

# Versatile Express™ Boot Monitor

## Reference Manual



# Versatile Express Boot Monitor

## Reference Manual

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# Chapter 1

## Versatile™ Express Boot Monitor Reference

This chapter describes using the Versatile™ Express Boot Monitor provided with the Motherboard Express  $\mu$ ATX. It contains the following sections:

- *About the Boot Monitor* on page 1-2
- *About the platform library* on page 1-3
- *Using the Boot Monitor* on page 1-4
- *Boot Monitor command reference* on page 1-6.

## 1.1 About the Boot Monitor

This is the standard ARM application that runs when the system is booted. It is built with the ARM platform library.

———— **Note** —————

Any application that is built using the ARM platform library, or handles its own initialization, can replace the Boot Monitor.

The Virtual Express Boot Monitor supports the following functions:

- General file operations.
- *MultiMedia Card* (MMC), *CompactFlash* (CF), and *Secure Digital* (SD) card utilities.
- Loading and running another application.
- A semihosting server that handles standard ARM semihosting SVC calls.

## 1.2 About the platform library

The ARM platform library handles the system initialization and re-targets the standard C library. To achieve this, it provides a basic I/O subsystem that supports simple device drivers.

The platform library provides:

- A simple terminal driver.
- UART, PS/2 keyboard, and LCD drivers.
- Support for semihosting I/O.

## 1.3 Using the Boot Monitor

The Versatile Express Boot Monitor is a collection of tools and utilities designed to help develop applications on the Versatile Express development platform.

### 1.3.1 Boot Monitor configuration

User switches on the motherboard or in the config.txt file control Boot Monitor configuration.

#### USERSWITCH[0]

Table 1-1 shows how the setting of USERSWITCH[0] in the config.txt file determines how the Boot Monitor starts after a reset.

**Table 1-1 Function of USERSWITCH[0]**

[0]	Description
OFF	A prompt is displayed enabling you to enter Boot Monitor commands.
ON	The Boot Monitor executes a boot script that has been loaded into an MMC or <i>Secure Digital</i> (SD) card. If a boot script is not present, the Boot Monitor prompt is displayed.

The boot script can execute any Boot Monitor commands. It typically selects and runs an application image that has been stored in either NOR flash memory, or on the SD card. You can store one or more code images in flash memory and use the boot script to start an image at reset. Use the SET BOOTSCRIPT command to set the boot script file name from the Boot Monitor. See Table 1-3 on page 1-6.

#### USERSWITCH[2:1]

Table 1-2 describes how the setting of USERSWITCH[2:1] controls text input and output for applications STDIO calls and Boot Monitor I/O.

**Table 1-2 Function of USERSWITCH[2:1]**

User switch 1	User switch 2	Output	Input	Description
OFF	OFF	UART0 or console	UART0 or console	STDIO autodetects whether to use semihosting I/O or a UART. If a debugger is connected and semihosting is enabled, STDIO is redirected to the debugger console window. Otherwise, STDIO goes to UART0.
OFF	ON	UART0	UART0	STDIO is redirected to UART0. This occurs even under semihosting.
ON	OFF	LCD	Keyboard	STDIO is redirected to the LCD and keyboard. This occurs even under semihosting.
ON	ON	LCD	UART0	STDIO output is redirected to the LCD and input is redirected to the UART0. This occurs even under semihosting.

The USERSWITCH[2:1] bits do not affect file I/O operations performed under semihosting. Semihosting operation requires a debugger and a JTAG interface device.

## USERSWITCH[7:3]

The Boot Monitor does not use the USERSWITCH[7:3] bits and these bits are always available for user applications. If a different loader program is present at the boot location, the function of USERSWITCH and CFGSWITCH is implementation-dependent. See the configuration information in the documentation supplied with your motherboard.

### 1.3.2 Running the Boot Monitor

This section describes how to run the Boot Monitor and have it display a prompt to a terminal.

The Boot Monitor accepts user commands from the debugger console window or an attached terminal. A command interpreter carries out the necessary actions to complete the user commands.

To run Boot Monitor and have it display a prompt to a terminal connected to UART0, set User Switches [0], [1], and [2] to OFF, and reset the system. Standard input and output functions use UART0 by default.

