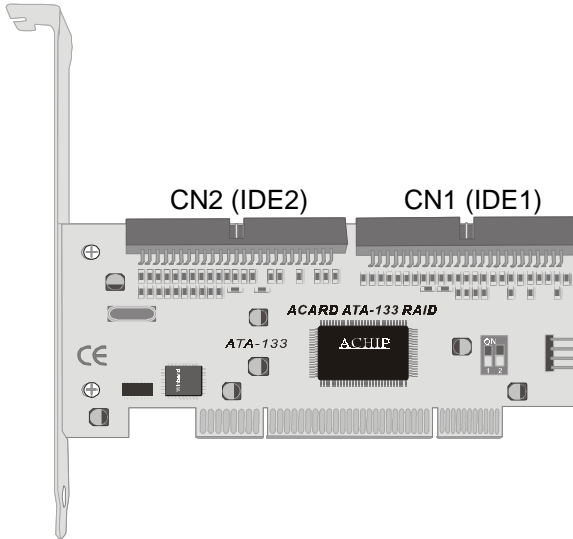
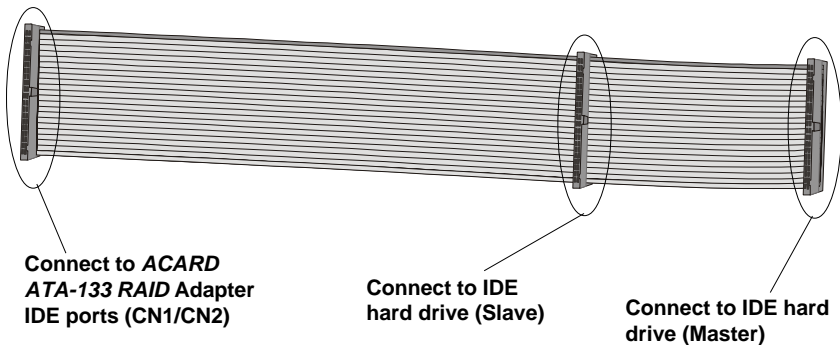


- Connecting 2 hard drives in the same channel, check the Master / Slave jumper.
- *ACARD ATA-133 RAID* adapter DIP Switch set on normal mode as a IDE port extension.
- As hard drive may contain old data which might cause the Mac OS installation problems. Doing RAID 0 function (striping mode), the “initialize” must be processed first under normal mode then turn off the computer to set the DIP Switch for striping mode and re-do the “initialize” again.

**Board Layout:**

CN1 (IDE1): The Primary IDE port

CN2 (IDE2): The Secondary IDE port

**ATA-133 Cable Layout:**

For the hard drive's Jumper setting (Master / Slave), refer to hard drive's Manual

## **2.2 ACARD ATA-133 RAID adapter compatibility list**

ACARD ATA-133 RAID is designed specifically for DMA hard drive, fully tested many kind of hard drive available in lab. The ACARD ATA-133 RAID supports many ATA 66/100/133 hard drives from the following vendors:

- FUJITSU
- IBM
- MAXTOR
- QUANTUM
- SEAGATE
- WESTERN DIGITAL

## **2.3 What you should know before the installation**

Before installing the ACARD ATA-133 RAID, the following tips to get the best performance of system:

### **Striping Mode**

- If two hard drives are in different storage capacity, ACARD ATA-133 RAID will treat smaller one as a standard capacity, and double the standard capacity as a total available disk capacity.
- For **one pair striping** connection using 2 HDD, the Jumper setting on each hard drive must set to be the same mode either both "Master" or both "Slave". Two hard drive must connect two independent ATA-133 cable on ACARD ATA-133 RAID card.
- When using **two pairs striping** for 4 hard drives on ACARD ATA-133 RAID, hard drives need to be identify either two Jumper setting have been adjusted at "Master" and "Slave" position on each IDE port cable connector (refer to Figure 1).



- For **two pairs striping** with 4 hard drives, the Jumper setting can not be set as both “Master” or both “Slave” in same connector cable.
- In order to get a better performance, use Ultra ATA 66, 100 or 133 hard drive in same model .

