

INTRODUCTION

The PCI-Express SATA controller card brings a high performance 6.0Gbps hardware RAID 0/RAID 1 solution to desktop/consumer storage applications utilizing a native 1-Lane PCI Express 2.0 interface. The card supports SATA 6Gbps devices compliant with Serial-ATA Revision 3.0 specification and ATA/ATAPI-7 specification. It is also backward compatible with SATA 1.5Gbps and 3.0Gbps devices.

The LED indicator headers on the card are specially designed so that the front panel LED indicator can show Read/Write activities of any hard disk drives connected to the card or to the motherboard.

The orientation and position of the two internal SATA ports are well designed so that cable wiring is very easy in small form factor computer chassis. 2-port eSATA version for external storage connectivity is also available on specific models.

The card also comes with an internal Parallel-ATA port (Optional, available on specific models) providing support for up to two legacy ATA/ATAPI storage devices such as IDE hard drives.

FEATURES & SPECIFICATION

General

- Based on Marvel 88SE9128 PCI-Express 2.0 SATA 6Gbps hardware RAID controller
- 1-Lane PCI-Express 2.0 interface supports communication speed of 2.5Gbps and 5.0Gbps
- Compliant with PCI-Express 2.0 Base Specification
- Unique Hard Drive Activity LED indicator circuit design: The LED blinks when there is read/write activity on any one of the hard drive connected to the motherboard SATA port or to this add-on card
- Supports Low Profile case (*Only for models without PATA/IDE interface*)
- Supports Windows 7 32/64-bit, Server 2008 32/64-bit, Vista 32/64-bit, Server 2003 32/64-bit, XP 32/64-bit, and Linux

Serial-ATA (SATA) Interface

- Two SATA 6.0Gbps ports (eSATA version also available)
- Compliant with Serial-ATA Specification 3.0
- Supports communication speed of 6.0Gbps, 3.0Gbps, and 1.5Gbps
- Compatible with SATA-III (6Gbps), SATA-II (3Gbps), SATA-I (1.5Gbps) hard drives and SSD's
- Supports Gen 1i, Gen 1x, Gen 2i, Gen 2m, Gen 2x, and Gen 3i
- Supports Hardware RAID 0 and RAID 1
- Supports Native Command Queue (NCQ)
- Supports SATA Port Multiplier FIS based switching or command based switching
- Supports SATA port Hot-Plug
- Supports AHCI 1.0 and IDE programming interface
- Supports ATA and ATAPI commands

Parallel-ATA (PATA / IDE) Interface ⁽¹⁾

- One PATA port supporting 2 ATA/ATAPI/IDE devices (Master and Slave)
- Compliant with ATA/ATAPI-7 specification
- Supports DMA protocols, and up to UDMA 150 Mbps data transfer rate
- Supports Multiword DMA and PIO modes for data transfer
- Supports IDE programming interface

⁽¹⁾ Available on specific models only

PACKAGE CONTENTS

- PCI-Express SATA RAID card x 1
- Driver CD x 1
- User's manual x 1
- LED cable x 1
- Low Profile Bracket x 1 (Available on specific models only)

4. Follow the on-screen help and information to configure various RAID functions, such as selecting RAID Level¹

BEFORE INSTALLATION

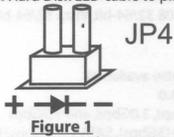
- The user must have basic knowledge of installing an add-on card and its driver to a desktop PC. If you have any queries, please call your local dealer, or find somebody who is experienced in computer hardware installation.
- Motherboard with a free PCI-Express 2.0 slot and a supported operating system installed.

WARNING

Before installing and activating this controller card, please make sure you have a complete backup of your existing data from your hard drives. Manufacturer is not responsible for data loss due to abuse, misuse, or neglect. Should you have any installation problem, please contact your dealer for assistance.

