CRU® WiebeTech® Drive eRazer™ Ultra

User Manual

Features

- Erases all data from a connected hard drive

- Choose from a dozen preset erase methods, or create your own.

- Can unhide or erase HPA or DCO areas that a computer's OS can't see.

- Attaches natively to SATA and IDE/PATA drives and connects to other types of drives with optional adapters

- LCD menus make setup and erasure simple

- LCD gives clear indication of time remaining for erasure to complete

- Standalone operation with no computer required

- USB connection allows the Drive eRazer Ultra to be used to prevew drives before erasure or to confirm erasure after use

- Optionally connects to a ZPL2 serial printer for summary/verification test results

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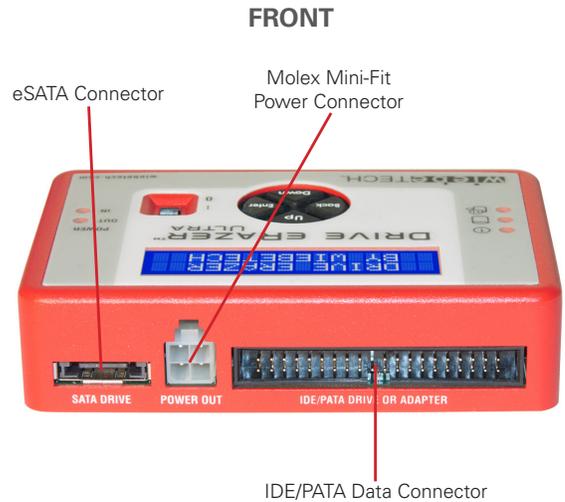
1.1 PACKAGE CONTENTS

The following list contains the items that are included in the complete configuration for this device. Please contact CRU if any items are missing or damaged:

Accessories	Quantity
Drive eRazer Ultra	1
AC adapter	1
Metal drive plate	1
Package of screws and bumpers	1
SATA power/data cable	1
IDE/PATA power cable	1
IDE/PATA data cable	1
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1.2 IDENTIFYING PARTS

Take a moment to familiarize yourself with the parts of the product. This will help you to better understand the following instructions.
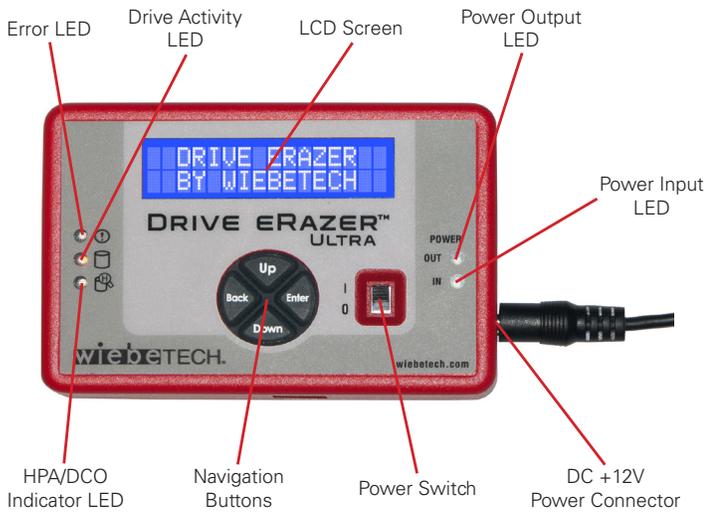
FRONT

eSATA Connector

Molex Mini-Fit Power Connector

IDE/PATA Data Connector

SIDES

DB9 Serial Connector
for printer output

USB 3.0 Connector

TOP

Error LED

Drive Activity
LED

LCD Screen

Power Output
LED

Power Input
LED

HPA/DCO
Indicator LED

Navigation
Buttons

Power Switch

DC +12V
Power Connector

1.3 LED BEHAVIOR

LED	COLOR	STATE	DESCRIPTION
Power Output	Green	Solid	The attached drive is powered on.
Power Input	Green	Solid	The Drive eRazer Ultra is receiving power.
Error	Red	Solid	The attached drive has reached 131°F/55°C, or an HPA/DCO-related disk command has failed.
Drive Activity	Red	Solid	The attached drive is being accessed.
HPA/DCO Indicator	Amber	Solid	An HPA or DCO area has been detected. Once lit, it will not be unlit until the Drive eRazer's power is cycled.

