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**OPERATOR MANUAL
FOR THE KEARFOTT
WINDOWS BASED BOOT LOADER SOFTWARE
(WINBOOT)**

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1 Introduction

WINBOOT is the user interface for the Kearfott Corporation, Guidance & Navigation Division (KGN) Boot Loader software loaded in an inertial system computer. It runs on any Windows PC with a high-speed serial port available. It may be run under the control of a batch file or as an interactive tool. In the batch mode, the tool starts as though in the interactive mode, but commands are taken from a supplied batch file. At the end of the file, the tool returns to the interactive mode. As an interactive tool, it allows the user to select commands from a menu or from buttons and executes each command. Results are displayed on the screen and the tool waits for the next command. For commands that take longer than a few seconds to execute, like Burn (Program) or Verify (Program), it displays a simple progress indicator. In most instances it is used with a supplied batch file.

The primary goal for the Boot Loader is to allow loading an operational program into the system. Other capabilities include the ability to verify the program in memory against the original program file, and the ability to load and store data in the data storage EEPROMs - both serial and parallel. WINBOOT also displays status information automatically determined by the Boot Loader such as the type and number of EEPROMs in the system available for program and data storage, whether or not an operational program has been stored, and descriptive information about the stored program.

2 Program Execution

WINBOOT is designed to run from a Windows shortcut or double clicking on "WINBOOT.exe" in the PC directory. On launching, WINBOOT presents the main window:

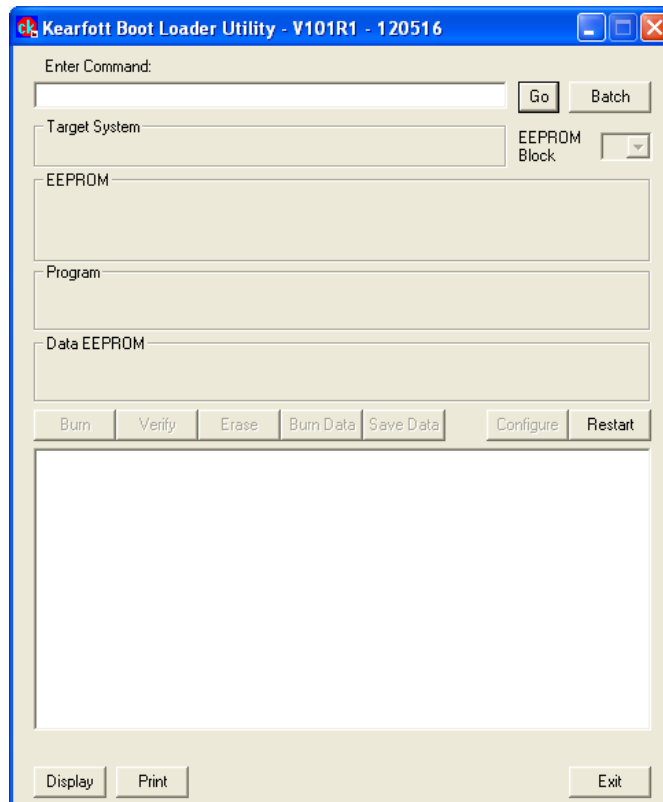


Figure 1 WINBOOT Main Window

The Title Bar of the main window identifies WINBOOT and which version is in use. The Enter Command window is at the top of the main window and is normally not used. The Target Status area is immediately below that and occupies the top half of the main window. The Target Status area contains information about the 'Target System', the amount and type of program storage 'EEPROM' that is available and whether it contains an operational 'Program'. It also reports on any 'Data EEPROM' in the target system.

The top right of the main window contains the Batch command button and the EEPROM Block selection window. A line of Command Buttons is below the Target Status area, separating it from the Information Display area. The bottom of the main window contains the Progress and Message area with another line of buttons below that.

3 Connecting To a Target

WINBOOT connects to the target system using an RS232 or RS422 serial line. It uses the standard Windows communications interface. Any port that appears to Windows as a COM port (in the range COM1 to COM64) may be used. The port must be able to run at 115200 bits/second, odd parity with 8 data bits and 1 stop bit as these are the settings required by WINBOOT. The first COM port available to Windows is the default selection if no other indication is made.

WINBOOT uses a handshake sequence to establish communication with the Kearfott Boot Loader. The Boot Loader checks each of its serial ports for the first half second after startup looking for the WINBOOT handshake sequence. If it does not see the handshake, it transfers control to the stored operational program. Once this has happened, the Boot Loader is no longer available.

