

# ADDONICS TECHNOLOGIES

## Model: CDC5HXAES

### IMPORTANT

**There is no back door for the Cipher tower encrypted hard drives if the Cipher keys are lost or stolen.**

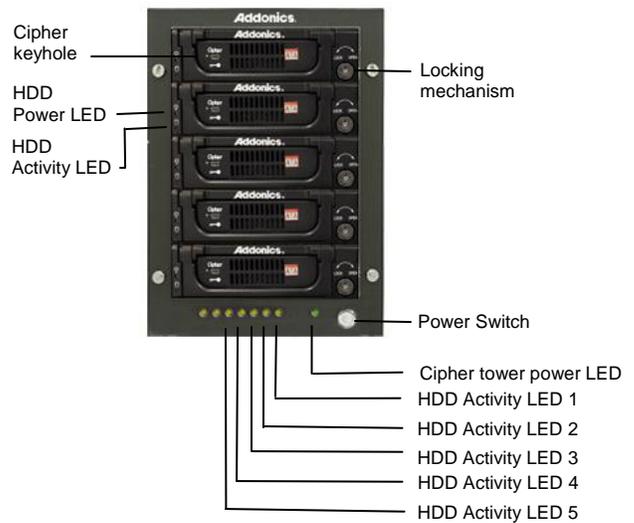
### Cipher key

Check to make sure you have the correct version of the Cipher key. A sample key is shown



Black label AES-256 stands for Cipher 256-bit key.

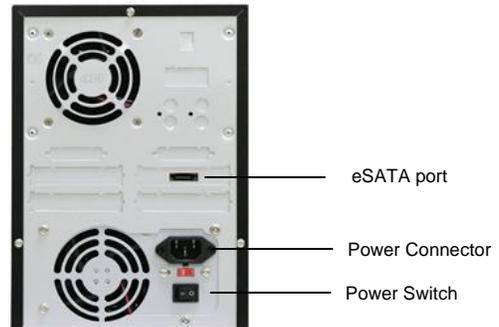
*To ensure there is a spare key, your Cipher tower comes with 5 pairs of Cipher keys. These cipher keys have all identical encryption code unless you requested them to be coded differently. One of these keys should be kept in a safe and secure location and can be sent back to Addonics for duplicating additional keys. If you are down to the last key, be sure to make a back up of all the data stored inside your Cipher tower prior to sending the last key to Addonics. Addonics is not responsible for key lost in the mail or retrieval of the data inside the encrypted hard drive.*



### Keeping track of the hard drive

If you are using the Cipher tower to encrypt multiple hard drives, it is important to label your hard drive if you are taking the drive out of the Cipher tower. The hard drive from the Cipher tower that is encrypted will look like a brand new drive when attach directly to the SATA controller of a computer. There will be no partition or any hint to indicate that the drive contains encrypted data. When the drive is partitioned, all the encrypted data will be lost.

The same holds true if a hard drive already has data on it is installed into the Cipher tower. The computer detects the hard drive as a brand new drive or a drive that is unallocated. Once you proceed to partition the drive, the data that was on the hard drive will be erased and cannot be recovered.



### I. Installing drives into the Cipher Tower

Refer to Diamond Cipher enclosure hard drive installation guide



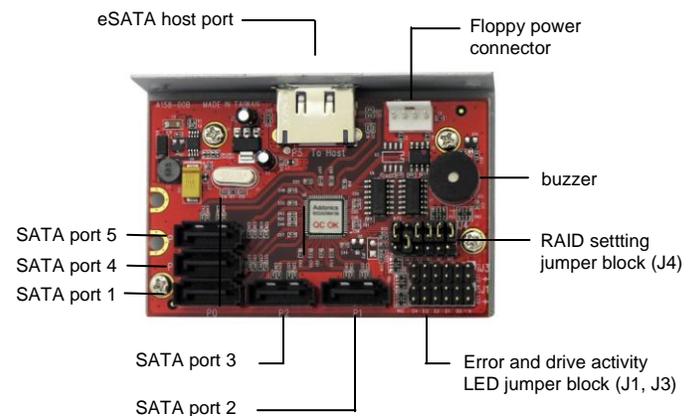
Slide the enclosure into the drive bay. Using the key provided, insert it to the lock mechanism and turn it to the "LOCK" position. This will secure the enclosure and provide power to the drive.

