SUPER®

AOC-SAT2-MV8

USER'S GUIDE

Rev. 1.0

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Table of Contents

1. Introduction

This manual is written for system integrators, PC technicians and knowledgeable PC users who intend to integrate Supermicro's SAT2-MV8 SATA Controller into their system. It provides detailed information for the installation and use of the SAT2-MV8 card. The Supermicro SAT2-MV8 offers an innovative, complete and cost effective solution to the ever-increasing demands of disk density and data integrity of today's servers.

1.1 Overview

The SAT2-MV8 is a highly efficient, highly compatible and easy-to-use SATA RAID Controller that allows the user to configure RAID functions by using Marvell's 88SX6081 8-port Serial ATA Host Controller, offering 64-bit PCI-X bus interface with high performance features. With the SATA physical interface support at 1.5 and 3.0 Gbps, the SAT2-MV8 is a high speed, high bandwidth RAID Controller that can integrate multiple high capacity drives to provide the user with maximum storage space.

Product Features

- Low profile Form Factor (w/ the PCB size of 2.5" H x 6.4" W)
- Marvell's 88SX6081 8-port Serial ATA Host Controller
- Eight SATA ports @ 1.5 or 3.0 Gigabits per second (Gbps)
- 64-bit, 133 MHz PCI-X bus
- Flash BIOS Interface
- Presence LED Indicator and Activity Indicator for each port
- Software RAID 0, RAID 1, RAID 10 and JBOD (-simple volume) supported (*Note: Some operating systems might not support Software RAID.)
- Bootability from a single drive.

Operating Systems supported

- Windows 2000, XP, 2003, XP EM64T, 2003 EM64T
- Linux: (-source code provided)--the driver disks currently available:
- RedHat 9 (2.4.20-6 and 2.4.20-8)
- RedHat Enterprise Linux 3 Update 2, Update 3, and Update 4.
- RedHat Enterprise Linux 3 EM64T/X86_64 Update 3 and Update 4.
- RedHat Enterprise Linux 4 and RedHat Enterprise Linux 4 EM64T/X86_64.
- SuSE 9.1, 9.2 and SuSE Linux Enterprise Server 9.
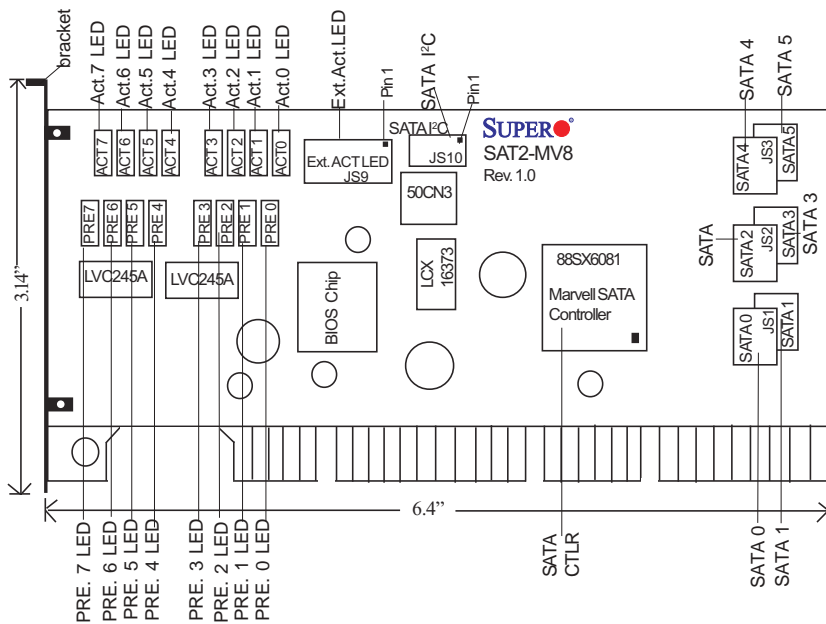- Fedora Core 3.