The default setting for UART0 is:

- 38400 baud.
- 8 data bits.
- No parity.
- 1 stop bit.

There is no hardware or software flow control. Use these values to configure a terminal application on your PC to communicate with the Boot Monitor.



## 1.4 Boot Monitor command reference

The Boot Monitor is the standard ARM application that runs when the Versatile Express development platform is reset.

———— **Note** ————

- Commands are accepted in uppercase or lowercase. The Boot Monitor accepts abbreviations of commands if the meaning is not ambiguous. For example, for QUIT, you can type QUIT, QUI, QU, Q, quit, qui, qu, or q.
- Optional parameters for commands are indicated by *[param]*. For example DIRECTORY *[directory]* indicates that the DIRECTORY command can take an optional parameter to specify which directory to list the contents of. If no parameter is supplied, the default is used, in this case, the current directory.
- Type HELP at the Boot Monitor prompt to display a full list of the available commands.
- You must set the appropriate switch setting to start the Boot Monitor after reset. See [Boot Monitor configuration on page 1-4](#).

The Boot Monitor has the following command sets:

- The default command set is available when the Boot Monitor starts. See [Default command set](#). This command set remains enabled until you switch to one of the alternate command sets.
- Entering SDCARD enables the commands for flash memory cards. See [MMC, SD, and CompactFlash card sub-menu commands on page 1-8](#).
- Entering CONFIGURE enables the configuration commands. See [Boot Monitor Configure commands on page 1-9](#).
- Entering DEBUG enables the debug commands. See [Boot Monitor Debug commands on page 1-11](#).
- Entering FLASH enables the flash commands for the NOR flash on the motherboard. See [Boot Monitor NOR flash commands on page 1-12](#).

### 1.4.1 Default command set

[Table 1-3](#) shows the standard Boot Monitor command set for the Versatile Express development platform.

**Table 1-3 Standard Boot Monitor command set**

Command	Action
@ <i>script_file</i>	Run a script file.
ALIAS <i>alias commands</i>	Create an alias command <i>alias</i> for the string of commands contained in <i>commands</i> .
CD <i>directory path</i>	Change directory.
CLEAR BOOTSCRIPT	Clear the current boot script. If no boot script is set and the run boot script switch is set the boot monitor will run the default BOOTSCRIPT from flash.
CONFIGURE	Enter the Configure subsystem. You can now execute the commands that <a href="#">Boot Monitor Configure commands on page 1-9</a> describes.

Table 1-3 Standard Boot Monitor command set (continued)

Command	Action
CONVERT BINARY <i>binary_file</i> LOAD_ADDRESS address[ENTRY_POINT address]	Provide information to the system that is required by the RUN command to execute a binary file. A new file with the name <i>binary_file</i> is produced, but with an .exe file extension.
COPY <i>file1 file2</i>	Copy <i>file1</i> to <i>file2</i> . For example, to copy the leds code from the PC to the MMC or SD card, type the following: COPY C:\software\projects\examples\rvds2.0\leds.axf leds.axf  ———— <b>Note</b> ———— Remote file access requires semihosting. Use a debugger connection to provide semihosting.
CREATE <i>file name</i>	Create a new file by inputting text. Enter +++ on a new line to signal the end of the boot script.
DEBUG	Enter the debug subsystem. You can now execute the commands that <a href="#">Boot Monitor Debug commands on page 1-11</a> describes.
DELETE <i>file name</i>	Delete <i>file name</i> from MMC or SD card or CompactFlash card.
DIRECTORY [ <i>directory</i> ]	List the files in a MMC, SD card, or CompactFlash card directory. Files that are only accessible from semihosting cannot be listed.
DISPLAY BOOTSCRIPT	Display the current boot script.
ECHO <i>text</i>	Echo <i>text</i> to the current output device.
EXIT	Exit the Boot Monitor. The processor is held in a tight loop until a JTAG debugger interrupts it.
FLASH	Enter the flash file system for the NOR flash on the Motherboard Express μATX. You can now execute the commands that <a href="#">Boot Monitor NOR flash commands on page 1-12</a> describes.
HELP [ <i>command</i> ]	List the Boot Monitor commands. Entering HELP followed by a command displays help for that command.
LINUX BOOT <i>image name</i> LOAD_ADDRESS address [ENTRY_POINT address] [ <i>kernel command line...</i> ]	Load Linux image <i>image name</i> and run it. If the ENTRY_POINT is specified, it replaces the load address as the entry point. You can specify a text file <i>file name</i> containing the kernel command line.
LINUX BOOT <i>image name</i> LOAD_ADDRESS address [ENTRY_POINT address] [FILE <i>file name</i> ]	
LINUX FDT <i>image name</i> LOAD_ADDRESS address	Load FDT image <i>image name</i> .
LINUX INITRD <i>image name</i> LOAD_ADDRESS address	Load initrd image <i>image name</i> .
LOAD <i>name</i>	Load the image <i>name</i> into memory and run it.
M:	Change drive, allocated to MMC or SD card.
K:	Change drive, allocated to CompactFlash card.
MKDIR <i>directory path</i>	Create a new directory.