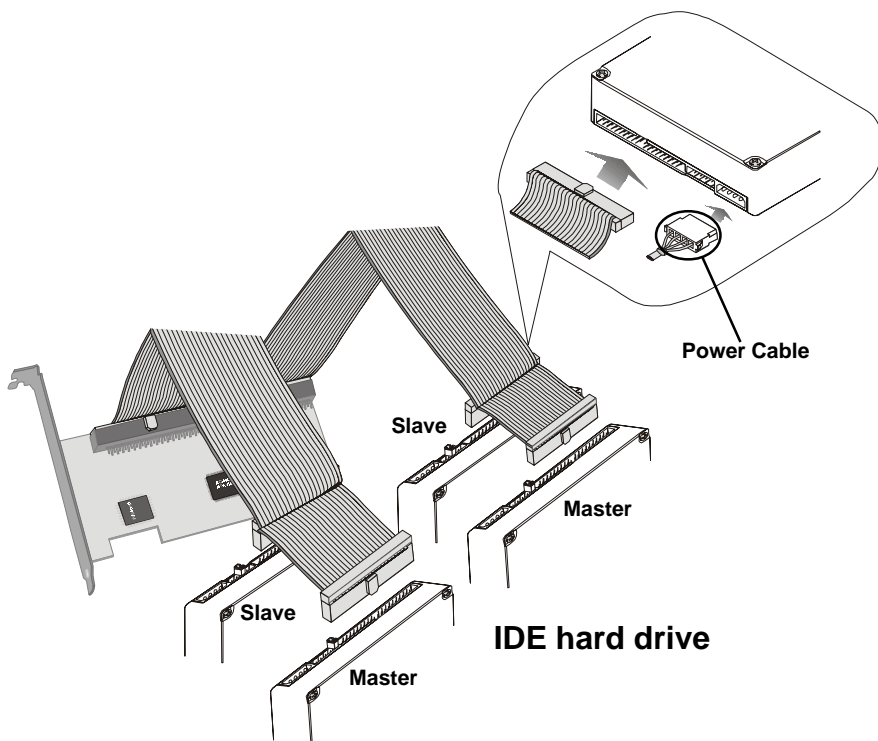
### **Normal Mode**

- Two IDE connectors of *ACARD ATA-133 RAID* can be treated as normal IDE port extension.
- When using two hard drives connected with *ACARD ATA-133 RAID* at the same IDE port (i.e.on same cable), identify that the hard drives Jumper setting must be set as one “Master” and one “Slave” position on individual hard drive. The two hard drives can not be set as both “Master” or both “Slave” on the same cable.
- In order to get better performance, use Ultra ATA 66, Ultra ATA 100 or Ultra ATA 133 hard drive.

## **2.4 ACARD ATA-133 RAID cable & power installation**

### **The cable connection methods:**

- Step 1. Find out pin 1 of IDE connector on IDE hard drive.
- Step 2. Find out a color line of the internal IDE ribbon cable indicating pin 1 of connector.
- Step 3. Connect the internal IDE cable to IDE hard drive aligning with pin-1 to pin-1.
- Step 4. Connect 4-pin power cable to IDE hard drive.

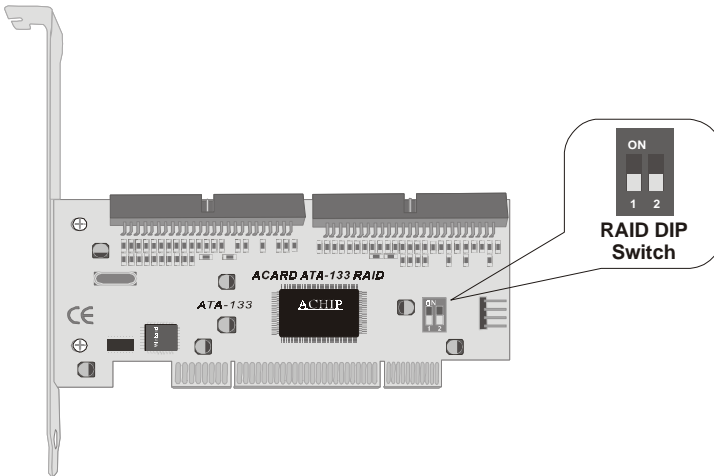


## 2.5 Configuring ACARD ATA-133 RAID

(Jumper Setting)

### RAID DIP Switch Setting

RAID configurations must be set up on ACARD ATA-133 RAID. Setting RAID Mode by adjust ON/OFF DIP Switch.



Please follow the instruction below and decide a suitable RAID DIP Switch setting.

