



# VOOM ATA Drive Wiper™ User Guide



ATA Hard Drive Wiper Unit

# ATA Drive Wiper™ User's Guide

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(Based on the 1.2 release)

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## **Technical Support**

### **Support by Telephone**

Voom Technologies, Inc. technical support is available by telephone Monday through Friday 8:00am to 5:00pm, Central Standard Time Zone at 651-436-2753.

### **Support by E-Mail**

Voom Technologies, Inc. technical support is available by e-mail at <mailto:support@voomtech.com>.

### **Technical Support Tips**

Call from a telephone where you have access to your ATA Hard Drive Wiper Unit. Please be prepared to provide the following information:

- Name, telephone number, e-mail address
- Model number and version of the product
- Make and model of your hard drives
- Symptoms of the problem

# 1 Preface

## 1.1 Product Contents

ATA Hard Drive Wiper Unit  
40-pin 80-wire three connector cables (two shipped)  
18 inch DC power cord (two shipped)  
Standard serial interface cable  
12V AC Adapter Module  
User's Guide

## 1.2 Requirements

The ATA Hard Drive Wiper Unit supports all ATA hard drives that comply with the AT Attachment with Packet Interface standard. In addition, it supports both the DoD 5220.22-M and NAVSO P-5239-10 specifications for clearing and sanitizing sensitive information from a hard drive.

## 1.3 Introduction

The ATA Hard Drive Wiper Unit is primarily designed to erase information from a disk drive. It provides two distinct ATA buses. This double bus architecture allows the hardware to simultaneously wipe the data from both drives. The unit automatically detects the Master/Slave settings on either drive, freeing the user from the hassle of reconfiguring drives prior to and after performing a drive wipe operation.

It supports all ATA drives, including drives that support either PIO or UDMA data transfer modes. It also operates with drives that support either 28 bit or 48 bit addressing. It always places both of the drives in "standby" mode after each operation has completed.

It currently supports the following operations:

- Performs a functional test of the current system configuration.
- Wipes all information from a disk drive.
- Sanitizes, or permanently erases, a disk drive.

It also supports error recovery for drives that operate intermittently. If the unit is unable to read/write a sector after 6 consecutive attempts, it will increment the appropriate drive access error counter, and continue with the wipe operation. The total number of drive access errors (read or write), along with a list of the Logical Block Addresses associated with each of the errors (maximum of 16 for each access type), will be displayed to the user when the operation completes.

The user interface for the ATA Hard Drive Data Wipe Unit supports both a LCD (2 line x 20 character) managed through a button control panel and a serial port that can be connected to any standard terminal. The user can execute commands by entering them from the button control panel, the attached terminal, or a combination of both. The status information is always displayed to both the LCD and the attached terminal.

The ATA Hard Drive Wiper Unit also supports erasing disk drives that are configured with a Host Protected Area (HPA) and/or Drive Configuration Overlay (DCO). An HPA is a reserved area for data storage outside the normal operating file system. The HPA is hidden from the operating system and is typically used by specialized applications. A DCO restricts access to selected drive capabilities, typically including some portion of the available data storage space. The data hidden by the DCO is normally accessible only at boot time and is completely invisible to the running system under normal conditions. If an HPA and/or DCO is found on either of the attached drives, they will automatically be removed and the entire drive will be erased.

## 1.4 Definitions

This section describes much of the technical verbiage used throughout this document.

**Master Hard Drive:** The primary hard drive on which the operating system is installed.

**Slave Hard Drive:** A hard drive that is connected to the slave device connector.

**Jumper:** Refers to the hard drive jumper located at the back of the hard drive. This jumper configures the hard drive as a slave or master hard drive based on the number of hard drives used and the hard drive cable used.

**DoD:** The United States Department of Defense.

**NAVSO:** The United States Navy Staff Office.

**Wipe:** The process of writing zeros to every sector of a disk drive.

**Sanitize:** The process of writing every sector on a disk drive with a fixed character, the compliment of the fixed character, a random character, then verify the random character.

**Ctrl:** The keyboard control key.

**Host Protected Area (HPA):** A reserved area for data storage outside the normal operating file system.

**HD or HDD:** Hard Drive, also called the Hard Disk Drive.

**GB:** Gigabyte.

**MB:** Megabyte.

**KB:** Kilobyte.

## 2 System Configuration

This section describes how to connect both a drives to the ATA Hard Drive Wiper Unit using the component assemblies provided.

### 2.1 Installing Drive 1

Drive 1 is connected to the jacks located on the back of the Disk Wiper Unit. The circular jack provides power to the drive, while the rectangular jack provides the data path to the drive.

Please follow the steps described below to install drive 1:

1. Power off the Disk Wiper Unit.
2. Attach the 18 inch DC power cable between the circular jack on the back of the Disk Wiper Unit and the power receptacle of the disk drive.
3. Attach the **blue** connector of the 40-pin flat cable to the rectangular jack on the back of the Disk Wiper Unit.
4. Attach the **black** connector of the 40-pin flat cable to the “cable-save” board, then plug the “cable-saver” board into the rectangular jack on the disk drive.

### 2.2 Installing Drive 2

Drive 2 is connected to the jacks located on the right side of the Disk Wiper Unit. The circular jack provides power to the drive, while the rectangular jack provides the data path to the drive.