Table 1-3 Standard Boot Monitor command set (continued)

Command	Action
QUIT	Alias for EXIT. Exit the Boot Monitor. The processor is held in a tight loop until a JTAG debugger interrupts it.
REBOOT	Power down and then restart the system.
RESET	Perform a reset of the daughterboards.
RENAME <i>old_name new_name</i>	Rename file named <i>old_name</i> to <i>new_name</i> .
RMDIR <i>directory path</i>	Remove a directory.
RUN <i>image_name</i>	Load the image <i>image_name</i> into memory and run it.
SDCARD	Enter the SD card subsystem. You can now execute the commands that <i>MMC, SD, and CompactFlash card sub-menu commands</i> describes.
SET BOOTSCRIPT <i>script_file</i>	Specify <i>script_file</i> as the boot script. This script will run at system reset if the run boot script switch is set.
SHUTDOWN	Power down the whole system except for the <i>Motherboard Configuration Controller (MCC)</i> which enters standby state.
TYPE <i>file name</i>	Display the file <i>file name</i> .
VERIFY <i>file1 file2</i>	Compare two files <i>file1</i> to <i>file2</i> and report the first nine errors.

#### 1.4.2 MMC, SD, and CompactFlash card sub-menu commands

The Boot Monitor includes a set of MMC, CF, and SD card commands, SDCARD.

Enter SDCARD while the main command set is active to enable the SDCARD commands.

Table 1-4 shows the commands for the SDCARD sub-menu.

Table 1-4 MMC, SD, and CompactFlash card command set

Command	Action
EXIT	Exit the SDCARD commands and return to executing standard Boot Monitor commands that <i>Default command set on page 1-6</i> describes.
FORMAT <i>drive</i> [QUICK] [VOLUME <i>label</i> ]	Format MMC, SD card, or CompactFlash card for use: <i>drive</i> Specifies the drive letter. QUICK Performs a quick format by overwriting the FAT. VOLUME <i>label</i> Sets the disk label.
HELP [ <i>command</i> ]	List the SDCARD sub-menu commands. Entering HELP followed by a command displays help for that command.
IDENTIFY	Display CompactFlash card information.
INFORM <i>drive</i> [CSD CID SCR SDS]	Display SD Card Information: <i>drive</i> Specifies the drive letter. CSD Returns information from the CSD register. CID Returns information from the CID register. SCR Returns information from the SCR register. SDS Issues SD_STATUS command and returns the results.

**Table 1-4 MMC, SD, and CompactFlash card command set (continued)**

Command	Action
INITIALISE [ <i>socket</i> ]	If the card has been changed, call INITIALISE to initialize the card and the file system before using any commands, otherwise the behavior is unpredictable and the card can be corrupted. Option [ <i>socket</i> ] selects different sockets: M           Selects MCI 0. K           Selects CompactFlash.
QUIT	Alias for EXIT. Exit the SDCARD commands and return to executing standard Boot Monitor commands that <a href="#">Default command set on page 1-6</a> describes.
REBOOT	Power down and then restart the system.
RESET	Perform a reset of the daughterboards.
SHUTDOWN	Power down the whole system except for the <i>Motherboard Configuration Controller</i> (MCC) which enters standby state.

### 1.4.3 Boot Monitor Configure commands

The Boot Monitor includes a set of configuration commands.

Enter CONFIGURE while the main command set is active to enable the configuration commands.

[Table 1-5](#) shows the commands for the Configure sub-menu.

