

# ServeRAID-MR10i

## Quick Install Guide



Thank you for purchasing the ServeRAID-MR10i Serial Attached SCSI (SAS)/Serial ATA (SATA) Controller. The ServeRAID-MR10i SAS/SATA Controller is a 1078-based PCI Express RAID adapter.

Please take a few minutes to read this Quick Install Guide before you install the controller. If you need more information about any topic covered in this guide, refer to the other documents on your *ServeRAID-MR Support CD*.

You can connect an intelligent Battery Backup Unit (iBBU) directly to the ServeRAID-MR10i SAS/SATA Controller. For more information about this battery, refer to the *ServeRAID-MR10i User's Guide* on the *ServeRAID-MR Support CD*.

### ServeRAID-MR10i CONTROLLER INSTALLATION

**Attention:** Back up your data before you change your system configuration. Otherwise, you might lose data.

Perform the following steps to install the ServeRAID-MR10i SAS/SATA Controller.

#### Step 1 Unpack the Controller

**Important:** When you handle static-sensitive devices, take precautions to avoid damage from static electricity.

Unpack the controller in a static-free environment. Remove the controller from the antistatic bag and inspect it for damage.

If the controller appears to be damaged, or if the *ServeRAID-MR Support CD* is missing, contact your place of purchase.

The CD contains utility programs, device drivers for various operating systems, and the following documentation:

- *ServeRAID-MR10i User's Guide*
- *ServeRAID-MR Software User's Guide*
- *ServeRAID-MR Device Driver Installation User's Guide*

#### Step 2 Prepare the Computer

Review all safety information provided with the computer. Unplug the power cords from the power supplies, disconnect the computer from the network, and remove the computer cover. Refer to the documentation provided with the computer for instructions.

**Attention:** Before you install the controller, make sure that the computer is disconnected from the power and from any networks.

#### Step 3 Review the Connectors

**Figure 1** shows the location of the connectors on the controller.

**Figure 1** ServeRAID-MR10i SAS/SATA Controller Card Layout

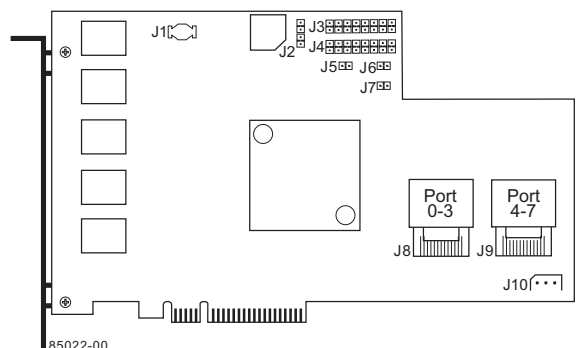
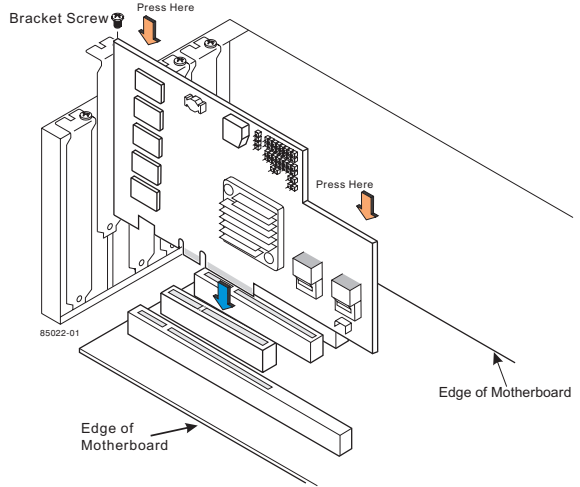


Table 1 describes the connectors on the controller.

Figure 2 Installing the ServeRAID-MR10i SAS/SATA Controller

Table 1 Connectors

Connector	Type	Description
J1	Board-to-board connector for battery backup unit daughter card	20-pin connector. Provides an interface to the daughter card that contains the battery backup unit.
J2	Universal Asynchronous Receiver/Transmitter debugging	4-pin connector. Reserved for IBM use.
J3	Individual Activity LED header for eight SAS ports	16-pin connector. Provides an LED interface individually to eight SAS ports. The LED indicates activity on individual drives.
J4	Individual Fault LED header for eight SAS ports	16-pin connector. Provides an LED interface individually to eight SAS ports. The LED indicates errors on individual drives.
J5	Debug connector	2-pin connector. Reserved for IBM use.
J6	Board Default Debug	2-pin connector. Reserved for IBM use.
J7	Cache Write Pending LED	2-pin connector. The connector for the enclosure LED. It provides a signal that indicates when the on-board cache contains data and a write from the cache to the hard drives is pending. Optional.
J8	x8 SAS Ports 0-3	The x8 Mini SAS 4i ports connect the cables from the RAID controller to SAS or SATA II physical drives or to a SAS expander.
J9	x8 SAS Ports 4-7	The x8 Mini SAS 4i ports connect the cables from the RAID controller to SAS or SATA II physical drives or to a SAS expander.
J10	IPMI-style SMBus (System Management)/I <sup>2</sup> C header	3-pin shielded header. Provides enclosure management support.