- 1. Normal Mode.** Generally, when device is using the RAID adapter card as an extending IDE port to connect IDE hard drive, set the DIP Switch 1 and 2 as OFF. The default value is OFF.
- 2. Striping Mode (RAID 0).** RAID 0 is dedicated as pair of hard drives that store striping data, then appear to the computer as a single drive. Setting the DIP Switch 1 as OFF and 2 as ON, the RAID 0 mode will be activated.



**Normal  
Mode**



**Striping  
Mode**

(Factory setting)

## Chapter 3 System Installation

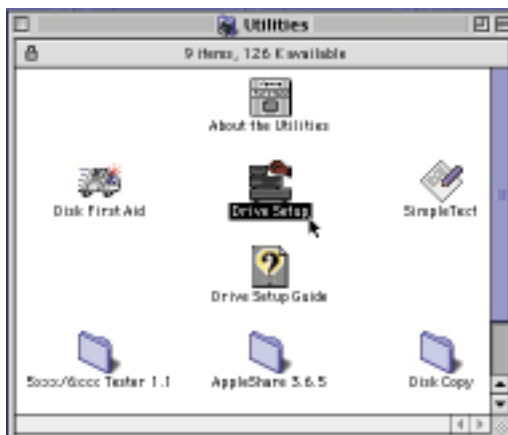
### 3.1 Normal Mode Installation

#### 3.1.1 Mac OS 9.x installation

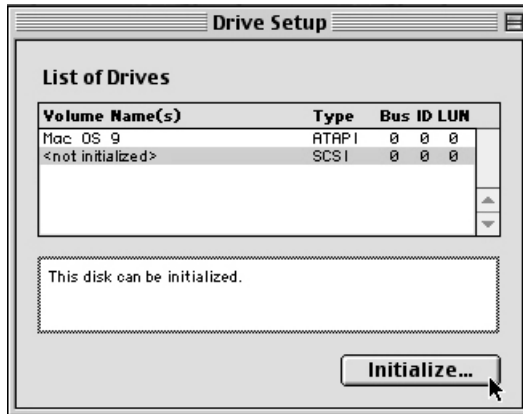
1. Be sure hardware had installed correctly.
2. Insert Mac OS CD-ROM to Macintosh.
3. Power on Macintosh and press 'C' key.
4. Wait for Mac OS and the Mac OS CD window popup.
5. Double click on "**Utilities**".



6. Double click on "**Driver Setup**".



7. Choose the hard drive connecting to *ACARD ATA-133 RAID* then press **"Initialize"** button. For more detail information about **"Drive Setup"**, refer to Mac OS manual.



8. Then start to install an new OS on the hard drive.

### **3.1.2 Mac OS X installation**

1. Be sure your hardware had install correctly.
2. Insert Mac OS X CD-ROM to your Macintosh.
3. Power on your Macintosh and press 'C' key.
4. After Mac OS X Boot up, select "**Installer**" from the top selection tools.
5. Select "**Open Disk Utility ...**" to open it.
6. Click on "**Drive Setup**" and choose the hard drive that you want to initialize.



7. Select the hard drive which you want to initialize and choose "**Partition**" to select the number of partition you need.



8. Then click **"Partition"** button to initialize the hard drive.



9. Then start to install an new Mac OS X on the hard drive.

**Note:** For more information about Mac OS X installation guide,  
please refer to Mac OS X installation manual.

### 3.1.3 Verify System Profiler

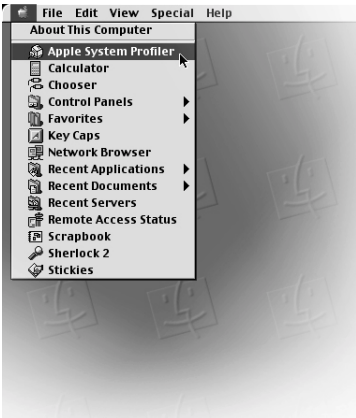
#### For Mac OS 9 Environment

To make sure the computer “**initialize**” hard drive successfully. When you initialize the hard drive successfully, on the Mac window will show a new “**Untitled**” hard drive icon.



For advanced Mac users, find the system information under the Apple Logo pop up. Then choose “**Apple System Profiler**” to find the information. Check the information and see the computer system status. Follow the instructions below to get how to check the system information.