**Table 1-5 Boot Monitor Configure command set**

Command	Action
DISABLE DATA CACHE	Disable the Level 1 data cache.
DISABLE I CACHE	Disable the Level 1 instruction cache.
DISABLE MMU	Disable the MMU.
DISPLAY CLOCK [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>OSC number</i> ]	Display system clocks information for the oscillator device on the specified card. The options are: <i>site name</i> Valid site names are MB, DB1 or DB2. <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>OSC number</i> Valid oscillator number for the specified card.
<b>Note</b>	
The DCC is the <i>Daughterboard Configuration Controller</i> on the daughterboard.	
DISPLAY CURRENT [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE number</i> ]	Display the current of a device on the specified card. The options are: <i>site name</i> Valid site names are MB, DB1 or DB2. <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>DEVICE number</i> Valid device number for the specified card.
DISPLAY DATE	Display the current date.

Table 1-5 Boot Monitor Configure command set (continued)

Command	Action
DISPLAY ENERGY [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE number</i> ]	Display the requested energy in Joules: <i>site name</i> Valid site names are DB1 or DB2. <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>Device number</i> Valid device number for the specified card.
DISPLAY HARDWARE	Display hardware information, for example, the FPGA revisions.
DISPLAY POWER [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE device</i> ]	Display the requested power in Watts.
DISPLAY SCC [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>REGISTER address</i> ]	Display the contents of the <i>Serial Configuration Controller</i> (SCC) register on the specified daughterboard. The options are: <i>site name</i> Valid site names are DB1 or DB2. <i>POSITION number</i> Valid daughterboard numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>REGISTER address</i> The address of the SCC Register for the specified card.
DISPLAY TEMPERATURE [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE number</i> ]	Display the temperature of a device on the specified board. The options are: <i>site name</i> Valid site names are MB, DB1, or DB2. <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>DEVICE number</i> Valid number for the configuration controller or FPGA on the board.
<b>Note</b>	
If a single device is fitted, <i>number must</i> be 0. If two devices are fitted, <i>number</i> can be 0 or 1.	
DISPLAY TIME	Display the current time.
DISPLAY VOLTAGE [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE number</i> ]	Display the voltage of a device on the specified board. The options are: <i>site name</i> Valid site names are MB, DB1, or DB2. <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>DEVICE number</i> Valid device number for the specified card.
ENABLE DATA CACHE	Enable the Level 1 data cache.
ENABLE I CACHE	Enable the Level 1 instruction cache.
ENABLE MMU	Enable the MMU.
EXIT	Exit the configure commands and return to executing standard Boot Monitor commands that <a href="#">Default command set on page 1-6</a> describes.
HELP [ <i>command</i> ]	List the configure commands. Entering HELP followed by a command displays help for that command.
QUIT	Alias for EXIT. Exit the Configure commands and return to standard Boot Monitor commands <a href="#">Default command set on page 1-6</a> describes.
REBOOT	Power down and then restart the system.
RESET	Perform a reset of the daughterboards.

Table 1-5 Boot Monitor Configure command set (continued)

Command	Action
RESET ENERGY [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>DEVICE number</i> ]	Perform a reset of the stored energy measurement. The options are: <i>site name</i> Valid site names are <i>DB1</i> or <i>DB2</i> . <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>DEVICE number</i> Valid device number for the specified card.
SET BAUD <i>port rate</i>	Set the baud <i>rate</i> for the UART <i>port</i> specified. Valid port numbers are 0, 1, 2, 3.
SET CLOCK [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] [ <i>OSC device</i> ] FREQUENCY <i>frequency</i>	Set the <i>frequency</i> in MHz of the requested oscillator device on the specified board. The options are: <i>site name</i> Valid site names are <i>MB</i> , <i>DB1</i> or <i>DB2</i> . <i>POSITION number</i> Valid board numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. <i>OSC device</i> Valid oscillator device for the specified card.
<b>Note</b>	
The Boot Monitor does not set any of the clocks on startup. The default values in the motherboard configuration file, <i>board.txt</i> , determines the clock values.	
SET DATE <i>dd/mm/yy</i>	Set date. You can also enter the date as <i>dd-mm-yy</i> .
SET MUXFPGA [ <i>site name</i> ]	Set the source of the video output for the specified site. The option is: <i>site name</i> Valid site names are <i>MB</i> , <i>DB1</i> or <i>DB2</i> .
SET SCC [ <i>site name</i> ] [ <i>POSITION number</i> ] [ <i>DCC number</i> ] REGISTER <i>address</i> DATA <i>value</i>	Set the value of the e <i>Serial Configuration Controller</i> (SCC) register on the specified daughterboard. The options are: <i>site name</i> Valid site names are <i>DB1</i> or <i>DB2</i> . <i>POSITION number</i> Valid daughterboard numbers are from 0 to 16. <i>DCC number</i> Valid controller numbers are from 0 to 16. REGISTER <i>address</i> The address of the SCC Register for the specified card. <i>value</i> The value to set for the SCC register.
SET TIME <i>hh:mm:ss</i>	Set time. You can also enter the time as <i>hh-mm-ss</i> .
SHUTDOWN	Power down the whole system except for the MCC which enters standby state.

