# VERIFIER II

## User's Manual


**August 2006**

# HARK TECHNOLOGIES
**8105 Bankshire Trail**
**N. Charleston, SC 29420**

**Telephone:**
**(843) 285-7200**

**FAX:**
**(518) 448-6698**

# CONTENTS

# BEFORE YOU BEGIN

The purpose of the Verifier II User's Manual is to provide you with the knowledge needed to efficiently operate the Verifier II equipment and software. It is recommended that the manual be read before operating the Verifier II.

The Verifier II consists of a combination of hardware and software uniquely designed to monitor digital paging formats and decode POCSAG, GOLAY, and FLEX communication protocols. The paging data being transmitted to mobile pagers, receivers, and beepers can be displayed on most types of RS-232 compatible terminals. The Verifier II can also be used in conjunction with a computer and common communications software.

# HOW TO USE THIS MANUAL

To help you understand and learn how to use the Verifier II, this manual is organized in a logical sequence that leads you from the hardware installation process through login and monitoring of the system.

This User's manual is intended for users of all experience levels. Many general concepts and simply guidelines are discussed in the initial portions of the manual. A familiarity with the basic concepts ensures that you can use the equipment and software efficiently. Subsequent sections describe particular tasks and list the procedures to accomplish them.

# CONVENTIONS USED IN THIS MANUAL

- The Verifier II software is fully menu driven. The functions performed within the application are accomplished using the keyboard.

- Names of keys are shown in capital letters; for example, TAB, SHIFT, and RETURN.

- A number or alpha character to the left of the function description identifies menu functions or options.

- Certain actions require the simultaneous use of multiple keystrokes. A plus sign (+) between key names indicates that you press those keys at the same time. For example, "Press CTRL+A" means that you must hold down the CTRL key while you press the A key.

- The following keys must be used to move the cursor within a displayed Verifier II window.

    | <u>**Keys**</u> | <u>**Function**</u> |
    |---|---|
    | RETURN | The RETURN key moves the cursor from prompt to prompt on a displayed window.  Upon entering data at a prompt, press the RETURN key to accept the data and move to the next prompt. |
    | ESCAPE | The ESCAPE key allows you to exit the displayed window and return to the prior window. |

# SECTION 1: INTRODUCTION TO THE VERIFIER II

The Hark Verifier II consists of a combination of hardware and software uniquely designed to monitor digital paging formats and decode POCSAG, GOLAY, and FLEX communication protocols. The Verifier II helps to isolate problems on paging channels, by allowing users to observe the operation of the paging channel by displaying the paging traffic as it is being transmitted.

The Verifier II builds and displays statistical information for up to the past 24 hours, which can be used to determine the efficiency of the channel and air time usage. This statistical information can be converted to comma delineated format, captured by a PC and terminal program, and then printed. Menu driven options can be used to isolate a particular paging format, an individual pager capcode, or a particular message keyword. The Verifier II can follow up to 200 capcodes with "hit-counts" to track pager usage, as well a display and store the message content of the pages.

Communication to the Verifier II is via an RS-232 interface, allowing the use of computers or dumb terminals for control and operation.

The Verifier II operates in four primary modes during which information can display:

- Cap code and Messages Mode – Displays the capcodes and actual content of messages.

- Scan Mode – Displays the capcodes and messages that match the entered scan criteria (including capcodes and search text).

- Technical Mode – Displays the format and header information.

- Binary Mode – Displays the raw bitstream (POCSAG only due to the amount of data to display).

# System Features

- Decodes POCSAG 512, 1200, 2400, GOLAY, and FLEX 1600, 3200, 6400 (bi and quad phase)

- Interfaced to a Commercial Receiver

- Serial Port for RS-232 Device, Video Terminal Display, Modem or Computer Terminal

# System Benefits

- The Hark Verifier II is a stand-alone decoder that does not require a computer for decoding.

- The Verifier II computes internal basic statistics.

- The Verifier II provides internal decoded page storage.

- An external PC connection is provided for expanded statistics capabilities.

# SECTION 2: GETTING STARTED

The following is discussed in the following section:

- System Requirements
- Installation Procedures
- Logging onto the Verifier II
- Logging off the Verifier II

This page intentionally left blank

## 2.1 System Requirements

The following equipment represents the minimum hardware configuration of the Verifier II.

- Verifier II Box
- Communications Receiver
- Class 2 Power Transformer
- Antenna
- PC Computer or Video Display Terminal

## 2.2 Hardware Installation

The following section describes the procedure used to install the Verifier II. Refer to Figure 1 for the location of all connections.  Note, observe proper Electro-static discharge (ESD) precautions when handling the equipment and connecting cables.  For example, always touch the back of the scanner first prior to touching any contacts.

**Step 1:**    Inspect the shipping packages for damage.  If damage is evident, immediately contact the shipper.

**Step 2:**    Carefully unpack the Verifier II.  Inspect for damages incurred during shipping.

**Step 3:**    Verify that the following equipment is included in the shipment.

- Verifier Box
- Communications Receiver
- Class 2 Power Transformer and cable
- Antenna

**Step 4:**    Verify that you have obtained the following equipment.

- RS-232 Serial Cable
- PC or Dumb Display Terminal (for viewing of data)

**Step 5:** Plug one end of the Power Supply cable into the connector labeled **12VDC** on the back of the Verifier II. Plug the other end of the cable into the connector on the Communications Receiver.

**Step 6:** Plug the audio cable into the connector labeled **SIG** at the back of the Verifier II.

**Step 7:** Plug the DB-25 connector of your RS-232 cable into the connector labeled **RS-232** at the back of the Verifier II. Plug the other end of the cable to your computer or Display Terminal.

**Step 8:** Connect the Antenna connector to the port labeled **ANT** on the communications receiver.

**Step 9:** Plug the Transformer into an electrical outlet.

**Step 10:** Turn on the Communications Receiver using the Power Switch located at the front of the receiver.

**Step 11:** If using a software terminal program on a computer, startup the Windows application. Set the baud rate on the display device to 19.2 K using the following steps.

a. Select **Start** from the Windows Desktop.
b. Select **Programs**.
c. Select **Accessories**.
d. Select **HyperTerminal**.
e. Select **Hypertrm.exe**.
f. Enter a name for the new connection (for example, enter Verifier) and click **OK**.
g. Select the appropriate communications port from the *Connect Using* field. Click **OK.**
h. Select **19200** from the *Data bits* field. Verify that Parity equals **None**, Stop bits equals **1**, and Flow Control equals **NONE.** Click **OK**.
i. Select the *File* option, then *Save* to save the new configuration. The HyperTerminal screen shown in Figure 2 displays.
j. Select the *File* option, then *Exit* to exit the HyperTerminal screen. Select **Yes** at the *Disconnect Verification* prompt.

As a result of the above steps, a shortcut icon is created on the Accessories screen, allowing you to quickly access the Verifier II. Refer to the *Logging onto the Verifier II* section for complete details on how to access the Verifier II.
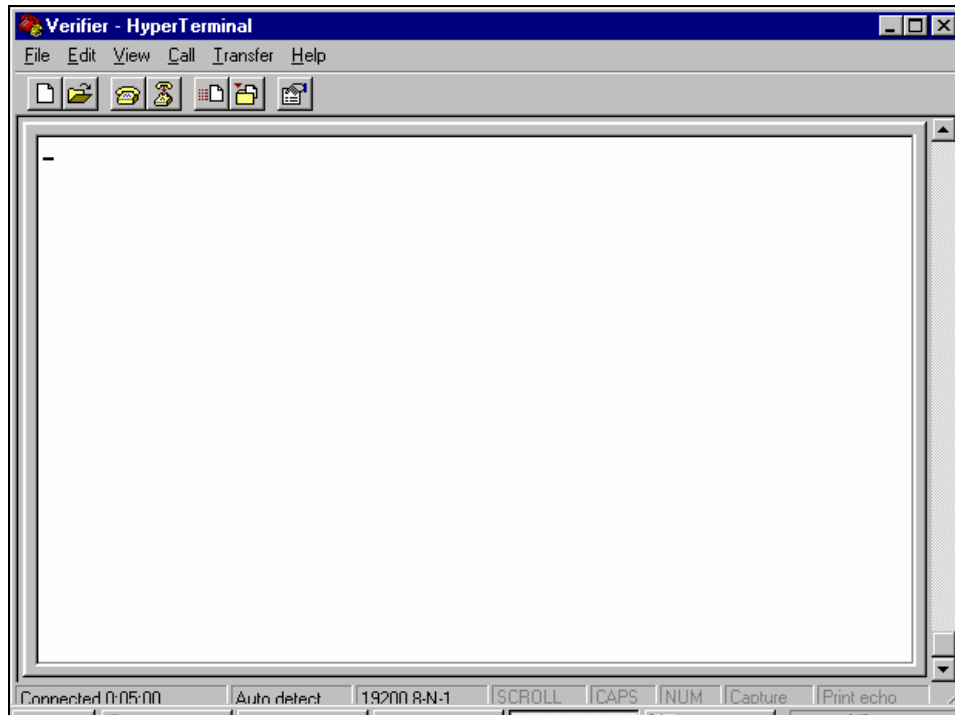
*Figure 1   Verifier HyperTerminal Screen*

# 2.3 Installation Notes

- RS232 Connection
  The Verifier II is configured to connect to a DCE device with a standard RS-232 (straight through) cable that connects pins 2, 3, and 7 of one connector to the same pin number of the second connector. If the Verifier II is connected to a video terminal that is a DTE device, a null RS-232 cable (pins 2 and 3 crossed) must be used.

- The Verifier II is shipped with a Uniden Bearcat BC898T communications receiver.

- The Verifier II contains no serviceable parts. If you have any questions, please contact one of Hark System's Service Technicians.

# 2.4 Logging Onto the Verifier II

Perform the following steps to log onto the Verifier II.