Please follow the steps described below to install drive 2:

5. Power off the Disk Wiper Unit.
6. Attach the 18 inch DC power cable between the circular jack on the back of the Disk Wiper Unit and the power receptacle of the disk drive.
7. Attach the **blue** connector of the 40-pin flat cable to the rectangular jack on the back of the Disk Wiper Unit.
8. Attach the **black** connector of the 40-pin flat cable to the “cable-save” board, then plug the “cable-saver” board into the rectangular jack on the disk drive.

**Note: All system configuration changes must be performed while the unit is powered off**

## 3 Command Description

The purpose of this section is to provide a detailed description of each of the commands supported by the button interface. Refer to the *Button Interface* or *Serial Interface* sections of this document for information on how to execute each of the commands. Please refer to the *Troubleshooting* section of this document for information relating to any failure case.

### 3.1 System Test Command

This feature is designed to verify that the drives are connected properly. This command simply reads a fixed number of sectors from the specified drive(s) and to ensure that the cables have been installed properly.

**Note: This is a non-destructive test, as no data is written to either drive.**

### 3.2 Wipe Drive Command

This feature removes all of the information from a disk drive by writing a fixed data pattern to every sector on the drive. It supports both the DoD 5220.22-M and NAVSO P-5239-10 specifications for clearing information from a hard drive.

#### 3.2.1 DoD Option

The DoD option requires only a single pass. It simply writes a fixed character of all ZEROs to the entire disk drive.

#### 3.2.2 NAVSO Option

The NAVSO option requires two passes, one to write and one to verify. First, it writes a fixed character of all ONES to the entire disk drive. Then, it verifies that the fixed character was written correctly to the entire disk drive.

### 3.3 Sanitize Drive Command

This feature permanently erases all of the information from a disk drive by writing a sequence of data patterns to every sector on the drive. It supports both the DoD 5220.22-M and NAVSO P-5239-10 specifications for sanitizing information from a hard drive.

#### 3.3.1 DoD Option

The DoD option requires a total of four passes, of which three are used for writing and one for verifying. First, it writes a fixed character of all ZEROs to the entire disk drive. Next, it writes the compliment of the initial fixed character, all ONES, to the entire disk drive. Finally, it writes a sequence of random characters to every sector on the disk drive and verifies that the sequence of random characters were written correctly to the entire disk drive.

#### 3.3.2 NAVSO Option

The NAVSO option requires a total of eight passes, of which seven are used for writing and one is used for verifying. It begins by writing a fixed character of all ONES to the entire disk drive. Next, it writes the compliment of the initial fixed character, all ZEROs, to the entire disk drive. Then, it repeats the previous two operations three more times for a total of 6 passes. Finally, it writes a random character (e.g., 0xDC) to every sector on the disk drive and verifies that the character was written correctly to the entire disk drive.

### **3.4 *Unlock Drive Command***

This feature is designed to unlock the Host Protected Area (HPA) and/or Drive Configuration Overlay (DCO) of a disk drive. In essence, this command will permanently remove the HPA and/or DCO from the drive and restore the MAX LBA to its initial value, allowing access to the entire disk drive.

**Note: Each of the other commands will automatically perform this unlock procedure prior to executing its associated operation on the disk drive. Therefore, all commands will operate on the entire disk drive.**

## 4 Button Interface

The button control panel and the LCD are designed to be the normal user interface. The button panel consists of the following three buttons:

Button	Function	Description
Yellow	Menu	This button is designed to step through each of the menu items. It always steps in a forward direction.
Green	Enter	This button is designed to either select a menu item, or acknowledge status information.
Red	Cancel	This button is designed to either abort the entering of a new command or the execution of the previous command.

The LCD is used to display each of the menu items, the progress of the current command, and to acknowledge the command status information.

Whenever commands are entered from the button control panel, all status information (e.g., MD5 checksum value, failure information, and completion status), must be acknowledged by the operator. A special arrow character [←] displayed in the lower right hand corner of the LCD indicates that the unit is waiting for acknowledgement of the data currently displayed in the LCD. Generally speaking, press the <enter> button each time the arrow character is displayed in order to continue executing the current command.

**Note: When operating from the button control panel, the user may terminate an executing command by pressing the <cancel> button!**

The button command menu is organized into a series of levels and parameter values. When displayed, the command information is displayed on the top line of the LCD and the parameter information on the bottom line. The level information is separated from the command information using a *colon* (e.g., [1:System Test] refers to level 1, and a command of "System Test"). Each of the parameters associated with a particular command (e.g., MD5 Enabled, MD5 Disabled) are displayed under the command once it has been selected. The prompting hierarchy used to organize the set of supported commands is shown below.