1.4 WARNINGS AND NOTICES

Please read the following before beginning installation.

General Care

• The main circuit board of the Drive eRazer Ultra is susceptible to static electricity. Proper grounding is strongly recommended to prevent electrical damage to the enclosure or other connected devices, including the computer host. Avoid all dramatic movement, tapping on the unit, and vibration.

• Avoid placing the hard drives close to magnetic devices, high voltage devices, or near a heat source. This includes any place where the product will be subject to direct sunlight. Do NOT allow water to make contact with the drive or the Drive eRazer Ultra.

• Before starting any type of hardware installation, please ensure that all power switches have been turned off and all power cords have been disconnected to prevent personal injury and damage to the hardware.

• Remove any attached devices before transporting the Drive eRazer Ultra to prevent damage to the drive interfaces.

2 INSTALLATION STEPS

a. Attach the protective metal drive plate to your 3.5" hard drive. (This step is optional.) The purpose of the bottom plate is to provide protection to your drive electronics and aid heat dissipation.

b. If you're erasing an IDE/PATA drive, configure the jumpers on the rear of the drive. The drive must be set to the Master setting. Consult the instructions for your drive. Some drives display configuration information on the drive's label.

c. Ensure that the Drive eRazer Ultra's power switch is in the OFF (0) position.

d. Connect the Drive eRazer Ultra to the drive (or adapter) using either the IDE ribbon cable for IDE/PATA drives or the SATA data/power cable for SATA drives.

e. If you're using an adapter, connect the drive to the adapter.

f. Attach the power cable to the Drive eRazer Ultra and to the drive. For SATA drives, the power cable and data cable are combined into a single SATA drive interface.

g. Plug the AC adapter into the Drive eRazer Ultra.

h. Turn on the power switch. The connected drive will power up and the Drive eRazer Ultra main menu will appear on the LCD screen.

3 USING THE LCD INTERFACE AND MENU

Use the LCD and 4-button navigation interface to start erasing drives, adjust settings, view information about the drive and dock, or check on operational status. On the 4-button navigation interface, "Up" and "Down" allow scrolling through options, while "Right" selects and "Left" goes back to the previous screen.

3.1 HOME/START ERASING

Use this screen to begin the erasure process using current settings. "Quick Erase" is the default erasure setting. Quick Erase uses all zeroes as the overwrite pattern.

START ERASING QUICK ERASE >	WILL ERASE ALL DATA >
ESTIMATING ERASE TIME	ERASING. . . 2% 19 M REMAINING

When Quick Erase is finished, the Drive eRazer Ultra will verify a sample to ensure completion. See section 3.2.3 for more information on verification.

PREPARING VERIFY	VERIFY . . .2% 39M REMAINING
VERIFY DONE >	REVIEW SETTINGS >

Protecting Your Digital Assets™

3.2 REVIEW SETTINGS

From this screen, the user can choose the erase type, set HPA/DCO handling, verification, and printer output type.

3.2.1 Erase Type

- From the "Review Settings" screen, press **Enter** to get to the "Erase Type" screen.

> ERASE TYPE
>
>   >

- The current erase mode will display, along with an option to change the setting. Press **Enter** to change.

> QUICK ERASE
> CHANGE SETTING? >

- Press the **Up** and **Down** buttons to scroll through the different options. Press **Enter** to select the erase mode you want to use.

> CHANGE MODE TO
> CUSTOM ERASE   >

- After you select the mode, you will be prompted to make your selection the default mode. Press **Enter** to save the mode as the default. Press **Up** or **Down** to set and continue without saving the mode as default.

> CUSTOM ERASE
> MAKE DEFAULT? >

Supported Erase Specifications

The Drive eRazer Ultra offers user flexibility with over a dozen preset erase methods. Use the following chart to help select which erase specification to use.