**Step 1:**  Turn on the Communications Receiver using the Power Switch located at the front of the receiver.

**Step 2:**  Access the Windows Desktop from the terminal attached to the Verifier II equipment.

**Step 3:**  Select *Start* from the Windows Desktop. The Start Pulldown Menu displays.

**Step 4:**  Select *Programs* from the Start Pulldown Menu. The Programs Pulldown Menu displays.

**Step 5:**  Select *Accessories* from the Programs Pulldown Menu. The Accessories Pulldown Menu displays.

**Step 6:**  Select *HyperTerminal* from the Accessories Pulldown Menu. The C\:Program Files\Accessories window displays.
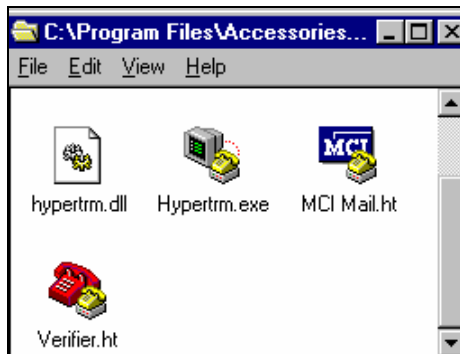


*Figure 2    C:\Program Files\Accessories Window*

**Step 7:**  Select the **Verifier.ht** icon. The Verifier – HyperTerminal screen displays.
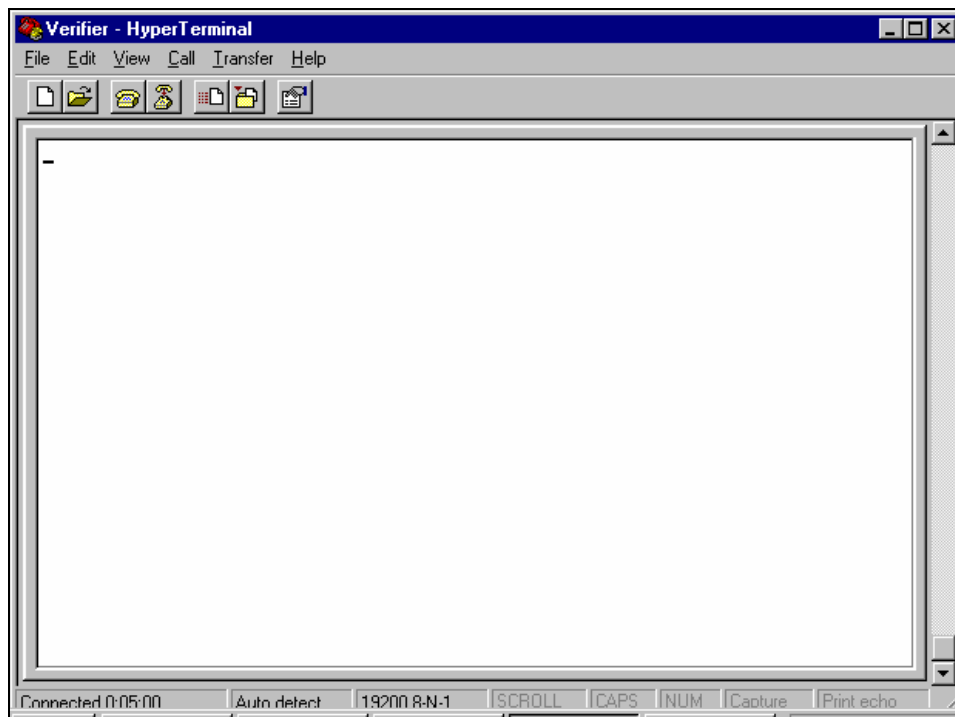
*Figure 3   Verifier – HyperTerminal Screen*

**Step 8:**     Press the ENTER key on the terminal's keyboard.  The Login screen displays.

```
Verifier II       Ver: 01.12        08-01-2006
Hark Technologies Paging Decoder

<CR> or <SPACE> for Password Prompt
```
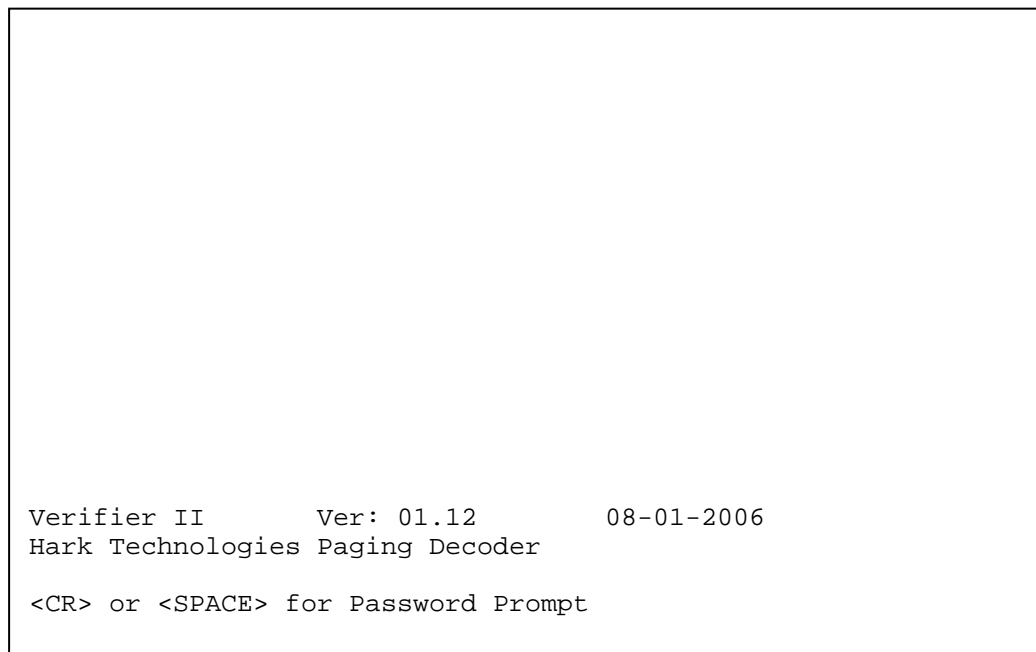
*Figure 4   Login Screen*

**Step 9:**     Press the SPACE BAR on the terminal's keyboard.  The Password Prompt screen displays.

```
Verifier II        Ver: 01.12         08-01-2006
Hark Technologies Paging Decoder

Enter Operator Password:
```
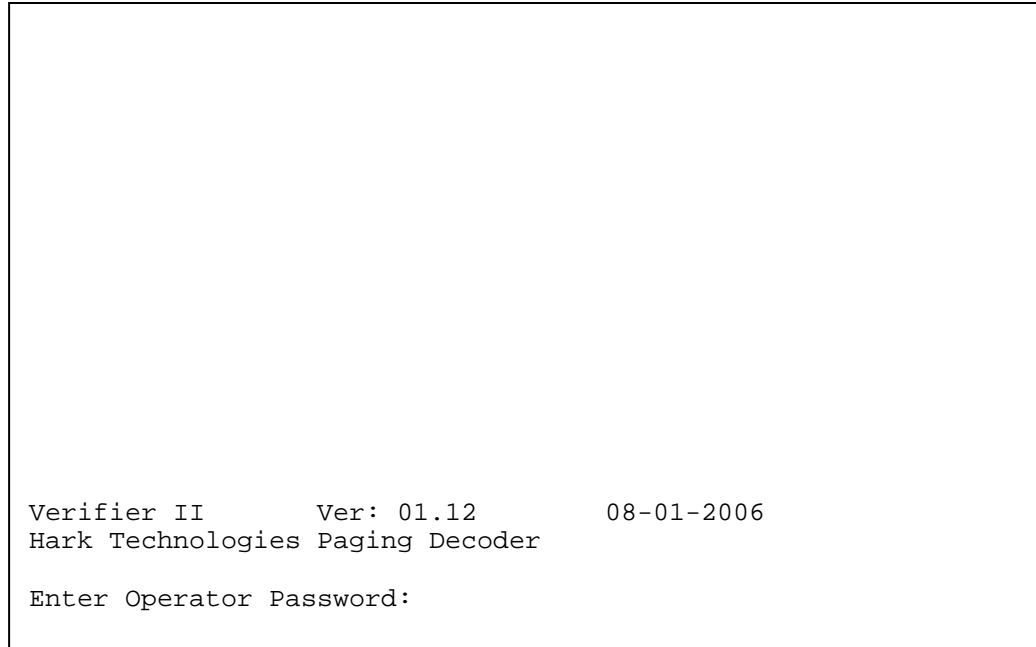
*Figure 5   Password Prompt Screen*

**Step 10:**    Key the appropriate password at the *Enter Operator Password* prompt and press the ENTER key.

- If logging onto the Verifier II for the first time after installation, enter one of the following three default factory passwords at the prompt.  The following passwords allow you to access the Main Menu.  Once the Main Menu displays, you should change the default passwords using the Administration option provided on the Main Menu.  Refer to Section 6 for details.

    The following three default passwords represent three levels of access.

    **GUEST** – Entering GUEST at the *Enter Operator Password* prompt allows you to view statistics, capcode hit counts, and adjust the current system date and time.  You cannot access any of the other functions provided by the Verifier II.

**TECH** – Entering TECH at the *Enter Operator Password* prompt allows you to perform all functions with the exception of those provided within the ***Administration*** option. You may not edit passwords, or load default parameters.

**ADMIN** – Entering ADMIN at the *Enter Operator Password* prompt allows you to access all functions provided within the Verifier II. This is the only password that allows you to edit passwords, and load default parameters.

- If you have already changed the default factory passwords, enter the current system password that is appropriate for your access level at the *Enter Operator Password* prompt and press the ENTER key.

---

**NOTES**

The Main Menu does not vary; all options display whether you logon as GUEST, TECH, or ADMIN. However, particular options displayed on the Main Menu are not accessible depending upon your access level. If you select an option to which you do not have access, the Main Menu continues to display and no further processing occurs.