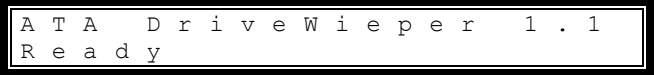
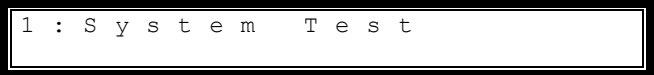

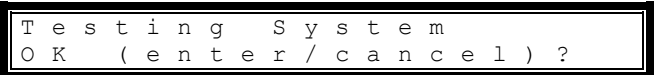

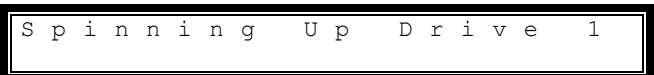
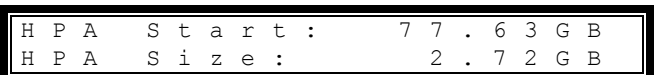

Level	Prompt	Description
1	System Test	Perform a system test.
	Both Drives	Operates on both drives 1 and 2 (default).
	Drive 1	Operates on only on drive number 1.
	Drive 2	Operates on only on drive number 2.
2	Wipe Drive	Wipes all information from a disk drive.
	DoD (1 Pass)	Wipes per the DoD specification.
	NAVSO (2 Passes)	Wipes per the NAVSO specification.
	Both Drives	Operates on both drives 1 and 2 (default).
	Drive 1	Operates on only on drive number 1.
	Drive 2	Operates on only on drive number 2.
3	Sanitize Drive	Sanitizes all sectors on a disk drive.
	DoD (4 Pass)	Wipes per the DoD specification.
	NAVSO (8 Passes)	Wipes per the NAVSO specification.
	Both Drives	Operates on both drives 1 and 2 (default).

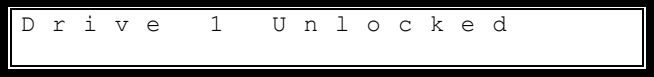
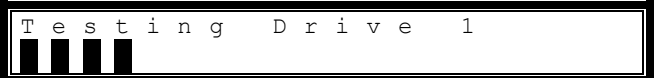

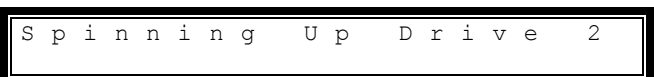
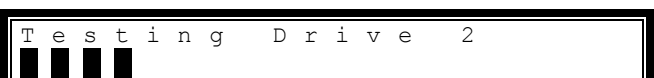

	Drive 1	Operates on only on drive number 1.
	Drive 2	Operates on only on drive number 2.
4	Unlock HPA	Perform a system test.
	Both Drives	Operates on both drives 1 and 2 (default).
	Drive 1	Operates on only on drive number 1.
	Drive 2	Operates on only on drive number 2.

Step-by-step examples of the operations that the user can perform through the button interface are described below.

#### 4.1 System Test Procedure

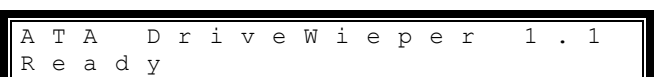
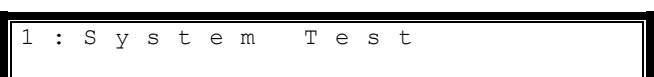
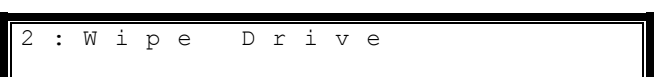
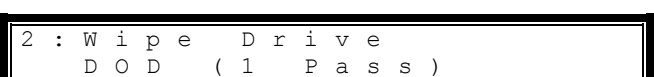
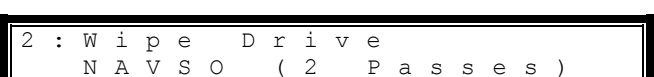
The table below describes the normal sequence associated with performing a system test of the current configuration (both drives attached) using the button panel interface.

LCD interface	Comments
	From the main window, press <menu> to display the initial menu item.
	Press <enter> to execute the system test command.
	Press <enter> to execute the system test on both drives.
	Press <enter> to acknowledge that you want to proceed.
	The status displayed after it discovers the attached drive.
	The status displayed while it is waiting for the the drive to spin up.
	The status displayed if, and only if, the drive contains a HPA.
	The status displayed while the HPA is being unlocked (if, and only if, the drive contains a HPA).

	The status displayed after the HPA has been unlocked (if, and only if, the drive contains a HPA).
	Interim status of the system test of drive 1.
	The status displayed after it discovers the attached drive.
	The status displayed while it is waiting for the drive to spin up.
	Interim status of the system test of drive 2.
	The status displayed after it completes the system test.

## 4.2 Wipe Drive Procedure

The table below describes the normal sequence associated with performing a NAVSO wipe of a disk drive (single drive attached to drive 2) using the button panel interface.

LCD interface	Comments
	From the main window, press <menu> to display the initial menu item.
	Press <menu> again to advance to the next menu item.
	Press <enter> to execute the wipe drive command.
	Press <menu> to advance to the next submenu item.
	Press <enter> to execute the wipe drive command using the NAVSO option.

<pre>2 : W i p e   D r i v e    B o t h   D r i v e s</pre>	Press <menu> to advance to the next submenu item.
<pre>2 : W i p e   D r i v e    D r i v e   1</pre>	Press <menu> to advance to the next submenu item.
<pre>2 : W i p e   D r i v e    D r i v e   2</pre>	Press <enter> to execute the wipe command (drive number 2 only).
<pre>W i p i n g   D r i v e O K   ( e n t e r / c a n c e l ) ?</pre>	Press <enter> to acknowledge that you want to proceed or <cancel> to abort.
<pre>D r i v e   2                               1 6 0 G B</pre>	The status displayed after it discovers the attached drive.
<pre>S p i n n i n g   U p   D r i v e   2</pre>	The status displayed while it is waiting for the the drive to spin up.
<pre>W i p i n g   3 . 7 4 G B / m i n 0 0 : 0 5 : 1 5 ,   1 2 G B / 1 6 0 G B</pre>	Interim status.□
<pre>V e r i f y i n g   3 . 7 4 G B / m i n 0 0 : 0 5 : 1 5 ,   1 2 G B / 1 6 0 G B</pre>	Interim status.□
<pre>D r i v e   2   C o m p l e t e 0 1 : 1 0 : 0 8 ,   1 6 0 . 0 3 G B ←</pre>	After viewing the completion status, press <enter> to return to the main window.