**Note:** It is recommended to fill up the tower with SATA drives from top to bottom. This is to help in identifying which drives connects to which ports for easier troubleshooting.

### II. Connecting the power cable and Cipher Tower to the computer

- Connect the power cord provided from the wall outlet to the back of the Cipher Tower.
- A power switch is located on the front of the tower. Make sure the power is off on the switch (power LED light should be off)
- Connect the provided eSATA or USB2.0 cable from the back of the Cipher tower to the eSATA or USB2.0 on the computer. We recommend connecting the eSATA port for best performance if this port is available on your computer.

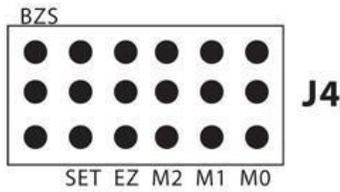
### III. 5-port HPM-XA mounted on the Cipher Tower



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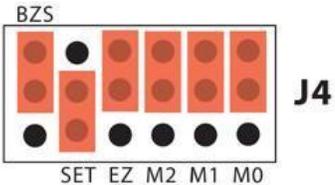
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## J4 – RAID Setting Jumper Block



BZS – Error buzzer function  
 SET – RAID mode setting  
 EZ – Automatic rebuilding to spare drive  
 M2 – RAID mode 2  
 M1 – RAID mode 1  
 M0 – RAID mode 0

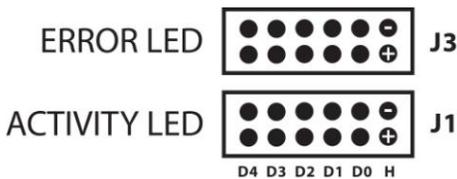
## Default factory RAID jumper setting



1. Error buzzer function is DISABLED (BZS)
2. RAID mode setting modification is DISABLED (SET)
3. Auto-rebuilding to spare drive is ENABLED (EZ)
4. Individual drive mode is ENABLED (M0-M2)

Note: When the default factory RAID setting is used, independent drive configuration and optical drive are supported only when connecting to controllers with Silicon Image Sil3124, Sil3132 chip set or controllers that are Port Multiplier (PM) compatible. Simultaneous DVD writing was tested using the Nero Burning Rom.

## LED Pin header



## J1 – Drive Activity LED

H – Activity LED for eSATA host port lights up when it is connected to a SATA controller card.  
 D0, D1, D2, D3 & D4 - Activity LEDs for port 1, 2, 3, & 4 light up when a drive is connected and blinks when there's drive activity.

## J3 – Error LED

H – error LED for eSATA host port  
 D0, D1, D2, D3 & D4 - error LED for port 1, 2, 3 & 4

## Two options for setting or modifying the RAID mode on the Cipher Tower

### A. Using the JMicron HW RAID Manager utility program

For Windows users, install the JMicron HW RAID Manager located on the SATA Controller CD. In the CD, go to RAID utilities > JMB393. This manager can be used to create and monitor the status of the RAID volume.

It is recommended to use the default factory RAID jumper setting when using the JMicron HW RAID Manager.

- a. Insert the 5 AES 256-bit cipher keys into each cipher keyhole on the Diamond Cipher enclosures located at the front of the Cipher tower.



- b. When the Cipher Tower power switch is turned on, observed that the green Cipher power LEDs at the front of the Cipher tower are on. If they did not, reinsert the cipher keys and re-power the Cipher tower.
- c. Run the JMicron HW RAID Manager in Windows.
- d. Configure the desired RAID configuration
- e. Go to the operating system's management utility to verify raid volume detection.
- f. Partition, format and mount the encrypted drives.