MODE	DESCRIPTION
QUICK ERASE	Performs a single pass, writing all zeroes
CUSTOM ERASE	Performs 1 to 99 passes (user-selectable) overwriting with zeroes for a user-selected pattern. On every other pass, the complement (inverse) of the selected pattern will be used, but the last pass will always use the user-defined pattern.
RANDOM ERASE	Performs 1 to 9 passes (user-selectable), overwriting with a randomly generated 32-bit pattern. A new pattern is generated for each pass.
SECURE ERASE N	Initiates the drive's built-in Secure Erase (Normal) function. Per the ATA specification, this function overwrites all addessable areas using zeroes. HPA or DCO areas are excluded per the spec, but the Drive eRazer Ultra will unhide such areas prior to initiating the Secure Erase if the user has changed the HPA/DCO behavior in the "Review Settings" menu. Secure erase is better able to handle bad blocks compared to other erase methods.
SECURE ERASE E	Initiates the drive's built-in Secure Erase (Enhanced) function. This is similar to Secure Erase (Normal), except that HPA and DCO areas are erased (without being removed), and instead of all zeroes a repeating pattern is used. The pattern is set by the drive manufacturer. The validation step is not applicable since the erase pattern varies from drive to drive.
DOD CLEAR	US Department of Defense (DoD 5220.22-M) "Clear" standard

Supported Erase Specifications, continued...

MODE	DESCRIPTION
DOD SANITIZE	US Department of Defense (DoD 5220.22-M) "Sanitize" standard
NIST80088 CLEAR	"Clear" standard defined by NIST special publication 800-88
NIST80088 PURGE	"Purge" standard defined by NIST special publication 800-88
CSEC ITSG-06	Canada's data sanitization standard
HMG IS5 ERASE	Great Britain's data sanitization standard
DSD ISM 6.2.92	Australia's data sanitization standard. Also satisfies New Zealand's GCSB NZISM 2010 standard. Removes HPA or DCO areas, then performs a single pass of a random pattern (three passes for drives smaller than 15GB).
VERIFY ONLY	No overwriting—performs the verification step only

Custom Erase

If this mode is selected, the user may select the pass count number and overwrite pattern. You can set this mode the default when you select it by pressing **Enter**. Press **Up** or **Down** to set and continue without saving the selection as the future default.

```
# OF PASSES
01   >
```
```
DATA PATTERN
00000000  >
```

```
CUSTOM ERASE
MAKE DEFAULT?  >
```

3.2.2 HPA/DCO Handling

Erase modes Quick Erase, Custom Erase, Random Erase, Secure Erase N, and Secure Erase E allow the user to select how hidden areas (HPAs and DCOs) are handled during the erasing process.

* From the "Review Settings" screen, press **Enter** and then **Up** or **Down** to get to the HPA/DCO Handling screen. Press **Enter**.

```
HPA/DCO HANDLING
              >
```

* The current HPA/DCO handling setting will display, along with an option to change the setting. Press **Enter** to change.

```
UNLOCK ALL
CHANGE SETTING? >
```

* Use the **Up** and **Down** buttons to scroll through the handling options: unlock all, unlock HPA only, and ignore all. Press **Enter** to select.

```
CHANGE TO
UNLOCK HPA ONLY >
```

* After you select the handling, you will be prompted to make your selection the default. Press **Enter** to save the mode as default. Press **Up** or **Down** to set and continue without saving the setting as default.

```
IGNORE ALL
MAKE DEFAULT?  >
```

3.2.3 Validation

The user may select the level at which the Drive eRazer Ultra verifies the erasure process at completion. The options are Minimal (factory default selection), Medium, and High. This validation process offers a basic level of assurance that the erasure was successfully completed.

NOTE   Some erase specifications recommend or require that a separate tool be used for validation.

- From the "Review Settings" screen, press **Enter**, and then **Up** or **Down** to get to the "Validation" screen. Press **Enter**.

  VALIDATION
                              >

- The current validation setting will display, along with an option to change the setting. Press **Enter** to change.

  MINIMAL
  CHANGE SETTING? >

- Use the **Up** and **Down** buttons to scroll through the verify options: MINIMAL, MEDIUM, or HIGH. Press **Enter** to select.

  CHANGE VERIFY TO
  MEDIUM   >

- After you select the validation you will be prompted to make your selection the default. Press **Enter** to save the mode as the default. Press **Up** or **Down** to set and continue without saving the setting as default.