### 4.3 Sanitize Drive Procedure

The table below describes the normal sequence associated with performing a DoD sanitize operation of both disk drives using the button panel interface.

LCD interface	Comments
<pre>A T A   D r i v e W i e p e r   1 . 1 R e a d y</pre>	From the main window, press <menu> to display the initial menu item.
<pre>1 : S y s t e m   T e s t</pre>	Press <menu> again to advance to the next menu item.

<pre>2 : W i p e   D r i v e</pre>	<p>Press &lt;menu&gt; again to advance to the next menu item.</p>
<pre>3 : S a n i t i z e   D r i v e</pre>	<p>Press &lt;enter&gt; to execute the sanitize drive command.</p>
<pre>3 : S a n i t i z e   D r i v e    D o D   ( 4   P a s s e s )</pre>	<p>Press &lt;enter&gt; to execute the sanitize drive command using the DoD option.</p>
<pre>3 : S a n i t i z e   D r i v e    B o t h   D r i v e s</pre>	<p>Press &lt;enter&gt; to execute the sanitize command (both drives).</p>
<pre>S a n i t i z i n g   D r i v e O K   ( e n t e r / c a n c e l ) ?</pre>	<p>Press &lt;enter&gt; to acknowledge that you want to proceed or &lt;cancel&gt; to abort.</p>
<pre>D r i v e   1                               8 0 G B</pre>	<p>The status displayed after it discovers the first attached drive.</p>
<pre>S p i n n i n g   U p   D r i v e   1</pre>	<p>The status displayed while it is waiting for the the drive to spin up.</p>
<pre>D r i v e   2                               1 6 0 G B</pre>	<p>The status displayed after it discovers the second attached drive.</p>
<pre>S p i n n i n g   U p   D r i v e   2</pre>	<p>The status displayed while it is waiting for the the drive to spin up.</p>
<pre>W i p i n g [ 1 ]   7 . 0 4 G B / m i n 0 0 : 0 5 : 1 5 ,   1 2 G B / 2 4 0 G B</pre>	<p>Interim status. The “[1]” indicates that it is performing pass 1 of 4.</p>
<pre>W i p i n g [ 2 ]   7 . 0 4 G B / m i n 0 0 : 0 5 : 1 5 ,   1 2 G B / 2 4 0 G B</pre>	<p>Interim status. The “[2]” indicates that it is performing pass 2 of 4.</p>
<pre>W i p i n g [ 3 ]   7 . 0 4 G B / m i n 0 0 : 0 5 : 1 5 ,   1 2 G B / 2 4 0 G B</pre>	<p>Interim status. The “[3]” indicates that it is performing pass 3 of 4.</p>

<pre>Verifying 7.04 GB / min 00:05:15, 12 GB / 240 GB</pre>	<p>Interim status. The last step in the sanitize process is to verify the data pattern from the previous wipe (pass 4).</p>
<pre>Both Drives Complete 01:10:08, 240.07 GB ←</pre>	<p>After viewing the completion status, press &lt;enter&gt; to return to the main window.</p>

#### 4.4 Unlock Drive Procedure

The table below describes the normal sequence associated with unlocking a disk drive (single drive attached to drive 1) by permanently removing its HPA using the button panel interface.

LCD interface	Comments
<pre>ATA DriveWiper 1.1 Ready</pre>	<p>From the main window, press &lt;menu&gt; to display the initial menu item.</p>
<pre>1: System Test</pre>	<p>Press &lt;menu&gt; again to advance to the next menu item.</p>
<pre>2: Wipe Drive</pre>	<p>Press &lt;menu&gt; again to advance to the next menu item.</p>
<pre>3: Sanitize Drive</pre>	<p>Press &lt;menu&gt; again to advance to the next menu item.</p>
<pre>4: Unlock Drive</pre>	<p>Press &lt;enter&gt; to execute the unlock drive command.</p>
<pre>4: Unlock Drive Both Drives</pre>	<p>Press &lt;menu&gt; to advance to the next submenu item.</p>
<pre>4: Unlock Drive Drive 1</pre>	<p>Press &lt;enter&gt; to execute the unlock drive command (drive number 1 only).</p>
<pre>Unlocking Drive OK (enter/cancel)?</pre>	<p>Press &lt;enter&gt; to acknowledge that you want to proceed or &lt;cancel&gt; to abort.</p>
<pre>Drive 1: 80 GB</pre>	<p>The status displayed after it discovers the attached drive.</p>