### B. Using the onboard RAID setting jumper block on the 5-port HPM-XA

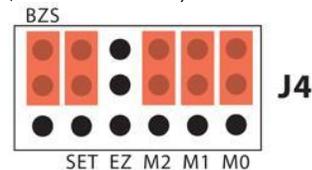
Recommended to be used on operating system without JMicron HW RAID Manager support like Linux, Mac & Solaris. Windows users can also use the procedure below.

**Note: Steps 1 ~ 4 needs to be performed each time the raid mode is modified.**

1. Insert the 5 AES 256-bit cipher keys into each cipher keyhole on the Diamond Cipher enclosures located at the front of the Cipher tower.



2. When the Cipher Tower power switch is turned on, observed that the green Cipher power LEDs at the front of the Cipher tower are on. If they did not, reinsert the cipher keys and re-power the Cipher tower.
3. Set the J4 RAID setting jumper block as shown below. (ignore EZ pins, EZ is DISABLED)



Note: If the JMicron HW RAID Manager is used to create a raid volume using the RAID mode diagram above the raid metadata will not be saved. When a reboot of HPM-XA is made, it resets and deletes all raid metadata.

4. Turn on the Cipher Tower for at least 5 seconds for hardware port multiplier initialization. This step acts as a reset.
5. Power off the Cipher Tower.
6. On the J4 RAID setting jumper block, change (M0-M2) jumper setting to the desired RAID mode using the diagram on the next page as reference.

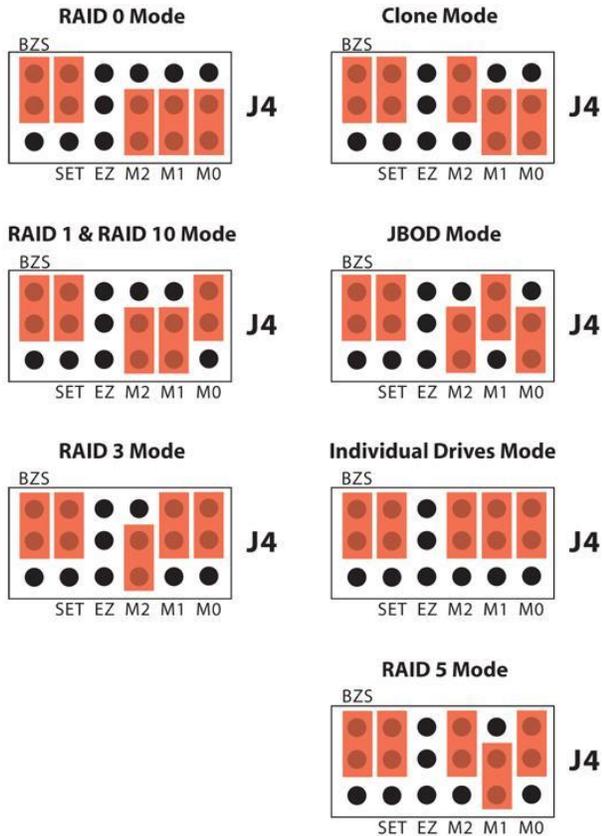
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All settings on the diagram shows

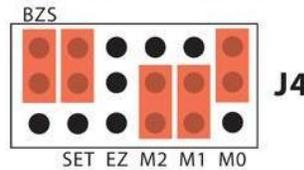
- RAID mode setting modification is ENAABLED (SET)
- Error buzzer function is DISABLED (BZS)

Note: On this setting, there is no jumper on SET.



### RAID Setting Notes:

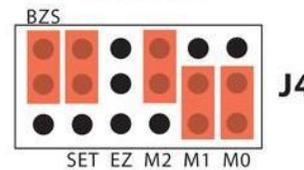
#### RAID 1 & RAID 10 Mode



When 2 drives are connected to the HPM-XA, and J4 is set to this setting, the 2 drives will be configured as a 2-drive RAID1 array.