3.1 Batch Command File

The batch file is a binary format that has an extension of '.KGN'. Kearfott will normally provide the binary batch file via email or a Kearfott FTP site (must use binary mode doing FTP transfer). When the last command has been executed from the batch file, WINBOOT will return to interactive command processing.

A batch file is started interactively at any time with the 'Batch' command button and available batch files are seen. Double click on the batch file to be executed.



Figure 2 Batch File (.KGN) Selection Screen

The first step is to make sure that the desired serial port on the PC is connected to (any) one of the serial ports on the target system.

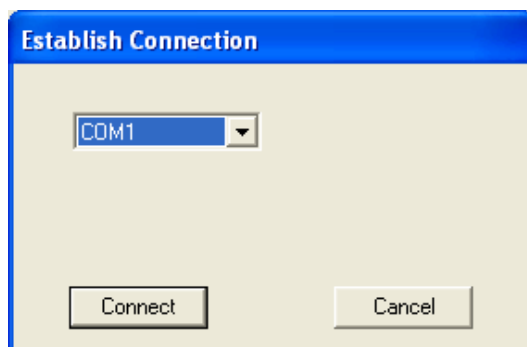


Figure 3 Connection Pop-Up Window

The pull-down arrow will show all serial ports that may be used and allow selecting a different port if required.

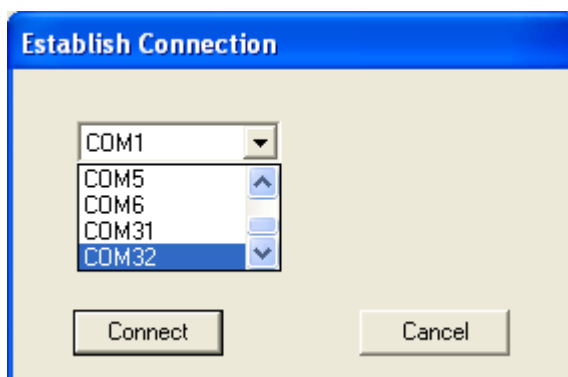


Figure 4 Connection Pop-Up Window Serial Port Pull Down

When the selections are correct, click on the 'Connect' button.

The system will display a message to start the target system and will wait until that happens. Apply power to the INU.

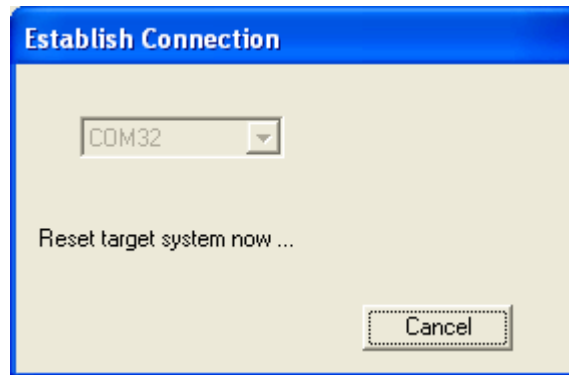


Figure 5 Reset target system Display

As soon as communication is established, WINBOOT will get status information from the target and display it in the Target System area.

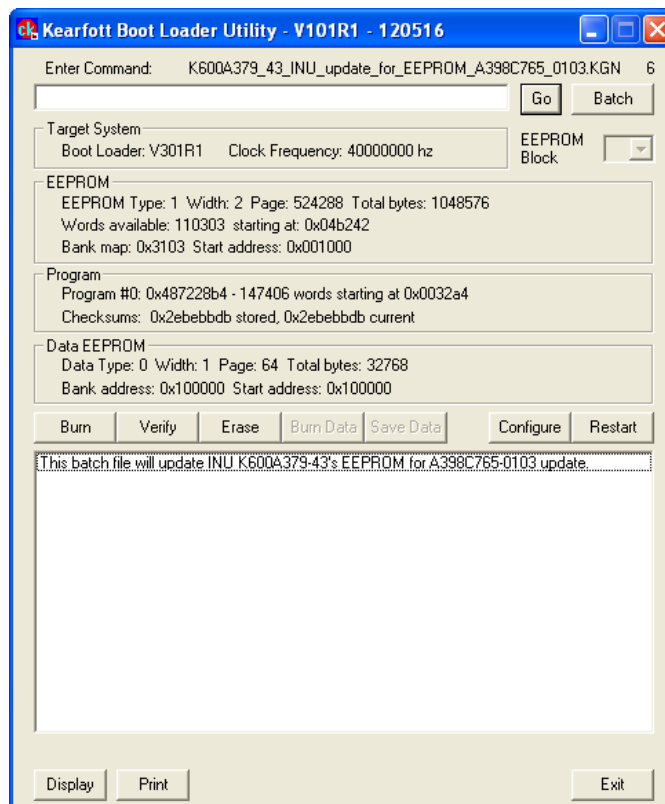


Figure 6 Communication established with the INS

If WINBOOT fails to get a response from the target system at any time, it will gray out the Target System area. This is a sign that communications with the target has been lost for some reason. To re-establish communication, click on the 'Restart' button. This will usually also require restarting the target system.