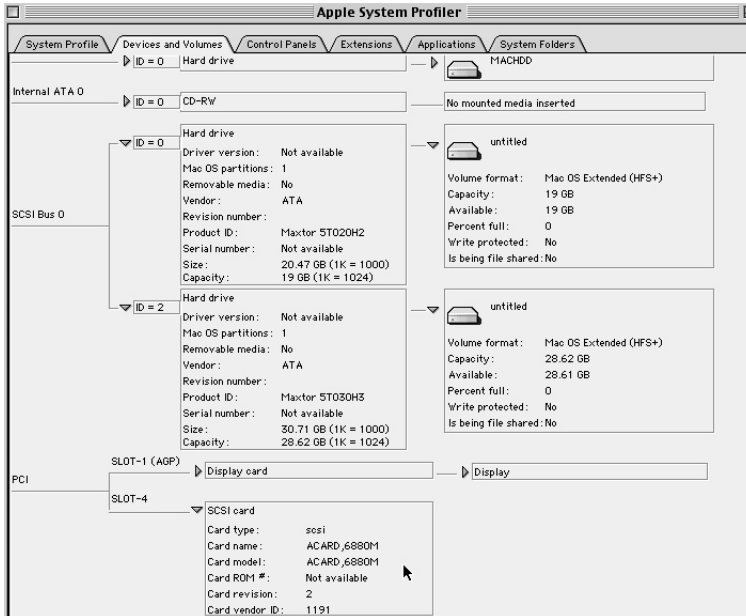
Step 1. Click on Apple Logo and choose “**Apple System Profiler**” to show hard drives information.





Step 2. Under the “**Apple System Profiler**”, you will see the “**System Profiler**”. Choose “**Devices and Volumes**” to see the devices status.

Step 3. Under “**Devices and Volumes**”, please choose “**PCI**” item. You will find the SCSI card installation status.



## **For Mac OS X Environment**

To make sure the computer “**initialize**” hard drive successfully. When you initialize the hard drive successfully, on the Mac window will show a new “**Untitled**” hard drive icon.

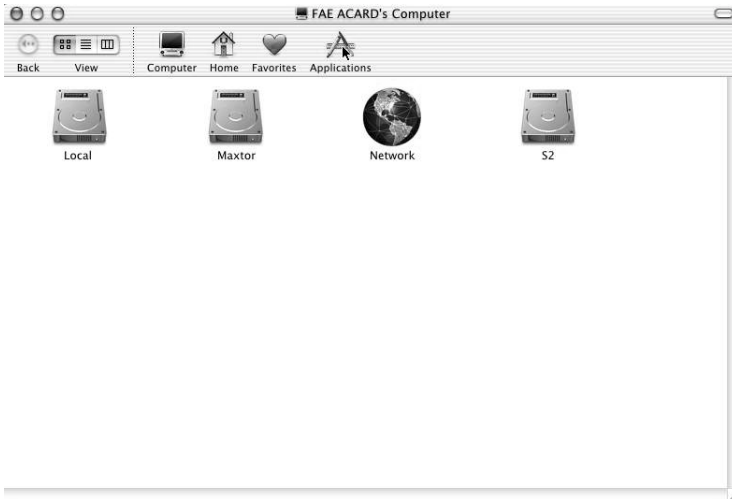


For advanced Mac users, find the system information under the Apple Logo pop up. Then choose “**Apple System Profiler**” to find the information. Check the information and see the computer system status. Follow the instruction below to get how to check the system information.

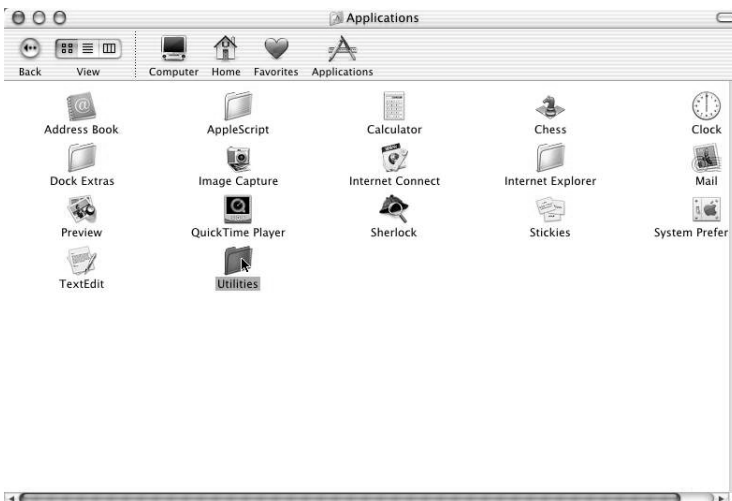
Step 1. Please find the “**Finder**” in the bottom of the Mac OS Screen then click it.