<pre>S p i n n i n g   U p   D r i v e   1</pre>	<p>The status displayed while it is waiting for the the drive to spin up.</p>
<pre>H P A   S t a r t :       7 7 . 6 3 G B H P A   S i z e :       2 . 7 2 G B</pre>	<p>The status displayed if, and only if, the drive contains a HPA.</p>
<pre>U n l o c k i n g   D r i v e   1</pre>	<p>The status displayed while the drive is being unlocked (if, and only if, the drive contains a HPA).</p>
<pre>D r i v e   1   U n l o c k e d</pre>	<p>The status displayed after the disk drive has been unlocked (if, and only if, the drive contains a HPA).</p>
<pre>D r i v e   1   C o m p l e t e</pre>	<p>The status displayed after it completes the unlock drive procedure.</p>

## 5 Serial Interface

The serial interface is primarily provided as a means for providing the user access to additional commands, command parameters, detailed status information, and detailed failure messages. It is designed to operate with the following serial port configuration settings:

Parameter	Value
Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	none

**Note: When operating from the serial interface, the user may terminate a command by entering a <Ctrl C> character!**

The serial interface command menu can be displayed anytime using either the *Help* command or by simply entering the “?” character followed by a carriage return. Any command options are preceded with a “-“ character and all optional parameters are enclosed in brackets. The example below shows the output from the *Help* command.

```
=> help
User Commands:
  Test           [1|2]      Test system configuration
  Wipe           -[d|n] [1|2]      Wipe the disk drive(s)
  Sanitize       -[d|n] [1|2]      Sanitize the disk drive(s)
  Unlock         [1|2]      Remove HPA from disk drive(s)
```

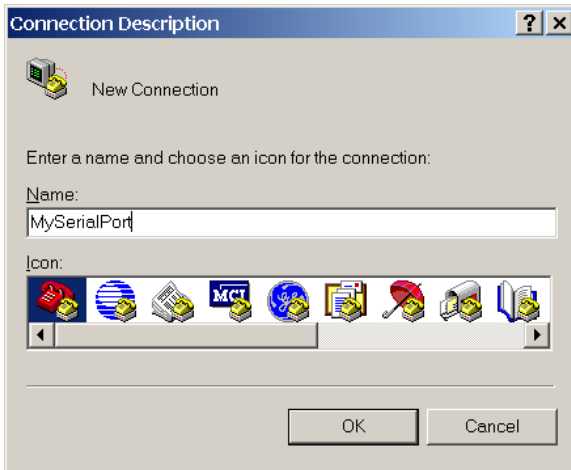
**Note: Entering the hidden “verbose” command results in additional status and error information displayed to the terminal!**

Since the most common terminal program available on a PC/laptop today is Microsoft’s HyperTerminal™ program, the steps shown below describe how to configure it to interface with the ATA Hard Drive Data Wipe Unit using a Windows PC/laptop.

1. First, execute the terminal program by selecting the following item from the Windows start menu:

**Start->Programs->Accessories->Communications->HyperTerminal**

2. Next, create a new connection by entering “**File->New Connection**” from the main menu bar. Enter a suitable name and click on the OK button.



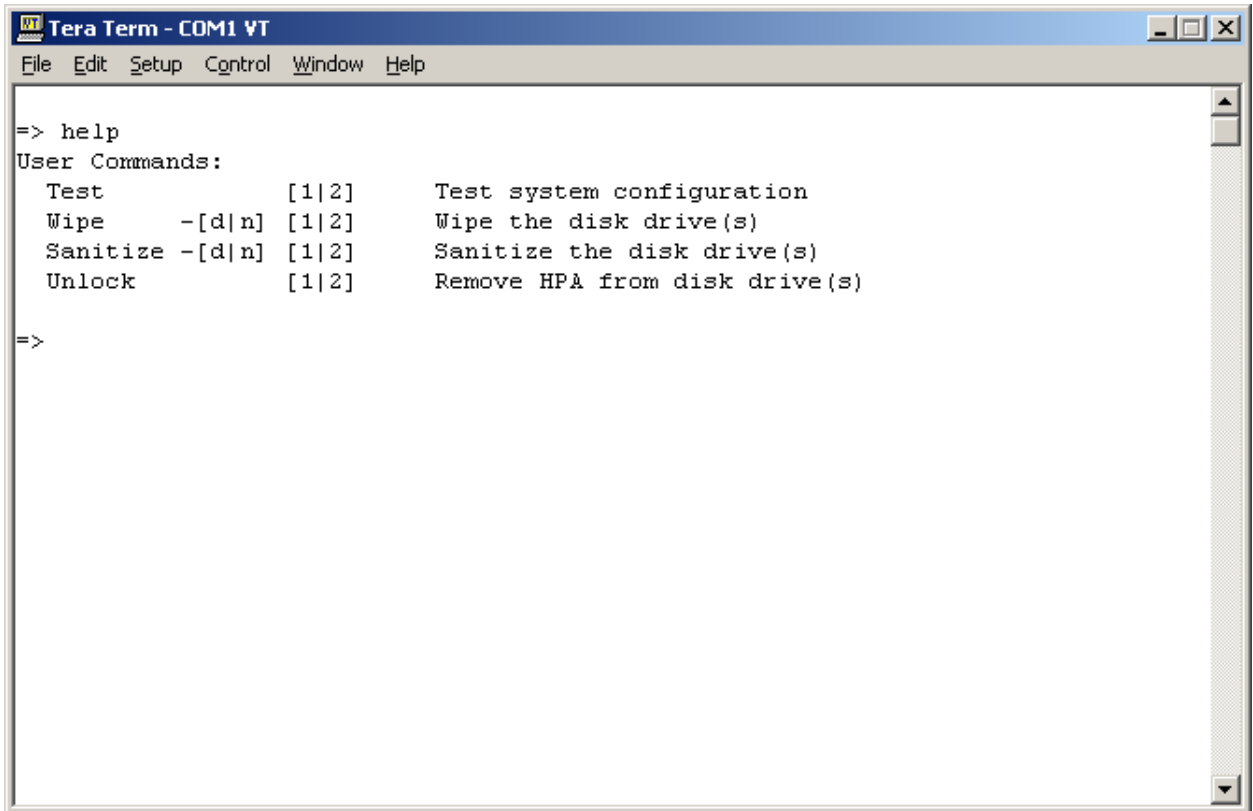
3. Select the desired communications port (e.g., COM1) and click on the OK button.