The passwords are case-sensitive. Both the default factory passwords and your individualized system password must be entered in the proper case. For example, the default password of GUEST must be entered in upper case. Also, if the password is a combination of upper and lower cases, such as RgET02aA, the password must be entered in exactly that combination of upper and lower case characters. If entered in any other combination of upper and lower cases, you are not logged onto the Verifier II.

---

**Step 11:** The entered password is verified at this time. If correct, a Welcome message displays, then the Verifier II Main Menu displays. The Main Menu provides you with the ability to access all the Verifier II functions.

---

```
Verifier II      Ver: 01.12        08-01-2006
Hark Technologies Paging Decoder

1  View Mode
2  Search Menu
3  Stats Menu
4  Administration
5  Set Time and Date

Enter Command:
```
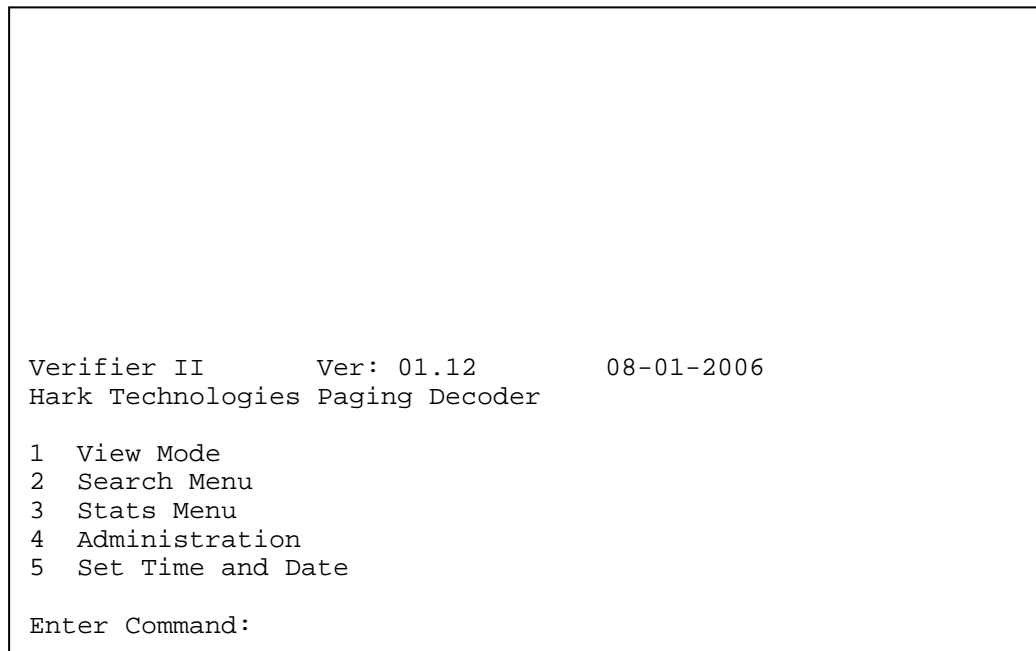
*Figure 6   Main Menu*

**Step 12:**   Select an option from the Main Menu by keying the number displayed to the left of each option at the *Enter Command* prompt. For example, to access the *View Mode* option, key a **1** at the *Enter Command* prompt.  Refer to Section 3 of this manual for details on using the Main Menu.

# 2.5  Initial State

Upon Powering up the Verifier II, the receiver tunes to the last used channel. The unit is in a **No Menu** state.  In this mode, you are notified of any captured pages, and if enabled, captured messages.

- Pressing the SPACE BAR returns you to the *Password* prompt.

# 2.6 Logging Off the Verifier II

Log off the Verifier II by performing the following.

**Step 1:** Exit any of the displayed Verifier II screens by pressing the Escape key until you access the Main Menu.

**Step 2:** Select the *File* option displayed in the Menu Bar at the top of the Main Menu. *The File Pulldown menu displays.*

**Step 3:** Select the *Exit* option from the File Pulldown menu. *The Disconnect Verification window displays.*
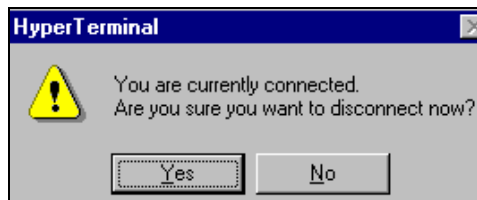


*Figure 7   Disconnect Verification Window*

**Step 4:** Select **Yes** to exit the Verifier II application. Select **No** to terminate the exit process and remain within the Verifier II application.

# 2.7 What To Do Next…

Now that the system has been installed and you have successfully logged onto the Verifier II, you should refer to Section 3, *Verifier II Main Menu*, to learn about the Main Menu and the various utilities that can be accessed from the Main Menu.

This page intentionally left blank

# SECTION 3: VERIFIER II MAIN MENU

The following is discussed within Section 3.

- Verifier II Main Menu
- Various options and utilities that you may access from the Main Menu
- Procedure used to select the menu options from the Main Menu

This page intentionally left blank

# 3.1 Description of the Main Menu

The Verifier II Main Menu displays automatically as a result of the successful completion of the login process. The Main Menu provides you with the ability to access all of the Verifier II utilities and functions.

```
                        ┌──────────────┐
                        │  Status Bar  │
                        └──────┬───────┘
              ┌────────────────┴────────────┐

  Verifier II      Ver: 01.12          08-01-2006
  Hark Technologies Paging Decoder

  1  View Mode          ┐
  2  Search Menu        ├──┐  ┌──────────────┐
  3  Stats Menu         │  ├──│ Menu Options │
  4  Administration     │  │  └──────────────┘
  5  Set Time and Date  ┘

  Enter Command:
```

*Figure 8   Verifier II Main Menu*

The Status Bar identifies the application (Verifier II), the software version that is currently being used (Ver: 01.XX, where XX identifies the actual version), and the software build date (for example, 08-01-2006).

# 3.1.1 Menu Options

The following menu options display on the Main Menu. Selection of an option initiates the corresponding utility. The appropriate display window or entry prompts display. Each of the following options are discussed in detail in Sections 4 through 9 of this manual.
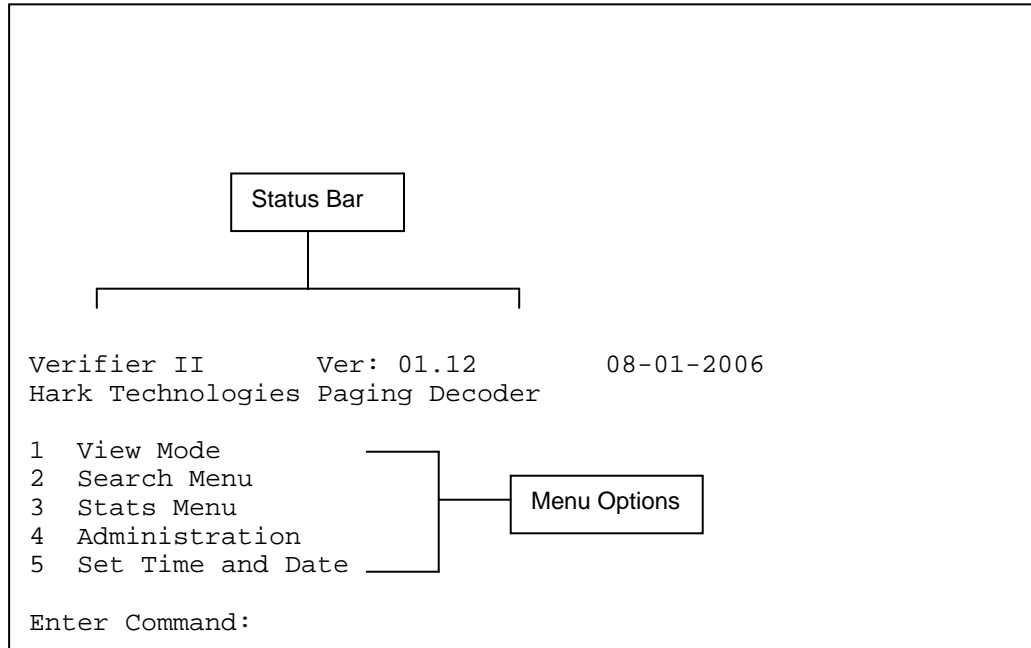
*View Mode*
The *View Mode* option allows you to set the parameters used to view decoded information and allows you to begin viewing the decoded information. Four common view modes are provided; you may selectively change the parameters within each of the modes.

*Search Menu*
The *Search Menu* option allows you to identify the search criteria for the capcodes and messages that you want to view, and allows you to view the actual capcodes and messages. You identify the capcode or search string for which you want to search. The Verifier II displays the matching capcode list, hit counts, messages with matching search strings, etc.

*Stats Menu*
The *Stats Menu* option allows you to view the current and last 23 hours of statistics that were captured, view the last 23 hours of statistics in Comma Delineated Format, and clear the statistics and reset the counts to zero.

*Administration*
The *Administration* option allows you to change passwords, and reload the original parameters and stats.

*Set Time and Date*
The *Set Time and Date* option allows you to set the current system time and date.

# 3.2 Selecting Options From the Main Menu

Select an option displayed on the Main Menu by performing the following.

1. Key the number that is displayed to the left of the Menu option at the *Enter Command* prompt.

   For example, to access the **View Mode** option, key a **1** at the *Enter Command* prompt. To access the **Administration** option, key a **4** at the *Enter Command* prompt.

   The selected option initiates the appropriate utility. The corresponding screen or prompts display. Note, if an invalid entry is keyed at the *Enter Command* prompt, or you enter an option for which you do not have access authority, the option is not accepted and no further processing takes place until you enter a valid option.

# 3.2.1 Additional Information

To return to a prior menu, press the ESCAPE key.

When prompted to enter data from the command line, particular keys perform the following functions.

| <u>Key</u> | <u>Function</u> |
|---|---|
| <BACKSPACE><br><RUB><br><DELETE> | Erases the previous character. |
| <ESC> | Erases all the characters entered at the prompt. |
| <ENTER> | Indicates that data entry is complete and to initiate the corresponding option or data entry process. |

# 3.3 What To Do Next…

You are now ready to configure the Verifier II.  You should first change the factory default passwords to your own, individualized passwords using the ***Administration*** option.  Once the passwords have been changed, you can set the current system date and time, as required.  Refer to Section 4 through 5 for complete details.

