

» User Guide «

CP3003-SA/CP3003-V **uEFI BIOS**

Doc. ID: 1053-4014, Rev. 2.0
July 29, 2013



Revision History

Publication Title:		CP3003-SA/CP3003-V uEFI BIOS User Guide
Doc. ID:		1053-4014
Rev.	Brief Description of Changes	Date of Issue
1.0	Initial issue based on the uEFI BIOS version R11	29-Jul-2013
2.0	Added description for the CP3003-V based on the uEFI BIOS version R11	29-Jul-2013

Imprint

Kontron Europe GmbH may be contacted via the following:

MAILING ADDRESS

Kontron Europe GmbH
Sudetenstraße 7
D - 87600 Kaufbeuren Germany

TELEPHONE AND E-MAIL

+49 (0) 800-SALESKONTRON
sales@kontron.com

For further information about other Kontron products, please visit our Internet web site: www.kontron.com.

Disclaimer

Copyright © 2013 Kontron AG. All rights reserved. All data is for information purposes only and not guaranteed for legal purposes. Information has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Kontron and the Kontron logo and all other trademarks or registered trademarks are the property of their respective owners and are recognized. Specifications are subject to change without notice.



Table of Contents

<i>Revision History</i>	<i>ii</i>
<i>Imprint</i>	<i>ii</i>
<i>Disclaimer</i>	<i>ii</i>
<i>Table of Contents</i>	<i>iii</i>
1. Starting uEFI BIOS Setup	3
1.1 <i>Main Setup Menu</i>	4
1.2 <i>Navigation</i>	5
2. Main Setup	9
2.1 <i>BIOS Information</i>	9
2.2 <i>Memory Information</i>	9
2.3 <i>Trusted Computing</i>	10
2.3.1 <i>Configuration</i>	10
2.3.1.1 <i>TPM Support (CP3003-SA)</i>	10
2.3.2 <i>Current Status Information</i>	10
2.4 <i>CPU Configuration</i>	11
2.4.1 <i>CPU Configuration</i>	11
2.4.2 <i>Max Freq Ratio</i>	11
2.5 <i>Firmware Update Configuration</i>	12
2.5.1 <i>Me FW Image Re-Flash</i>	12
2.6 <i>USB Configuration</i>	13
2.6.1 <i>USB Configuration</i>	13
2.6.1.1 <i>USB Devices</i>	13
2.6.1.2 <i>Legacy USB Support</i>	13
2.6.1.3 <i>USB3.0 Support</i>	14
2.6.1.4 <i>XHCI Hand-Off</i>	14
2.6.1.5 <i>EHCI Hand-Off</i>	14
2.6.2 <i>USB Hardware Delays and Time-outs</i>	15
2.6.2.1 <i>USB Transfer Timeout</i>	15
2.6.2.2 <i>Device Reset Timeout</i>	15
2.6.2.3 <i>Device Power-up Delay</i>	15



2.7	<i>Serial Port Console Redirection</i>	16
2.7.1	<i>COM0</i>	16
2.7.1.1	<i>Console Redirection</i>	16
2.7.1.2	<i>Console Redirection Settings</i>	16
2.7.2	<i>COM1</i>	17
2.7.2.1	<i>Console Redirection</i>	17
2.7.2.2	<i>Console Redirection Settings</i>	17
2.7.3	<i>Serial Port for Out-of-Band Management/Windows EMS</i>	20
2.7.3.1	<i>Console Redirection</i>	20
2.7.3.2	<i>Console Redirection Settings</i>	20
2.8	<i>System Language</i>	22
2.9	<i>System Date</i>	22
2.10	<i>System Time</i>	22
2.11	<i>Access Level</i>	22
3.	<i>Boot Setup</i>	25
3.1	<i>Boot Configuration</i>	25
3.1.1	<i>Setup Prompt Timeout</i>	25
3.1.2	<i>Bootup NumLock State</i>	25
3.1.3	<i>Quiet Boot</i>	26
3.1.4	<i>Fast Boot</i>	26
3.1.5	<i>CSM16 Module Version</i>	26
3.1.6	<i>GateA20 Active</i>	26
3.1.7	<i>Option ROM Messages</i>	26
3.1.8	<i>Interrupt 19 Capture</i>	27
3.1.9	<i>CSM Support</i>	27
3.2	<i>Boot Option Priorities</i>	27
3.2.1	<i>Boot Option #1..2</i>	27
3.2.2	<i>Hard Drive BBS Priorities</i>	27
4.	<i>Security Setup</i>	31
4.1	<i>Administrator Password</i>	32
4.2	<i>User Password</i>	32

4.3	<i>HDD Security Configuration</i>	32
4.4	<i>Remember the Password</i>	32
5.	Save & Exit	35
5.1	<i>Save Changes and Exit</i>	35
5.2	<i>Discard Changes and Exit</i>	35
5.3	<i>Save Changes and Reset</i>	35
5.4	<i>Discard Changes and Reset</i>	36
5.5	<i>Save Changes (Save Options)</i>	36
5.6	<i>Discard Changes (Save Options)</i>	36
5.7	<i>Restore Defaults (Save Options)</i>	36
5.8	<i>Save as User Defaults (Save Options)</i>	36
5.9	<i>Restore User Defaults (Save Options)</i>	36
5.10	<i>Boot Override</i>	36
6.	The uEFI Shell	39
6.1	<i>Introduction, Basic Operation</i>	39
6.1.1	<i>Shell Startup</i>	39
6.2	<i>Kontron-Specific uEFI Shell Commands</i>	40
6.2.1	<i>kBiosRevision uEFI Shell Command</i>	41
6.2.2	<i>kboardconfig uEFI Shell Command</i>	42
6.2.3	<i>kboardinfo uEFI Shell Command</i>	49
6.2.4	<i>kboot uEFI Shell Command</i>	51
6.2.5	<i>kbootnsh uEFI Shell Command</i>	52
6.2.6	<i>kclearnvram uEFI Shell Command</i>	53
6.2.7	<i>kflash uEFI Shell Command</i>	54
6.2.8	<i>kmkramdisk uEFI Shell Command</i>	55
6.2.9	<i>kpassword uEFI Shell Command</i>	56
6.2.10	<i>kresetconfig uEFI Shell Command</i>	57
6.2.11	<i>kSettings uEFI Shell Command</i>	58
6.2.12	<i>kwdt uEFI Shell Command</i>	59
6.3	<i>uEFI Shell Scripting</i>	60
6.3.1	<i>Startup Scripting</i>	60



6.3.2	<i>Create a Startup Script</i>	60
6.3.3	<i>Examples of Startup Scripts</i>	60
6.3.3.1	<i>Automatic Booting from USB Flash Drive</i>	60
6.3.3.2	<i>Execute Shell Script on Other Harddrive</i>	61
6.3.3.3	<i>Enable Watchdog and Control PXE Boot</i>	61
6.3.3.4	<i>Handling the Startup Script in the Flash Bank</i>	62
7.	<i>Updating the uEFI BIOS</i>	65
7.1	<i>uEFI BIOS Fail-Over Mechanism</i>	65
7.2	<i>Updating Procedure</i>	65
7.3	<i>uEFI BIOS Recovery</i>	65
7.4	<i>Determining the Active Flash</i>	65



Chapter

1

Starting uEFI BIOS Setup



This page has been intentionally left blank.





1. Starting uEFI BIOS Setup

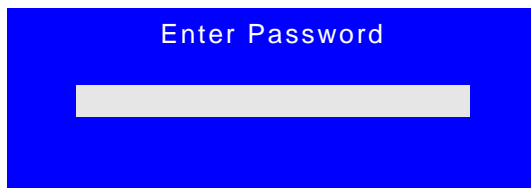
The CP3003-SA/CP3003-V is provided with a Kontron-customized, pre-installed and configured version of Aptio® (referred to as uEFI BIOS in this manual), AMI's next generation BIOS firmware based on the Unified Extensible Firmware Interface (uEFI) specification and the Intel® Platform Innovation Framework for EFI. This uEFI BIOS provides a variety of new and enhanced functions specifically tailored to the hardware features of the CP3003-SA/CP3003-V.

To take advantage of these functions, the uEFI BIOS comes with a Setup program which provides quick and easy access to the individual function settings for control or modification of the uEFI BIOS configuration.

The Setup program allows the accessing of various menus which provide functions or access to sub-menus with more specific functions of their own. The individual menus and the configurable functions are described in this guide.

To start the uEFI BIOS Setup program, follow the steps below:

1. Power on the board.
2. Wait until the first characters appear on the screen (POST messages or splash screen).
3. Press the or <F2> key.
4. If the uEFI BIOS is password-protected, a window such as the one below will appear:



Enter either the User password or the Administrator password (refer to Chapter 4, Security Setup, for further information), press <RETURN>, and proceed with step 5.

5. A Setup menu with the following token attributes will appear.
The currently active menu and the currently active uEFI BIOS Setup item are highlighted in white.