  MEDIUM
  MAKE DEFAULT?   >

3.2.4 Label Printer Output

The Drive eRazer Ultra features a DB9 null-modem serial connection for the purpose of connecting a label printer that supports the ZPL II programming language. This will allow the Drive eRazer to print a label recording details of an erase process. This occurs at the end of the process. The label can then be affixed to the drive, or to a DriveBox™ anti-static storage case. There are two output modes, one for a 4″ x 1″ label and one for a 4″ x 6″ label. You may also print a label as a test without an erasure process.

- From the "Review Settings" screen, press **Enter** and then **Up** or **Down** to get to the "Printer Output" screen. Press **Enter**.

  PRINTER OUTPUT
                              >

- The current Printer Output setting will display, along with an option to change the setting. Press **Enter** to change, or **Up** or **Down** to print a test label, change the number of labels you wish to print, or change whether to print a label when an error is detected or not.

LARGE LABEL 1x6
CHANGE SETTING? >

PRINT TEST LABEL
                                          >

OF COPIES: 1
CHANGE SETTING? >

PRINT ON ERR? N
CHANGE SETTING? >

- Use the **Up** and **Down** buttons to scroll through the printer options: "Small Label 4x1", "Large Label 4x6", or "PC Output". Press **Enter** to select.

CHANGE LABEL TO
SMALL LABEL 4x6 >

- After you select the printer option, you will be prompted to make your selection the default. Press **Enter** to save the mode as the default. Press **Up** or **Down** to set and continue without saving as default.

SMALL LABEL 4x6
MAKE DEFAULT?   >

3.2.5 Reset to Factory

From this screen, you can reset the settings on the Drive eRazer Ultra to the factory defaults.

FUNCTION	FACTORY DEFAULT SETTING
Erase Mode	Quick Erase
HPA/DCO Handling	Ignore All
Validation	Minimal
Label Printer Output	Small Label 4x1

- From the "Review Settings" screen, press **Enter** and then **Up** or **Down** to get to the "Reset to Factory" screen. Press **Enter**.

RESET TO FACTORY
                    >

- At the next screen, press **Enter** to continue. The settings are now reset to the factory defaults.

CONTINUE   >

3.3 VIEW DRIVE INFO

This screen displays information about the attached drive.

- From the "Home/Start Erasing" screen, press the **Up** or **Down** buttons to get to the "View Drive Info" screen. Press **Enter**.

VIEW DRIVE INFO
                    >

- Use the **Up** or **Down** buttons to scroll through and view the following info about the drive.

MODE	EXPLANATION
Capacity (bytes)	Capacity of the hard drive, measured in bytes
Manufacturer	Manufacturing company name of the hard drive
Model number	Model number of the hard drive
Serial number	Serial number of the hard drive
Firmware Rev	Firmware revision number of the hard drive
HPA size (bytes)	The size of the Host Protected Area of the hard drive, measured in bytes
DCO size (bytes)	The size of the Device Configuration Overlay of the hard drive, measured in bytes
Disk health	Displays the S.M.A.R.T. health status of the drive
Secure Erase Nor time	Time reported by the drive that it will take to use Secure Erase (Normal)
Secure Erase Enh time	Time reported by the drive that it will take to use Secure Erase Enhanced
Start/Stops	S.M.A.R.T. information on how many times the drive has spun up and spun down
Power Cycles	S.M.A.R.T. information on how many power on/off cycles the drive has undergone
Bad Sectors	Number of bad sectors reported by the drive

3.4 VIEW DOCK INFO

This screen displays information about your Drive eRazer Ultra unit.

- From the "Home/Start Erasing" screen, press the up or down buttons to get to the "View Dock Info" screen. Press **Enter**.

VIEW DOCK INFO:
>

- Use the **Up** or **Down** buttons to scroll through and view the following info about Drive eRazer.

MENU ITEM	CONDITION/EXPLANATION
Product Name	Brand name of the product (e.g. "Drive eRazer Ultra")
Unique ID#	A specific, unique number assigned to the unit for identification, akin to a serial number
Firmware ver. #	Specific firmware version installed on the Drive eRazer Ultra product

3.5 OTHER SCREENS DURING THE ERASURE PROCESS

3.5.1 Operational Status

During erasure, status messages are displayed on the LCD. Examples are below.