HARDWARE INSTALLATION

- Turn off your computer and all external devices connected to it
- Disconnect your computer from the power sources.
- Open the computer case. Refer to your computer user manual for more details.
- Find an available PCI-Express 2.0 slot and remove the slot bracket. Save the bracket screw for later use.
- Align the controller card horizontally with respect to the slot and insert it into the slot firmly and evenly. Take care not to force it into the slot. Once you have properly positioned the controller card into the slot, fasten it to the computer case with the screw you have just saved.
- Mount the hard disk(s) on the computer case.
- Connect the power cable to the hard disk(s).
- Connect the SATA hard disk(s) to the controller card with the SATA cable.
- Connect the computer case's front panel Hard Disk LED cable to pin header JP4 (See **Figure 1**)



- Connect the one end of the LED cable (included) to pin header JP5, and the other end to your motherboard's HDD LED connector
- Secure the computer case and switch on your computer.

RAID BIOS SETUP

- Skip this section if you are not going to create a RAID virtual disk
- Press the **[Ctrl] + [M]** key combination during the controller card's POST (Power On Self Test). After pressing **[Ctrl] + [M]**, you may have to wait a few seconds before the BIOS screen appears.
- Figure 2 shows the messages displayed during the POST of the SATA controller card

```
Marvell 88SE91xx Adapter - BIOS Version 1.0.0.1008
PCI-E X1 Bandwidth Usage: 5.0Gbps   Configure SATA as: AHCI Mode

Virtual Disk
No Virtual Disk!

Physical Disk
[ID] [Disk name]           [Size]           [Speed]
0   SATA ST3750330HG      715GB            3.0G
8   SATA ST3750330HG      715GB            3.0G
16  ATAPI SONY DVD-ROM DD01615  Not Available    UDMA2

Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue.
```

(RAID 0 or RAID 1), selecting RAID 0 stripe size (32K or 64K), manually rebuilding a RAID 1 virtual disk, etc.

- If you created a RAID virtual disk but later you don't want the RAID function, simply erase the RAID configuration data in the BIOS

Note: The SATA (IDE) interface does not support RAID function

DRIVER INSTALLATION

(A) Installing Driver for Windows Vista 32/64bit, Server 2008 32/64bit and Windows 7 32/64bit:

- Start Windows and insert the driver CD into the CD-ROM drive, assume drive D.
- The SATA card is initially installed with the inbox AHCI drivers and recognized as a Standard AHCI 1.0 Serial ATA controller.
- From the **Start** Menu, right click **My Computer**, and select **Manage** to open the **Computer Management** utility.
- Browse to **System Tools**, then **Device Manager** in the navigation tree.
- Select **IDE ATA/ATAPI controllers** in the list of devices, then right click **Standard AHCI 1.0 Serial ATA Controller** and select **Update Driver**.
- Click on: **Browse my computer for driver software**, and then browse to the following folder on the driver CD according to your operating system:
 - Windows Vista 32-bit, Server 2008 32-bit and Windows 7 32-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_32bit\
 - Windows Vista 64-bit, Server 2008 64-bit and Windows 7 64-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_64bit\
- Follow the on-screen instructions to install the driver.
- After successful installation, the SATA card is listed under **Storage controllers as Marvell 91xx SATA 6G Controller**.
- For the RAID controller, an additional device **Marvell 91xx Config SCSI Processor Device** is detected. Select **"Locate and install driver software (recommended)"** and click **Continue**. And then select **"I don't have the disc. Show me other options"**.
- Click on: **Browse my computer for driver software**, and then browse to the following folder on the driver CD according to your operating system:
 - Windows Vista 32-bit, Server 2008 32-bit and Windows 7 32-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_32bit\
 - Windows Vista 64-bit, Server 2008 64-bit and Windows 7 64-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_64bit\
- Follow the on-screen instructions to install the driver.
- After successful installation, the device is listed in the **Device Manager as Marvell 91xx Config Device (under System devices)**.
- Once driver installation is completed, you can now connect your external devices to the SATA card. To install the driver for the external devices, please refer to the external device user's manuals.