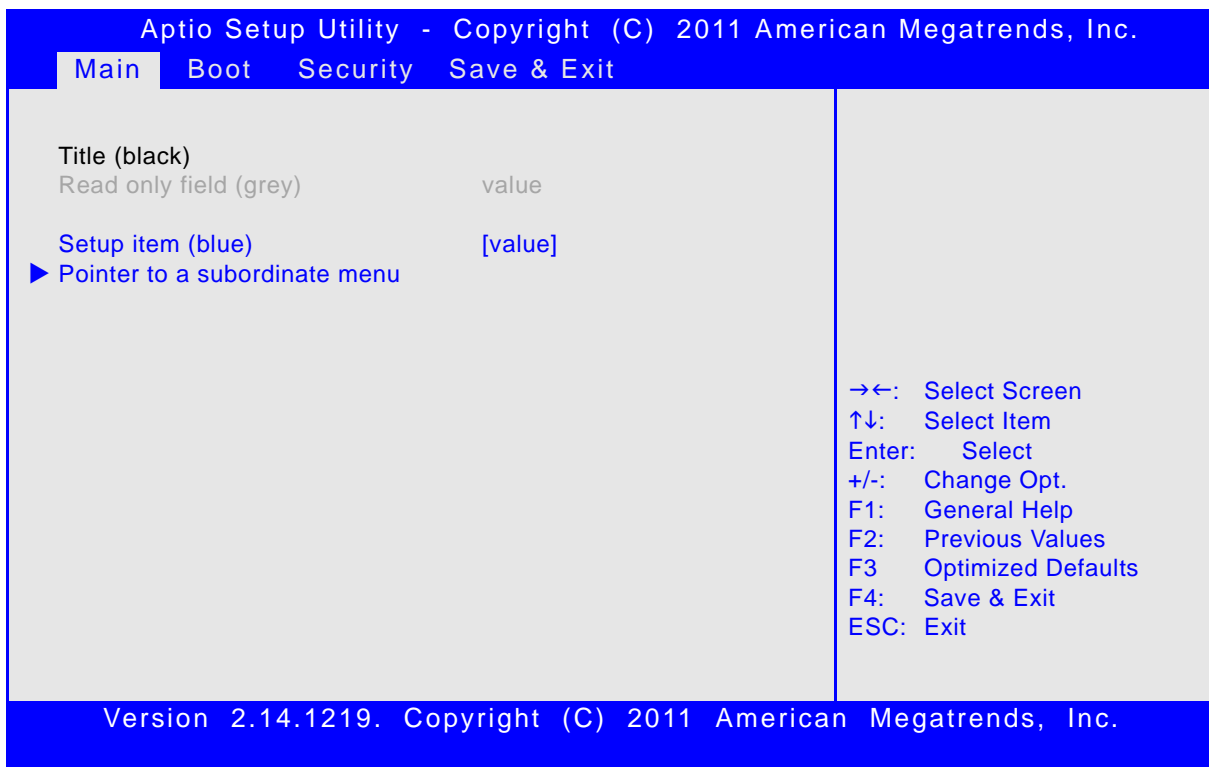
1.1 Main Setup Menu

The Main setup menu is the first screen that appears after starting the Setup program.

At the top of this screen and all of the other major screens, there is a setup menu selection bar, which permits access to all of the other major setup menus. These menus are selected via the left-right arrow keys.

All setup menu screens have two main frames. The left frame displays all the functions that can be configured. They are displayed in blue. Functions displayed in gray provide information about the status or the operational configuration.

The right frame displays the key legend. Above the key legend there is an area reserved for a text message. When a function is selected in the left frame, it is displayed in white. Often a text message will accompany it.





1.2 Navigation

The CP3003-SA/CP3003-V uEFI BIOS setup program uses a hot key-based navigation system. A hot key legend is located in the right frame on most setup screens. The following table provides information concerning the usage of these hot keys.

HOT KEY	DESCRIPTION
<F1>	The <F1> key is used to invoke the General Help window.
<F2>	The <F2> key is used to restore the previous values.
<F3>	The <F3> key is used to load the defaults.
<F4>	The <F4> key is used to save the current settings and exit the uEFI BIOS Setup.
→ ← Right/Left	The <i>Right and Left</i> <Arrow> keys are used to select a major Setup screen. For example: Main Screen, Advanced Screen, Chipset Screen, etc.
↑ ↓ Up/Down	The <i>Up and Down</i> <Arrow> keys are used to select a Setup function or a sub-screen.
+ - Plus/Minus	The <i>Plus and Minus</i> <Arrow> keys are used to change the field value of a particular Setup function, for example, system date and time.
<ESC>	The <ESC> key is used to exit a menu or the uEFI BIOS Setup. Pressing the <ESC> key in a sub-menu causes the next higher menu level to be displayed. When the <ESC> key is pressed in a major Setup menu, the uEFI BIOS Setup is terminated without saving any changes made.
<Enter>	The <Enter> key is used to execute a command or select a menu.



This page has been intentionally left blank.





Chapter **2**

Main Setup

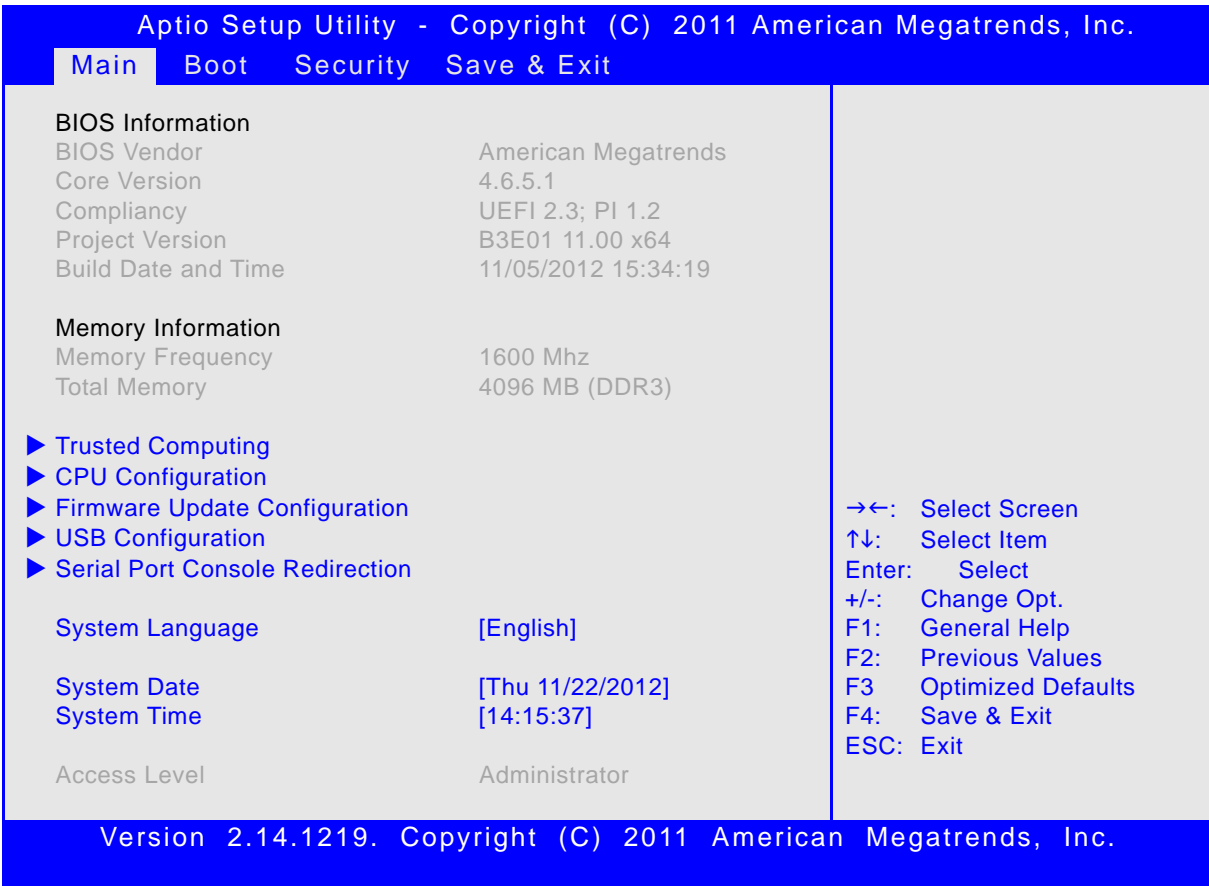


This page has been intentionally left blank.



2. Main Setup

Upon entering the uEFI BIOS Setup program, the Main setup screen is displayed. This screen lists the main setup sub-screens and provides very basic system information as well as functions for setting the system time and date. In addition, the remaining major setup menus can be accessed from this screen. This screen can also be selected from any other major setup screen by using the Main tab.



Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main Boot Security Save & Exit

BIOS Information
 BIOS Vendor American Megatrends
 Core Version 4.6.5.1
 Compliance UEFI 2.3; PI 1.2
 Project Version B3E01 11.00 x64
 Build Date and Time 11/05/2012 15:34:19

Memory Information
 Memory Frequency 1600 Mhz
 Total Memory 4096 MB (DDR3)

▶ Trusted Computing
 ▶ CPU Configuration
 ▶ Firmware Update Configuration
 ▶ USB Configuration
 ▶ Serial Port Console Redirection

System Language [English]
 System Date [Thu 11/22/2012]
 System Time [14:15:37]
 Access Level Administrator

→←: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

2.1 BIOS Information

This function provides display-only information concerning the uEFI BIOS.