#### 1.4.4 Boot Monitor Debug commands

The Boot Monitor includes a set of debug commands.

Enter DEBUG while the main command set is active to enable the debug commands.

Table 1-6 shows the commands for the Debug sub-menu.

Table 1-6 Boot Monitor Debug command set

Command	Action
DEPOSIT <i>address value</i> [ <i>size</i> ]	Load memory specified by <i>address</i> with <i>value</i> . The <i>size</i> parameter is optional. If used, it can be BYTE, HALWORD, or WORD. The default is WORD.
DISABLE MESSAGES	Disable printing of debug messages.
ENABLE MESSAGES	Enable printing of debug messages.

Table 1-6 Boot Monitor Debug command set (continued)

Command	Action
EXAMINE <i>address</i>	Examine memory at <i>address</i> .
EXIT	Exit the debug commands and return to executing standard Boot Monitor commands that <i>Default command set on page 1-6</i> describes.
GO <i>address</i>	Run the code starting at <i>address</i> .
HELP [ <i>command</i> ]	List the debug commands. Entering HELP followed by a command displays help for that command.
MODIFY <i>address value mask [size]</i>	Performs read-modify-write at memory specified by <i>address</i> . The current value at the location is ORed with the result of ANDing <i>value</i> and <i>mask</i> . The <i>size</i> parameter is optional. If used, it can be BYTE, HALFWORD, or WORD. The default is WORD.
QUIT	Alias for EXIT. Exit the Debug commands and return to standard Boot Monitor commands that <i>Default command set on page 1-6</i> describes.
REBOOT	Power down and then restart the system.
RESET	Perform a reset of the daughterboards.
SHUTDOWN	Power down the whole system except for the MCC which enters standby state.
START TIMER	Start a timer.
STOP TIMER	Stop the timer started with the START TIMER command and display the elapsed time.

#### 1.4.5 Boot Monitor NOR flash commands

The Boot Monitor includes a set of NOR flash commands, FLASH.

Enter FLASH while the main command set is active to enable the NOR flash commands.

[Table 1-7](#) shows the commands for the NOR Flash subsystem.

Table 1-7 Boot Monitor NOR flash command set

Command	Action
CREATE BOOTSCRIPT [NAME <i>name</i> ] [FLASH_ADDRESS <i>address</i> ]	Create a boot script that is stored in flash. The image is identified in flash by the default name BOOTSCRIPT. This can be overridden by using the optional NAME argument. You can specify where in flash the boot script is written using the optional FLASH_ADDRESS argument.
DISPLAY BOOTSCRIPT [ <i>name</i> ]	Display boot script that is stored in flash. If the optional <i>name</i> is not specified, then the default name BOOTSCRIPT is used.
DISPLAY IMAGE <i>name</i>	Display information of image <i>name</i> .
ERASE IMAGE <i>name</i>	Erase an image or binary file from flash.
ERASE RANGE <i>start [end]</i>	Erase an area of NOR flash from the <i>start</i> address to the <i>end</i> address.
<p>————— <b>Note</b> —————</p> <p>It is only possible to erase entire blocks of flash. Therefore, the entire block of flash that contains <i>start</i>, the block that contains <i>end</i>, and all intervening blocks are erased. This might mean that data before <i>start</i> or after <i>end</i> is erased if they are not on block boundaries. If you do not specify the optional <i>end</i> parameter, only the single block of flash that contains <i>start</i> is erased.</p>	