At some point in the execution of the batch file, a comment for saved EEPROM files may be entered. The “Enter comment” pop-up window will appear.

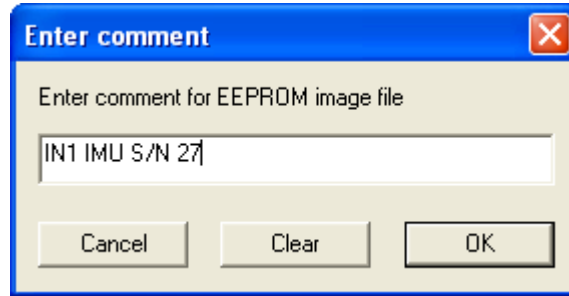


Figure 7 Enter Comment Pop-up Window

Enter the comment and click on “OK.” If no comment is to be entered, click on “Cancel.” If a comment was entered previously it is shown. To change the comment click on “Clear” and enter the new comment and click on “OK.”

If EEPROMs are saved they will be stored in the same directory as the WINBOOT program. The file name will be the PC time the file was written in HEX and the extension will be the of the form “.Nxx” where “xx” will be the number of the EEPROM block (normally 00 to 09).

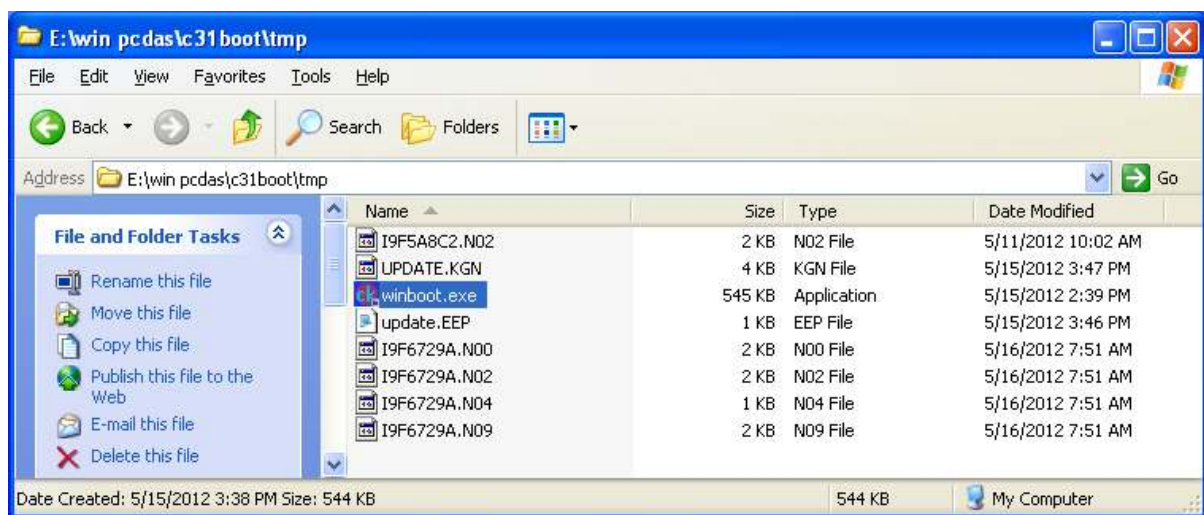


Figure 8 Saved EEPROM Files

As a batch file executes, each command line will appear above the 'Batch' button. It will also show the line number of the command in the file. Execution will continue as each command is completed unless the command was 'Pause' or an error occurs. Following a 'Pause' clicking on the 'Batch' button will resume batch file processing with the next line in the file.

In the case of an error occurring the batch file processing will be aborted with a warning message the display will show "An error occurred, BATCH file aborted".