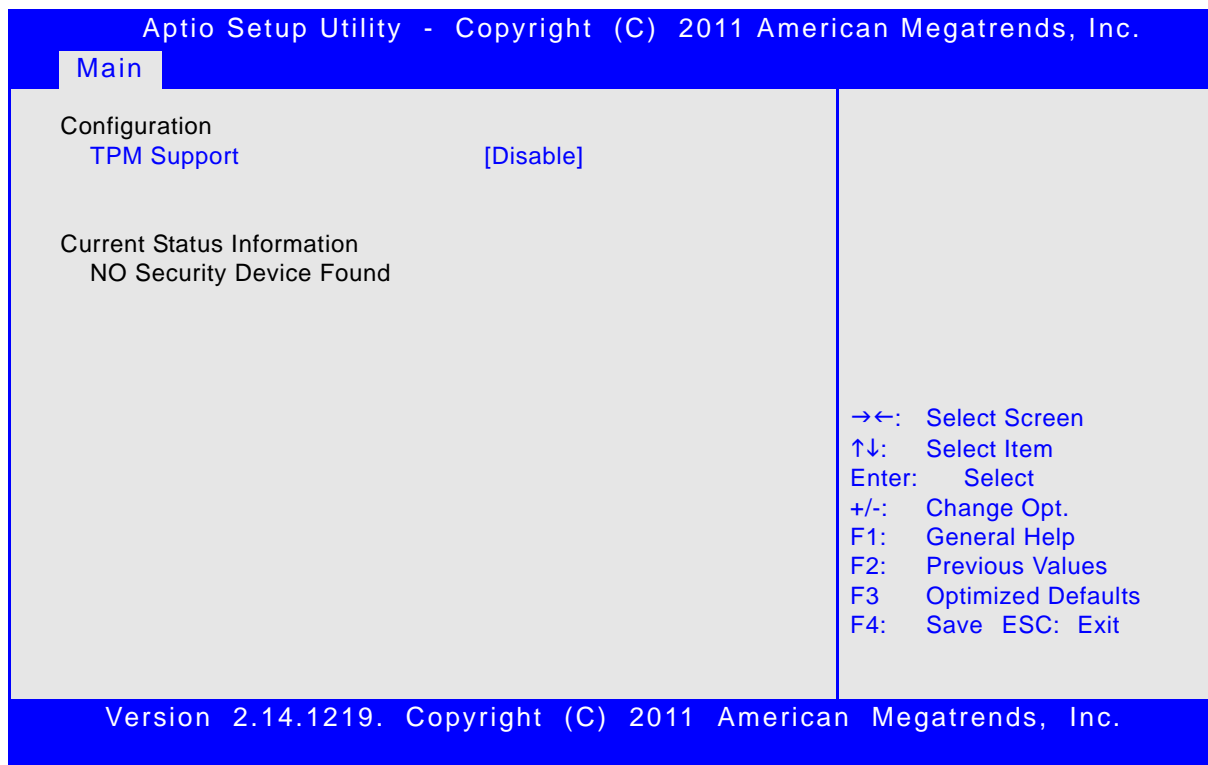
Information about the running uEFI BIOS version is reflected in the display-only function Project Version (parameter "11.00" indicates Rev. 11).

2.2 Memory Information

This function provides display-only information concerning the system memory.

2.3 Trusted Computing

This screen provides functions for specifying the TPM configuration settings and TPM displaying status information.



2.3.1 Configuration

2.3.1.1 TPM Support (CP3003-SA)

This function is used to provide the Trusted Platform Module (TPM) functionality to the OS.

SETTING	DESCRIPTION
Disable	Use this setting to disable TPM support. If this setting is used, TPM is not present for the OS, regardless whether the function TPM State is enabled or not.
Enable	Use this setting to enable TPM support.

Default setting: Disable

2.3.2 Current Status Information

This is a display-only function which provides status information.

2.4 CPU Configuration

This screen provides information concerning the CPU operating frequencies and the ability to set the frequency ratio.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main

CPU Configuration	
Inter (R) Core(TM) i7-3517UE CPU @ 1.70GHz	
Max CPU Speed	1700 MHz
Min CPU Speed	800 MHz
CPU Speed	1600 MHz
Max Freq Ratio	255

- ←: Select Screen
- ↑↓: Select Item
- Enter: Select
- +/-: Change Opt.
- F1: General Help
- F2: Previous Values
- F3: Optimized Defaults
- F4: Save & Exit
- ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

2.4.1 CPU Configuration

This is a display-only function indicating general information about the installed CPU.

2.4.2 Max Freq Ratio

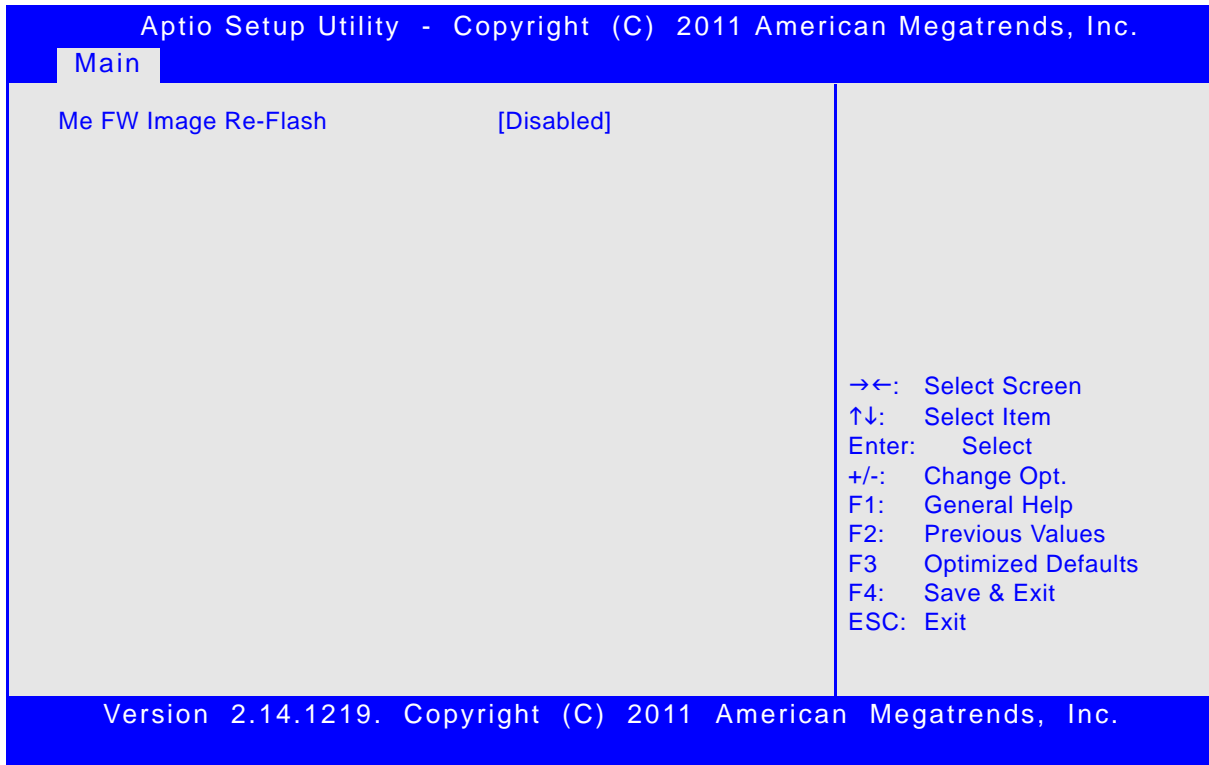
This function is used to permit the CPU frequency to be adjusted so as to make a reduction in power consumption possible when higher performance is not required.

To ensure that the maximum desired frequency is not exceeded, the CPU turbo mode must be disabled using the uEFI shell command:

“kboardconfig CpuTurbo disabled”

2.5 Firmware Update Configuration

This screen provides functions for specifying the firmware update configuration settings.



2.5.1 Me FW Image Re-Flash

This function is used to enable or disable Intel® Management Engine (ME) firmware re-flashing.

SETTING	DESCRIPTION
Disable	Use this setting to disable ME firmware re-flashing.
Enable	Use this setting to enable ME firmware re-flashing.

Default setting: Disable



2.6 USB Configuration

This screen provides information about support for USB devices as well as functions for specifying the USB configuration settings.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main

<p>USB Configuration</p> <p>USB Devices: 1 Keyboard, 1 Mouse, 4 Hubs</p> <p>Legacy USB Support [Enabled] USB3.0 Support [Enabled] XHCI Hand-Off [Enabled] EHCI Hand-Off [Disabled]</p> <p>USB hardware delays and time-outs: USB transfer time-out [20 sec] Device reset time-out: [20 sec] Device power-up delay: [Auto]</p>	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</p>
---	---

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

2.6.1 USB Configuration

2.6.1.1 USB Devices

This is a display-only function providing general information about the USB devices detected.

2.6.1.2 Legacy USB Support

This function is required for booting from USB devices and for operating systems which do not support USB themselves (mainly DOS and some BootLoaders).

SETTING	DESCRIPTION
Disabled	Use this setting to disable legacy USB support.
Enabled	Use this setting to enable legacy USB support.
Auto	Use this setting to enable legacy USB support if there are USB devices present.

Default setting: Enabled



2.6.1.3 USB3.0 Support

This function is used to enable USB3.0 support.

SETTING	DESCRIPTION
Disabled	Use this setting to disable USB3.0 support.
Enabled	Use this setting to enable USB3.0 support.

Default setting: Enabled

2.6.1.4 XHCI Hand-Off

This function is used to enable a workaround for operating systems without XHCI Hand-Off support. The XHCI ownership change should be claimed by the XHCI driver.

SETTING	DESCRIPTION
Disabled	Use this setting to disable XHCI Hand-Off support.
Enabled	Use this setting to enable XHCI Hand-Off support.

Default setting: Enabled

2.6.1.5 EHCI Hand-Off

This function is used to enable a workaround for operating systems without EHCI Hand-Off support. The EHCI ownership change should be claimed by the EHCI driver.

SETTING	DESCRIPTION
Disabled	Use this setting to disable EHCI Hand-Off support.
Enabled	Use this setting to enable EHCI Hand-Off support.