4. Configure each of the communication parameters as shown in the following window and click the OK



5. This completes the configuration process. If you have successfully established communications between the Windows PC/laptop and the ATA Hard Drive Data Wipe Unit, pressing a carriage return should display the “=>” prompt. Once the prompt is displayed, you can enter the Help command as illustrated below:



Examples of the operations that the user can perform through the serial interface are described below. Interfacing to the serial port requires the drive wipe unit to be connected to the serial port of a PC/laptop executing a terminal program.

## 5.1 System Test Procedure

When using the serial interface, the command syntax for testing the system is given below:

```
Test [1|2]
```

The optional “drive number” parameter allows the operator to enter a specific drive number (e.g., drive 1 or drive 2) to be tested. By default, both of the drives will be tested.

The examples below show the output from a typical system test command (one example for each of the three possible drive configurations) when using the serial port interface.

```
=> Test
Testing System
OK (y/n)? y

Drive 1:      ST380011A 80.03 GB
HPA Start:   77.63GB (optional)
HPA Size:    2.72GB (optional)
Clearing Drive 1 HPA (optional)
Drive 1 HPA Cleared (optional)

Reading 2048 sectors from Drive 1 drive
Drive 2:      ST3160021A 160.06 GB
Reading 2048 sectors from Drive 2 drive
Both Drives Complete
=>

=> Test 1
Testing System
OK (y/n)? y

Drive 1:      ST380011A 80.03 GB
Reading 2048 sectors from Drive 1 drive
Drive 1 Complete
=>

=> Test 2
Testing System
OK (y/n)? y

Drive 2:      ST3160021A 160.06 GB
Reading 2048 sectors from Drive 1 drive
Drive 2 Complete
=>
```

## 5.2 Wipe Drive Procedure

When using the serial interface, the command syntax for wiping disk drives is given below:

```
Wipe -[d|n] [1|2]
```

The command line “specification” option allows the operator to select which specification (DoD or NAVSO) to use for the wipe operation. By default, the DoD specification will be used. The “drive number” parameter allows the operator to enter a specific drive number (e.g., drive 1 or drive 2) to be wiped. By default, both of the drives will be wiped simultaneously.

The examples below show the output associated with wiping the information from a single disk drive (drive 1) when using the serial port interface (DoD and NAVSO specifications).

```
=> Wipe -d 1
Wiping Drive
OK (y/n)? y

Drive 1:      ST380011A 80.03 GB

Wiping 156301488 sectors on drive 1
00:00:10, 1114044 sectors, 57.04MB/sec (3.42GB/min average)
00:00:20, 2260854 sectors, 57.04MB/sec (3.47GB/min average)
00:00:30, 3407664 sectors, 57.04MB/sec (3.49GB/min average)
. . .
00:29:41, 156301488 sectors, 34.45MB/sec (2.70GB/min average)
Drive 1 Complete (00:29:41, 80.03GB)
=>

=> Wipe -n 1
Wiping Drive
OK (y/n)? y

Drive 1:      ST380011A 80.03 GB

Wiping 156301488 sectors on drive 1
00:00:10, 1114044 sectors, 57.04MB/sec (3.42GB/min average)
00:00:20, 2260854 sectors, 57.04MB/sec (3.47GB/min average)
00:00:30, 3407664 sectors, 57.04MB/sec (3.49GB/min average)
. . .
00:29:41, 156301488 sectors, 34.45MB/sec (2.70GB/min average)
Wipe of drive 1 complete (end of pass number 1)
Verifying 156301488 sectors on drive 1
00:00:10, 2228088 sectors, 114.08MB/sec (6.84GB/min average)
00:00:20, 4521708 sectors, 114.08MB/sec (6.95GB/min average)
00:00:30, 6815328 sectors, 114.08MB/sec (6.98GB/min average)
. . .
00:29:41, 156301488 sectors, 34.45MB/sec (2.70GB/min average)
Verify of drive 1 complete
Drive 1 Complete (00:58:22, 80.03 GB)
=>
```

### 5.3 Sanitize Drive Procedure

When using the serial interface, the command syntax for sanitizing disk drives is given below:

**Sanitize -[d|n] [1|2]**

The command line “specification” option allows the operator to select which specification (DoD or NAVSO) to use for the sanitize operation. By default, the DoD specification will be used. The “drive number” parameter allows the operator to enter a specific drive number (e.g., drive 1 or drive 2) to be sanitized. By default, both of the drives will be sanitized simultaneously.