# SECTION 4: ADMINISTRATIVE FUNCTIONS

The following section discusses the administrative functions that can be performed within the Verifier II.

- Changing Passwords
- Loading Default Parameters and Stats

The above functions are accessed as a result of selecting the *Administration* option provided on the Main Menu.  Please note, only those users who have logged onto the Verifier II using the Administrative password have access to this functionality.

# 4.1 Setting Passwords

The Verifier II provides you with the ability to change the factory default passwords used while logging onto the Verifier II.  In addition, you may change your individualized password at any time.

---
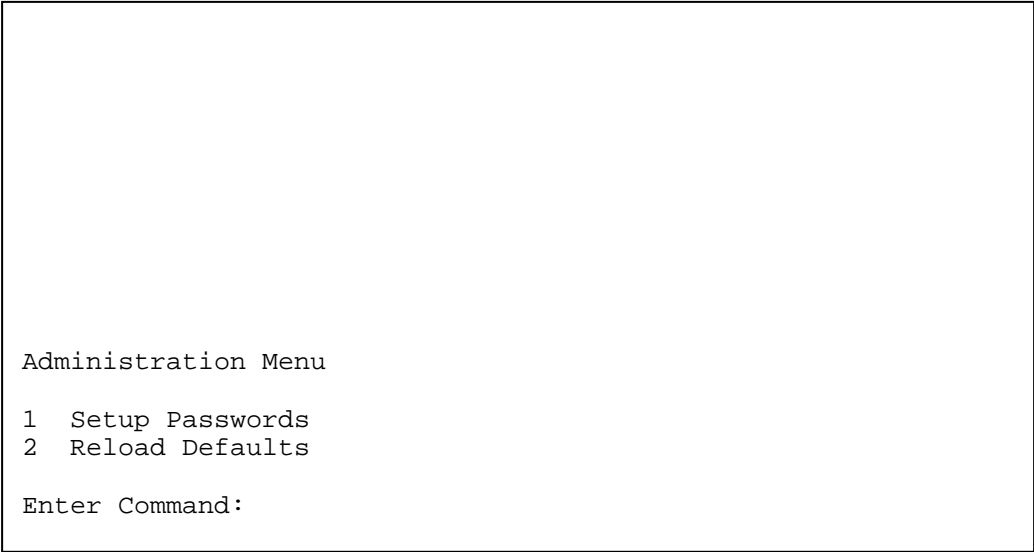
**NOTE:**

It is highly recommended that you change the factory default passwords originally assigned by Hark as soon as you have installed and initialized the Verifier II.  Refer to Section 2.4 for complete details on the default passwords.  It is also recommended that you change your individualized passwords on a regular basis.

---

Perform the following steps to access the Password Menu screen and change a password.

1.  Select the *Administration* option displayed on the Main Menu by keying a **4** at the *Enter Command* prompt.

    The Administration Menu displays.

```
Administration Menu

1   Setup Passwords
2   Reload Defaults

Enter Command:
```

*Figure 9   Administration Menu*

2.  Select the *Setup Passwords* option by keying a **1** at the *Enter Command* prompt.

    The Password Menu displays.

```
Password Menu

1  Admin
2  Tech
3  Guest

Enter Command:
```
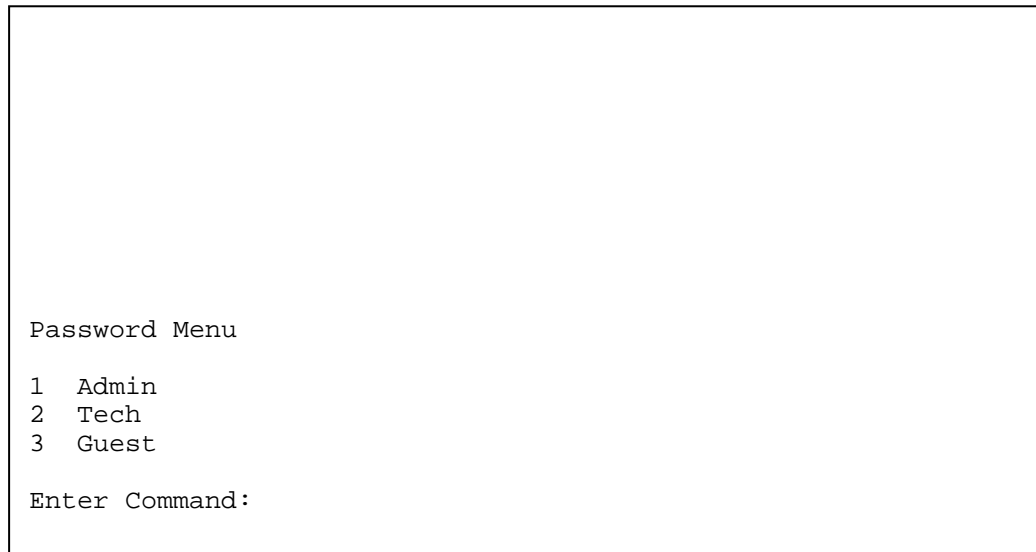
*Figure 10   Password Menu*

3.  Select the password that requires changing by entering the number displayed next to the password level that requires changing at the *Enter Command* prompt.  For example, to change the Admin password, key a **1** at the *Enter Command* prompt.

    The *Password:* prompt displays.

```
Password Menu

1  Admin
2  Tech
3  Guest

Enter Command:


Admin Password:
```

*Figure 11   Password Prompt*

4. Key the new password at the *Password* prompt and press the ENTER key. Note that passwords are case-sensitive.

   The Password Menu redisplays.

5. Continue changing the passwords as required, or press the Escape key to return to the Administration and Main Menus.

# 4.2 Reloading System Defaults

The ***Reload Defaults*** option provided on the Administration Menu allows you to reset your view parameters to the defaults originally set by Hark Systems and clear any statistical data and counts. The current view parameters can be viewed and changed using the ***View Menu*** option referenced on the Verifier II Main Menu.

Perform the following steps to access the ***Reload Defaults*** option and change the parameters back to the system defaults.

1. Select the ***Administration*** option displayed on the Main Menu by keying a **4** at the *Enter Command* prompt.

   The Administration Menu displays.

2. Select the ***Reload Defaults*** option by keying a **2** at the *Enter Command* prompt.

   The *Reload Defaults and Clear Statistics Verification* prompt displays.

```
Administration Menu

1  Setup Passwords
2  Reload Defaults

Enter Command:


Do you want to Load Defaults and Clear Statistics?
```
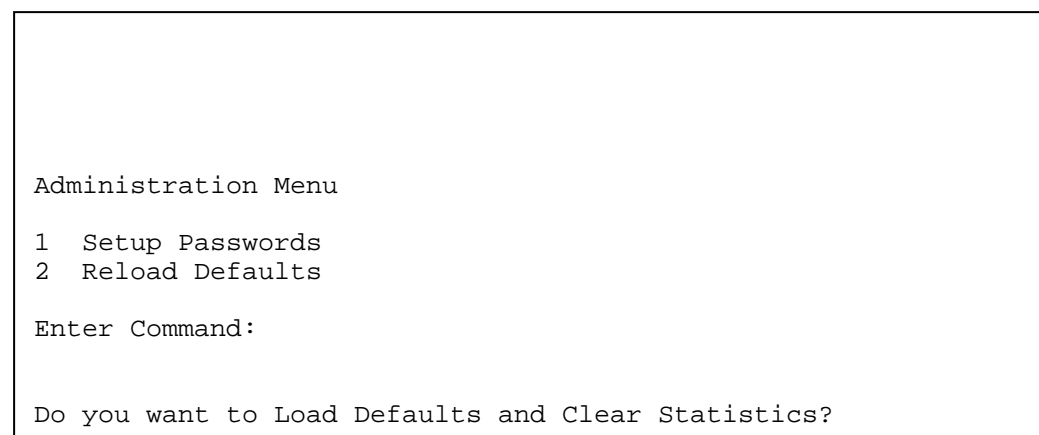
*Figure 12   Reload Defaults and Clear Statistics Verification Prompt*

3.   Enter a **Y** at the *Do You Want to Load Defaults and Clear Statistics* prompt and press the ENTER key to continue to reload the defaults and clear the statistics.  Enter a **N** at the prompt and press the ENTER key if you no longer want to reload the defaults and clear the statistics.

In either of the above cases, the Administration Menu is redisplayed. Press the Escape key to return to the Main Menu.

# 4.3 What To Do Next…

Continue to Section 5 to set the current date and time values.

# SECTION 5: SET CURRENT SYSTEM TIME AND DATE

The following section describes the process that must be followed to set the current system time and date.

All levels of users may access this functionality.

This page intentionally left blank

# 5.1 Set Time and Date Option

During system configuration, you must set the system time and date referenced by the Verifier II to the current time and date.

Perform the following to set the system time and date.

1.   Select the *Set Time and Date* option displayed on the Main Menu by keying a **5** at the *Enter Command* prompt.

   The Date Menu displays.

```
Date Menu

1   Month   [08]
2   Date    [01]
3   Year    [06]

4   Hour    [13]
5   Minute  [05]
6   Second  [15]

Enter Command:
```

*Figure 13   Date Menu*

2.   Key the number displayed to the left of the date or time parameter that you want to change at the *Enter Command* prompt.  For example, to change the month, key a **1** at the *Enter Command* prompt.

   The corresponding prompt displays.  For example, if changing the month, the *Enter Month* prompt displays.

3.   Enter the appropriate information at the prompt and press the ENTER key. For example, if changing the month, enter 10 to change the system month to October (10th month within the year).

4.  Repeat Steps 2 and 3 until all parameters within the system date and time have been set.

5.  Press the ESCAPE key after all required changes have been made.

The Main Menu redisplays.