An Important Note to the User

- All images and layouts shown in this user's guide were based upon the latest revision available at the time of publishing. The card you've received may or may not look exactly the same as the ones shown in this manual.
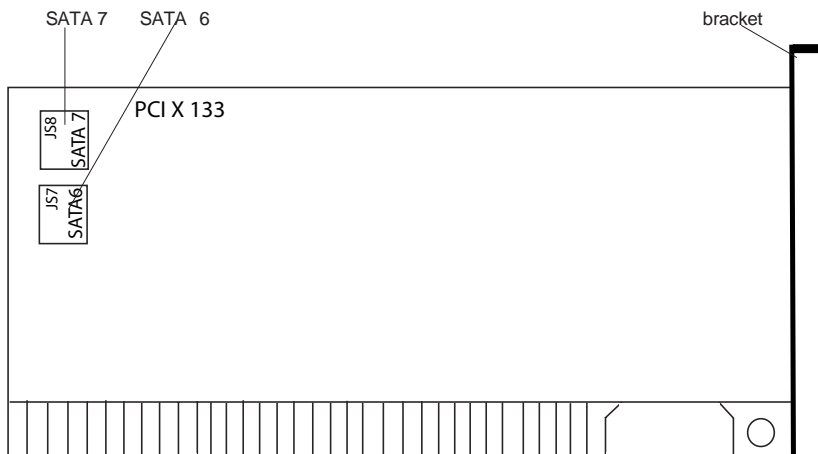
1.2 Technical Specifications

SUPER●°SAT2-MV8 Card Layout and Jumper Locations

Front view

Rear view

Front view (SAT2-MV8 w/Full-Height Bracket)

Full-Height bracket

4.75"

SATA I²C

SUPER●
SAT2-MV8
Rev. 1.0

ACT7 ACT6 ACT5 ACT4   ACT3 ACT2 ACT1 ACT0

Ext. ACT LED
JS9

JS10

50CN3

PRE7 PRE6 PRE5 PRE4   PRE3 PRE2 PRE1 PRE0

LVC245A   LVC245A

BIOS Chip

LCX
16373

88SX6081

Marvell SATA
Controller

SATA4 JS3 SATA5

SATA2 JS2 SATA3

SATA0 JS1 SATA1

2.5"

6.4"
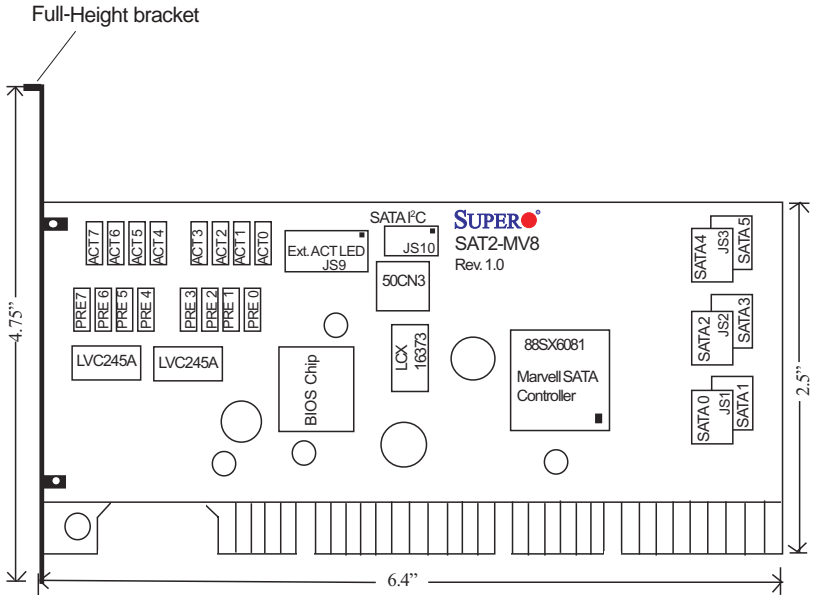
Front view (SAT2-MV8 w/Low-Profile Bracket)

Low-Profile bracket

3.14"

SATA I²C

SUPER●
SAT2-MV8 Rev. 1.0

ACT7 ACT6 ACT5 ACT4   ACT3 ACT2 ACT1 ACT0

Ext. ACT LED
JS9

JS10

50CN3

PRE7 PRE6 PRE5 PRE4   PRE3 PRE2 PRE1 PRE0

LVC245A   LVC245A

BIOS Chip

LCX
16373

88SX6081

Marvell SATA
Controller

SATA4 JS3 SATA5

SATA2 JS2 SATA3

SATA0 JS1 SATA1

2.5"