Default setting: Disabled



2.6.2 USB Hardware Delays and Time-outs

2.6.2.1 USB Transfer Timeout

This function selects the timeout in seconds that the USB core will wait for Control, Bulk, and Interrupt transfers.

SETTING	DESCRIPTION
1 sec 5 sec 10 sec 20 sec	Use one of these settings to specify how long the USB core is to wait for Control, Bulk, and Interrupt transfers.

Default setting: 20 sec

2.6.2.2 Device Reset Timeout

This function selects the timeout in seconds that the POST will wait for a USB mass storage device to become ready after start unit command.

SETTING	DESCRIPTION
10 sec 20 sec 30 sec 40 sec	Use one of these settings to specify how long the POST will wait for a USB mass storage device to become ready after the start unit command.

Default setting: 20 sec

2.6.2.3 Device Power-up Delay

This function determines the maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses a default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

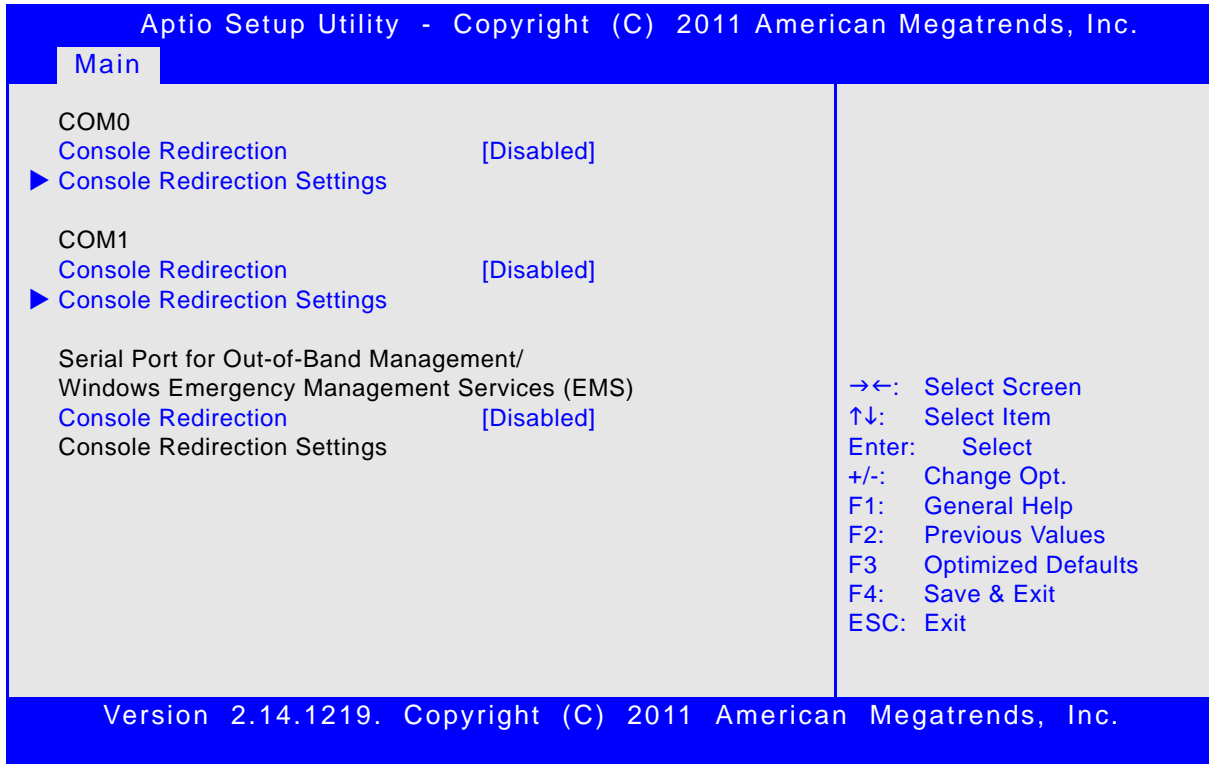
If the "Manual" option is chosen, the device power up delay in seconds field will be enabled to accept a delay ranging from 1 to 40 seconds.

SETTING	DESCRIPTION
Auto	Use this setting to specify a default delay time for a Root or Hub port. (root port = 100ms; hub port = value in hub descriptor)
Manual	Use this setting to specify a delay time from 1 to 40 seconds. (contents of seconds field)

Default setting: Auto

2.7 Serial Port Console Redirection

This screen provides information about functions for specifying the Serial Port Console Redirection configuration settings. Console redirection can be used to remotely operate system settings and the uEFI console.



2.7.1 COM0

The COM0 port (serial port 0) corresponds to the COMA port (RS-232) and is available either on the front panel of the 8HP CP3003-SA/CP3003-V equipped with a CP3003-HDD extension module or on the rear I/O.

2.7.1.1 Console Redirection

SETTING	DESCRIPTION
Disabled	Use this setting to disable console redirection for COMA (RS-232).
Enabled	Use this setting to enable console redirection for COMA (RS-232).

Default setting: Disabled

2.7.1.2 Console Redirection Settings

For information about this function, refer to Chapter 2.7.2.2 in this manual.



2.7.2 COM1

The COM1 port (serial port 1) corresponds to the COMB port (RS-232) and is available on the rear I/O.

2.7.2.1 Console Redirection

SETTING	DESCRIPTION
Disabled	Use this setting to disable console redirection for COMB (RS-232).
Enabled	Use this setting to enable console redirection for COMB (RS-232).

Default setting: Disabled

2.7.2.2 Console Redirection Settings

This screen provides information about functions for specifying the Console Redirection configuration settings for the serial port 0 (COM0) and serial port 1 (COM1). Each serial port can be independently configured.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main

COM0 Console Redirection Settings		
Terminal Type	[ANSI]	
Bits per second	[115200]	
Data Bits	[8]	
Parity	[None]	
Stop Bits	[1]	
Flow Control	[None]	
VT-UTF8 Combo Key Support	[Enabled]	→←: Select Screen
Recorder Mode	[Disabled]	↑↓: Select Item
Resolution 100x31	[Enabled]	Enter: Select
Legacy OS Redirection Resolution	[80x24]	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.



2.7.2.2.1 Terminal Type

SETTING	DESCRIPTION
VT100	Use one of these settings to select the terminal type to be emulated.
VT100+	
VT-UTF8	
ANSI	

Default setting: ANSI

2.7.2.2.2 Bits per second

SETTING	DESCRIPTION
9600	Use one of these settings to select the baud rate of the serial port.
19200	
38400	
57600	
115200	

Default setting: 115200

2.7.2.2.3 Data Bits

SETTING	DESCRIPTION
7	Use one of these settings to specify the number of data bits per frame.
8	

Default setting: 8

2.7.2.2.4 Parity

SETTING	DESCRIPTION
None	Use one of these settings to select the parity for the serial port.
Even	
Odd	
Mark	
Space	

Default setting: None

2.7.2.2.5 Stop Bits

SETTING	DESCRIPTION
1	Use one of these settings to specify the number of stop bits for the serial port.
2	

Default setting: 1



2.7.2.2.6 Flow Control

SETTING	DESCRIPTION
None	Use one of these settings to specify the type of flow control to be used for this serial port.
Hardware RTS/CTS	

Default setting: None

2.7.2.2.7 VT-UTF8 Combo Key Support

Use this function to enable or disable VT-UTF8 Combination Key Support for ANSI/ VT100 terminals.

SETTING	DESCRIPTION
Disabled	Use this setting the disable combination key support.
Enabled	Use this setting the enable combination key support.

Default setting: Enabled

2.7.2.2.8 Recorder Mode

Use this function to specify whether display formatting characters are to be transmitted along with data or if only data is to be transmitted.

SETTING	DESCRIPTION
Disabled	Use this setting to specify normal terminal operation.
Enabled	Use this setting to specify that only text will be sent. Use this to capture terminal data.

Default setting: Disabled

2.7.2.2.9 Resolution 100x31

SETTING	DESCRIPTION
Disabled	Use this setting the disable extended terminal resolution.
Enabled	Use this setting the enable extended terminal resolution.

Default setting: Enabled

2.7.2.2.10 Legacy OS Redirection

SETTING	DESCRIPTION
80x24	Use one of these settings to select the number of rows and columns for legacy OS redirection.
80x25	

Default setting: 80x24



2.7.3 Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The following functions control the presence and content of the ACPI serial port redirection table (SPCR). This table is mainly used by the Windows server variants to provide Windows Emergency Management Services (EMS). This functionality is totally independent from serial redirection of other console output.

2.7.3.1 Console Redirection

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the system from adding the SPCR table to the ACPI tables.
Enabled	Use this setting to add the SPCR table to the ACPI tables. The OS can further use the information provided for serial redirection services.

Default setting: Disabled

2.7.3.2 Console Redirection Settings

This screen provides information about functions for specifying the Console Redirection configuration settings for the Out-of-Band Management / Windows Emergency Management Services (EMS).

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main

Serial Port for Out-of-Band Management
Console Redirection Settings

Out-of-Band Mgmt Port	COM0	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Terminal Type	[VT-UTF8]	
Bits per second	[115200]	
Flow Control	[None]	
Data Bits	8	
Parity	None	
Stop Bits	1	

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.



2.7.3.2.1 Out-of-Band Mgmt Port

This function is used to select the serial port intended for use with Out-of-Band Management.

Note: This function is available only when the respective serial port is enabled.