# SECTION 6: VIEWING PAGING DATA

The Verifier II allows you to monitor a particular paging channel and display either the FLEX, GOLAY, or POCSAG paging traffic as it is being transmitted. This functionality may be accessed by users who have logged onto the Verifier II using the Technician and Administration level passwords.

Section 6 discusses the following processes.

- Setting view parameters
- Selecting a view mode
- Viewing data

This page intentionally left blank

# 6.1 Common Modes

Pages may be viewed in one of four common modes. These common modes include:

- Cap code and Messages Mode – Displays the capcodes and actual content of messages.

- Scan Mode – Displays the capcodes and messages that match the entered scan criteria (including capcodes and search text).

- Technical Mode – Displays the format and header information.

- Binary Mode – Displays the raw bitstream (POCSAG and GOLAY only due to the amount of data to display).

The view mode in which the messages are to be displayed is selected using the *View Mode* option provided on the Main Menu.

Particular parameters or message formats are associated with each of these common modes. The parameters associated with each of the view modes may be viewed and edited using the *View Mode* option.

# 6.1.1 Setting View Mode Parameters

The parameters associated with a particular view mode determine the type of pages that are displayed for viewing, plus determine the type of information displayed for each of the pages.

Default parameters are associated with each of the four view modes; these default parameters may be changed using the following steps.

1. Select the *View Mode* option displayed on the Main Menu by keying a **1** at the *Enter Command* prompt.

   The View Mode Menu displays.

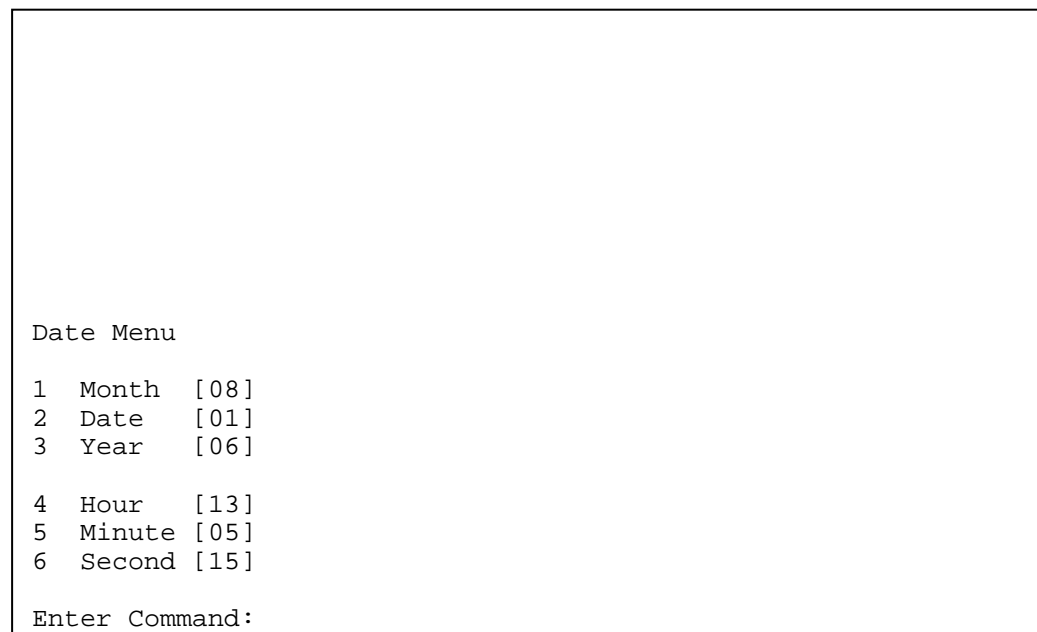The View Mode Menu is divided into two areas:

**Mode Options Area** – This area lists the four view modes that may be selected.  The parameters associated with each of the modes are displayed in the Options column to the right of the mode listing.

**Toggle Options Area** – This area lists each of the parameters that may be associated with a particular mode and the associated formats.  A particular parameter may be enabled or disabled, depending upon the paging data that you want to view.  If the parameter is preceded by the term "Disable", the parameter is currently enabled (for example, Disable Alpha Pages).  If the parameter is preceded by the term "Enable", the parameter is currently disabled (for example, Enable Expanded).

```
View Mode Menu                  Options

1   Cap Code & Message Mode     A C F G M N P
2   Scan Mode                   A F G N P S
3   Technical Mode              E F G H P T
4   Binary Mode                 G H P R T


Toggle Options:                 Formats
A   Disable Alpha Pages         F G P
C   Disable Capcode Mode        F G P
E    Enable Expanded            F G P
F   Disable Flex Pages          F
G   Disable Golay Pages         G
H    Enable Header Mode         F
I    Enable Idle Mode           F G P
M   Disable Message Mode        F G P
N   Disable Numeric Pages       F G P
P   Disable Pocsag Pages        P
R    Enable Raw Mode            G P
S    Enable Scan Mode           F G P
T    Enable Type Headers        F G P
V   Begin Viewing

Enter Command:
```

*Figure 14   View Mode Menu*

2.   To enable a particular parameter that is currently disabled, key the alpha character displayed to the left of the parameter in the *Enter Command* prompt.  For example, to enable the Raw Mode shown in the above figure, key a **R** at the *Enter Command* prompt.

3. To disable a particular parameter that is currently enabled, key the alpha character displayed to the left of the parameter in the *Enter Command* prompt. For example, to disable the viewing of Alpha Pages shown in the above figure, key an **A** at the *Enter Command* prompt.

4. To begin viewing the pages, key a **V** at the *Enter Command* prompt.

# 6.1.2 Selecting a View Mode

Once you have set your parameters, you may select a view mode in which you want to view the paging data being decoded.

Perform the following steps to view the paging data.

1. Select the *View Mode* option displayed on the Main Menu by keying a **1** at the *Enter Command* prompt.

   The View Mode Menu displays.

2. Select the appropriate view mode by keying the number displayed to the left of the mode at the *Enter Command* prompt.

   The literal "View Enabled" displays. The data begins to display according to the parameters set for the selected view mode. Refer to the following figures for samples of captured messages. Press the ESCAPE key at any time to exit the View mode and return to the Main Menu.

   - Figure 22 shows an example of the data displayed if the Capcode and Message Mode option (Option 1) is selected.

   - Figure 23 shows an example of the data displayed if the Scan Mode option (Option 2) is selected.

   - Figure 24 shows an example of the data displayed if the Technical Mode option (Option 3) is selected.

   - Figure 25 shows an example of the data displayed if the Binary Mode (POCSAG) option (Option 4) is selected.

3. Press the ESCAPE key to exit the view mode and return to the Main Menu.

**Capcode and Message Mode**

View Enabled
POCSAG:     0079008          MRS GREENE 921-1111 PT:  JOSEPH CHILDES REC DR:
                             BLACKE PLEASE CALL WARD AT ONCE

POCSAG:     1271111          222-3344
POCSAG:     1177888          912-4402-888
POCSAG:     1155222          CALL HOME
Flex:       1133211          332-4444

*Figure 15   Sample Capcode and Message Mode*

**Scan Mode**

View Enabled
Flex:       0124567          CALL OFFICE NOW!
POCSAG:     1133224          CALL YOUR WIFE ASAP AT 555-7777
POCSAG:     3344556          CALL 2223344; SEMI-EMERGENCY
Flex:       2255345          WANT TO REMIND YOU  ITS  MOM'S BIRTHDAY

*Figure 16   Sample Scan Mode*

```
Pri:00, Addr Start:0, Vec Start:06, Carry:0 Mask:0, Pages:5


Flex-   6400 4L   Time: xx:32:26
Cyc: 08, Frame: 014, Roaming: N, Repeat paging value: F


Pri:00, Addr Start:0, Vec Start:02, Carry:0 Mask:0, Pages:1


Pri:00, Addr Start:0, Vec Start:03, Carry:0 Mask:0, Pages:2

Flex:   0189598   Alpha Msg   YOU HAVE A ROOM BOOKED AT THE HOLIDAY INN EXPR
                              ESS @ 435 KATELLA AVE.  CONF#657 037 61.  CHEC
                              K IN TODAY, CHECK OUT MONDAY.  PLEASE CALL TO
                              CONFIRM THIS PAGE & W/ANY ???'S  THANKS!  GRAC
                              E<DC1>v<ESC>
Flex:   0183771   Alpha Msg   From: Pusateri, Joan Marie (Exchange)- call me
                               ralph

Pri:00, Addr Start:0, Vec Start:04, Carry:0 Mask:0, Pages:3

_
```

*Figure 17   Technical Mode*

```
5 7A89C196 I
6 7A89C196 I
6 7A89C196 I
7 11CF47DA C
7 B64D9FF0 M
Sync Codeword, Batch 0003
0 AB266D82 M
0 DDAD0280 M
1 E0D18212 M
1 900000EC M
2 7A89C196 I *
2 7A89C196 I
3 7A89C196 I
3 7A89C196 I
4 7A89C196 I
4 7A89C196 I
5 7A89C196 I
5 7A89C196 I
6 7A89C196 I
6 7A89C196 I
7 7A89C196 I
7 7A89C196 I
_
```

*Figure 18   Binary Mode (POCSAG)*

# 6.1.3 Pausing the Display

The display of messages may be paused at any time by pressing the <SPACE BAR> while in View mode. While in pause, the data is still being captured; the messages are simply not displayed. Press any key to unpause the display and begin displaying the captured messages.

Note, the display must not be paused for a long period of time; doing so causes the buffer to fill and over-run, causing invalid data to be displayed.

# SECTION 7: SEARCH LISTS

The Verifier II allows you to search for:

- Any pages initiated by a particular capcode.
- Any messages containing a specified search string.

This section discusses the processes used to search for pages which reference a particular cap code and/or search string, display and view the capcode list and messages, clear the capcode counts, and delete the captured messages.