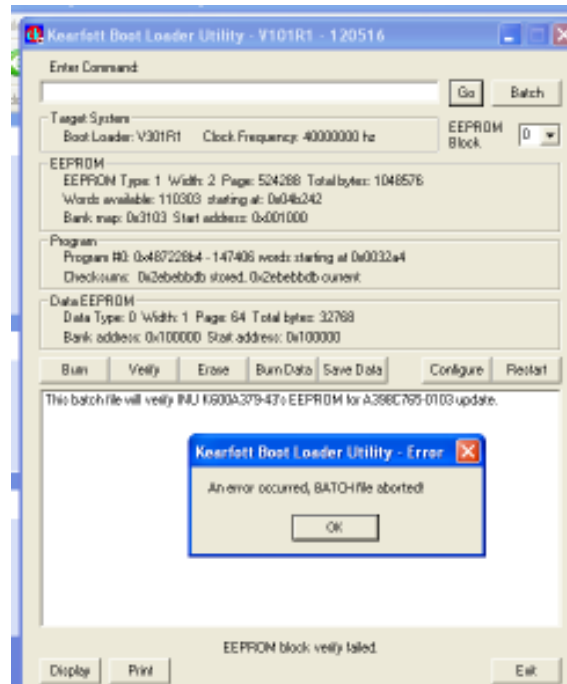


Figure 9 WINBOOT Main screen following an error in a Batch file

Click "OK" then click "Exit" and remove power from the INU.

At the completion of the batch file, a comment will be seen. The program is terminated by clicking “Exit” and removing power from the INU.

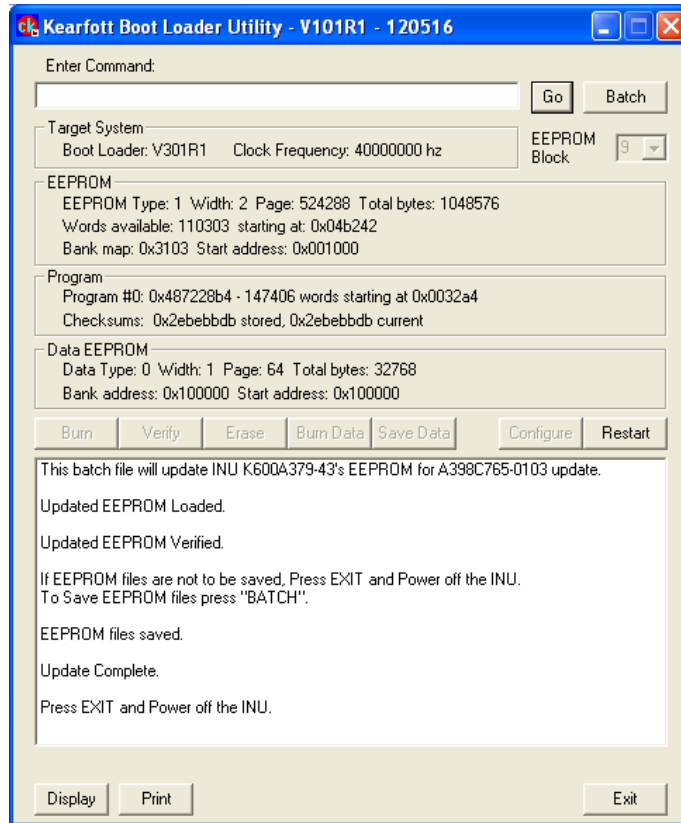


Figure 10 WINBOOT Main screen following completion of a Batch file

3.2 Dedicated Command buttons:

3.2.1 Burn:

Download operational software to the target system.

3.2.2 Verify:

Verify the operational software currently loaded in the target system.

3.2.3 Erase:

Erase the operational software currently loaded in the target system. This is only required if there is not sufficient room in the target EEPROM memory to load software or if the currently loaded software is the 15th load since the last erase command.

3.2.4 Burn Data:

Load new data to a block of EEPROM data. The data comes from an EEPROM image file. If the EEPROM block contains BIT history, this button will clear the history. If the block contains Elapsed Time information, this button allows setting the current elapsed time value.

3.2.5 Save Data:

Save the data from an EEPROM block to an EEPROM image file.

3.3 Control buttons:

3.3.1 Batch:

Start or continue execution of a Batch Command File.

3.3.2 Configure:

Allow Changing WINBOOT Options. This can be used to change options from their default settings or from settings made using command line options.

3.3.3 Restart:

Start the process of Connecting To a Target system.

3.3.4 Display:

A sub-menu allows clearing the Information Display window or selecting items of information to display.

3.3.5 Print:

Send contents of the Information Display window to a printer.

3.3.6 Exit:

End WINBOOT.