6.4"
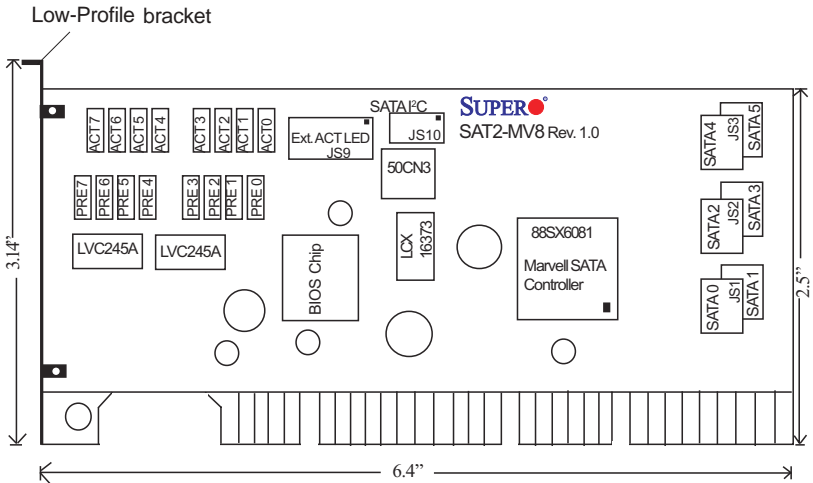
1.3 LED Indicators and Pin Definitions

SATA Presence LED Indicators

Serial ATA Presence LED Indicators (DS0-DS7) indicate the presence of SATA ports (0-7). See the Table on the right for pin definitions.

SATA Presence LED Indidators
Pin Definitions (DS0-DS7)

DS #	Definition	DS#	Definition
DS0	SATA0_Present	DS4	SATA4_Present
DS1	SATA1_Present	DS5	SATA5_Present
DS2	SATA2_Present	DS6	SATA6_Present
DS3	SATA3_Present	DS7	SATA7_Present

SATA Activity LED Indicators

Serial ATA Activity LED Indicators (DS8-DS15) indicate the activity status of SATA ports (0-7). See the table on the right for pin definitions.

SATA Activity LED Indidators
Pin Definitions (DS8-DS15)

DS#	Definition	DS#	Definition
DS8	SATA0_Act	DS12	SATA4_Act
DS9	SATA1_Act	DS13	SATA5_Act
DS10	SATA2_Act	DS14	SATA6_Act
DS11	SATA3_Act	DS15	SATA7_Act

 (*Refer to the layout on Page 5 for the locations of Connectors and the LED Indicators.)

1.4 Connectors and Pin Definitions

Extended Activity LED Connectors

Extended Activity LED Connector (JS9) indicates the status of Extended Activity of SATA ports. This connector is only compatible with Supermicro's SATA panel and requires SATA Cables such as CBL-0069, CBL-0055, CBL-0056, or CBL-0057 installed to function properly.
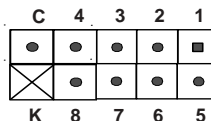
Extended ACT. LED Pin Definitions (JS9)

Pin#	Definition
1-8	Activity Output for Drives 0-7
C	Common Ground
K	Unused

RAID SMB (I²C) Connector

RAID SMB I² C Connector (JS10), monitors the status of RAID for Serial ATA ports. See the table on the right for pin definitions.
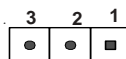
SATA RAID I²C Pin Definitions (JS10)

Pin#	Definition
1	Data
2	Ground
3	Clock

SATA Connections

The following onboard connectors (JS1-3, JS7-8) support Serial ATA Ports (#0-7). See the table on the right for detailed information.

SATA Port Connections (JS 1-3, JS 7-8)

JS#	Port#	JS#	Port#
JS1	SATA Ports 0, 1	JS7	SATA Port 6
JS2	SATA Ports 2, 3	JS8	SATA Port 7
JS3	SATA Ports 4, 5		

(*Refer to the layout on Page 5 for the locations of Connectors and the LED Indicators.)

2. Safety Guidelines

To avoid personal injury and property damage, please carefully follow all the safety steps listed below when accessing your system or handling the components:

ESD Safety Guidelines

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system. it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the RAID card.
- Use only the correct type of bracket for the chassis. Please use a full-height bracket for a 1U, 3U, 4U, Tower, or a Pedestal system. Use a low-profile bracket for a 2U or some of the proprietary chassis. Make sure to secure the bracket in the host system cabinet. (*Note: When used in a 1U system, the card with a full-height bracket is mounted into the riser card.)
- Disconnect the power cable before removing the Extended LED, data or I^2C cables from the riser card.
- Make sure that the card is securely seated in the PCI slot to prevent damage to the system due to power shortage.
- Do not force a cable connector onto the controller or a drive.