This page intentionally left blank

# 7.1 Adding Capcodes to Search List

By adding a particular capcode to the Search List, those pages referencing the specified capcode are isolated and displayed in a capcode listing. Capcodes are added to the search list using the **Search Menu** option provided on the Main Menu.

Perform the following steps to add capcodes to the search list.

1.   Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

   The Search Menu displays.

```
Search Menu

1  Enter Search Capcode
2  Delete Search Capcode
3  Display Capcode List
4  Clear Capcode Counts
5  Clear Capcode List

6  Display/Edit Search Strings
7  Show Captured Messages
   393/65536 used (0%), 6 messages
8  Clear Captured Messages

0  Enable Auto-Save Capcode

Enter Command:
```
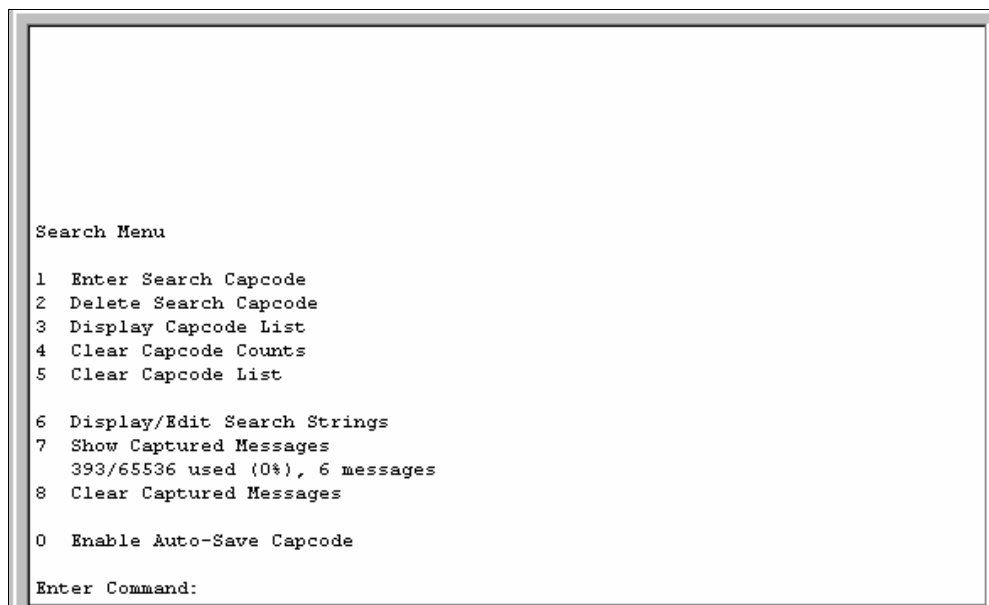
*Figure 19   Search Menu*

2.   Select the Enter Search Capcode option by keying a **1** at the *Enter Command* prompt.

   The *Enter Capcode to Search* prompt displays.

3.   Enter the digits comprising the capcode for which you want to display the pages at the *Enter Capcode to Search* prompt and press the ENTER key.

   The Search Menu displays. The capcode is added to the search list.

# 7.2 Deleting Capcodes from Search List

You have the ability to delete a particular capcode from the search list if you no longer want to view and track the pages sent by that capcode. Capcodes are deleted from the search list using the **Delete Search Capcode** option provided on the Search Menu. Note, if you want to delete all the capcodes from the search list, use the *Clear Capcode List* option discussed in Section 8.5.

Perform the following steps to delete capcodes from the search list.

1. Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

   The Search Menu displays.

2. Select the **Delete Search Capcode** option by keying a **2** at the *Enter Command* prompt.

   The *Enter Capcode to Delete* prompt displays.

3. Key the digits comprising the capcode that needs to be deleted from the search list at the *Enter Capcode to Delete* prompt and press the ENTER key.

   The Search Menu redisplays. The capcode is deleted from the search list.

# 7.3 Displaying the Capcode Search List

You may display a listing of capcodes currently referenced in the search list. (Any pages referencing the capcodes listed in the search list are captured displayed as a result of selecting the *Show Captured Messages* option on the Search Menu.)

Perform the following steps to display the capcodes referenced in the search list.

1. Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

   The Search Menu displays.

2.   Select the **_Display Capcode List_** option by keying a **3** at the _Enter Command_ prompt.

The Capcode Listing displays.

```
Search Menu

1   Enter Search Capcode
2   Delete Search Capcode
3   Display Capcode List
4   Clear Capcode Counts
5   Clear Capcode List

6   Display/Edit Search Strings
7   Show Captured Messages
    421/65536 used (0%), 7 messages
8   Clear Captured Messages

0   Enable Auto-Save Capcode

Enter Command:


Capcode Count T  Capcode Count T  Capcode Count T  Capcode Count T
2224444 00000 U   4456789 00000 U


End of List.
```

*Figure 20   Capcode List*

3.   Press the ENTER key to return to the Search Menu.

# 7.4 Clear Capcode Counts

The Verifier II keeps a count of the number of pages which reference each of the capcodes listed in the search list.  You have the ability to reset these counts to zero (0) using the **_Clear Capcode Counts_** option provided on the Search Menu.

Perform the following to reset the capcode counts to zero.

1.  Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

    The Search Menu displays.

2.  Select the *Clear Capcode Counts* option by keying a **4** at the *Enter Command* prompt.

    The *Do You Want to Clear ALL Capcode Counts* prompt displays.

3.  Key a **Y** at the prompt and press the ENTER key to reset all the capcode counts to zero.

    Key a **N** at the prompt and press the ENTER key if you no longer want to reset the capcode counts to zero.

    In either of the above cases, the Search Menu redisplays.

# 7.5 Clear Capcode List

You have the option to conveniently delete all search capcodes from the search list using the *Clear Capcode List* option provided on the Search Menu.

Perform the following steps to delete all capcodes from the search list.

1.  Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

    The Search Menu displays.

2.  Select the *Clear Capcode List* option by keying a **5** at the *Enter Command* prompt.

    The *Do You Want to Delete ALL Capcodes* prompt displays.

3.  Key a **Y** at the prompt and press the ENTER key to delete all the capcodes from the search list.

Key a **N** at the prompt and press the ENTER key if you no longer want to delete all the capcodes from the search list.

In either of the above cases, the Search Menu redisplays.

# 7.6 Display/Edit Search Strings

You have the ability to search for a particular string of characters within messages. If the specified search string is encountered, the message is displayed for viewing. Up to 20 search strings may be specified. New search strings may be added, and existing search strings may be changed or deleted at any time.

Perform the following steps to add new search strings and view and edit existing search strings.

1. Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

   The Search Menu displays.

2. Select the *Display/Edit Search Strings* option by keying a **6** at the *Enter Command* prompt.

   The Search String Menu displays. Any existing search strings are listing. In the example shown in the following screen, any messages containing the word "CALL" are selected and displayed for viewing.
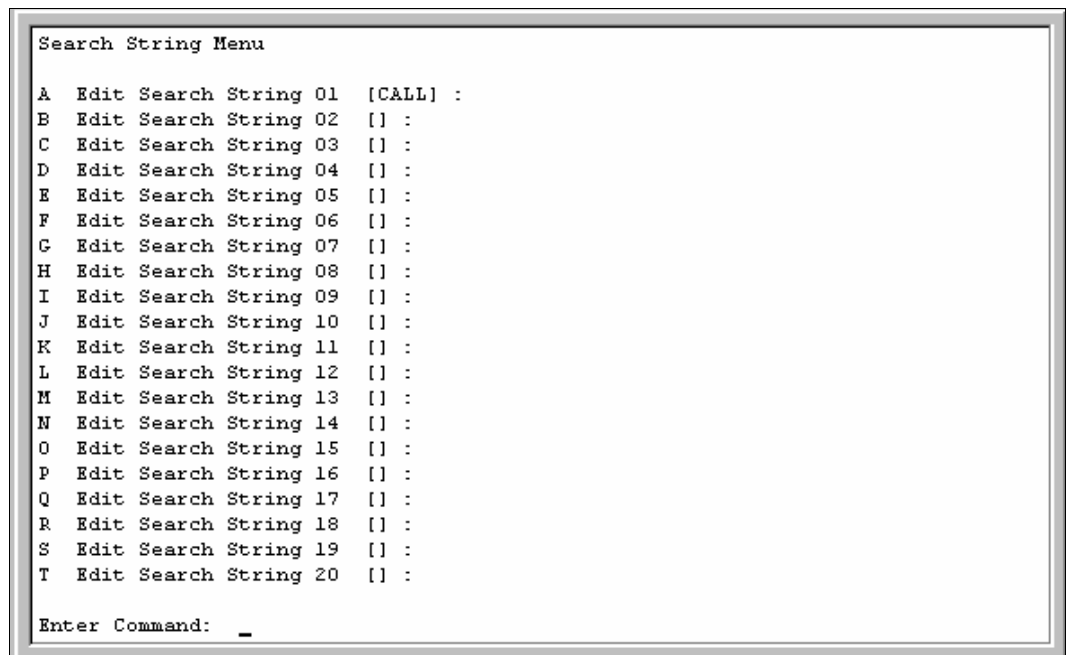
```
Search String Menu

A  Edit Search String 01  [CALL] :
B  Edit Search String 02  [] :
C  Edit Search String 03  [] :
D  Edit Search String 04  [] :
E  Edit Search String 05  [] :
F  Edit Search String 06  [] :
G  Edit Search String 07  [] :
H  Edit Search String 08  [] :
I  Edit Search String 09  [] :
J  Edit Search String 10  [] :
K  Edit Search String 11  [] :
L  Edit Search String 12  [] :
M  Edit Search String 13  [] :
N  Edit Search String 14  [] :
O  Edit Search String 15  [] :
P  Edit Search String 16  [] :
Q  Edit Search String 17  [] :
R  Edit Search String 18  [] :
S  Edit Search String 19  [] :
T  Edit Search String 20  [] :

Enter Command:  _
```

*Figure 21   Search String Menu*

3. To add a new search string, key the alpha character for the first blank line at the *Enter Command* prompt. In the example shown in the above screen, key a **B** at the prompt to enter the search string on the second detail line.