SETTING	DESCRIPTION
COM0	Use this setting to specify that the serial port 0 is to be used with Out-of-Band Management
COM1	Use this setting to specify that the serial port 1 is to be used with Out-of-Band Management

Default setting: COM0

2.7.3.2.2 Terminal Type

SETTING	DESCRIPTION
VT100	Use one of these settings to select the terminal type to be emulated.
VT100+	
VT-UTF8	
ANSI	

Default setting: VT-UTF8

2.7.3.2.3 Bits per second

SETTING	DESCRIPTION
9600	Use one of these settings to select the baud rate of the serial port.
19200	
57600	
115200	

Default setting: 115200

2.7.3.2.4 Flow Control

SETTING	DESCRIPTION
None	Use one of these settings to specify the type of flow control to be used for this serial port.
Hardware RTS/CTS	
Software Xon/Xoff	

Default setting: None

2.7.3.2.5 Data Bits

This is a display-only function providing information about the frame width for the Out-of-Band Management.



2.7.3.2.6 Parity

This is a display-only function providing information about the parity for Out-of-Band Management.

2.7.3.2.7 Stop Bits

This is a display-only function providing information about the number of stop bits for Out-of-Band Management.

2.8 System Language

SETTING	DESCRIPTION
English	Use this function to select the system language. Currently, only English is supported.

2.9 System Date

SETTING	DESCRIPTION
<WD MM/DD/YYYY>	Use this function to change the system date. Select System Date using the Up and Down <Arrow> keys. Enter the new values through the keyboard or press +/- to increment/decrement values. Use "Tab" to switch between date elements.

2.10 System Time

SETTING	DESCRIPTION
<HH:MM:SS>	Use this function to change the system time. Select System Time using the Up and Down <Arrow> keys. Enter the new values through the keyboard or press +/- to increment/decrement values. Use "Tab" to switch between time elements.

Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

2.11 Access Level

This function provides display-only information concerning the uEFI BIOS Setup accessibility for the current Setup session. The access level is either "Administrator" or "User".



Chapter **3**

Boot Setup



This page has been intentionally left blank.



3. Boot Setup

Select the Boot tab to enter the Boot Setup screen. This screen lists the sub-screens for boot configuration and boot device priority.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Boot

Boot Configuration		
Setup Prompt Timeout	1	
Bootup NumLock State	[On]	
Quiet Boot		[Disabled]
Fast Boot		[Disabled]
CSM16 Module Version		07.68
GateA20 Active	[Upon Request]	→←: Select Screen
Option ROM Messages	[Force BIOS]	↑↓: Select Item
Interrupt 19 Capture	[Enabled]	Enter: Select
CSM Support	[Enabled]	+/-: Change Opt.
Boot Option Priorities		F1: General Help
Boot Option #1	[UEFI: Built-in EFI...]	F2: Previous Values
Boot Option #2	[P0: TOSHIBA MK1676...]	F3: Optimized Defaults
Hard Drive BBS Priorities		F4: Save & Exit
		ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

3.1 Boot Configuration

3.1.1 Setup Prompt Timeout

This integer function is used to set an additional time the POST should wait for the operator to press the key to enter SETUP. The time is entered in seconds.

SETTING	DESCRIPTION
1	Use one of these settings to specify the setup prompt timeout.
⋮	
65535	

Default setting: 1

3.1.2 Bootup NumLock State

This function is used to set the state of the keyboard's numlock function after POST.

SETTING	DESCRIPTION
On	Use this setting to switch on the keyboard's numlock function after POST.
Off	Use this setting to switch off the keyboard's numlock function after POST.

Default setting: On



3.1.3 Quiet Boot

This function is used to display either POST output messages or a splash screen during boot-up.

SETTING	DESCRIPTION
Disabled	Use this setting to display POST output messages during boot-up.
Enabled	Use this setting to display a splash screen during boot-up.

Default setting: Disabled

3.1.4 Fast Boot

This function is used to enable or disable boot with initialization of a minimal set of devices required to launch active boot option..

SETTING	DESCRIPTION
Disabled	Use this setting to disable fast boot.
Enabled	Use this setting to enable fast boot.

Default setting: Disabled

3.1.5 CSM16 Module Version

This function provides display-only information concerning the CSM Module and is intended for internal use only.

3.1.6 GateA20 Active

This function is used to enable or disable GateA20.

SETTING	DESCRIPTION
Upon Request	Use this setting to disable GateA20 in the uEFI BIOS.
Always	Use this setting to prevent the system from disabling GateA20.

Default setting: Upon Request

3.1.7 Option ROM Messages

This function is used to control the messages of the loaded PCI option ROMs.

SETTING	DESCRIPTION
Force BIOS	Use this setting to force to a BIOS-compatible output. This will show the option ROM messages.
Keep Current	Use this setting to keep the current video mode. This will suppress option ROM messages. Option ROMs requiring interactive inputs may not work properly in this mode.

Default setting: Force BIOS



3.1.8 Interrupt 19 Capture

This function is used to specify if legacy PCI option ROMs are allowed to capture software interrupt 19h.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent legacy PCI option ROMs from capturing software interrupt 19h.
Enabled	Use this setting to allow legacy PCI option ROMs to capture software interrupt 19h.

Default setting: Enabled

3.1.9 CSM Support

This function is used to enable or disable CSM support.

SETTING	DESCRIPTION
Disabled	Use this setting to disable CSM support.
Enabled	Use this setting to enable CSM support.

Default setting: Enabled

3.2 Boot Option Priorities

3.2.1 Boot Option #1..2

These functions are used to form the boot order and are dynamically generated. They represent either a legacy BBS (BIOS Boot Specification) class of devices or a native EFI boot entry. Press Return on each option to select the BBS class / EFI boot entry desired.

3.2.2 Hard Drive BBS Priorities

This function leads to a sub-menu that allows configuring the boot order for a specific device class. These options are only visible if at least one device for this class is present. These functions are dynamically generated.



This page has been intentionally left blank.





Chapter **4**

Security Setup



This page has been intentionally left blank.





4. Security Setup

Select the Security tab to enter the Security Setup screen. This screen provides information about the passwords and functions for specifying the security settings.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Security

<p>Password Description</p> <p>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</p> <p>If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.</p> <p>The password length must be in the following range:</p> <table style="width: 100%; border: none;"> <tr> <td style="padding: 2px;">Minimum length</td> <td style="text-align: right; padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">Maximum length</td> <td style="text-align: right; padding: 2px;">20</td> </tr> </table> <p style="margin-top: 10px;">Administrator Password User Password</p> <p style="margin-top: 10px;">HDD Security Configuration P0:TOSHIBA MK16</p>	Minimum length	3	Maximum length	20	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</p>
Minimum length	3				
Maximum length	20				

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

The following modes of security are provided:

SETTING	DESCRIPTION
No password is set	Booting the system as well as entering the Setup is unsecured.
Only Administrator password is set	Booting the system is unsecured. For entering the Setup, the Administrator password is required.
Only User password is set	The password is required for booting the system as well as for entering the Setup menu. On every startup, the user will be asked for the password.
Both User and Administrator passwords are set	Either the User or the Administrator password is required for booting the system as well as for entering the Setup menu. If the User password is entered here, limited access to the Setup is granted. Entering the Administrator password provides full access to all Setup entries.

Note: The CP3003-SA/CP3003-V provides no factory-set passwords.



4.1 Administrator Password

This function is used to set, change or delete the Administrator password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return.

Note: The password is case sensitive.

4.2 User Password

This function is used to set, change or delete the User password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return.

Note: The password is case sensitive.

4.3 HDD Security Configuration

Allows access to set, modify and clear the harddisk User password. The harddisk User password must be set to enable harddisk security.

Note: This function is only available if a HDD/SSD is detected which supports this function.

Note: The harddisk User password is case sensitive.

4.4 Remember the Password

It is highly recommended to keep a record of all passwords in a safe place. Forgotten passwords may lead to being completely locked out of the system.

If the system cannot be booted because neither the uEFI BIOS User password nor the Administrator password are known, refer to the CP3003-SA/CP3003-V User Guide, Chapter 4.1, for information about clearing the uEFI BIOS settings, or contact Kontron for further assistance.

Note: The harddisk User password cannot be cleared using the above method.