3. Installing the SAT2-MV8 Driver

3.1 Creating the driver floppy disk:

A CDROM that contains the drivers for the Windows OS, Linux OS, and the Controller BIOS is included in the shipping package. Please locate the CDROM before installing the driver. (*Note: this CDROM does not perform Auto-boot or auto-play.)

For the Windows 32-bit Operating System:

• Copy all files from the folder: \Windows_3_4_1\build\Windows\i386\Free into a blank, formatted floppy disk.

For the Windows 64-bit Operating System:

• Copy all files from the folder: \Windows_3_4_1\build\Windows\amd64 \Free into a blank, formatted floppy disk.

For the Linux Operating System:

For an existing system:

• Use the source code from the folder: \Linux_3_4_0 to compile.

For a new system:

• Use the tool- rawwritewin.exe to write the driver images stored in the folder: \DiskImag\linux to create a driver disk. (*Note: The folder- \DiskImag\linux is included in Supermicro's CD ROM that came with your shipping. However, the file-rawwritewin.exe is not included.)

3.2 Adding the driver into an existing system

(*Note: An existing system is a system that has an operating system already installed and the SAT2-MV8 driver is being installed as a Secondary Controller.)

For the Windows Operating System

a. Install the controller and make sure that the BIOS screen as shown be- low displays:

```
Supermicro Inc. SATA BIOS Version 1.0
Copyright 2004 Supermicro Inc.
Marvell Serial ATA 88SX5081 Adapter
Found adapter at bus 3, device 2
SATA 4 : MODEL [WDC WD2500JD-00FYB0    ] SIZE 238475 MByte
SATA 6 : MODEL [WDC WD360CD-00FNA0     ] SIZE 35304 MByte
SATA 7 : MODEL [WDC WD360CD-00ELX1     ] SIZE 35304 MByte
```

b. Start the Windows OS. The Windows OS will launch the "Found New Hardware Wizard" and search for the installer driver.

c. Insert the driver floppy disk that you've created into the floppy drive, select the floppy drive as the source, and press the <enter> key.

d. Continue clicking <Next> until the driver is successfully installed.

e. Remove the driver disk from the FDD drive and restart the system to complete the installation process.

For the Linux Operating System

a. Insert the CDROM that contains the Linux OS driver in the CD drive.

b. At the # prompt, type: mount /dev/cdrom /mnt/cdrom and press <enter> to mount the CDROM directory into the system directory.

c. At the # prompt, type: cd /mnt/cdrom/Linux_3_4_0 and press <enter> to change the directory to the CDROM directory.

d. Read the README.txt file and exit.

e. At the # prompt, type: cd /mnt/cdrom/Linux_3_4_0/Docs/ and press <enter>.

f. Read the documents included carefully and follow the instructions given to create the driver and install it into the system.

3.3 Installing the driver into a new system

(*Note: A new system is a system that has no operating system installed yet, and the SAT2-MV8 driver installation is a part of the OS installation.)
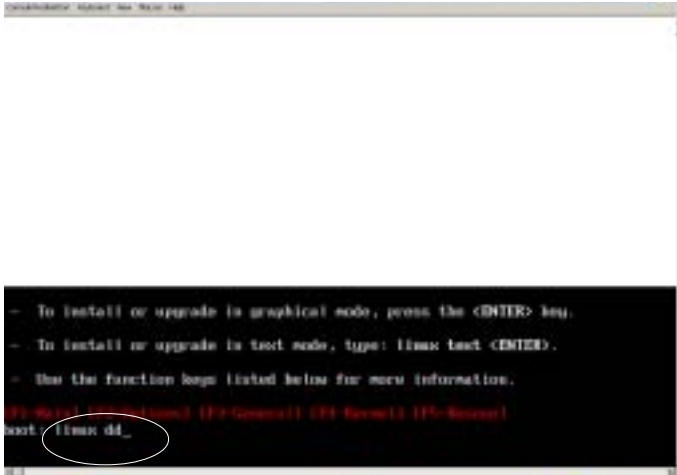
For the Windows Operating System

a. Install the controller and make sure that the BIOS screen displays as shown on the previous page.

b. Insert the Windows Setup CD and boot from it.

c. When prompted at the bottom of the screen to install a third party driver, press the <F6> key. (**Note: You have only 5 seconds to press <F6>. If you miss it, you will need to restart the system and repeat this step again.*)

d. Insert the driver disk into the system, and wait until you are prompted to install a driver. Press <S> to specify that the driver is included in an additional device--the floppy disk, and press <Enter>.

e. When the Marvell's driver disk--"Marvell Serial ATA PCI-X Adapter" is located, press <Enter>.

f. Press <Enter> again to continue with the Windows OS installation.