STATUS MESSAGE	CONDITION/EXPLANATION
STARTING ERASURE	Briefly displays when a user first selects "Start Erasing" and then confirms that selection
GATHERING INFO	Briefly displays while the Drive eRazer Ultra is gathering information from the drive and making calculations to determine such things as the presence of an HPA or DCO
PREPARING ERASE	Briefly displays while the Drive eRazer Ultra is checking user settings and planning the erase

Operational Status, continued...

STATUS MESSAGE	CONDITION/EXPLANATION
ESTIMATING ERASE TIME	The Drive eRazer Ultra is wiping a portion of the drive (for one minute) for the purpose of estimating how long it will take to erase the whole drive.
PASSWORD RESET	Briefly displays before the Drive eRazer Ultra resets the hard drive password
PASSWORD RESET CYCLE POWER	The hard drive's password was successfully reset. The user must turn off the Drive eRazer Ultra and then turn it back on.
HPA RESET	HPA was successfully removed
DCO RESET	DCO was successfully removed
VERIFY DONE	The erase process and verification completed successfully
ERASE DONE	The erase process completed successfully; verification not available (only seen with Secure Erase Enhanced mode)
PREPARING VERIFY	The Drive eRazer Ultra is checking user settings and planning the verification process

3.5.2 Error Indication

If your Drive eRazer Ultra unit encounters any errors, a brief explanatory message displays.

ERROR MESSAGE	CONDITION/EXPLANATION
PASSWORD ERROR	The Drive eRazer Ultra tried to reset the password on the drive, but was unable to do so and received an error from the drive.
CAN'T RESET PASSWORD	Password reset was thought to have been successful, but a subsequent double-check detected that the password was still present
FACTORY < min.	The drive is suspected of reporting false information. The DCO size appears to be unreasonable large, leaving less than 5MB of disk capacity.
NATIVE < min.	The drive is suspected of reporting false information. The HPA size appears to be unreasonable large, leaving less than 5MB of disk capacity.
BLOCKCNT < min.	The drive is suspected of reporting false information. The drive's factory capacity appears to be less than 5MB.
HPA RESET ERROR	Failed first attempt to remove the HPA
HPA RESET FAILED	The HPA was thought to have been removed, but a subsequent double-check found it to be still present
DCO RESET ERROR	Failed first attempt to remove the DCO
DCO RESET FAILED	The DCO was thought to have been removed, but a subsequent double-check found it to be still present
SECURE ERASE NOT SUPPORTED	The drive does not support the "Secure Erase (Normal)" feature
SECURE ERASE ENH NOT SUPPORTED	The drive does not support the "Secure Erase (Enhanced)" feature
SECURE ERASE ENH ERROR	An error occurred during the Secure Erase (Enhanced) process
WRITE CMD ERROR	The Drive eRazer Ultra received an error while attempting to write to the drive
READ CMD ERROR	The Drive eRazer Ultra received an error while attempting to read from the drive
VERIFICATION ERROR	A block on the drive doesn't match what was supposed to have been overwritten there.

4. FREQUENTLY ASKED QUESTIONS (FAQ)

HOW DOES SECURE ERASE WORK?

Secure Erase is a feature on many modern hard drives (greater than 15GB). This feature is activated by a low level command to the drive and causes the drive to erase itself using methods developed by the drive manufacturers in conjunction with the NSA. To protect against malware attacks, operating systems such as Windows and Mac OS (and software applications written for these operating systems) cannot send this command, but Drive eRazer Ultra can.

Secure Erase sequentially overwrites the data on the drive, similar to the Drive eRazer Ultra unit's other erase modes. However, Secure Erase better handles data on "bad blocks" (single pass may stop and report an error at a bad block).

Secure Erase is implemented on most drives that were manufactured in 2001 or later. However, an estimated time for completion was not added until later. Some drives therefore support Secure Erase but will not give an estimated completion time.

HOW FAST WILL MY DRIVE ERAZER ULTRA ERASE THE DATA ON A HARD DRIVE?