The example below shows the output associated with sanitizing the information from both disk drives when using the serial port interface (DoD specification).

```
=> Sanitize
Sanitizing Drive
OK (y/n)? y

Drive 1:      ST380011A 80.03GB
Drive 2:      ST3160021A 160.04GB
Wiping 156301488 sectors on drive 1
Wiping 312581808 sectors on drive 2
00:00:10, 2228088 sectors, 114.08MB/sec (6.84GB/min average)
00:00:20, 4521708 sectors, 114.08MB/sec (6.95GB/min average)
00:00:30, 6815328 sectors, 114.08MB/sec (6.98GB/min average)
. . .
00:58:22, 468883296 sectors, 45.83MB/sec (4.11GB/min average)
Wipe of drive 2 complete (end of pass number 1)
Wiping 156301488 sectors on drive 1
Wiping 312581808 sectors on drive 2
00:00:10, 2228088 sectors, 114.08MB/sec (6.84GB/min average)
00:00:20, 4521708 sectors, 114.08MB/sec (6.95GB/min average)
00:00:30, 6815328 sectors, 114.08MB/sec (6.98GB/min average)
. . .
00:58:22, 468883296 sectors, 45.83MB/sec (4.11GB/min average)
Wipe of drive 2 complete (end of pass number 2)
Wiping 156301488 sectors on drive 1
Wiping 312581808 sectors on drive 2
00:00:10, 2228088 sectors, 114.08MB/sec (6.84GB/min average)
00:00:20, 4521708 sectors, 114.08MB/sec (6.95GB/min average)
00:00:30, 6815328 sectors, 114.08MB/sec (6.98GB/min average)
. . .
00:58:22, 468883296 sectors, 45.83MB/sec (4.11GB/min average)
Wipe of drive 2 complete (end of pass number 3)
Verifying 156301488 sectors on drive 1
Verifying 312581808 sectors on drive 2
00:00:10, 2228088 sectors, 114.08MB/sec (6.84GB/min average)
00:00:20, 4521708 sectors, 114.08MB/sec (6.95GB/min average)
00:00:30, 6815328 sectors, 114.08MB/sec (6.98GB/min average)
. . .
00:58:22, 468883296 sectors, 45.83MB/sec (4.11GB/min average)
Verify of drive 2 complete
Both Drives Complete (03:53:28, 240.07 GB)
=>
```

## 5.4 Unlock Drive Procedure

When using the serial interface, the command syntax for unlocking a disk drive (e.g., permanently removing its HPA) is given below:

**Unlock [1|2]**

The optional “drive number” parameter allows the operator to enter a specific drive number (e.g., drive 1 or drive 2) to be unlocked. By default, both of the drives will be unlocked.

The example below shows the output from a typical unlock disk drive command (single drive attached to drive 1) when using the serial port interface.

```
=> Unlock 1
Unlocking Drive
OK (y/n)? y

Drive 1:      ST380011A 80.03GB
HPA Start:   72.02GB
HPA Size:    8.00GB
Unlocking Drive 1 HPA
Drive 1 HPA Unlocked
Drive 1 Complete
=>
```

## 6 Special Precautions

This section describes some scenarios that require special attention in order to prevent unexpected results when operating the drive wipe unit. Each of these situations is described in detail below:

### 6.1 Using the Buttons

The system automatically de-bounces each of the switch operations. In addition, to avoid unexpected results caused by “double-clicking” any of the buttons, all previous button status is cleared after each prompting message is displayed to the LCD. Therefore, each prompting message will be displayed for a minimum of 0.5 seconds before the unit will respond to any operator input from the buttons.

The user may experience up to a 30 second response delay if the hardware is waiting for a drive to respond (e.g., spinning up a drive).

### 6.2 Wiping/Sanitizing Drives

Powering off the unit or while either testing, wiping, or sanitizing a drive is not recommended. Before powering off the unit, make sure that it is in the idle state by canceling any command that is currently executing. To cancel a command from the button interface, first press the <cancel> button and then respond to each of the prompts until the “Ready” status is indicated on the LCD. To cancel a command from the serial interface, first enter <Ctrl C>, then respond to each of the user prompts until the “=>” is displayed on the terminal.

**Note: Powering off the unit or canceling a command will result in a partially erased drive!**

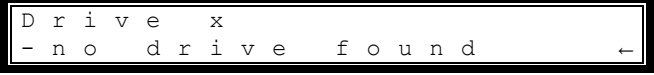

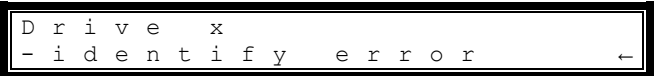
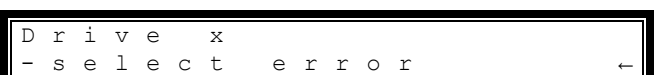
### 6.3 Incompatibility Issues

Our goal is to support every hard drive ever manufactured, however, occasionally there is a model that requires special handling. Therefore, the table below provides a list of hard drives that do not work with the current software release.

Vendor	Model	Comment
Western Digital	Caviar 2340	Able to identify the device, but unable to read any of the sectors.
Western Digital	Caviar 21000	Able to identify the device, but unable to read any of the sectors.