Chapter

5

Save & Exit

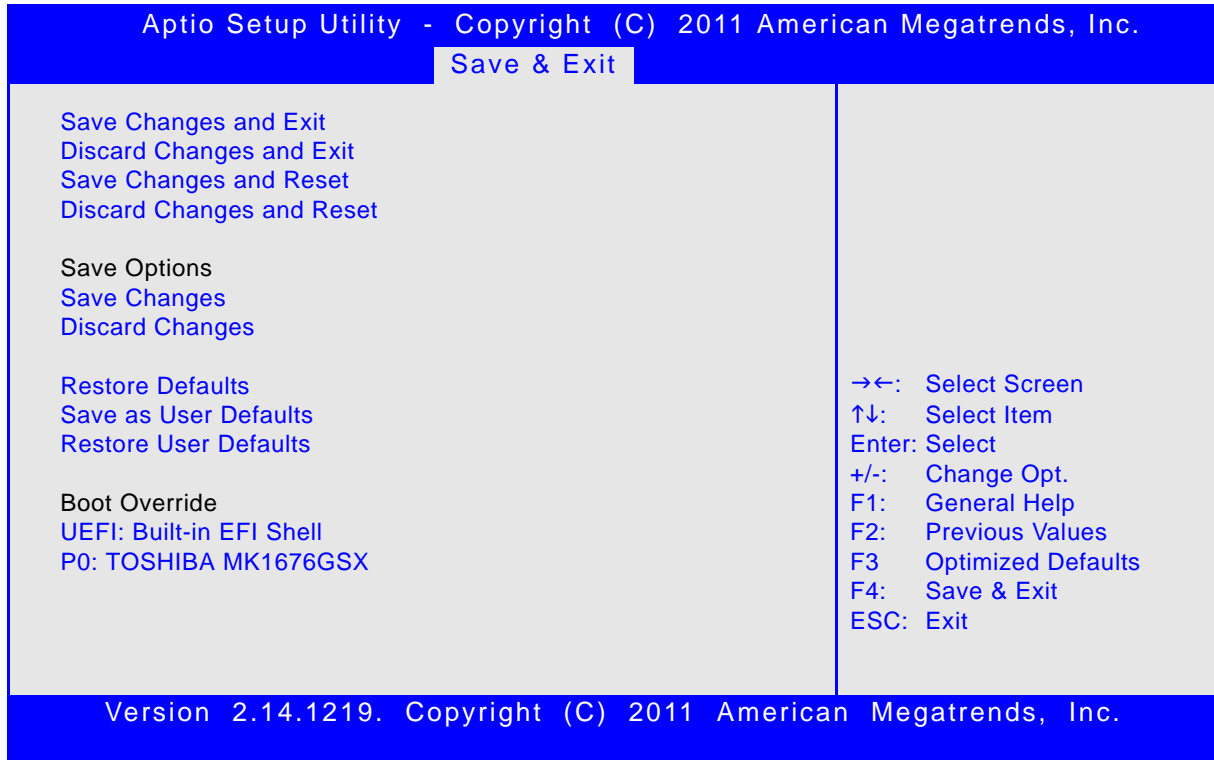


This page has been intentionally left blank.



5. Save & Exit

Select the Save & Exit tab to enter the Save & Exit menu screen. This screen provides functions for handling changes made to the uEFI BIOS settings and the exiting of the Setup program.



5.1 Save Changes and Exit

This function is used to save all changes made within the Setup to flash. This function continues the boot process as long as no option was altered that requires a reboot.

Note: The Setup will ask for confirmation prior to executing this command.

5.2 Discard Changes and Exit

This function is used to discard all changes made within the Setup. This function continues the boot process.

Note: The Setup will ask for confirmation prior to executing this command.

5.3 Save Changes and Reset

This function is used to save all changes made within the Setup to flash. This function performs a reboot afterwards.

Note: The Setup will ask for confirmation prior to executing this command.



5.4 Discard Changes and Reset

This function is used to discard all changes made within the Setup. This function performs a reboot afterwards.

Note: The Setup will ask for confirmation prior to executing this command.

5.5 Save Changes (Save Options)

This function is used to save all changes made within the Setup to flash. This function returns to Setup.

Note: The Setup will ask for confirmation prior to executing this command.

5.6 Discard Changes (Save Options)

This function is used to discard all changes made within the Setup. This function returns to Setup.

Note: The Setup will ask for confirmation prior to executing this command.

5.7 Restore Defaults (Save Options)

This function is used to restore all tokens to factory default.

Note: The Setup will ask for confirmation prior to executing this command.

5.8 Save as User Defaults (Save Options)

This function is used to save all current settings as user default. The current setup state can later be restored using Restore User Defaults.

Note: The Setup will ask for confirmation prior to executing this command.

5.9 Restore User Defaults (Save Options)

This function is used to restore all tokens to settings previously stored by Save as User Defaults.

Note: The Setup will ask for confirmation prior to executing this command.

5.10 Boot Override

This group of functions includes a list of tokens, each of them corresponding to one device within the boot order. Select a drive to immediately boot that device regardless of the current boot order. If booting to EFI Shell this way, an exit from the shell returns to Setup.



Chapter

6

The uEFI Shell



This page has been intentionally left blank.





6. The uEFI Shell

The Kontron uEFI BIOS features a built-in and enhanced version of the uEFI Shell. For a detailed description of the available standard shell scripting refer to the EFI Shell User's Guide. For a detailed description of the available standard shell commands, refer to the Shell Command Manual 1.0. Both documents can be downloaded from the EFI and Framework Open Source Community homepage (<https://efi-shell.tianocore.org>) under the "Documents and Files" section.

Please note that not all shell commands described in the Shell Command Manual 1.0 are provided by the Kontron uEFI BIOS.

6.1 Introduction, Basic Operation

The uEFI Shell forms an entry into the uEFI boot order and is the first boot option by default. It is simply started by putting the uEFI Shell first in boot and running the board as usual.

6.1.1 Shell Startup

If the shell is executed, it displays its signon message followed by a list of detected devices. The output produced by the device mapping table can vary depending on the board's configuration.

```
EFI Shell version 2.31 [4.651]
Current running mode 1.1.2
Device mapping table
fs0      :Removable HardDisk - Alias hd33b0b0b blk0
          Acpi(PNP0A03,0)/Pci(1D|7)/Usb(1, 0)/Usb(1, 0)/HD(Part1,Sig17731773)
fs1      :Removable BlockDevice - Alias f33b0c0 blk1
          Acpi(PNP0A03,0)/Pci(1D|7)/Usb(1, 0)/Usb(2, 0)
blk0     :Removable HardDisk - Alias hd33b0b0b fs0
          Acpi(PNP0A03,0)/Pci(1D|7)/Usb(1, 0)/Usb(1, 0)/HD(Part1,Sig17731773)
blk1     :Removable BlockDevice - Alias f33b0c0 fs1
          Acpi(PNP0A03,0)/Pci(1D|7)/Usb(1, 0)/Usb(2, 0)
blk2     :HardDisk - Alias (null)
          Acpi(PNP0A03,0)/Pci(1F|2)/Ata(Primary,Master)/HD(Part1,SigC811D18D)
blk3     :BlockDevice - Alias (null)
          Acpi(PNP0A03,0)/Pci(1F|2)/Ata(Primary,Master)
blk4     :Removable BlockDevice - Alias (null)
          Acpi(PNP0A03,0)/Pci(1D|7)/Usb(1, 0)/Usb(1, 0)
```

Press the ESC key within 5 seconds to skip startup.nsh, and any other key to continue.

If the ESC key is pressed before the 5-second timeout has elapsed, the shell prompt is shown:

```
Shell>
```



6.2 Kontron-Specific uEFI Shell Commands

The Kontron uEFI implementation provides the following additional commands related to the specific HW features of the Kontron system:

- **kBiosRevision**
- **kboardconfig**
- **kboardinfo**
- **kboot**
- **kbootnsh**
- **kclearnvram**
- **kflash**
- **kmkramdisk**
- **kpassword**
- **kresetconfig**
- **kSettings**
- **kwdt**

The following tables provide information concerning these Kontron-specific commands. Where “RESPONSE” information is provided in “USAGE”, the value indicated in brackets is the currently selected setting. Where “SETTINGS” information is provided, the value indicated in brackets is the current setting.



6.2.1 kBiosRevision uEFI Shell Command

kBiosRevision

FUNCTION:	Get uEFI BIOS revision
SYNTAX:	<pre>kbiosrevision [-?] [[-lt] [-eq] [-gt] <number>]</pre> <p>where:</p> <ul style="list-style-type: none"> -? Show help -lt Check if current uEFI BIOS revision is less than <number> -eq Check if current uEFI BIOS revision is equal to <number> -gt Check if current uEFI BIOS revision is greater than <number> <p><number> (uEFI BIOS) revision number</p>
DESCRIPTION:	<p>The kBiosRevision command is used to display the current uEFI BIOS revision.</p> <p>In scripting environments it can be used to perform checks against a uEFI BIOS revision number provided in the script.</p>
USAGE:	<p>Display current uEFI BIOS revision:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kbiosrevision BIOS revision: 11</pre> <p>Check if current uEFI BIOS revision is equal to R11: (used within uEFI shell script)</p> <pre>kbiosrevision -eq 11 if not %lasterror% == 0 then echo "NOT R11 , need to update" goto _update else "EFI R11 found" endif</pre>

6.2.2 kboardconfig uEFI Shell Command

kboardconfig

FUNCTION:	Configure the non-volatile board settings																
SYNTAX:	<p>kboardconfig [-?][[-b][[-nc] <option> <parameter></p> <p>where:</p> <ul style="list-style-type: none"> ? Used to show HELP -b Used to invoke page break in the display output -nc Used to disable color <option> Used to select option <parameter> Used to specify parameter for option selected <p>The command notation above indicates only the possible modifiers and not the command's syntax logic.</p> <p>There are eight defined variations of this command:</p> <table border="0"> <tr> <td>kboardconfig</td> <td>lists options and their current status</td> </tr> <tr> <td>kboardconfig -b</td> <td>lists options, their current status, and invokes page breaks in the display output</td> </tr> <tr> <td>kboardconfig -nc</td> <td>lists options, their current status, and disables color in the display output</td> </tr> <tr> <td>kboardconfig -?</td> <td>provides HELP information</td> </tr> <tr> <td>kboardconfig -? -b</td> <td>provides HELP information and invokes page breaks in the display output</td> </tr> <tr> <td>kboardconfig <option></td> <td>provides HELP for option specified and the current status of the option</td> </tr> <tr> <td>kboardconfig <option> -nc</td> <td>provides HELP for option specified, the current status of the option, and disables color in display output</td> </tr> <tr> <td>kboardconfig <option> <parameter></td> <td>sets the <parameter> to be used with the <option> specified</td> </tr> </table>	kboardconfig	lists options and their current status	kboardconfig -b	lists options, their current status, and invokes page breaks in the display output	kboardconfig -nc	lists options, their current status, and disables color in the display output	kboardconfig -?	provides HELP information	kboardconfig -? -b	provides HELP information and invokes page breaks in the display output	kboardconfig <option>	provides HELP for option specified and the current status of the option	kboardconfig <option> -nc	provides HELP for option specified, the current status of the option, and disables color in display output	kboardconfig <option> <parameter>	sets the <parameter> to be used with the <option> specified
kboardconfig	lists options and their current status																
kboardconfig -b	lists options, their current status, and invokes page breaks in the display output																
kboardconfig -nc	lists options, their current status, and disables color in the display output																
kboardconfig -?	provides HELP information																
kboardconfig -? -b	provides HELP information and invokes page breaks in the display output																
kboardconfig <option>	provides HELP for option specified and the current status of the option																
kboardconfig <option> -nc	provides HELP for option specified, the current status of the option, and disables color in display output																
kboardconfig <option> <parameter>	sets the <parameter> to be used with the <option> specified																
DESCRIPTION:	The kboardconfig command is used to configure non-volatile board settings. For information on default settings, refer to Chapter 5.7, Restore Defaults, and Chapter 6.2.6, kclearnvram uEFI Shell Command.																

