RocketU 1144CM Host Controller
4-Port USB 3.0 PCI-Express 2.0 x4 RAID HBA for Mac

User’s Guide

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HighPoint Technologies, Inc.
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HighPoint RocketU 1144CM

Quad 5Gb/s Ports USB 3.0 - SuperSpeed RAID HBA
HighPoint's RocketU 1144CM: 3rd Generation PCI-E 2.0 x4 USB 3.0 HBA designed for Apple Mac Pro's and Mac OS X.
RocketU 1144CM HBAs benefit from a 2 ounce (oz) copper PCB layer for robust transfer performance and improved energy efficiency. The four Dedicated 5Gb/s USB Ports deliver 20Gb/s of transfer bandwidth.
The RocketU 1144CM is optimized for today's fastest USB 3.0 HDD and SSD's, storage docks, and enclosures.
Built-in RAID technology and an intuitive Web-based Management interface support a variety of storage configurations including RAID 0, 1, and JBOD.

1 Features and Specifications

Host Adapter Architecture
- PCI Express 2.0 x4
- Quad-Port: Four USB 3.0 ports with type A connectors for easy data access
- SuperSpeed USB 3.0: 5Gb/s per USB port
- 20Gb/s transfer bandwidth
- Support RAID 0, 1 and JBOD
- Optimized for external USB drives and drive enclosures
- Backwards compatible with USB 2.0 & 1.1
- Hot-Swap and Hot-Plug
- Compliant with xHCI (Extensible Host Controller Interface) Specification
- Support SMTP Email notification
- Mac OS X 10.6 and newer
2 Physical Specifications

Host Adapter Dimensions:
Size: 96mm x 95.0mm x 19mm

EMI:
EMI: FCC Part 15 Class B and CE

Thermal and Atmospheric Characteristics:
Work Temperature Range: +5 °C ~ + 55 °C
Relative Humidity Range: 5% ~ 60% non-condensing
Storage Temperature: -20 °C ~ +80 °C
MTBF: 920,585 Hours

Electrical Characteristics:

<table>
<thead>
<tr>
<th>PCI-E</th>
<th>3.3V</th>
<th>12V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>4W max</td>
<td>1W max</td>
</tr>
</tbody>
</table>

3 Kit Contents

- RocketU 1144CM USB 3.0 HBA
- CD (Driver Software)
- Quick Installation Guide
4 Hardware Description and Installation

4.1 RocketU 1144CM Host Adapter Board Layout

4.2 Installing the RocketU 1144CM Host Adapter

*Note: Make sure the system is powered-off before installing the RocketU host adapter.*

1. Open the system chassis.
2. Locate an unused PCI-Express ×16 slot.
3. Remove the PCI-Express slot cover.
4. Gently insert the RU series into the PCI-Express slot, and secure the bracket to the system chassis.
5. After installing the adapter, attach the hard disks or disk enclosure to the RU series card using the USB cables.
6. Close and secure the system chassis.
5 RocketU 1144CM Host Adapter Driver Installation

5.1 Driver Installation

Once you have installed the RocketU 1144CM Card and booted your Mac, follow these instructions to install the drivers and the HighPoint Web Management Software:

1. Click “System Information” icon.
2. Click “PCI Cards”. Four PCI entries labeled “pci1103,1042” will be displayed. “Driver Installed” should be reported as “No” for these entries.
3. Insert the RocketU Series Software CD into your Mac Pro's DVD drive and navigate to the Mac Software package folder:
/RocketU/RU1144CM
Double-click on the “*.dmg” file to mount the disc image containing the Mac OS X software and drivers.

4. Double-click on the installer package labeled 📦 to start the installation process.
5. Follow the on-screen steps to complete the installation process.

6. After the install has completed, you will be prompted to restart your computer. You will need to restart in order to use the RocketU 1144CM.
5.2 Verify Installation of the Software

1. Click “System Information” icon.
2. Click “PCI Cards”. Four PCI entries labeled “pci1103,1042” will be displayed. “Driver Installed” should be reported as “Yes” for these entries.
6 Connect Hard Disk to RocketU 1144CM Host Adapter

The RocketU 1144CM’s standard Type-A ports accept stand-alone USB 3.0 hard drive and SSD’s kits, as well as standard USB 3.0 enclosures and docking bays. HighPoint RocketStor 5122B USB 3.0 Storage docks are an ideal companion for the RocketU 1144CM HBA. The innovative dual-5Gb/s bay architecture provides an unprecedented level of transfer bandwidth for a USB-based storage solution, delivering the fastest SATA 6G performance possible through USB 3.0 connectivity.