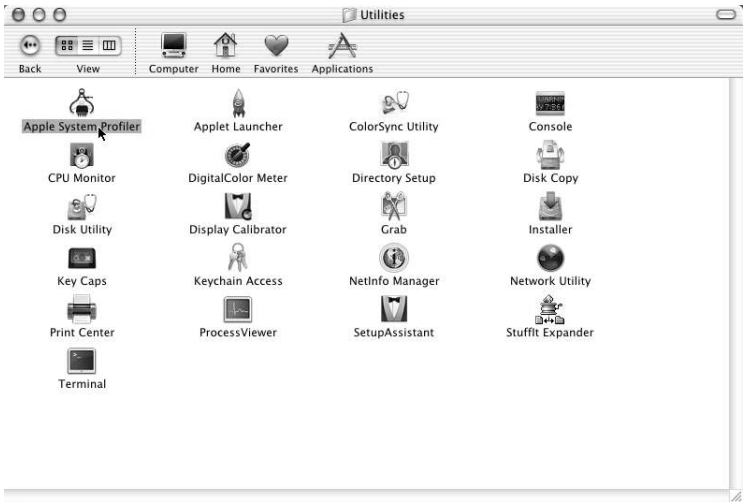
Step 2. Find the “**Application**” sign on the top of the screen and click it.



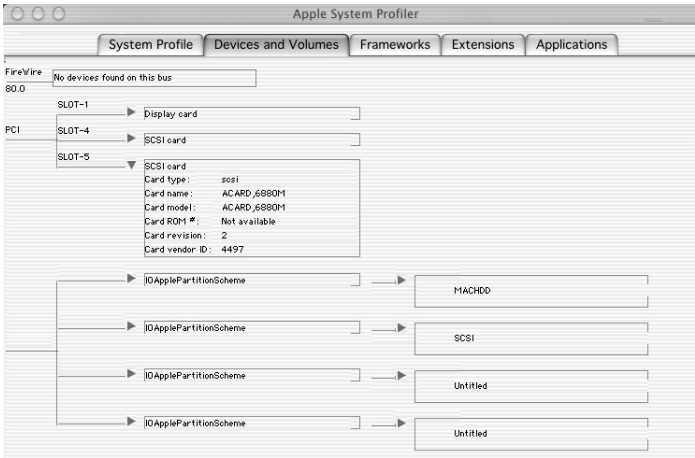
Step 3. Under the “**Application**”, find out the “**Utilities**” item and click it.



Step 4. Under the **“Utilities”**, you will see the **“Apple System Profiler”**. Click on **“Apple System Profiler”** to see the devices status.



Step 5. Under **“Devices and Volumes”**, please choose **“PCI”** item. You will find the SCSI card installation status.



### 3.2 Striping Mode (RAID 0) Installation

Use clean hard drives for the *ACARD ATA-133 RAID* striping mode.

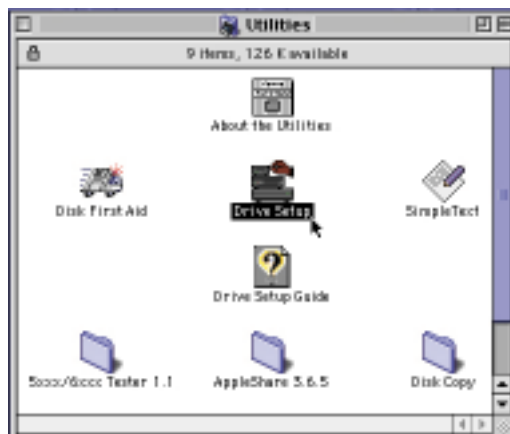
Before doing the striping mode installation, do the “**initialize**” under **normal mode** first then turn off computer to set the DIP Switch for striping mode.