The Drive eRazer Ultra can erase modern hard drives at up to 7GB/minute or more. The erasure time depends on several factors. Older drives will generally take longer than newer ones. Higher levels of verification will not affect the time spent erasing, but will make the total process take longer. Finally, the erase mode plays a role. Quick Erase will generally finish a little faster than Secure Erase.

WITH WHAT DRIVE CAPACITIES IS DRIVE ERAZER COMPATIBLE?

The Drive eRazer Ultra cannot erase extremely small drives or media that are less than 10,000 sectors. Assuming a 512 byte sector size, 10,000 sectors is less than 5MB. There is currently no known limit to how large of a disk Drive eRazer Ultra will erase. As of April 2015 the Drive eRazer Ultra has been tested with up to 6TB hard drives. We have no reason to believe that the Drive eRazer Ultra will not continue to work with newer and larger drive sizes as they are released.

DO I HAVE TO JUMPER MY IDE DRIVE TO A PARTICULAR SETTING?

We recommend that you jumper your IDE/PATA hard drives to a Master setting. Some hard drives have two different Master settings: one for when there is a slave drive present and one for when there is no slave drive present. Choose the setting for No Slave present. There may be some drives that will not work with either of these settings. The next choice is Cable Select. If this does not work, try using **no** jumpers. This may be the same as "Master with No Slave present".

WHAT KIND OF PRINTER SHOULD I USE WITH THE DRIVE ERAZER ULTRA?

The Drive eRazer Ultra was tested primarily with Zebra brand printers compatible with ZPL II formatted text (often indicated by –Z at the end of the model number). During development we made every effort to make this feature as compatible as possible, but no list of compatible printers is currently being published. If choosing a new printer, the Zebra product line is a good starting point. Feel free to contact CRU Support for up-to-date information about Drive eRazer Ultra and serial printers.

WHAT KIND OF CABLE DO I NEED FOR THE PRINTER PORT?

The printer port is a standard 9-pin serial RS-232 port. Drive eRazer Ultra requires a male end and most printers also require a male end. If you need to source a new cable, what you need is probably a "Male to Male RS-232 (DB9) Null Modem Serial cable." This cable is available from CRU (Part Number 7380-8000-03). Check your printer's documentation regarding serial cable types. Connecting it to a computer's serial port is possible with a "Male to Female RS-232 (DB9) Null modem serial cable".

WHAT SIZES ARE THE LABELS THAT THE DRIVE ERAZER ULTRA PRINTS?

The Drive eRazer Ultra can print one of two different label sizes: 4"x1" or 4"x 6", depending upon how it's configured.
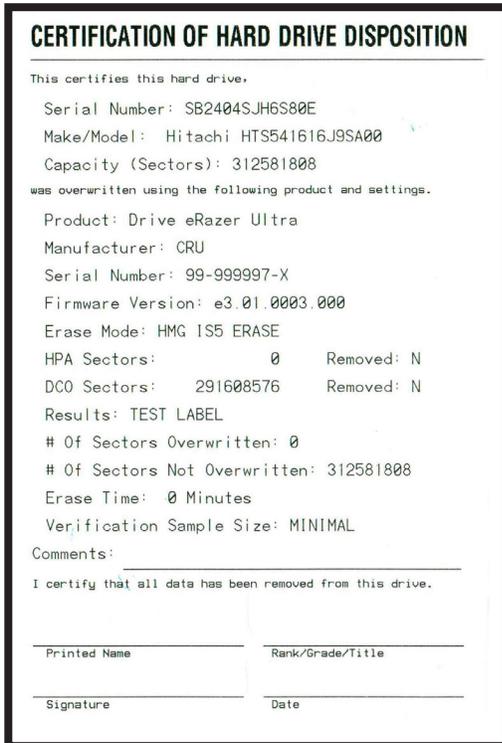
WHAT INFORMATION IS INCLUDED ON EACH LABEL THAT THE DRIVE ERAZER ULTRA PRINTS?

Below are examples of the two types of labels that the Drive Eraser Ultra generates.