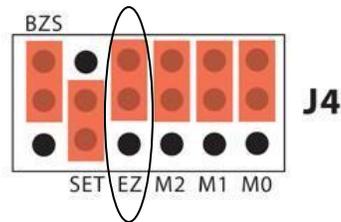
When 4 drives are connected to the HPM-XA, the 4 drives will be configured as a 4-drive RAID10 array.

#### Clone Mode



Clone's action is similar to RAID1. However, all of the hard drives will be mirrored. Clone mode is useful especially when users like to copy data from a source hard drive to the drives connected to the HPM-XA.

### Notes on Spare Drives Using the Easy RAID Setting (EZ)



In reference to the diagram, the auto-rebuilding to spare drive is ENABLED (EZ)

When EZ mode is ENABLED, the degraded RAID group will start rebuilding automatically by using the existing spare drive.

\* Spare drive can be either plugged before RAID building or a new drive can be plug as the spare drive when RAID rebuild is required.

#### A. Which port acts as a spare drive?

The last drive will automatically become the spare drive.

For a 3-drive RAID5 with spare:

Drives connected to SATA ports 1~3 belong to the active RAID5 array and drive connected to port 4 is the spare.

For a 4-drive RAID10 with spare:

Drives connected to SATA ports 1~4 belong to the active RAID10 array and drive connected to port 5 is the spare.

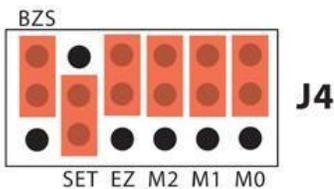
For a 2-drive RAID1 with spare:

Drives connected to SATA ports 1 & 4 belong to the active RAID1 array and drive connected to port 5 is the spare.

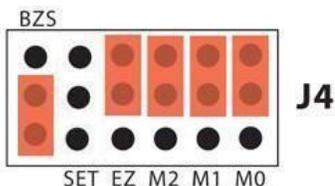
#### B. When will rebuild action start?

- When the raid fails and EZ is enabled, the HPM-XA will automatically rebuild the RAID group using the spare.
- When the raid fails and EZ is disabled, the HPM-XA will NOT rebuild the raid group unless you install a good drive to replace the failed drive.

7. Power on the Cipher Tower.
8. Verify if the RAID array is detected by the system
  - a. If the 5-port HPM-XA is connected to the motherboard onboard SATA, on the CMOS setup utility, the raid array will display as "Addonics H/W RAID5" if setup as a RAID5 array.
  - b. If the 5-port HPM-XA is connected to an eSATA host controller card, on the RAID BIOS, the raid array will display as "Addonics H/W RAID0" if setup as a RAID0 array.
  - c. If booted into Windows, in Disk Drives under Device Manager, the raid array will display as "Addonics H/W LARGE" if setup as a RAID0 array.
9. Once raid array is verified, you can set back the RAID jumper setting back to default



or the diagram below where buzzer is ENABLED.



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### III. How to operate the Cipher tower after initial setup

1. Insert the 5 AES 256-bit cipher keys into each cipher keyhole on the Diamond Cipher enclosures located at the front of the Cipher tower.
2. Push the power switch of the Cipher tower to turn it on. Observe that the green Cipher power LEDs at the front of the Cipher tower are on. If they did not, reinsert the cipher keys and re-power the Cipher tower.
3. Use the system's File Explorer to access the files on the encrypted drive.
4. For security purposes, remove the cipher keys from the Cipher tower after the drives are detected by the system. All the files being transferred into the drives are still encrypted even if the cipher key is removed.
5. When the Cipher tower is restarted, the 4 cipher keys must be inserted again in order to gain access to the drives.

#### Best Practice:

Create a label to identify the SATA hard drive and the associated Cipher key used.

#### TECHNICAL SUPPORT

Phone: 408-453-6212  
Hours: 8:30 am - 6:00 pm PST  
Email: <http://www.addonics.com/support/query/>