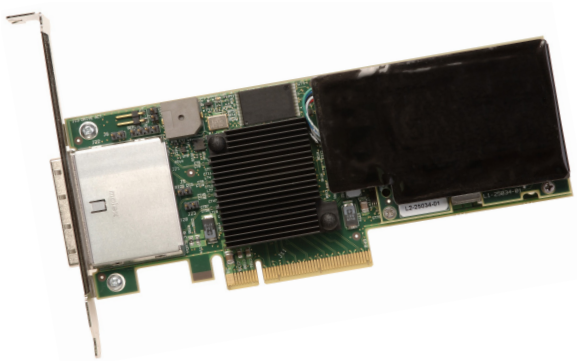
ServeRAID-MR10M
Quick Install Guide



Thank you for purchasing the ServeRAID-MR10M Serial Attached SCSI (SAS)/Serial ATA (SATA) Controller. The ServeRAID-MR10M SAS/SATA Controller is a LSI1078ROC-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 directly to the ServeRAID-MR10M SAS/SATA Controller. For more information about this battery, refer to the *ServeRAID-MR10M User's Guide* on the *ServeRAID-MR Support* CD.

ServeRAID-MR10M 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-MR10M SAS/SATA Controller.

Step 1 Unpack the Controller

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

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-MR10M 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. See 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-MR10M SAS/SATA Controller Card Layout

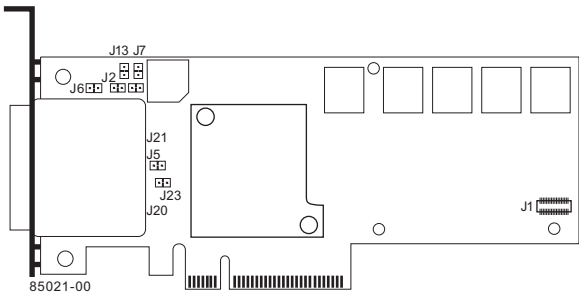


Table 1 describes the connectors on the ServeRAID-MR10M controller.

Table 1 Jumpers and Connectors

Jumper/ Connector	Type	Description
J1	Battery Backup connector	20-pin connector. Provides the interface to the battery backup unit. The LSIiBBU07 connects directly to the ServeRAID-MR10M controller.
J2	Universal Asynchronous Receiver/ Transmitter debugging	4-pin connector. Reserved for IBM use. Note: This connector uses 3.3V LVTTL levels and will be damaged if connected to standard transceiver levels.
J5	BIOS Disable	2-pin connector. Reserved for IBM use.
J6	Board Default Debug	2-pin connector. Reserved for IBM use (default jumper).
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 physical disks is pending. Optional.
J13	Global Drive Activity header:	2-pin connector. Indicates activity on the physical drives. Operates at approximately 10mA at 3.3V.
J20	x4 SAS PORT B (Lanes 0-3)	The x4 SAS external connectors connect the cables from the RAID controller to SAS physical drives, SATA II physical drives, or a SAS expander.
J21	x4 SAS PORT A (Lanes 4-7)	The x4 SAS external connectors connect the cables from the RAID controller to SAS physical drives, SATA II physical drives, or a SAS expander.
J23	Debug connector	Reserved for IBM use.

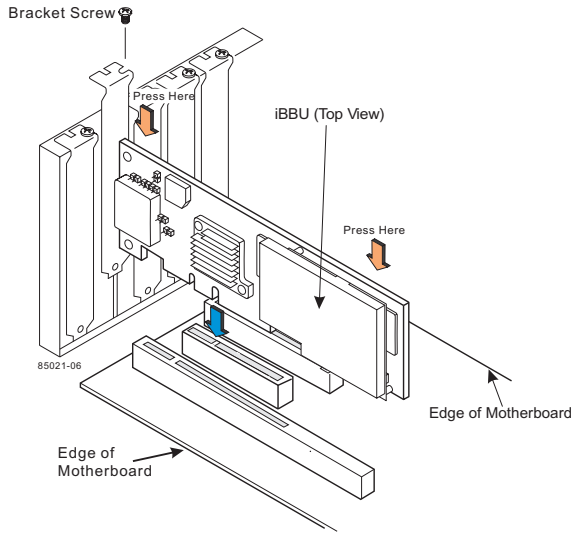
Step 4 Install the Controller on the Motherboard

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 motherboard guide for information about the PCI Express slot.

Figure 2 Installing the ServeRAID-MR10M SAS/ SATA Controller



Step 5 Configure and Install the SAS Devices, SATA II Devices or Both

Configure the SAS devices, SATA II devices, or both, and install them in the external enclosure.

Note: Refer to the documentation for the external devices for pre-installation configuration requirements.

Note: The ServeRAID-MR10M 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 SAS devices, SATA II devices, or both. Refer to the external device documentation to view connector locations for the external devices.

Note: Refer to the *ServeRAID-MR10M User's Guide* for information about the cables and the connectors.

Step 7 Turn on the Power to the Computer

Install the computer cover and reconnect the power cords. Turn on the power to the computer.

Make sure that the power is turned on to the SAS devices and the SATA II devices before or at the same time as the host computer. If the power is turned on to the computer before it is turned on to the devices, the computer might not recognize the devices.

During boot, a MegaRAID BIOS message similar to the following displays:

```
LSI MEGARAID BIOS VERSION xxxx [date]
Copyright(c) 2007, LSI Corporation
HA-1 (Bus x Dev y) MegaRAID 8880EM2
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).

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, press CTRL+H immediately 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 ServeRAID-MR10M 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/support/. For updates, click **Downloads and drivers**. Access the download center and follow the steps to download the driver.

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-MR10M 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 physical disks.
- **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

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

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