(B) Installing Driver for Windows XP 32/64bit and Server 2003 32/64bit:

- Start Windows and insert the driver CD into the CD-ROM drive, assume drive D.
- Windows will automatically detect the SATA card. Select **"No, not this time"** and click the **Next** button to continue.
- Select **"Install from a list or specific location (Advanced)"** and click on the **Next** button.
- Browse to the following folder on the driver CD according to your operating system:
 - Windows XP 32-bit and Server 2003 32-bit:
D:\Marvell\88SE91xx\Windows\Win_32bit\
 - Windows XP 64-bit and Server 2003 64-bit:
D:\Marvell\88SE91xx\Windows\Win_64bit\
- Follow the on-screen instructions to install the driver.
- After successful installation, the SATA controller is listed in the **Device Manager as Marvell 91xx SATA 6G Controller (under SCSI and RAID controllers)**.
- For RAID controller, an additional device **Marvell 91xx Config SCSI Processor Device** is detected. Select **"No,**

not this time" and click the **Next** button to continue.

8. Select "**Install from a list or specific location (Advanced)**" and click on the **Next** button.
9. Browse to the following folder on the driver CD according to your operating system:
 - Windows XP 32-bit and Server 2003 32-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_32bit\
 - Windows XP 64-bit and Server 2003 64-bit:
D:\Marvell\88SE91xx\Windows\RAID\Win_64bit\
10. Follow the on-screen instructions to install the driver.
11. After successful installation, the device is listed in the **Device Manager** as **Marvell 91xx Config Device** (under **System devices**).
12. Once driver installation is completed, you can now connect your external devices to the SATA card. To install the driver for the external devices, please refer to the external device user's manuals.

(C) Installing Driver for Linux:

Note: Marvell does not provide Linux drivers for AHCI and IDE/ATA devices

Drivers for AHCI devices

Linux distributions contain Inbox drivers for AHCI devices. The drivers are installed automatically during the Linux OS installation.

Drivers for IDE/ATA devices

Linux distributions with kernel version 2.6.19 and above include inbox drivers for IDE/ATA devices (Source: <http://www.kernel.org/pub/linux/kernel/v2.6/ChangeLog-2.6.19>). In most distributions, the kernel does not load the inbox drivers for IDE/ATA devices by default. The procedure for enabling support for IDE/ATA devices in Linux is as follows:

Enabling Support for IDE/ATA Devices during a Clean Installation of Linux

This section describes the procedure for enabling support for IDE/ATA devices during a clean installation of Linux. To enable support for IDE/ATA devices during a clean installation of Linux:

1. Boot from the Linux installation CD / DVD
2. Select **Installation** and press **Enter**
3. Type the following command into the Boot Options command line:
ata_generic.all_generic_ide=1
4. Press Enter to continue with the Linux OS installation

Enabling Support for IDE/ATA Devices on an Existing Installation of Linux

This section describes the procedure for enabling support for IDE/ATA devices on an existing installation of Linux. To enable support for IDE/ATA devices on an existing installation of Linux:

1. Login as root.
2. Right-click the **Desktop** and select **Open In Terminal**.
3. Type the following commands:
ls
cd /boot/grub/
vim menu.lst
4. Type the following command at the end of the kernel line for the title paragraph that lists the version information for the Linux distribution.
ata_generic.all_generic_ide=1
5. Browse to File and select Save.
6. Reboot the system for the changes to take effect.

(D) Updating Drivers:

The latest drivers and last-minute change to this document are available on this website:

<http://www.drivers-download.com>

Search for the following Download Code from "**Drivers Search**":

Chipset.	Description	Download Code
Marvell 88SE9128	PCI-Express to SATA 6Gbps Hardware RAID controller card	DL-0141101

*All contents and specification mentioned in this manual are subject to change without prior notice
All brand names and trade names referenced and mentioned in this manual are property of their respective owners.*