**kboardconfig (continued)**

USAGE: Command: **kboardconfig**
Shows all options and their current parameter setting.

COMMAND / RESPONSE EXAMPLE:

```
Shell> kboardconfig
StorageOprom    -> enabled
PrimaryDisplay  -> auto
Vga              -> front
VgaInterrupt    -> disabled
SataMode         -> ahci
Sata0Speed      -> noLimit
Sata1Speed      -> noLimit
Sata2Speed      -> noLimit
Sata3Speed      -> noLimit
Sata4Speed      -> noLimit
Sata5Speed      -> noLimit
Sata2Hotplug    -> disabled
Sata3Hotplug    -> disabled
WrProtSata      -> disabled
WrProtEeprom    -> disabled
WrProtSpi       -> disabled
IntelVT         -> enabled
IntelHT         -> enabled
SpeedStep       -> enabled
CpuTurbo        -> enabled
C3State         -> disabled
C6State         -> disabled
C7State         -> enabled
PciCfgDelay     -> disabled
GbeA            -> front
GbeB            -> front
ComA            -> rear
Pxe             -> disabled
Tdp             -> disabled
```

kboardconfig (continued)**USAGE:**
(continued)

Command: **kboardconfig -?**

Shows HELP information for the kboardconfig command.

COMMAND / RESPONSE EXAMPLE:

```
Shell> kboardconfig -?  
Control nonvolatile board settings
```

Example: **kboardconfig <option> <parameter>**

Show all options and their current status:
kboardconfig

Show help:
kboardconfig -?

Show all options and their current status with page
break:
kboardconfig -b

Show all options and their current status without
color:
kboardconfig -nc

Show help and status for a single option:
kboardconfig <option>
kboardconfig -nc <option>

Change parameter for an option:
kboardconfig <option> <parameter>

Command: **kboardconfig <option>**

Show help and status for a single option:

COMMAND / RESPONSE EXAMPLE:

```
Shell> kboardconfig Pxe  
Pxe:  
  PXE boot device  
  Available parameters: [disabled], all, gbeA, gbeB,  
  gbeC
```

In this case “disabled” is the current setting.



kboardconfig (continued)

USAGE: (continued)	<p>Command: kboardconfig <option> <parameter></p> <p>Set option "Pxe" to parameter "all":</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kboardconfig Pxe all</pre> <p>The response for "kboardconfig" with <option> and <parameter> is the display of a status line indicating the performance status of the command and one or more lines providing further information related to the command performance.</p>												
OPTIONS:	<p>The listing below provides an overview of the possible options and a short description of their functionality.</p> <p>To view all of the possible parameters for a given option, use the command "kboardconfig <option>".</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding-bottom: 10px;">OPTION</th> <th style="text-align: left; padding-bottom: 10px;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top; padding-bottom: 10px;">StorageOprom</td> <td style="vertical-align: top; padding-bottom: 10px;">Used to launch the Storage PCI OPROM When disabled it includes the onboard RAID option ROM</td> </tr> <tr> <td style="vertical-align: top; padding-bottom: 10px;">PrimaryDisplay</td> <td style="vertical-align: top; padding-bottom: 10px;">Used to select the primary display device auto: Automatically detect primary display device igfx: Use internal graphics, if enabled peg: Try to use video on the PCIe graphics port, if present (CP3003-SA only) pci: Try to use video on the PCI(e) bus first</td> </tr> <tr> <td style="vertical-align: top; padding-bottom: 10px;">Vga</td> <td style="vertical-align: top; padding-bottom: 10px;">Used to select the VGA port configuration</td> </tr> <tr> <td style="vertical-align: top; padding-bottom: 10px;">VgaInterrupt</td> <td style="vertical-align: top; padding-bottom: 10px;">Used to enable the VGA interrupt generation</td> </tr> <tr> <td style="vertical-align: top; padding-bottom: 10px;">SataMode</td> <td style="vertical-align: top; padding-bottom: 10px;">Used to select the operational configuration for the SATA controller ide: SATA ports operate as two IDE controllers ahci: SATA ports operate as one 6-port AHCI controller raid: SATA ports form a RAID device</td> </tr> </tbody> </table> <p>Note: For this command to take effect, the system must be re-booted. During the bootup, it is possible to select a menu to specify the desired RAID configuration. Entry to this menu is achieved by pressing "Ctrl + I" when requested during the bootup.</p>	OPTION	DESCRIPTION	StorageOprom	Used to launch the Storage PCI OPROM When disabled it includes the onboard RAID option ROM	PrimaryDisplay	Used to select the primary display device auto : Automatically detect primary display device igfx : Use internal graphics, if enabled peg : Try to use video on the PCIe graphics port, if present (CP3003-SA only) pci : Try to use video on the PCI(e) bus first	Vga	Used to select the VGA port configuration	VgaInterrupt	Used to enable the VGA interrupt generation	SataMode	Used to select the operational configuration for the SATA controller ide : SATA ports operate as two IDE controllers ahci : SATA ports operate as one 6-port AHCI controller raid : SATA ports form a RAID device
OPTION	DESCRIPTION												
StorageOprom	Used to launch the Storage PCI OPROM When disabled it includes the onboard RAID option ROM												
PrimaryDisplay	Used to select the primary display device auto : Automatically detect primary display device igfx : Use internal graphics, if enabled peg : Try to use video on the PCIe graphics port, if present (CP3003-SA only) pci : Try to use video on the PCI(e) bus first												
Vga	Used to select the VGA port configuration												
VgaInterrupt	Used to enable the VGA interrupt generation												
SataMode	Used to select the operational configuration for the SATA controller ide : SATA ports operate as two IDE controllers ahci : SATA ports operate as one 6-port AHCI controller raid : SATA ports form a RAID device												

kboardconfig (continued)

OPTIONS: (continued)	Sata0Speed	Indicates maximum speed supported by SATA port 0 (SATA cable connector J3 on the CP3003-SA/CP3003-V main board) Available parameters for Sata0Speed and Sata1Speed: noLimit, gen1 (SATA 1.5 Gb/s), gen2 (SATA 3.0 Gb/s), gen3 (SATA 6.0 Gb/s)
	Sata1Speed	Indicates maximum speed supported by SATA port 1 (SATA connector J6 on the CP3003-HDD module) For available parameters, refer to Sata0Speed.
	Sata2Speed	Indicates maximum speed supported by SATA port 2 (SATA connector J6 on the CP-RIO3-04 module) Available parameters for Sata2Speed to Sata5Speed: noLimit, gen1 (SATA 1.5 Gb/s), gen2 (SATA 3.0 Gb/s)
	Sata3Speed	Indicates maximum speed supported by SATA port 3 (SATA connector J5 on the CP-RIO3-04 module) For available parameters, refer to Sata2Speed.
	Sata4Speed	Indicates maximum speed supported by SATA port 4 (CFast connector J3 on the 8 HP CP3003-SA/CP3003-V with CP3003-HDD module / High-speed I/O extension connector J4 for 12 HP CP3003-SA/CP3003-V expansion) For available parameters, refer to Sata2Speed.
	Sata5Speed	Indicates maximum speed supported by SATA port 5 (SATA connector J12 on the CP3003-SA/CP3003-V main board for connection to the SATA Flash module) For available parameters, refer to Sata2Speed.
	Sata2Hotplug:	Enable hotplug for SATA port 2 (SATA connector J6 on the CP-RIO3-04 module)
	Sata3Hotplug:	Enable hotplug for SATA port 3 (SATA connector J5 on the CP-RIO3-04 module)

kboardconfig (continued)

OPTIONS: (continued)	WrProtSata:	Used to select onboard SATA flash write protection If enabled, the onboard SATA flash is write-protected after POST. OS needs to be prepared to work with write-protected flash. For further information, refer to the operating system's documentation. Note: Please contact Kontron before using this function.
	WrProtEeprom:	Used to select onboard system EEPROM write protection If enabled, the system EEPROM is write-protected after POST.
	WrProtSpi	Used to select onboard SPI boot flash write protection If enabled, both of the onboard SPI boot flashes are write-protected after POST.
	IntelVT	Used to enable Intel® VT-x Virtualization Technology
	IntelHT	Used to enable Intel® Hyper-Threading Technology
	SpeedStep	Used to enable Intel® SpeedStep®
	CpuTurbo	Used to enable CPU turbo mode
	C3State	Used to enable CPU C3-State report to OS
	C6State	Used to enable CPU C6-State report to OS
	C7State	Used to enable CPU C7-State report to OS
PciCfgDelay	Used to set a delay for PCI config cycles	



kboardconfig (continued)

OPTIONS: (continued)	GbeA	Used to select the routing of the GbeA port
	GbeB	Used to select the routing of the GbeB port
	ComA	Used to select the routing of the serial port 0 Note: This option is only valid for CP3003-SA/ CP3003-V rear /O versions.
	Pxe	Used to select a PXE boot device gbeA and gbeB : Ethernet ports available on the front panel of the 4 HP CP3003-SA/CP3003-V via the J7A/B dual Gigabit Ethernet connector. These ports are switchable to rear I/O. gbeC : Ethernet port available on the front panel of the 8 HP CP3003-SA/CP3003-V with a CP3003-HDD extension module via the Gigabit Ethernet connector J5.
	Tdp	Used to select a lower operating TDP level by preserving maximum possible performance.