   To edit a particular search string, key the alpha character corresponding to the detail line on which the search string is displayed at the *Enter Command* prompt. In the example shown in the above screen, key an **A** at the prompt to edit the "CALL" search string.

   The *Enter Search String* prompt displays.

4. Key the new search string at the *Enter Search String* prompt and press the ENTER key. Note, a question mark (?) matches any single character. Spaces are allowed and must be matched. Searches are not case sensitive.

   - If editing an existing search string, the new search string replaces the prior search string.

   - If adding a new search string, the new search string displays on the corresponding detail line.

5. Press the ESCAPE key to return to the Search Menu. The Verifier II beeps whenever a message contains one or more of the indicated search strings.

The messages are stored in the internal memory and can be viewed using the *Show Captured Messages* option discussed in the following section.

# 7.7 Show Captured Messages

The *Show Captured Messages* option provided on the Search Menu allows you to view the contents of captured messages. A message is captured if either the capcode referenced in the message matches a capcode referenced in the search list, or a character string in the message matches one of the search strings.

Perform the following steps to view the contents of the captured messages.

1. Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

   The Search Menu displays. As messages are captured, the amount of message memory being used, the percentage of message memory being used, and the number of captured messages displays below the *Show Captured Messages* option. Refer to Figure 27 for the location of this information.

2. Select the *Show Captured Messages* option by keying a **7** at the *Enter Command* prompt.

   The *Enter Capcode to Display or <CR> for All* prompt displays.

3. If you only want to view the messages that reference a particular capcode, enter the capcode at the *Enter Capcode to Display or <CR> for All* prompt and press the ENTER key.

   If you want to view all messages, regardless of the capcode, simply press the ENTER key while the prompt is displayed.

   In either of the above cases, the appropriate messages are displayed. Refer to the following figure for a sample. The receiving capcode, page type, date and time page was sent, and contents of the message are listed.

```
2055544    P    10/02    02:02:28        [CALL YOUR WIFE ASAP AT 555-6666 ]
0077999    P    10/02    02:07:43        [MRS WHYTRIE  445-6677 PT:  JAMES
                                          GREENE REG DR :  JURRIE   PLEASE CALL
                                          HOSPITAL FOR ADMITTANCE]
1405555    P    10/02    02:08:09        [PLEASE CALL JAN @432-1234 RE: PHONE
                                          LINES]
0188888    P    10/02    02:50:46        [PLEASE CALL 888-9090]
1133454    F    10/02    02:53:34        [CALL FRONT OFFICE AT YOUR
                                          CONVENIENCE]


Hit any key to continue._
```

*Figure 22   Sample Captured Messages*

4.  Press the ENTER key to view any additional messages not displayed on the current screen.  The message "End of Messages" displays once all captured messages have been displayed.

5.  Press any key to return to the Search Menu.


# 7.8 Clear Captured Messages

Once you have reviewed the captured messages, the messages can be cleared from internal memory using the *Clear Captured Messages* option provided on the Search Menu.  Note, once the messages are cleared using this option, you can no longer view those messages.  This function should be performed on a periodic basis to ensure that the memory does not become overloaded.  The actual amount of memory being used for captured messages displays on the Search Menu under the *Show Captured Messages* option.

Perform the following steps to clear any captured messages.

1.  Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

    The Search Menu displays.

2.  Select the *Clear Captured Messages* option by keying an **8** at the *Enter Command* prompt.

The *Do You Want to Clear all Stored Messages* prompt displays.

3.   Enter a **Y** at the prompt and press the ENTER key if you want to clear all captured messages.

If you no longer want to clear all captured messages, key a **N** at the prompt and press the ENTER key.

In either of the above cases, the Search Menu is redisplayed.

# 7.9 Enable Auto-Save Capcode

The *Enable Auto-Save Capcode* option allows you to automatically add a capcode to the capcode serach list when a search string match occurs.

Perform the following to enable the auto-save capcode functionality.

1.   Select the *Search Menu* option from the Main Menu by keying a **2** at the *Enter Command* prompt.

The Search Menu displays.

2.   Select the *Enable Auto-Save Capcode* option by keying a **0** at the *Enter Command* prompt.

The Search Menu redisplays.  The auto-save capcode functionality has been enabled.  The *Disable Auto-Save Capcode* option now displays on the Search Menu indicating that the auto-save functionality has been enabled.

3.   To disable the auto-save capcode functionality, select the *Disable Auto-Save Capcode* option by keying a **0** at the *Enter Command* prompt.

The Search Menu redisplays.  The auto-save capcode functionality has been disabled.  The *Enable Auto-Save Capcode* option now displays on the Search Menu.

This page intentionally left blank

# SECTION 8: VIEWING STATISTICS

The Verifier II allows you to view the current and last 23 hours of statistics. The following section discusses how to display the statistics and how to clear the statistics once they are no longer needed.

This page intentionally left blank

# 8.1 Displaying the Statistics

Statistics for the current hour and the preceding 23 hours are stored by the Verifier II. This data can be displayed as a result of selecting the ***Display Stats*** option provided on the Stats Menu. Note, the 24 hours only includes time when the communications receiver is turned on. If the communications receiver was turned off at any time during the 24 hours, the down time is not included in the 24 hours.

Perform the following steps to display the statistics.

1.  Select the ***Stats Menu*** option from the Main Menu by keying a **3** at the *Enter Command* prompt.

    The Stats Menu displays.
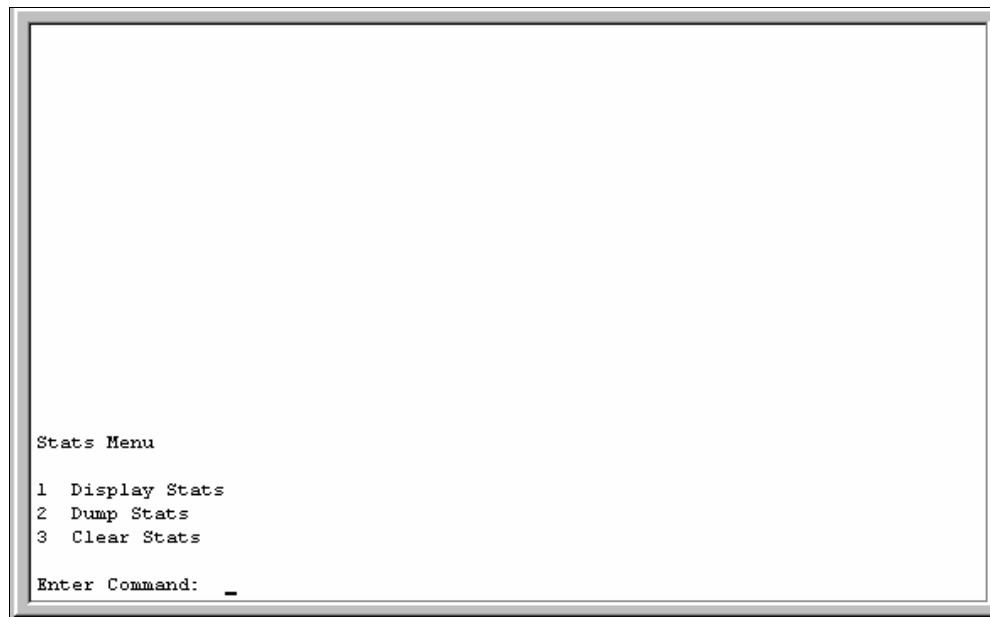


```
Stats Menu

1  Display Stats
2  Dump Stats
3  Clear Stats

Enter Command:  _
```

*Figure 23   Stats Menu*

2.  Select the ***Display Stats*** option by keying a **1** at the *Enter Command* prompt.

    The Statistical screen displays.

```
Current
Fmt Speed   Pream Batch    Pages M-Words I-Wds C-Err U-Err Time        Total

F 1600-2        0     0        0       0     0     0     0 00:00.0000
F 3200-2        0     0        0       0     0     0     0 00:00.0000
F 3200-4        0     0        0       0     0     0     0 00:00.0000
F 6400-4        0     0        0       0     0     0     0 00:00.0000
P 2400          0     0        0       0     0     0     0 00:00.0000
P 1200         81   416      709    3395  2552   783     2 03:12.4608
P 512           2    18       22     184    82    36     0 00:19.3500 03:31.8108

Hour Starting 10/02 04:00
Fmt Speed   Pream Batch    Pages M-Words I-Wds C-Err U-Err Time        Total

F 1600-2        0     0        0       0     0     0     0 00:00.0000
F 3200-2        0     0        0       0     0     0     0 00:00.0000
F 3200-4        0     0        0       0     0     0     0 00:00.0000
F 6400-4        0     0        0       0     0     0     0 00:00.0000
P 2400          0     0        0       0     0     0     0 00:00.0000
P 1200         20    57      110     407   395   127     1 00:26.7981
P 512           1    11       12      94    70    31     0 00:11.8000 00:38.5981

Hit any key to continue.
```

*Figure 24   Statistical Screen*

3.   The following fields display on the Statistical screen.

| Field | Field Definition |
|---|---|
| Format | P indicates that the paging format is POCSAG.  F indicates that the paging format is FLEX. |
| Speed | The speed at which the messages where transmitted. |
| Preamb | Generally, the start of a group of pages.  A group may contain several batches of pages, but they must all be of the same speed and format. |
| Batch | The number of POCSAG batches or FLEX packets. |
| Pages | The number of pages in the batch or packet. |
| M-Words | The number of message words within the pages. |
| I-Wds | The number of idle or unused words used to fill parts of a batch. |

C-Err       The number of corrupted words that were received and corrected.  Note, this indicates a received error (such as weak signal, interference, etc.); this does not indicate a transmitted error.

U-Err       The number of corrupted words that were received and could not be corrected.  This indicates a received error (such as a weak signal, interference, etc.).

Time       The air time spent in each format.

Total       The total air time used per hour.  This information can be used to indicate channel usage.