1. Make sure the RocketU 1144CM has been installed into your Mac.
2. Connect the enclosure or hard disk to the RocketU 1144CM with USB 3.0 cables.
3. Allow the drives/enclosure to spin up for a few moments. Once the devices are ready, they will be recognized by the operating system and can be accessed as needed.
7 Web RAID Management Interface

HighPoint’s web-based RAID Management Software (also known simply as the “Web GUI”), is used to monitor and configure hard disks and RAID arrays attached to HighPoint Rocket host adapters.

The software package must be installed on a system with supported HighPoint Rocket controllers installed, and the device driver must be loaded to run the service. A web browser with XML support is required on the client side, e.g. Safari, Mozilla or Google’s Chrome.

7.1 Running the Web RAID Management Software

To run the Web GUI, start your browser and enter the following URL address or click on the shortcut icon on the desktop:
http://localhost:7402

The RAID Management Interface will display information about any hard disks and SSD’s attached to the RocketU 1144CM HBA.
7.2 Web RAID Management – Manage

Three options are provided by the Manage Tab: Device, Array and Spare Pool.

**Device:** Displays all hard drives and SSD’s attached to the RocketU 1144CM HBA.

**Array:** Create and Delete RAID arrays.

**Spare Pool:** When creating RAID 1 arrays, a Spare HDD can be configured to automatically help rebuild the array in the case of disk failure.
7.2.1 Manage - Devices

Manage – Device displays information about each hard disk and SSD hosted by the RocketU 1144CM HBA, including the device’s Model Number, Serial Number, Firmware version, Total Capacity, and port number (which port the device is attached to).

7.2.2 Manage - Array

Create Array

The RocketU 1144CM allows you to configure RAID arrays using SATA HDD and SSD’s attached to any of its four USB 3.0 ports. Three types of RAID configurations (known as RAID levels) are supported:

**Note:** The requirements for creating a RAID array are below.

**JBOD:** Also known as “Just a Bunch Of Disks”. Requires one or more devices. Select this array type if maximum storage capacity is priority. The capacity of a JBOD array is the sum total of each devices’ available capacity.

**RAID 0:** Also known as a “Stripe array”. Requires one or more devices. Configure a RAID 0 array if speed is priority – it is the fastest RAID level. The capacity of a RAID 0 array is equal to the smallest device multiplied by the total number of devices (for example: a 2 disk RAID 0 array created between a 3TB and 4TB hard drive results in 6TB of available capacity).

**RAID 1:** Also known as “Mirroring”. Requires 2 devices. Select this RAID level if security is priority. The target device’s capacity must be equal to or larger than the source. All data written to the source is automatically duplicated to the target.
The RocketU 1144CM supports RAID 0, 1, and JBOD configurations.

Name the array – this step is optional.

RAID initialization is available for RAID level 1 RAID arrays. RAID initialization will zero out each device, ensuring a healthy RAID array. There are two initialization
methods to choose from: Foreground and Quick Init.

- Quick Init: Will skip the initialization process and allow the user to immediately format and use the RAID array. This method is recommended only if you plan on “Verifying” the RAID array at a later time. A RAID array that is not fully initialized may have problems rebuilding when a RAID array becomes critical.  
  Note:  
  A. This option will delete all content on the disks.  
  B. This option will not perform disk array initialization. When new HDD’s are used this option can be ignored since there is no data on the hard disks.

- Foreground: Will zero out the RAID array. The RAID array will not be accessible during the initialization process and it will only be available after initialization is complete. Initialization times are dependent the capacity of the RAID array. (A larger array will take longer to initialize than a smaller array).  
  Note:  
  A. This option will delete all content on the disks.  
  B. The initialization time will be shorter time compared to the “Background” option. The logical disks will not be reported to the OS until the initialization is complete.
Select All: Select the number of HDD for the RAID array.

Select All: Select the number of HDD for the RAID array.

7.2.3 Manage – Spare Pool
When creating redundant RAID arrays 1 a Spare HDD can be configured to automatically help rebuild a degraded redundant RAID.
1. You will see the following window after clicking the Spare Pool option.
2. Check the box before each disk you want to assign to the Spare pool, and click “Add Disk”. This will open a pop-up window. Click “OK” to confirm.

3. To remove a disk from the Spare Pool, check the box before the target disk and click “Remove Spare”. Click “OK” to continue, or “Cancel” to return to the menu. If you select “OK”, a second pop-up window will open announcing that the disk has been removed from the Spare Pool. Click “OK” to confirm.
7.3 Web RAID Management – Event

The Event tab will open the Event View interface. Event View logs all RAID related activity including administrative actions, warnings and hardware failures. **Clear:** Click “Clear” to remove all current entries from the Event View log.