**Step 5 Configure and Install the SAS Devices, SATA II Devices or Both in the Host Computer Case**

Configure the SAS devices, SATA II devices, or both, and install them in the host computer.

**Note:** The ServeRAID-MR10i controller supports SATA II protocols but not SATA I protocols. All references to SATA in this document are to SATA II.

**Step 6 Connect the Controller to the SAS Devices, SATA II Devices, or Both**

Connect the cables between the controller and the supported SAS devices or SATA II devices. Refer to the device documentation to view connector locations.

**Note:** Refer to the *ServeRAID-MR10i User's Guide* for information about the cables and the connectors.

**Step 7 Turn on the Power to the Computer**

Replace the computer cover, and reconnect the power cords. Turn on the power to the computer. During boot, a MegaRAID BIOS message similar to the following is displayed:

```
LSI MEGARAID BIOS VERSION xxxx [date]
Copyright(c) 2007, LSI Corporation
HA-1 (Bus x Dev y) MegaRAID 8708E
PCI-Express RAID Controller
Standard FW xxxx DRAM=xxx MB(SDRAM)
```

The firmware takes several seconds to initialize. During this time the adapter scans the bus(es).

**Step 4 Install the Controller in the Computer**

Insert the controller in a PCI Express slot on the motherboard, as shown in Figure 2.

Press down gently but firmly to seat the card correctly in the slot. Secure the controller to the computer chassis with the bracket screw.

**Note:** Refer to your computer documentation for information about the PCI Express slot.

**Attention:** The battery in the iBBU must charge for at least six hours under normal operating conditions. To protect your data, the firmware changes the Write Policy to *write-through* until the battery unit is sufficiently charged. When the battery unit is charged, the RAID controller firmware changes the Write Policy to *write-back* to take advantage of the performance benefits of data caching.

#### Step 8 Run the WebBIOS Configuration Utility

Run the WebBIOS Configuration Utility to configure the physical arrays and the logical drives. When the message `Press <Ctrl><H>` for WebBIOS displays on the screen, immediately press CTRL+H to run the utility.

**Note:** Refer to the *ServeRAID-MR Software User's Guide* on the *ServeRAID-MR Support CD* for detailed steps on configuring the physical arrays and the logical drives.

#### Step 9 Install the Operating System Driver

The controller can operate under various operating systems. To operate under these operating systems, you must install software drivers.

The *ServeRAID-MR Support CD* includes drivers for the supported operating systems. View the supported operating systems and download the latest drivers for the controller at <http://www.ibm.com/systems/support/>.

Refer to the *ServeRAID-MR Device Driver Installation User's Guide* on the CD for details on installing the driver. Be sure to use the latest Service Packs provided by the operating system manufacturer and review the `readme` file that accompanies the driver.

## SUPPORTED RAID LEVELS

The ServeRAID-MR10i SAS/SATA Controller supports disk arrays using the following RAID levels:

- **RAID 0 (Data Striping):** Data is striped across all disks in the array, enabling fast data throughput. There is no data redundancy. All data is lost if any disk fails.
- **RAID 1 (Disk Mirroring):** Data is written simultaneously to two disks, providing complete data redundancy if one disk fails. The maximum array capacity is equal to the available size of the smaller of the two hard drives.

- **RAID 5 (Disk Striping with Distributed Parity):** Data is striped across all disks in the array. Part of the capacity of each disk stores parity information that reconstructs data if a disk fails. Provides good data throughput for applications with high read request rates.
- **RAID 6 (disk striping with distributed parity across two disks):** Data is striped across all disks in the array and two parity disks are used to provide protection against the failure of up to two physical disks. In each row of data blocks, two sets of parity data are stored.
- **RAID 10 (RAID 1 and RAID 0 in Spanned Arrays):** Uses mirrored pairs of disks to provide complete data redundancy. Provides high data throughput rates.
- **RAID 50 (RAID 5 and RAID 0 in Spanned Arrays):** Uses both parity and disk striping across multiple disks to provide complete data redundancy. Provides high data throughput rates.
- **RAID 60 (RAID 6 and RAID 0 in spanned arrays):** RAID 60 uses both distributed parity across two parity disks and disk striping across multiple disks to provide complete data redundancy. RAID 60 provides high fault tolerance.

## TECHNICAL SUPPORT

Refer to the *Warranty and Support Information* document for information about the technical support available for this product.



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