#### 3.2.1 Mac OS 9.x installation:

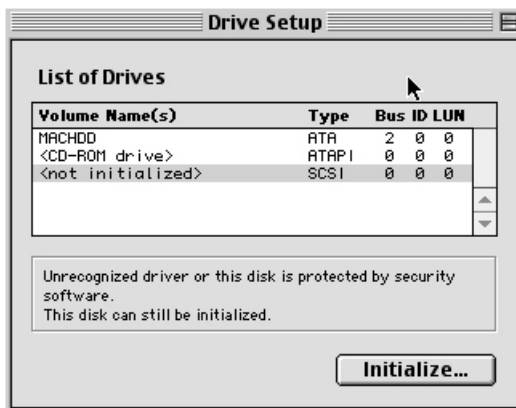
1. Be sure hardware had installed correctly.
2. Insert Mac OS CD-ROM to Macintosh.
3. Power on Macintosh and press ‘C’.
4. Wait for Mac OS and the Mac OS CD window popup.
5. Double Click on “**Utilities**”



6. Double click on “**Driver Setup**”.



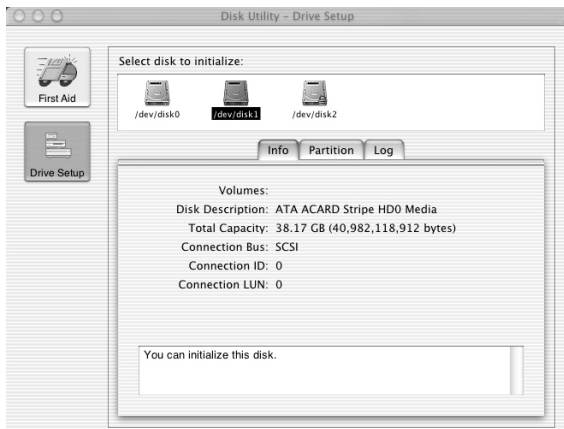
7. Choose the hard drive which connect to *ACARD ATA-133 RAID*, then press **"Initialize"** button. For more detail information about "Drive Setup", refer to OS Manual



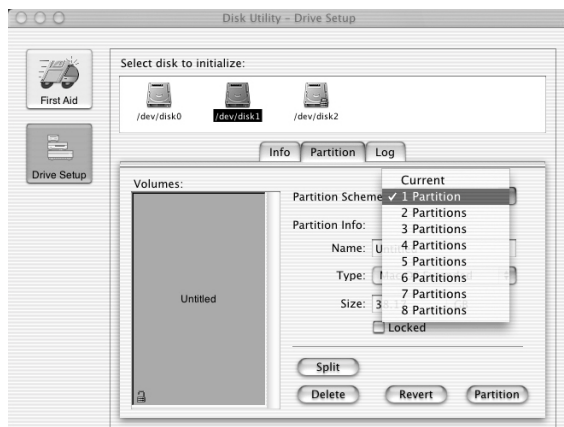
8. Then start to install an new OS on the hard drive.

### 3.2.2 Mac OS X installation

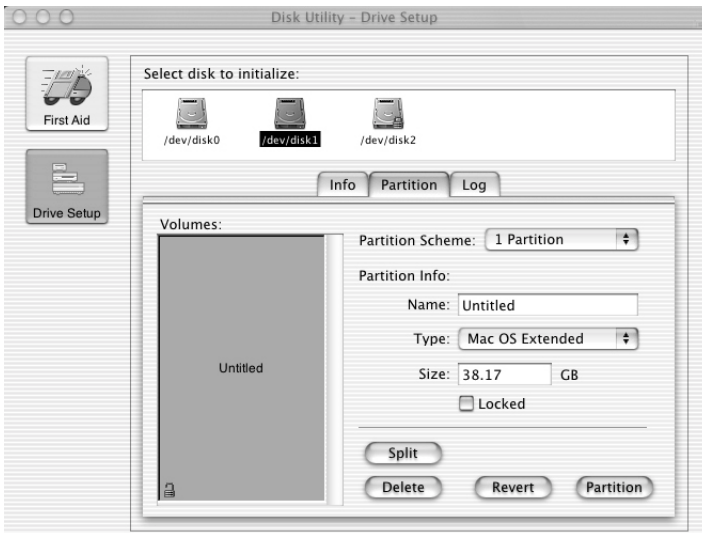
1. Be sure your hardware had install correctly.
2. Insert Mac OS X CD-ROM to your Macintosh.
3. Power on your Macintosh and press 'C' key.
4. After Mac OS X Boot up, select "**Installer**" from the top selection tools.
5. Select "**Open Disk Utility ...**" to open it.
6. Click on "**Drive Setup**" and choose the hard drive that you want to initialize.



7. Select the hard drive which you want to initialize and choose "**Partition**" to select the number of partition you need.



