



User Guide

Cipher RAID Tower
(CDC5HMEU3)

www.addonics.com

Technical Support

If you need any assistance to get your unit functioning properly, please have your product information ready and contact Addonics Technical Support at:

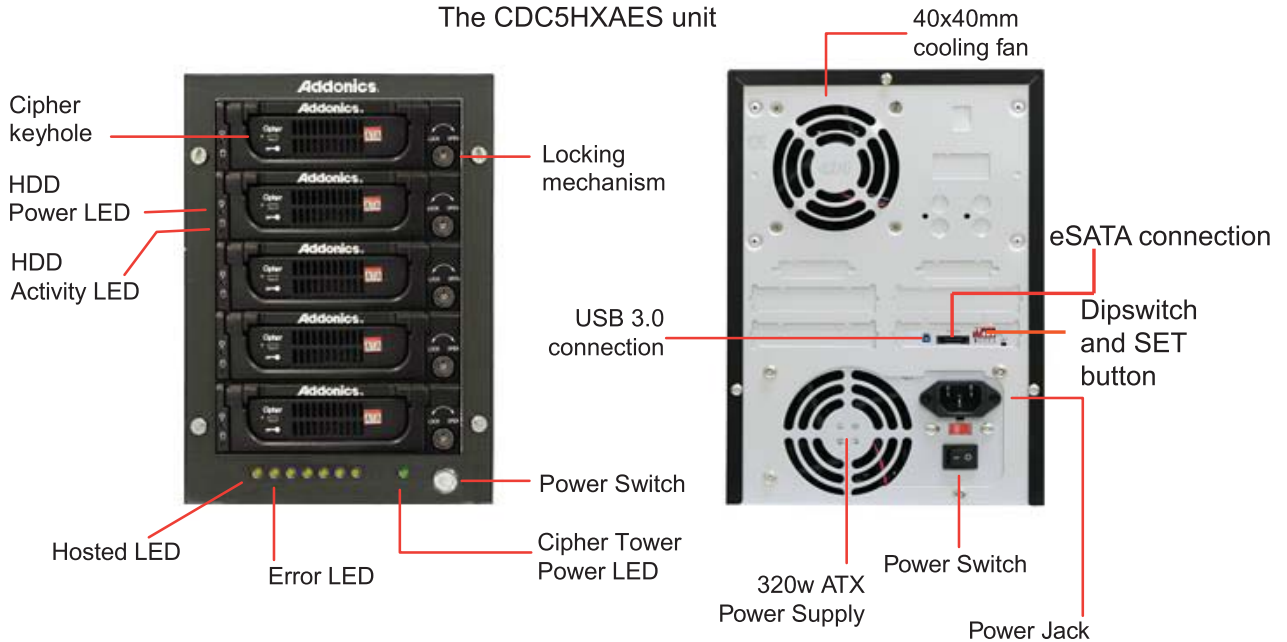
Hours: 8:30 am - 6:00 pm PST

Phone: 408-453-6212

Email: <http://www.addonics.com/support/query/>

Unpacking and Overview

The following items would be found in the shipping container



Diamond Enclosure Close up



One set of keys and mounting screws for each Diamond enclosure



One power cord

WARNING: Please remember to set the power supply to your local outlet voltage prior to plugging in the power cord. Failure to do so may damage the power supply.

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

Cipher 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 then 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.

Drive Installation Guide

Step 1

Use a Philips screwdriver to turn the cover securing screw clockwise into the "OPEN" position.



Step 2

Slide the aluminum cover towards the back end of the Diamond enclosure and remove it.



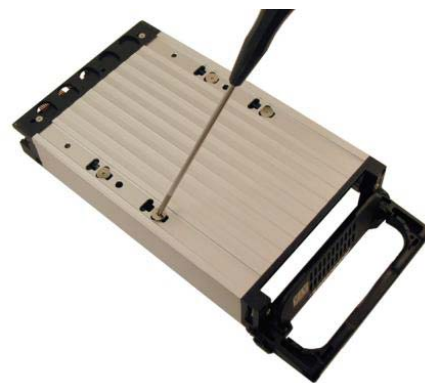
Step 3

Carefully place the SATA hard drive with the label facing up into the Diamond Enclosure. Push the hard drive towards the back end to secure the drive connectors onto the Diamond enclosure's SATA connector.