For the Red Hat Linux Operating System

a. Insert the Linux Driver into your floppy disk drive and press <Enter>. A Linux bootup screen will display as shown below:

b. At the boot prompt, type: **linux dd** as shown in the screen below.

c. After you've typed: linux dd at the prompt, press <Enter>. The system starts initializing the driver. Then, follow the instructions when prompted to complete the installation process.

For the SuSE Linux Operating System

(***Note**: The screen shot shown below was taken from a system based on the <u>SuSE Linux 9.2 Installation</u>. Other SuSE systems may display screens that are different from the ones included in the manual. However, the installation procedures listed below apply to all SuSE Linux systems.)

a. Extract the image driver from \DiskImag\Linux\x86_32 into a blank, formatted disk.

b. Boot up the system from SuSE Linux Installation CD ROM.

c. When the screen as shown below displays, highlight "Installation", press <F6> (to add the Installation Driver), and hit <Enter>.
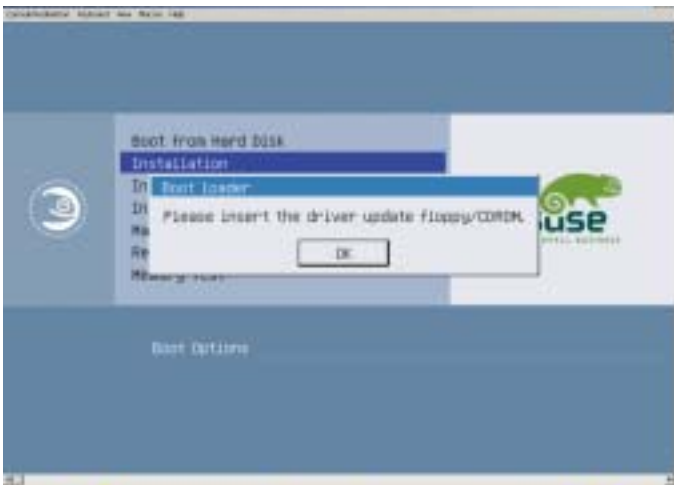
d. Follow the instructions given at the prompt to complete the installation process.

4. Troubleshooting

1. Problem: The SAT2-MV8's BIOS does not show up in DOS.

Recommended Solutions:

• Make sure that the system has enough expansion ROM to initialize the card. Remove other add-in cards if possible.
• Make sure that the card is properly and fully seated in the PCI slot.
• Check if the motherboard's BIOS is updated. (You can download a updated BIOS from our web site at: www.supermicro.com.)

2. Problem: I cannot see the card in the operating system.

Recommended Solutions:

• Make sure that the card is shown in the BIOS. If the card is shown in the BIOS, a screen shown below will display. If it is not shown in the BIOS, please find out the root cause of the problem by following the steps listed above.
• Make sure that the driver for the card is installed in the system.

3. Problem: I cannot see the hard drives that are connected to the controller.

Recommended Solutions:

• Make sure that there is power supply to the hard drives.

• Check the SATA cable to make sure that there are no loose connections between the card and the hard drives.

• If the hard drives are connected through a SATA back panel, make sure that there is power supply to the back panel, and there are no loose connections between the back panel and the controller. Also make sure that the hard drives are properly seated in the drive bay.

• If possible, swap the drives around to determine if the drive connections or the controller is bad.

4. I cannot create software RAID in the operating system.

Recommended Solutions:

• Make sure that the operating system supports software RAID. If not sure, please check with the software company that produces the OS.

• Make sure that more than one drives are seen by the OS.

Contacting Supermicro's Technical Support:

If you still have problems after trying out all the recommended solutions, please contact our Tech. Support @ (408)503-8000 or visit our web site @ www.supermicro.com/support/.

5. Contacting Supermicro

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Web Site:	www.supermicro.com.tw

Technical Support:

Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

6. Product Compliance Information

The SAT2-MV8 is compliant with the following safety standards/ requirements:

* USA: FCC 47 CFR, Part 15, subpart B

* European Union: EN 55022
                            EN 55024