8. Then click **“Partition”** button to initialize the hard drive.



9. Then start to install an new Mac OS X on the hard drive.

**Note: For more information about Mac OS X installation guide, please refer to Mac OS X installation manual.**



### 3.2.3 Verify System Profiler

#### For Mac OS 9.x Environment

To make sure the computer “**initialize**” hard drive successfully. When you initialize the hard drive successfully, on the Mac window will show a new “Untitled” hard drive icon.



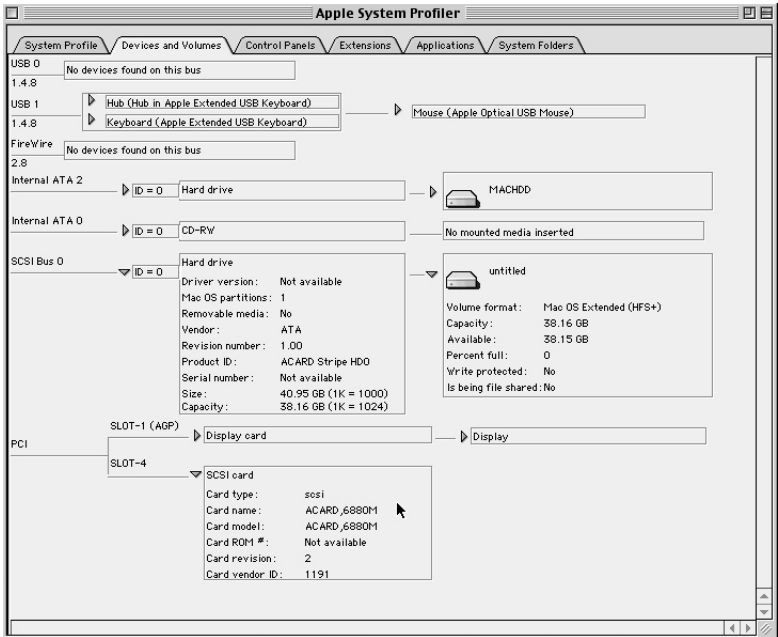
For advanced Mac users, find the system information under the Apple Logo pop up. Then choose “**Apple System Profiler**” to find the information. Check the information and see the computer system status. Follow the instructions below to get how to check the system information.

Step 1. Click on Apple Logo and choose “**Apple System Profiler**” to show hard drives information.



Step 2. Under the “**Apple System Profiler**”, you will see the “**System Profiler**”. Choose “**Devices and Volumes**” to see the devices status.

Step 3. Under “**Devices and Volumes**”, please choose “**PCI**” item. You will find the SCSI card installation status.



## **For Mac OS X Environment**

To make sure the computer **"initialize"** hard drive successfully. When you initialize the hard drive successfully, on the Mac window will show a new **"Untitled"** hard drive icon.

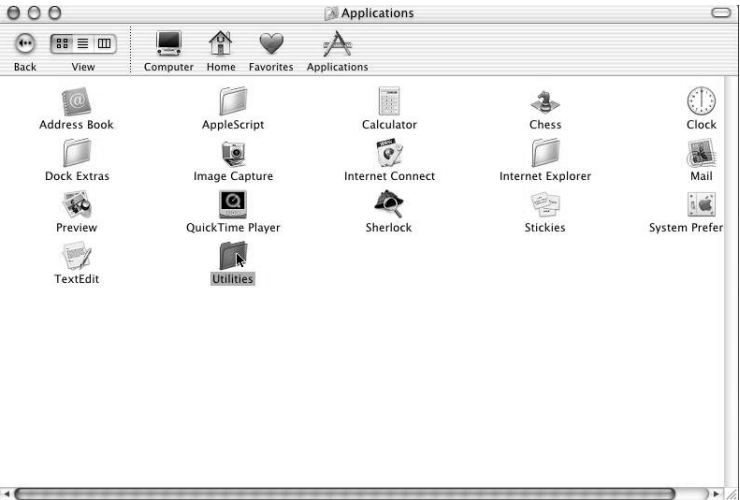
For advanced Mac users, find the system information under the Apple Logo pop up. Then choose **"Apple System Profiler"** to find the information. Check the information and see the computer system status. Follow the instruction below to get how to check the system information.

Step 1. Please find the **"Finder"** in the bottom of the Mac OS Screen then click it.