Step 4

Turn the Diamond enclosure over with the hard drive mounting holes facing up. Use the included flat head screws to secure the hard drive onto the bottom of the enclosure. Turn the Diamond enclosure back over, slide the cover back into place and turn in the screw to the "LOCK" position.



Step 5

Insert the enclosure into a cradle in the tower and secure it in place with the handle and turn the cradle's lock to the LOCK position. Note: the drive will not power up until the cradle's lock is in the LOCK position.

Connecting the Power Cable and Powering On

1. Connect the power cord provided from the wall outlet to the back of the tower.
2. Install all drives into the Diamond enclosures, then insert the enclosures into the cradles.
3. Insert the Cipher key into the Cipher connection, then lock the enclosure into place using the power key. The drive will not function unless the power key is turned to the LOCK position and the Cipher key is present when the unit powers up.
4. Turn on the Main switch on the back of the unit, then turn on the power switch on the front of the unit.

After the unit powers up, on each drive the cradle power LED and Cipher LED should be glowing. After confirming the Cipher LEDs are all glowing, the Cipher keys may be removed and stored in a secure place.

Resetting the RAID Mode

NOTE: This procedure destroys all RAID data. It should not harm individual drives or their contents; however, creating or running backups of all data is strongly recommended before proceeding.

1. Power down the unit and set the dip switch to the factory default setting (all switches OFF).
2. While holding the SET button with a ballpoint pen, turn the unit on. A long beep will sound from the Port Multiplier. The SET button may be released once the long beep stops.

Setting or Modifying the RAID Mode

NOTE: Setting or modifying the RAID mode destroys all data.

1. Follow the procedure for resetting the RAID Mode.
2. Power down the unit and set the dip switch to the desired RAID Mode.
3. While holding the SET button with a ballpoint pen, turn the unit on. A long beep will sound from the Port Multiplier. The SET button may be released once the long beep stops.

If instead of a long beep the Port Multiplier sounds a series of short beeps, an error has occurred during configuration of the array.

Windows users may install the JMicron HW RAID Manager application located on the SATA Controller CD. In the CD, browse to Configuration Utilities → JMB393. The JMicron HW RAID Manager can be used to create, modify, and monitor the health status of the RAID drives, and provide status alerts. When configuring the RAID mode using the RAID Manager application, it is strongly recommended to leave the dip switch in the factory default setting.

Using identical drives for all settings other than JBOD or LARGE is strongly recommended. Creating a LARGE array using drives that have different properties will use all space on all members, and performance will match that of the member in use during any particular I/O operation. Creating a RAID using drives that are not all the same size will result in all members using only as much space as the smallest member. Creating a RAID using drives that have different performance will degrade the overall performance of the array.

BZS Switch (SW1:1):

The BZ switch is used to silence the audible alarm buzzer. The OFF position permits the audible alarm, and the ON position silences the audible alarm. The BZ switch has immediate effect.

EZ Switch (SW1:2):

The EZ (spare) switch inhibits spares when ON. When in the OFF position, all individual drives (not defined as members of an array) are considered spare. Should a RAID become degraded, when the EZ switch is in the OFF position a spare drive will be used automatically to rebuild the RAID, if present. EZ mode is determined when the unit is powered up. Changing the switch will have no effect until the unit has been re-powered.

RAID Mode Switches M2, M1, M0 (SW1:3 – SW1-5)

The RAID Mode switches define what type of RAID will be initialized when the unit is powered up while the RAID Mode button is held down. Each type of RAID has different properties and requirements, as follows:

Dipswitch	1	2	3	4	5
Raid Mode	BZS ¹	EZ	M2	M1	M0
JBOD (Individual drives) * FACTORY DEFAULT SETTING	OFF	OFF ²	OFF	OFF	OFF
0	OFF	ON ³	ON	ON	ON
1 or 10	OFF	OFF	ON	ON	OFF
3	OFF	OFF	ON	ON	OFF
5	OFF	OFF	OFF	ON	OFF
Clone	OFF	OFF	OFF	ON	ON
Large	OFF	ON ³	ON	OFF	ON

1 Audible alarm is recommended at all times.

2 EZ mode has no effect in JBOD mode.

3 Disabling EZ for RAID 0 and LARGE is strongly recommended.

JBOD Mode (Individual Drives)

Number of drives: at least 1

Unit capacity: N/A (100% of each individual drive)

Spares: no

Fault tolerance: none

JBOD mode offers all connected units to the host adapter, no RAID is defined at all.