4.    Press any key to view subsequent screen pages of data.  The message "End of Stats" displays once all the statistics have been displayed.

5.    Press any key to return to the Stats Menu.


# 8.2 Dump Stats

The *Dump Stats* option displays the current and last 23 hours of statistics in Comma Delineated format.  This statistical information can be captured by a PC and terminal and then imported to a spreadsheet, word processing program, or printed.

Perform the following steps to view the statistics in Comma Delineated format.

1.    Select the *Stats Menu* option from the Main Menu by keying a **3** at the *Enter Command* prompt.

The Stats Menu displays.

2.    Select the *Dump Stats* option by keying a **2** at the *Enter Command* prompt.

The Stats - Comma Delineated Format screen displays.

```
10/02 04:00,F 3200-2,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 04:00,F 3200-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 04:00,F 6400-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 04:00,P 2400   ,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 04:00,P 1200   ,00020,00057,0000110,0000407,00395,00127,00001,00:26.7981
10/02 04:00,P 512    ,00001,00011,0000012,0000094,00070,00031,00000,00:11.8000
10/02 03:00,F 1600-2,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 03:00,F 3200-2,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 03:00,F 3200-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 03:00,F 6400-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 03:00,P 2400   ,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 03:00,P 1200   ,00028,00116,0000214,0000863,00779,00264,00000,00:53.9268
10/02 03:00,P 512    ,00007,00066,0000096,0000654,00306,00146,00000,01:10.9125
10/02 00:00,F 1600-2,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 00:00,F 3200-2,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 00:00,F 3200-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 00:00,F 6400-4,00000,00000,0000000,0000000,00000,00000,00000,00:00.0000
10/02 00:00,P 2400   ,00001,00007,0000076,0000035,00000,00091,00015,00:01.6109
10/02 00:00,P 1200   ,00043,00179,0000322,0001280,01262,00389,00000,01:23.2047
10/02 00:00,P 512    ,00002,00014,0000030,0000120,00074,00037,00000,00:15.1000


End of Stats
Hit any key to continue. _
```

**Figure 25   Stats - Comma Delineated Format Screen**

3.  Press any key to view subsequent screen pages of data.  The message "End of Stats" displays once all the statistics have been displayed.

4.  Press any key to return to the Stats Menu.

# 8.3 Clear Stats

The Clear Stats option allows you to clear the statistics for the last 24 hours and reset the statistical counts to zero (0).

Perform the following steps to clear the statistical information.

1.  Select the *Stats Menu* option from the Main Menu by keying a **3** at the *Enter Command* prompt.

    The Stats Menu displays.

2.  Select the *Clear Stats* option by keying a **3** at the *Enter Command* prompt.

    The *Do You Want to Clear Statistics* prompt displays.

3.  Key a **Y** at the *Do You Want to Clear Statistics* prompt and press the ENTER key to clear the statistics and reset the counts to zero (0). The message "Stats Cleared" displays. Press the ESCAPE or ENTER key to return to the Stats Menu.

    Key a **N** at the prompt and press the ENTER key if you no longer want to clear the statistics and reset the counts. The Stats Menu redisplays.

This page intentionally left blank

# APPENDIX A: WARRANTY INFORMATION

## *WARRANTIES*

For a period not to exceed one year from the date of purchase, Hark Technologies guarantees that the electronic equipment sold will be fit for the ordinary purposes for which they are supplied, and will conform to the property description and statements of fact contained within any applicable brochure and labels provided with the product. However, upon the cessation of the one year warranty, Hark makes no warranty, expressed or implied, that the equipment is merchantable and/or fit for any particular purposes.

The Seller warrants that the goods covered by this agreement shall be free from defects in material and workmanship for one year when use under normal conditions and for the purpose for which they are sold. However, the warranty period for expendable parts, such as bulbs and fuses shall be limited to thirty days.

This warranty does not extend to damage incurred by natural causes such as lightning, fire, floods, or other catastrophes, damages caused by environmental extremes such as power surges and/or transients or willful, malicious, reckless, negligent acts or misuse by the purchaser or third parties.

All warranty work must be performed at HarkTechnologies. No credit will be given for unauthorized repair work attempted by the customer or other unauthorized repair facilities. In/warranty merchandise must be shipped freight prepaid to the nearest Hark Technologies facility.

A Return Materials Authorization (RMA) Number must be obtained from Hark Technologies customer service department prior to returning any equipment, in/warranty, or otherwise to Hark Technologies for repair. Equipment received without the proper RMA number will be returned to the shipper.

All goods and materials are carefully tested and inspected before leaving the point of manufacture; however, as it is impossible to always detect imperfections, the only guarantee that is given by us, or for which we are in any way liable, is to repair or replace such goods as prove defective, when used for the purposes for which manufactured. All replaced goods are to be returned to us transportation prepaid. Under no circumstances are we responsible for any other damages, incidental, consequential, or otherwise, nor in any case shall we be responsible for any damages beyond the price of the goods. No damages or charges of any kind, for labor, expenses, or otherwise suffered or incurred by the customer in replacing or repairing defective goods or otherwise occasioned by the customer will be allowed.

Written notice must be promptly given to the Seller of any perceived failure of the equipment sold, in order to fulfill the warranty, and in no event shall notice be given more than ten days after the discovery of the product defect. The notice shall state in what parts and wherein the warranty has failed and reasonable time shall be given to the Seller to remedy the difficulty. Failure to provide adequate notice within the required time frame shall be conclusive evidence of due fulfillment of the warranty on the part of the Seller, and that the product is satisfactory to the Purchaser, and that the Seller shall be released from all liability under the warranty.

### *DISCLAIMER OF WARRANTIES*

**THE WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THIS PURCHASE. ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.**

**IT IS UNDERSTOOD AND AGREED THAT UNDER NO CIRCUMSTANCES SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, WHETHER THE THEORY OF LIABILITY IS BASED IN CONTRACT, TORT, UNDER ANY WARRANTY, OR IN NEGLIGENCE. THE PRICE AS STATED FOR THE WARRANTY IS A CONSIDERATION FOR LIMITING SELLERS WARRANTY. FURTHER, NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THE TRANSACTIONS UNDER THIS AGREEMENT MAY BE BROUGHT BY THE PURCHASER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.**

### *BREACH OF AGREEMENT*

In the event that the terms or conditions of this Agreement are breached, then Hark is entitled to have the customer pay all reasonable court costs, attorney fees and expenses that shall be made or incurred by Hark in enforcing this Agreement; and the parties agree that the terms and conditions of this Agreement shall be binding on, apply and inure to their respective heirs, executors, administrators, successors and assigns.

This invoice shall be construed and governed by the laws of the State of South Carolina AND VENUE IN ANY LITIGATION PURSUANT TO THIS INVOICE SHALL BE IN CHARLESTON COUNTY, SOUTH CAROLINA.

### *ALTERATIONS AND CHANGES*

Any alterations for deviations from the above specifications that involve extra material, costs or additional or more costly labor will require extra charges. These extra charges will be billed over and above the proposal amount.

### *PROPOSAL GOOD FOR THIRTY (30) DAYS*

The price given in the proposal for material and labor is an offer that shall bind Hark for 30 days. If the proposal is not accepted within 30 days, then Hark has the option of revoking its proposal.

### *AGREEMENT SUBJECT TO APPROVAL BY MANAGEMENT*

This offer is subject to management's approval. If terms of payment are: cash on completion, or if this is a credit sale, this offer is also subject to approval by Hark's credit manager.

### *ACTS BEYOND HARK'S CONTROL*

Hark Technologies is not responsible for delays in delivery or for delays in installation due to weather, fire, strikes, governmental regulations, or other causes unforeseen or beyond it's control.

### *SECURITY AGREEMENT*

Hark Technologies may require as a condition to this Agreement that the customer execute a security agreement to safeguard its position as a creditor in extending payment terms to the customer. In the event that Hark requires collateral, the customer agrees to provide a promissory note and a security agreement (and UCC-1) in the manner acceptable to Hark Technologies.

### *BAD CHECKS & C.O.D.*

A service charge of $25.00 will be applied to each returned check. Accounts 60 days old will be placed on C.O.D. and technical service shall be withheld. Legal action will be taken after the account is 90 days old.

### *RETURNS*

No returned goods will be accepted without a Returned Merchandise Authorization Number.

### *HANDLING/RESTOCKING CHARGE*

A restocking charge of 20% will be made on all goods returned unless due to error caused by Supplier.

### *EQUIPMENT PACKING*

Packing instructions: Equipment to be returned to Hark Technologies for repair must be packed in the original packing supplied by the factory. If the original packing is not available, Hark Technologies will provide it to you for a nominal fee. Customer packing materials can be used, providing the precautions are taken to provide adequate static protection for the equipment.

> DO NOT PACK HARK EQUIPMENT IN STYROFOAM PEANUTS ONLY
>
> Repairs necessitated due to improper packing will be billed at the standard factory repair rate.

Hark Technologies, Inc. will repair or replace equipment and return to customer, freight prepaid, within the continental United States. Equipment found not to be defective will be returned at purchaser's expense and will include cost of handling, testing and returning of equipment.

Out-of-warranty repairs will be billed at the established factory flat rate per hour, plus components needed for replacement.

### *TITLE*

Title to and all goods or material hereafter purchased shall remain with Supplier until full purchase price has been paid.

### *ENTIRE AGREEMENT*

This Agreement constitutes the entire agreement between the parties hereto; and this Agreement shall not be modified, amended, altered, or changed except by a written agreement signed by the party sought to be charged. However, change orders may be made by an oral agreement as enumerated in the "Alterations and Changes" section above.

This page intentionally left blank

# APPENDIX B: CANCELLATION

Buyer may by written notice to Seller within five (5) days of the merchandise received date cancel any contract or agreement arising here under, for other than the default of the Seller and at its convenience, in which the Buyer shall pay the Seller twenty percent (20%) of the above total price for all products and accessories as a restocking charge.

This page intentionally left blank