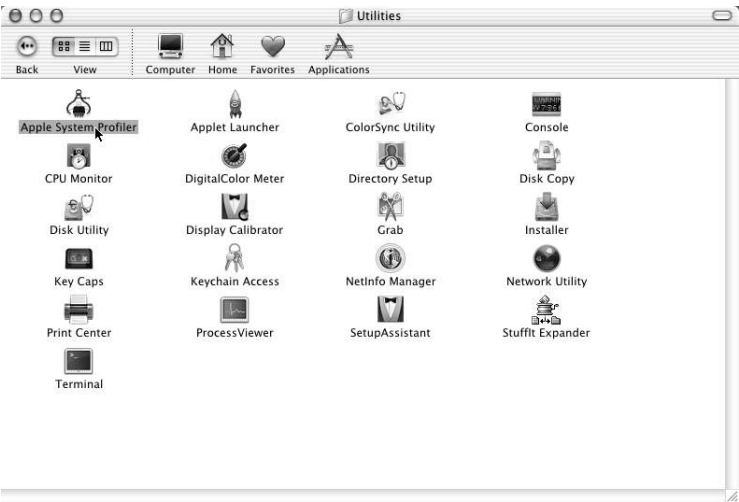


Step 2. Find the “**Application**” sign on the top of the screen and click it.

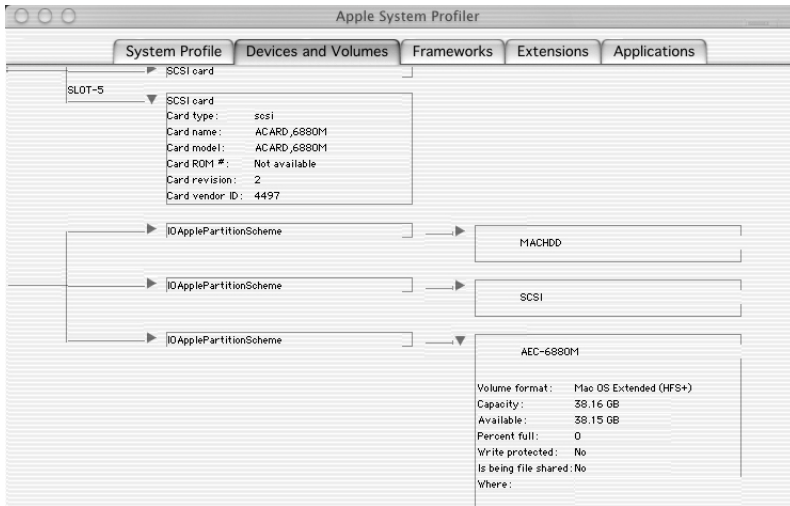
Step 3. Under the “**Application**”, find out the “**Utilities**” item and click it.



Step 4. Under the “**Utilities**”, you will see the “**Apple System Profiler**”. Click on “**Apple System Profiler**” to see the devices status.



Step 5. Under “**Devices and Volumes**”, please choose “**PCI**” item. You will find the SCSI card installation status.



## **Chapter 4 Troubleshooting**

Installing *ACARD ATA-133 RAID* and it does not function properly, follow the troubleshooting below.

### **1. Check power supply.**

Whenever start to check the malfunction devices, check the power status (ON / OFF).

### **2. Verify IDE device.**

Always make IDE device functions is in proper mode setting before installing *ACARD ATA-133 RAID*.

### **3. Check host adapter.**

Verify the adapter card is seated in its slot on the motherboard.

### **4. Check all connectors and cables.**

Check internal IDE connector, device power connector, and cables are connected well. Cables are easily damaged because of un-proper fold. Try a new cable known to be good. Make sure no connector pins are bent. Verify pin 1 on the interface cable is aligned with pin 1 on the drive and host adapter.

### **5. Verify the DIP switch setting.**

Start over the section configuring *ACARD ATA-133 RAID* (RAID DIP Switch Setting and power connection) to check if the jumper setting is correct.

### **6. PCI Slot Position.**

Use *ACARD ATA-133 RAID* in Mac Clone computer which is not manufactured by Apple that may need to change the PCI Slot for properly operation.

## Appendix 1 Technical Support Form

Email: [support@acard.com](mailto:support@acard.com)

<http://www.acard.com>

<b>Model:</b>	AEC-6880M	<b>F/W Version:</b>	
System Configuration			
Computer			
CPU			
Memory			
SCSI adapter			
Other I/O card			
Other Storage Device			
<b>MAC OS version</b>			
Hard Disk Configuration			
Model			
Type			
Manufacturer			
Firmware Rev			
Problem Description			

MALAEC6880ME10-0