Table 1-7 Boot Monitor NOR flash command set (continued)

Command	Action
EXIT	Exit the NOR flash commands and return to executing standard Boot Monitor commands that <a href="#">Default command set on page 1-6</a> describes.
HELP [ <i>command</i> ]	List the flash commands. Entering HELP followed by a command displays help for that command.
LINUX BOOT <i>image name</i> [LOAD_ADDRESS <i>address</i> ] [ENTRY_POINT <i>address</i> ] [ <i>kernel command line</i> ]	Load Linux image <i>image name</i> from flash and run it. If the LOAD_ADDRESS or ENTRY_POINT are specified, these replace the programmed load address or entry point. You can specify a text file <i>file name</i> containing the kernel command line.
LINUX BOOT <i>image name</i> [LOAD_ADDRESS <i>address</i> ] [ENTRY_POINT <i>address</i> ] [FILE <i>file name</i> ]	
LINUX FDT <i>image name</i> [LOAD_ADDRESS <i>address</i> ]	Load FDT image <i>image name</i> from flash. If the LOAD_ADDRESS is specified, it replaces the programmed load.
LINUX INITRD <i>image name</i> [LOAD_ADDRESS <i>address</i> ]	Load initrd image <i>image name</i> from flash. If the LOAD_ADDRESS is specified, it replaces the programmed load.
LIST AREAS	List areas in flash. An area is one or more contiguous blocks that have the same size and use the same programming algorithm.
LIST IMAGES	List images in flash.
LOAD <i>name</i>	Load the image <i>image_name</i> into memory.
QUIT	Alias for EXIT. Exit the NOR flash commands and return to standard Boot Monitor commands that <a href="#">Default command set on page 1-6</a> describes.
REBOOT	Power down and then restart the system.
RESERVE SPACE <i>address size</i>	Reserve space in NOR flash. The Boot Monitor does not use this space. <i>address</i> is the start of the area and <i>size</i> is the size of the reserved area.
RESET	Perform a reset of the daughterboards.
RUN <i>name</i>	Load the image <i>name</i> from flash and run it.
SHUTDOWN	Power down the whole system except for the MCC which enters standby state.



Table 1-7 Boot Monitor NOR flash command set (continued)

Command	Action
UNRESERVE SPACE <i>address</i>	Free the space starting at <i>address</i> in NOR flash. The Boot Monitor can use this space.
WRITE BINARY <i>file</i> [NAME <i>new_name</i> ] [FLASH_ADDRESS <i>address</i> ] [LOAD_ADDRESS <i>address</i> ] [ENTRY_POINT <i>address</i> ]	<p>Write a binary file to flash. By default, the image is identified by its file name. Use NAME <i>new_name</i> to specify a name instead of using the default name.</p> <p>Use FLASH_ADDRESS <i>address</i> to specify where in flash the image is to be located. The optional LOAD_ADDRESS and ENTRY_POINT arguments enable you to specify the load address and the entry point.</p> <p>If an entry point is not specified, the load address is used as the entry point.</p> <p>———— <b>Note</b> —————</p> <p>Remote file access requires semihosting. Use a debugger connection to provide semihosting.</p>
WRITE IMAGE <i>file</i> [NAME <i>new_name</i> ] [FLASH_ADDRESS <i>address</i> ]	<p>Write an ELF image file to flash. By default, the image is identified by its file name. For example, <code>t:\images\boot_monitor.axf</code> is identified as <code>boot_monitor</code>. Use NAME <i>new_name</i> to specify a name instead of using the default name.</p> <p>Use FLASH_ADDRESS <i>address</i> to specify where in flash the image is to be located. If the image is linked to run from flash, the link address is used and <i>address</i> is ignored.</p> <p>———— <b>Note</b> —————</p> <p>Remote file access requires semihosting. Use a debugger connection to provide semihosting.</p>

# Appendix A

## Revisions

This appendix describes the technical changes between released issues of this book.