NOTE: JBOD mode requires a SATA controller featuring Port Multiplier support for eSATA connections.

NOTE: Optical drives can only be configured as JBOD using an eSATA connection.

RAID 0 (Stripe set)

Number of drives: at least 2

Unit capacity: size of each member times number of members.

Spares: no

Fault tolerance: none - if any member is lost all data is lost.

RAID 0 “stripes” the file system across the array by placing sectors of data sequentially between drives in a specific order.

RAID 1 or 10 (Mirror set, Stripe of mirror sets)

Number of drives: 2 (RAID 1) or 4 (RAID 10).

Unit capacity: size of one member (RAID 1) or size of two members (RAID 10).

Spares: yes – if EZ mode is not disabled and 3 (RAID 1) or 5 (RAID 10) drives are present, the array will be initialized with a spare.

Fault tolerance: RAID 1 can withstand the loss of one drive without losing data. RAID 10 can withstand the loss of one drive from each mirror set without losing data.

RAID 1 works by duplicating the exact same data on two drives.

RAID 10 works by using two RAID 1 sets configured as members of a RAID 0. Disks 1 and 2 are mirrored, disks 3 and 4 are mirrored, and the two mirror sets are striped together.

RAID 3 (Stripe set with dedicated parity)

Number of drives: at least 3

Unit capacity: size of one member times number of members minus one.

Spares: yes

Fault tolerance: can withstand the loss of one drive without losing data.

RAID 3 works by striping data for individual I/O blocks across all members except one, which contains parity data for the stripe set computed by the Port Multiplier.

RAID 5 (Stripe set with striped parity)

Number of drives: at least 3

Unit capacity: size of one member times number of members minus one.

Spares: yes

Fault tolerance: can withstand the loss of one drive without losing data.

RAID 5 works by striping entire I/O blocks across all members of the set, with each member taking turns carrying parity data computed by the Port Multiplier.

CLONE (Mirror set)

Number of drives: at least 2

Unit capacity: size of one member.

Spares: yes

Fault tolerance: can withstand the loss of any number of drives without losing data as long as at least one complete member remains online.

CLONE mode works the same way as RAID 1, by maintaining a complete copy of the entire set of data on each drive.

LARGE (Spanned set)

Number of drives: at least 2

Unit capacity: 100% of all drives together regardless of differences in size

Spares: no

Fault tolerance: cannot withstand the loss of any drives without losing data. However, some data may be recovered as long as the drive(s) carrying the file system data (boot record, directory, etc.) remain online.

LARGE mode is neither a RAID nor is it a JBOD. It works by declaring the sum of all available space of the member drives as a single unit, without striping the data. As each member is filled, new data is stored on the next.

Notes about Spare Drives

If EZ mode is disabled (SW1:2 ON), all individual drives not configured as array members will be offered to the host adapter as separate units.

To create an array with one or more spares, set or modify the RAID mode using fewer than 5 members, while the spares are disconnected from the Port Multiplier. When EZ mode is enabled, individual drives connected when an array is present are considered spare.

Spare drives must be equal to or larger in size than the smallest member.

When any type of array is defined, individual units will be considered spare. RAID 0 and LARGE arrays are not fault-tolerant and spare drives will not be useful; therefore, disabling EZ for these arrays is recommended.

When a spare drive is present and a fault-tolerant RAID (1, 10, 3, or 5) is defined, EZ mode will automatically rebuild any available spares into the array.

CONTACT US

www.addonics.com

Phone: 408-573-8580

Fax: 408-573-8588

Email: <http://www.addonics.com/sales/query/>