<table>
<thead>
<tr>
<th>Date Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/12/16 23:31:56</td>
<td>Plugining device detected ('ASMT 2105-123456789012' at Controller1-Channel4-Device1)</td>
</tr>
<tr>
<td>2012/12/16 23:31:52</td>
<td>Plugining device detected ('ASMT 2105-000000000000000000000000000000' at Controller1-Channel3-Device1)</td>
</tr>
<tr>
<td>2012/12/16 23:31:20</td>
<td>Plugining device detected ('HPT R5S122B-S122B0000A4' at Controller1-Channel1-Device1)</td>
</tr>
<tr>
<td>2012/12/16 23:31:4</td>
<td>Device 'HPT R5S122B-S122B0000A4' at Controller1-Channel1-Device1 failed.</td>
</tr>
<tr>
<td>2012/12/16 23:26:45</td>
<td>Array 'RAID_0_0' has been deleted successfully.</td>
</tr>
<tr>
<td>2012/12/16 23:26:19</td>
<td>RAID 0 Array 'RAID_0_0' has been created successfully (Disk 1: 'HPT R5S122B-S122B0000A4', 1/1; Disk 2: 'HPT R5S122B-S122B0000A3', 1/2; Disk 3: 'ASMT 2105-000000000000000000000000000000', 1/3; Disk 4: 'ASMT 2105-123456789012', 1/4/1).</td>
</tr>
<tr>
<td>2012/12/16 23:26:19</td>
<td>Device 'Device_1_4_1' (1/4/1) has been initialized.</td>
</tr>
<tr>
<td>2012/12/16 23:26:19</td>
<td>Device 'Device_1_3_1' (1/3/1) has been initialized.</td>
</tr>
<tr>
<td>2012/12/16 23:26:19</td>
<td>Device 'Device_1_2_1' (1/2/1) has been initialized.</td>
</tr>
<tr>
<td>2012/12/16 23:26:18</td>
<td>Device 'Device_1_1_1' (1/1/1) has been initialized.</td>
</tr>
<tr>
<td>2012/12/16 21:20:22</td>
<td>Plugining device detected ('ASMT 2105-0000000000000000000000000000000000' at Controller1-Channel1-Device1)</td>
</tr>
<tr>
<td>2012/12/16 21:19:44</td>
<td>Disk failed.</td>
</tr>
<tr>
<td>2012/12/16 21:17:21</td>
<td>Disk 'HPT R5S122B-S122A0000010' at Controller1-Channel4-Device1 failed.</td>
</tr>
<tr>
<td>2012/12/16 21:16:45</td>
<td>Plugining device detected ('HPT R5S122B-S122A0000010' at Controller1-Channel4-Device1)</td>
</tr>
<tr>
<td>2012/12/16 21:16:37</td>
<td>Disk 'ASMT 2105-123456789012' at Controller1-Channel2-Device1 failed.</td>
</tr>
</tbody>
</table>
7.4 Web RAID Management – Task

The Task page allows you to schedule maintenance sessions for RAID 1 arrays. Regular maintenance is highly recommended for any redundant RAID array, and is essential for maintaining healthy, reliable storage configurations.

The interface allows you to name each task, and specify the frequency, date, hour minute and second for each session.

![Task Management Interface](image)

New Verify Task

- Task Name: RAID_1_0
- Schedule:
  - Occurs every
  - Start date: 2012 - 11 - 1
  - End date: 2012 - 11 - 1

Submit
7.5 Web RAID Management – Setting

The Settings page provides various HBA-related settings and options.

Rebuild Priority

Set Rebuild Priority: [Medium] [Change]

Browser Based RAID Management Listening Port

- Restrict to localhost access.
- Port Number: 7402 [Change]

Email Notification Setting

- Enable Event Notification
- Server Address (name or IP):
- Mail From (E-mail address):
- Login Name:
- Password:
- SMTP Port: 25 [Change Setting]

Recipients

<table>
<thead>
<tr>
<th>E-mail</th>
<th>Name</th>
<th>Event Level</th>
</tr>
</thead>
</table>

Add Recipient

- E-mail:
- Name:
- Event Level: [Information] [Warning] [Error]
  - Add [Test]
Rebuild Priority: When a RAID 1 array becomes critical and needs to be rebuilt, the Rebuild Priority setting allows you to adjust how system resources are allocated to the rebuild procedure.

- **Lowest:** Lowest Priority when rebuilding arrays. System resources will be assigned to all other tasks first.
- **Low:** Most of the system’s tasks have priority over the rebuild procedure.
- **Medium:** Medium Priority is the default option – system resources are equally distributed between the rebuild procedure and other system tasks.
- **High:** The majority of available system resources will be directed towards the rebuild procedure.
- **Highest:** The HBA will utilize all available system resources to rebuild the array.