4" x 1" label

```
Hard Drive:SAMSUNG SV4002H 0413J1FTC62983
Capacity:  40060403712 Bytes
Erased using: CRU Drive eRazer Ultra e3.01.0000.000
               001525665
Erase Type: QUICK ERASE     0 Mins.
Erase Successful? N
```

4" x 6" label

```
CERTIFICATION OF HARD DRIVE DISPOSITION

This certifies this hard drive,

  Serial Number: SB2404SJH6S80E

  Make/Model:  Hitachi HTS541616J9SA00

  Capacity (Sectors): 312581808

was overwritten using the following product and settings.

  Product: Drive eRazer Ultra

  Manufacturer: CRU

  Serial Number: 99-999997-X

  Firmware Version: e3.01.0003.000

  Erase Mode: HMG IS5 ERASE

  HPA Sectors:            0        Removed: N

  DCO Sectors:     291608576       Removed: N

  Results: TEST LABEL

  # Of Sectors Overwritten: 0

  # Of Sectors Not Overwritten: 312581808

  Erase Time:  0 Minutes

  Verification Sample Size: MINIMAL

Comments: _____

I certify that all data has been removed from this drive.


_____     _____
  Printed Name            Rank/Grade/Title

_____     _____
  Signature               Date
```

WHY DOES THE USB CONNECTOR LOOK LIKE USB 3.0 BUT THE DOCUMENTATION SAYS IT'S USB 2.0?

The Drive eRazer Ultra uses a USB 3.0 style connector because it shares a form factor and many parts with another product. However, the controller chip that drives the Drive eRazer Ultra's USB connection supports USB 2.0 only. The port can be used with either USB 2.0 or 3.0 type cables and with either USB 2.0 or 3.0 hosts, but it will operate at USB 2.0 speed. The intended purposes of the port are the previewing of a drive and firmware upgrading, rather than for lengthy data transfers. For these two purposes USB 2.0 speed is sufficient.

CAN I SWITCH DRIVES OR ATTACH A HARD DRIVE WHEN THE UNIT IS TURNED ON?

This is not recommended, because it could cause an electrical short that could damage the Drive eRazer ultra or the drive.

Q: WILL MY DRIVE ERAZER ULTRA WORK WITH A SOLID STATE DRIVE (SSD)?

Short answer: SSDs erased by the Drive eRazer Ultra in any mode would be safe from casual data retrieval attempts, but for very sensitive data the only way to guarantee security is to physically destroy the drive.

Longer answer: With SSDs, the host (such a computer or a Drive eRazer Ultra) does not have direct access to the sectors on the drive. There is therefore no way to guarantee that a command to erase a given sector will actually erase that sector.

The SSD's controller may instead remap that physical sector to a new logical sector, leaving the data intact but inaccessible. Even a full overwrite of a SSD may therefore not result in a fully wiped drive. However, the data remaining on the drive would not be accessible via normal means. Recovering such data would require removing the actual flash chips from the SSD's circuit board and accessing them with special equipment and software tools.

Secure Erase modes offer the best chance of fully erasing an SSD because they use the drive's built-in erasing function. Secure Erase is defined by the ATA specification and requires drives to fully erase all user accessible data areas when the command is received. The Enhanced version also erases any data within HPA or DCO areas. However, at least one study has shown that some SSD manufacturers did not correctly implement this portion of the ATA specification. So, while most SSDs will be erased fully by Secure Erase, some may not. If you know that a particular SSD model correctly implements Secure Erase modes per the ATA spec, these modes can erase the SSD completely. If you're unsure, you should assume that data fragments could remain.

MY DRIVE ERAZER ULTRA SHOWS "WRITE CMD ERROR" ON THE LCD AND THE ERASE HAS STOPPED PROGRESSING. WHAT DO I DO NEXT?

This message means that the drive reported an error when attempting to execute a write command sent to it by the Drive eRazer Ultra. Several things can cause such an error, such as a bad block on the drive, or a poor physical connection between the Drive eRazer Ultra and the drive. It may occur if the drive or dock is moved or bumped during the erase process. This is an unrecoverable error (indicated by the lighting of the Red "Error" LED).