**Table A-1 Issue A**

<b>Change</b>	<b>Location</b>	<b>Affects</b>
No changes, first release	-	-

**Table A-2 Differences between issue A and issue B**

<b>Change</b>	<b>Location</b>	<b>Affects</b>
Note changed in Boot Monitor Configure command set table. The note in the SET CLOCK command is changed to state that the clock values are determined by the default values in the motherboard configuration file, board.txt.	<a href="#">Table 1-5 on page 1-9</a>	All versions

Table A-3 Differences between issue B and issue C

Change	Location	Affects
VERIFY <i>file1 file2</i> command added to Standard Boot Monitor command set.	<a href="#">Table 1-3 on page 1-6</a>	All versions
DCC number added to Boot Monitor Configure command set in the following commands:	<a href="#">Table 1-5 on page 1-9</a>	All versions
<ul style="list-style-type: none"> <li>• DISPLAY CLOCK</li> <li>• DISPLAY CURRENT</li> <li>• DISPLAY SCC</li> <li>• DISPLAY TEMPERATURE</li> <li>• DISPLAY VOLTAGE</li> <li>• SET CLOCK</li> <li>• SET SCC</li> </ul>		
LINUX <i>image name [file name]</i> added to Boot Monitor NOR flash command set.	<a href="#">Table 1-7 on page 1-12</a>	Issue C

Table A-4 Differences between issue C and issue D

Change	Location	Affects
Document updated to latest <i>Element Definition Document (EDD)</i> .	All document	All versions
LINUX commands added:		All versions
<ul style="list-style-type: none"> <li>• LINUX <i>image name [command line information]</i></li> <li>• LINUX <i>image name [FILE] [file name]</i></li> <li>• DISPLAY POWER [<i>site name</i>] [<i>POSITION number</i>] [<i>DCC number</i>] [<i>DEVICE device</i>]</li> <li>• LINUX <i>image name [command line information]</i></li> <li>• LINUX <i>image name [FILE] [file name]</i></li> </ul>	<a href="#">Table 1-3 on page 1-6</a> <a href="#">Table 1-3 on page 1-6</a> <a href="#">Table 1-5 on page 1-9</a> <a href="#">Table 1-7 on page 1-12</a> <a href="#">Table 1-7 on page 1-12</a>	

Table A-5 Differences between issue D and issue E

Change	Location	Affects
DISPLAY ENERGY and RESET ENERGY commands added.	<a href="#">Table 1-5 on page 1-9</a>	All versions
Linux commands changed. Previous Linux commands replaced with the following: LINUX BOOT <i>image name</i> LOAD_ADDRESS <i>address</i> [ENTRY_POINT <i>address</i> ] [ <i>kernel command line</i> ] LINUX BOOT <i>image name</i> LOAD_ADDRESS <i>address</i> [ENTRY_POINT <i>address</i> ] [FILE <i>file name</i> ] LINUX INITRD <i>image name</i> LOAD_ADDRESS <i>address</i> LINUX FDT <i>image name</i> LOAD_ADDRESS <i>address</i>	<a href="#">Table 1-3 on page 1-6</a>	All versions
Linux commands changed. Previous Linux commands replaced with the following: LINUX BOOT <i>image name</i> [LOAD_ADDRESS <i>address</i> ] [ENTRY_POINT <i>address</i> ] [ <i>kernel command line</i> ] LINUX BOOT <i>image name</i> [LOAD_ADDRESS <i>address</i> ] [ENTRY_POINT <i>address</i> ] [FILE <i>file name</i> ] LINUX INITRD <i>image name</i> [LOAD_ADDRESS <i>address</i> ] LINUX FDT <i>image name</i> [LOAD_ADDRESS <i>address</i> ]	<a href="#">Table 1-7 on page 1-12</a>	All versions

**Table A-6 Differences between issue E and issue F**

<b>Change</b>	<b>Location</b>	<b>Affects</b>
Updated CLEAR BOOTSCRIPT and SET BOOTSCRIPT commands.	<a href="#">Table 1-3 on page 1-6</a>	All versions
Added REBOOT, RESET and SHUTDOWN commands.	<a href="#">Table 1-3 on page 1-6</a> <a href="#">Table 1-4 on page 1-8</a> <a href="#">Table 1-6 on page 1-11</a> <a href="#">Table 1-7 on page 1-12</a>	All versions
Removed Glossary. Added explanations of abbreviations used in document.	Throughout document	All versions