## 7 Troubleshooting

This section describes each of the possible operation failures that may occur during the execution of the commands previously described. Since the same information is displayed to both the LCD and the serial interface, we will use the LCD format to describe each of these conditions. The following table provides a brief description of the most common events leading up to each failure condition and also describes some suggestions for resolving the problem:

LCD information	Detailed description
 <pre> Drive x - no drive found </pre>	<p>This message is displayed whenever one of the following conditions occur:</p> <ul style="list-style-type: none"> <li>• No power to the specified drive.</li> <li>• No ATA cable to the specified drive.</li> <li>• Unable to identify the specified drive.</li> </ul> <p>Hint: Make sure that the ATA cable is installed correctly (blue end to the to the hard drive wiper unit and black end to the drive).</p>
 <pre> Drive x - reset error </pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"> <li>• An error was detected while resetting the specified drive.</li> </ul> <p>Hint: Repeat the command, as the disk drive may be intermittent.</p>
 <pre> Drive x - identify error </pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"> <li>• An error was detected while attempting to read the drive configuration attributes from the specified drive.</li> </ul> <p>Hint: Repeat the command, as the disk drive may be intermittent.</p>
 <pre> Drive x - select error </pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"> <li>• An error was detected while attempting to select the specified drive.</li> </ul> <p>Hint: Repeat the command, as the disk drive may be intermittent.</p>

<pre>D r i v e  x - r e a d  e r r o r  ←</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• A read error was detected while testing the specified drive.</li></ul> <p>Hint: Repeat the command, as the sectors on the specified drive may be intermittent.</p>
<pre>D r i v e  x - w i p e  e r r o r  ←</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• Attempting to initialize a wipe operation with an invalid data pattern. This should never happen under normal operating circumstances.</li></ul> <p>Hint: Please report this problem to the customer service department so that can be corrected in the next software release.</p>
<pre>D r i v e  x - s a n i t i z e  e r r o r  ←</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• The number of sectors wiped does not match the number of sectors verified. This should never happen under normal operating circumstances.</li></ul> <p>Hint: Repeat the command, as either the wipe or verify operation failed to complete successfully.</p>
<pre>D r i v e  x - v e r i f y  e r r o r  ←</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• Attempting to initialize a verify operation with an invalid data pattern. This should never happen under normal operating circumstances.</li></ul> <p>Hint: Please report this problem to the customer service department so that can be corrected in the next software release.</p>

<pre>Drive x -unlock drive error ←</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• An error was detected while attempting to remove the HPA from the specified drive.</li></ul> <p>Hint: Power off the unit, then repeat the command as each drive can only be unlocked one time without being powered off.</p>
<pre>Insufficient Memory [Power Off Unit]</pre>	<p>This message is displayed whenever the following condition occurs:</p> <ul style="list-style-type: none"><li>• The operating system has exhausted all of its memory resources. This should never happen under normal operating circumstances.</li></ul> <p>Hint: Please report this problem to the customer service department so that can be corrected in the next software release.</p>

## Warranty

### Limited Warranty

Voom Technologies, Inc. warrants the ATA Hard Drive Data Wipe Unit hardware against defects in material and workmanship under normal use and service for one (1) year from the original date of purchase. Voom Technologies, at its option, shall repair or replace the defective unit covered by this warranty.

In order to keep this warranty in effect, the product must have been handled and used as prescribed in the instructions accompanying this warranty.

This warranty shall not apply if the product is modified, tampered with, misused, abused, or subjected to abnormal working conditions (including, but not limited to lightening and water damage).

Please retain the dated sales receipt as evidence of the date of purchase. You will need it for any warranty service.

To obtain warranty service during the warranty period you must:

Call the Voom Technologies, Inc. Customer Service Department at 651-436-2753.

Give a full description of the problem.

Obtain a Return Manufacturers Authorization number (RMA).

Pack the PRODUCT in its original packaging or any other secure box so that no further damage occurs.

Enclose a letter inside the package that provides your business name, contact person, address, telephone number, e-mail address, RMA, and a brief description of the problem. You must also enclose a copy of the sales receipt.

Deliver the PRODUCT POSTAGE PREPAID to:

Voom Technologies, Inc.  
110 St. Croix Trail South  
Lakeland, MN 55043  
Attention: RMA \_\_\_\_\_

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE, AND VOOM TECHNOLOGIES SHALL IN NO EVENT BE LIABLE TO PURCHASER FOR INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER.

Some states do not allow the exclusion or limitation of incidental or consequential damages or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

### Data Protection Information

The user must be aware that an improper system configuration can lead to data corruption. Please read the System Configuration section of this manual carefully before attempting to wipe any data. Voom Technologies, Inc. is not responsible for any loss of data resulting from the use, disuse or misuse of this product.

## ATA Drive Wiper™ Specifications

This section describes the specifications for the Model No. XLDWPL-1 hard drive wiper unit.

AC Electrical Requirements	
AC Adapter Voltage	Universal AC, 100 VAC/240 VAC
Frequency	50-60 Hz
Current	1.5 Amps
Output Voltage	12 VDC @ 4.16 A
Manufacturer	Phihong Model: PSA60W-120 or equivalent
Fusing	3.5 Amp (5X20 mm) internal

Operating Environment	
Temperature	10 to 35 Degrees C
Relative Humidity	20% to 80% (non condensing)
Altitude	0 to 8000 Feet

Physical Characteristics	
Height	2.31 inches (58 mm)
Width	6.41 inches with latches locked (164 mm)
Depth	6.06 inches with latches locked (155 mm)
Weight	1 pound (excluding accessories)