The next step is to turn off the Drive eRazer Ultra's power. If you like, you can turn the Drive eRazer Ultra back on and attempt to erase the drive again. A bad block is not always 100% bad, so sometimes a block that fails to be overwritten on one attempt will succeed on the next try. Make sure the cables connecting

the drive and the Drive eRazer Ultra are fully seated, and do not attempt to move the drive, Drive eRazer Ultra, or cables during the erase process. Make sure the drive has good air flow around it to avoid any possible heat issues. If you continue to see this error message on the drive, the next thing to try is changing to Secure Erase Enhanced mode. This mode doesn't use write commands; rather, it issues a single command to the drive that causes the drive to erase itself. This mode handles bad blocks better than modes based on write commands. If none of these remedies work, the only way to ensure there are no recoverable data remaining on the drive is to physically destroy it.

MY DEPARTMENT REQUIRES 100% VERIFICATION OF ERASURE. DOES THE "HIGH" OPTION VERIFY 100% OF THE DRIVE?

No, although the "high" checks a large number of sectors of the drive, performing 100% verification would require a much greater amount of time than the erasure process itself. For this reason, and for the security of having an independent tool, we recommend using a 3rd party tool for 100% verification.

Many organizations actually require that the erase tool and the verification tool be separate products. The Australian Government Information Security Manual, November 2010, states that "Verifying the sanitisation of media with a different product to the one conducting the sanitisation process provides an independent level of assurance that the sanitisation process was conducted correctly" (161).

If it satisfies your department's requirements, you could use a hex editor, such as HxD, to visually inspect the contents of the drive to verify that it was erased.

Protecting Your Digital Assets™

5 TECHNICAL SPECIFICATIONS

Product Models	Drive eRazer Ultra
U.S. Patent No.	8,090,904
Output Interface Types & Speeds	USB 2.0: up to 480 Mbps (compatible w/ USB 3.0 cables and interfaces) RS232 Serial: up to 20k bits/s (Label Printing Only)
Supported Drive Types	2.5" and 3.5" SATA drives 3.5" IDE/PATA drives Additional drives using optional adapters
Input Data Connectors	One (1) IDE/PATA connector One (1) SATA connector
Output Data Connectors	One (1) USB 3.0 connector One (1) DB9 Null Model Serial connector
Supported Operating Systems	Windows 10, 8, 7, and Vista Windows Server 2012 and 2008 product families Mac OS X 10.4.x or higher (USB 3 requires 10.8 or later) Linux distributions that support the connection type used
Compliance	EMI Standard: FCC Part 15 Class A EMC Standard: EN55022, EN55024 CE, RoHS, RCM
Product Weight	0.4 pounds (0.18 kg)
Product Dimensions	2.95" x 4.33" x 1.06" (75mm x 110mm x 27mm)
Technical Support	Your investment in CRU products is backed up by our free technical support for the lifetime of the product. Contact us through our website, www.cru-inc.com/support or call us at 1-800-260-9800 or +1-360-816-1800.

Product Warranty
CRU warrants this product to be free of significant defects in material and workmanship for a period of three years from the original date of purchase. CRU's warranty is nontransferable and is limited to the original purchaser.

Limitation of Liability
The warranties set forth in this agreement replace all other warranties. CRU expressly disclaims all other warranties, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose and non-infringement of third-party rights with respect to the documentation and hardware. No CRU dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty. In no event will CRU or its suppliers be liable for any costs of procurement of substitute products or services, lost profits, loss of information or data, computer malfunction, or any other special, indirect, consequential, or incidental damages arising in any way out of the sale of, use of, or inability to use any CRU product or service, even if CRU has been advised of the possibility of such damages. In no case shall CRU's liability exceed the actual money paid for the products at issue. CRU reserves the right to make modifications and additions to this product without notice or taking on additional liability.

FCC Compliance Statement: "This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

In the event that you experience Radio Frequency Interference, you should take the following steps to resolve the problem:

1) Ensure that the case of your attached drive is grounded.
2) Use a data cable with RFI reducing ferrites on each end.
3) Use a power supply with an RFI reducing ferrite approximately 5 inches from the DC plug.
4) Reorient or relocate the receiving antenna.

FC Tested to comply with FCC standards

FOR OFFICE OR COMMERCIAL USE

CRU

Protecting Your Digital Assets™

For more information, visit the CRU web site.

www.cru-inc.com