Browser Based RAID Management Listening Port: The default listening port is 7402, no other application utilities will use 7402 as listening port. Restricting to localhost access port number means that remote network access of the RAID management utility with the systems IP address will not work.

Email Notification Setting: The RocketRAID HBA can be configured to send Event Log entries to one or more E-Mail addresses.
7.6 Maintaining and Rebuilding a RAID Array

7.6.1 Maintenance and Verify

From the Manage page, click the “Maintenance” link displayed near the arrays Status to see additional options and features for the selected array. The following pop-up window will be displayed:

**Delete:** Will delete the existing RAID array or single disk JBOD. The HDD’s will become legacy HDD’s after rebooting.

**Unplug:** Power down and power off all members of the RAID array. For any hosted device not configured as an array, this option is displayed beneath the Device name (see below):

![Array Information](image)

**Verify:** Use this option to manually verify the selected RAID 1 array. This will scan the RAID disks for bad sectors, and will ensure that parity is consistent.

**Rename:** You are free to rename any RAID array at any time.

*Note: the name is limited to 8 characters or less.*
7.6.2 Maintenance and Rebuilding a Critical RAID Array

A redundant array (RAID 1) may become Critical if one of the disks fails or drops offline. The RAID status will change to Critical. Click “Maintenance” for more information. The missing/failed disk will be reported as an “Offline Disk”.

7.6.3 Add Disk

If a spare disk is not available, you can physically install a new disk and use it to rebuild the critical array. To rebuild the array, click on “Maintenance”. Next, click “Add Disk”. The following menu will be displayed:

Check the empty circle before the new disk and click “Submit”.
7.6.4 Rebuild RAID Array
Once a disk has been added, the Web GUI will automatically start the rebuild process. Once complete, the status will change to “Normal”.

![Image of RAID Management Interface]

7.7 Web GUI Icon Definition List
The definitions of each ICON used by the RAID Management interface are listed below.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Normal Icon]</td>
<td>The array status is &quot;Normal&quot;.</td>
</tr>
<tr>
<td>![Critical Icon]</td>
<td>The array status is &quot;Critical&quot; - a disk is missing from the RAID array.</td>
</tr>
<tr>
<td>![Verifying Icon]</td>
<td>The array status is &quot;Verifying&quot;. This indicates that the array is running a data integrity check.</td>
</tr>
<tr>
<td>![Rebuilding Icon]</td>
<td>The array status is &quot;Rebuilding&quot;. This occurs when the data verification fails or when adding a new disk into the &quot;Critical&quot; array.</td>
</tr>
<tr>
<td>![Critical Status Icon]</td>
<td>The array status is &quot;Critical&quot;. This indicates that current array needs &quot;rebuild&quot;.</td>
</tr>
<tr>
<td>![Disabled Icon]</td>
<td>The status of the &quot;Array&quot; or &quot;Device&quot; is &quot;Disabled&quot;.</td>
</tr>
<tr>
<td>![Initializing Icon]</td>
<td>The array is &quot;Initializing&quot;.</td>
</tr>
<tr>
<td>![Uninitialized Icon]</td>
<td>This icon means the RAID array is &quot;Uninitialized&quot;. This icon is displayed if the Quick Init option is used when first creating an array, or if the initialization process was interrupted.</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>🚨</td>
<td>The array has stopped &quot;Initializing&quot;. Current status is &quot;Uninitialized&quot;.</td>
</tr>
<tr>
<td>📦</td>
<td>The device status &quot;Legacy&quot;. An existing file system has been created on the HDD.</td>
</tr>
<tr>
<td>🔄</td>
<td>The device is a &quot;Spare&quot;. It is used to replace the failed RAID disk member to rebuild automatically</td>
</tr>
<tr>
<td>📧</td>
<td>Information.</td>
</tr>
<tr>
<td>🚩</td>
<td>Warning.</td>
</tr>
<tr>
<td>🚫</td>
<td>Error.</td>
</tr>
</tbody>
</table>
8 Thank You

Thank you for purchasing the RocketU 1144CM Host adapter. We appreciate your support, and welcome any questions, comments or product suggestions you may have.
9 Customer Support

If you encounter any problem while utilizing RocketU series Host Adapters, or have any questions about this or any other HighPoint Technologies, Inc. product, feel free to contact our Customer Support Department.

HighPoint Technologies, Inc. websites:
http://www.highpoint-tech.com/

Web Support:
http://www.highpoint-tech.com/websupport/
http://www.highpoint-tech.com