6.2.3 kboardinfo uEFI Shell Command

kboardinfo

FUNCTION:	Show board identification data
SYNTAX:	<code>kboardinfo</code>
DESCRIPTION:	The kboardinfo command shows a summary of board-specific identification data. It is especially useful for support queries because it contains this data in a concentrated form.
USAGE:	<p>Show board identification data</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kboardinfo KOMaOEMF rev.: 4 Board ID: 0xB3E0 Hardware rev.: 0x0 Logic rev.: 0x02 Boot flash: Standard SPI Boot flash In system slot: Yes Geographic address: 1 Material number: 1234-5678 Hardware index: 10 Serial number: 1234567001 EFI article name: SK-EFI-B3E01 EFI material number: 1051-8483 EFI index: 11, standard EFI build time: 15:34:19 EFI build date: 11/05/2012 CPU rev.: 0x9 Chipset rev.: 0x4 Microcode: 0x15 CPU ID: 0x306A9 CPU Branding: Intel(R) Core(TM) i7-3517UE CPU @ 1.70 GHz ME firmware rev.: 8.0.13.1502 VBIOS rev.: 2137</pre>

**kboardinfo (continued)**

USAGE: (continued)	KOMaOEMF rev.:	Revision of KOMaOEMF protocol
	Board ID:	Kontron board identification value
	Hardware rev.:	Hardware revision of this board
	Logic rev.:	Logic revision of this board
	Boot flash:	Current boot flash: either "Standard SPI boot flash" or "Recovery SPI boot flash"
	In system slot:	Indicates that the board is installed in the system slot
	Geographic Address:	Geographic address of the cPCI backplane slot the board is currently plugged into
	Material number:	Kontron hardware reference number
	Hardware index:	Kontron hardware index
	Serial number:	This board's unique serial number
	EFI article name:	Kontron uEFI reference name
	EFI material number:	Kontron uEFI reference number
	EFI index:	Version of this uEFI BIOS
	EFI build time:	Build time of this uEFI BIOS
	EFI build date:	Build date of this uEFI BIOS
	CPU rev.:	Chip revision of the CPU
	Chipset rev.:	Chip revision of the chipset
	Microcode:	Currently loaded microcode
	CPU ID:	CPUID
	CPU Branding:	CPU identification string
ME firmware rev.:	Revision of the Intel® ME Firmware	
VBIOS rev.:	Revision of the Intel® Video BIOS	



6.2.4 kboot uEFI Shell Command

kboot

FUNCTION:	Boot a legacy OS Not to be used for uEFI BootLoaders!
SYNTAX:	<pre>kboot [-?] [-d] [-p <path>] [-n <name>] [-t <type>]</pre> <p>where:</p> <ul style="list-style-type: none"> -? Show online help -d Boot default order -p <path> Specify the path to the device to boot from -n <name> Specify the device name to boot from -t <type> Specify the device type to boot from <p>Available types are:</p> <ul style="list-style-type: none"> floppy harddrive cdrom network usb-floppy usb-harddrive usb-cdrom
DESCRIPTION:	The kboot command boots a legacy OS. If the requested device is not present, boot returns to shell. The kboot command cannot boot native uEFI-aware operating systems. But since these are bootable from shell by calling their bootloader, this is not necessary either. If a requested device is present but not bootable, uEFI continues to boot with the next bootable device in the boot order.
USAGE:	<p>Show all connected devices:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kboot</pre> <pre>_____ BBS_TABLE 00001 usb-harddrive "SanDisk Extreme 0001" Device path: PciRoot(0x0)/Pci(0x1d,0x0)/ USB(0x1,0x0)/USB(0x3,0x0) 00003 network "IBA GE Slot 0100 v1372" 00002 network "IBA GE Slot 0200 v1372" 00004 network "IBA GE Slot 0500 v1372" 00000 harddrive "P1: TOSHIBA MK1665GSX " Device path: PciRoot(0x0)/Pci(0x1f,0x2/Sata(0x1,0x0)</pre>



kboot

USAGE: (continued)	Boot from device containing the string "SanDisk": <code>Shell> kboot -n SanDisk</code>
	Boot from first device found that is of type harddrive: <code>Shell> kboot -t harddrive</code>
	Boot from device using the path to the device: <code>Shell> kboot -p "PciRoot(0x0)/Pci(0x1f,0x2/Sata(0x1,0x0)"</code>

6.2.5 kbootnsh uEFI Shell Command

kbootnsh

FUNCTION:	Manage the startup script stored in the flash
SYNTAX:	<pre>kbootnsh [-?] [-b] [-d] [[-g] [-p] <filename>]</pre> <p>where:</p> <ul style="list-style-type: none"> -b Display output page by page -? Show online help -g <filename> Store the current boot script to disk. If there is no physical disk drive present, the kmkramdisk command may be used. -p <filename> Store the shell script pointed to by filename to flash. Note: The shell script cannot be larger than 400 bytes. -d Delete the current startup script from flash.
DESCRIPTION:	The kbootnsh command manages the flash-stored startup script. If the shell is launched by the boot process, it executes a shell script stored in the flash. If the shell script terminates, the shell will continue the boot process. However, the shell script can of course contain any other boot command.
USAGE:	Get current startup script to file named boot.nsh COMMAND / RESPONSE EXAMPLE: <code>Shell> kbootnsh -g boot.nsh</code>
	Store file named boot.nsh to flash: COMMAND / RESPONSE EXAMPLE: <code>Shell> kbootnsh -p boot.nsh</code>
	Delete startup script: COMMAND / RESPONSE EXAMPLE: <code>Shell> kbootnsh -d</code>



6.2.6 kclearnvram uEFI Shell Command

kclearnvram

FUNCTION:	Clear the NVRAM to restore the system's default settings
SYNTAX:	<code>kclearnvram [-?] [-q]</code> where: -? Show online help -q Silent mode operation (for use of this command in shell scripts)
DESCRIPTION:	Invoking the kclearnvram command clears the system NVRAM. Since all uEFI settings are stored inside the NVRAM, the default settings are loaded afterwards. When invoked without the “-q” option, this command must be confirmed by pressing “c”. If invoked with the “-q” option, no confirmation is requested.

6.2.7 kflash uEFI Shell Command

kflash

FUNCTION:	Manage uEFI BIOS update
SYNTAX:	<pre>kflash [-?] [-h] [-q] [-c] [-i] [[-p] [-v] [-s] [-r] [-f] <file>]</pre> <p>where:</p> <ul style="list-style-type: none"> -? Show online help -h Show this help -p Program flash -i Show information string and check CRC -v Verify flashed image -s Save current ROM image to file -c Clone flash content to second flash -f Force write -q Silent mode, no user interaction required (for use of this command in shell scripts) -r Raw image mode (.bin, .rom) (expert function, not recommended for standard usage) <p><file> uEFI BIOS binary file</p>
DESCRIPTION:	The kflash command is used to program and verify the flash banks holding the uEFI BIOS code. uEFI BIOS binary files must be available from connected mass storage devices, such as USB flash drive or harddisk.
USAGE:	<p>Get help:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>shell> kflash -?</pre> <p>Get help:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>shell> kflash -h</pre> <p>Program the uEFI BIOS into the standard SPI boot flash:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>shell> kflash -p BIOS_file.kf1</pre> <p>Note: This function will select and update the standard SPI boot flash regardless of the DIP switch setting for boot flash selection.</p>



kflash (continued)

USAGE: (continued)	<p>Copy the currently running uEFI BIOS into the inactive SPI boot flash:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kflash -c</pre> <p>Note: Using this function will overwrite the inactive SPI boot flash. Failures during the process will make the inactive SPI boot flash invalid. In such cases, it will be necessary to execute the function again until the process completes successfully.</p>
------------------------------	--

6.2.8 kmkramdisk uEFI Shell Command

kmkramdisk

FUNCTION:	Create RAMdisk drives
SYNTAX:	<pre>kmkramdisk [-?] [-s <size> <name>]</pre> <p>where:</p> <pre>-? show help</pre> <pre>-s <size> <name> create a RAMdisk of given size in Megabytes with the mount point name <name></pre>
DESCRIPTION:	<p>Creates a RAMdisk of variable size. Can be very useful to perform file operations when no real filesystem is connected to the system.</p> <p>Note: The RAMdisk loses its mount point name after all drives are remapped by the map -r command. The RAMdisk will then be enumerated as any other connected drive and gain a mount point name like "fs0". This is not a bug of the kmkramdisk command but a normal function of the uEFI framework.</p>
USAGE:	<p>Create RAMdisk:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>rd:\> kmkramdisk -s 5 myramdisk</pre> <pre>Device mapping table</pre> <pre> myramdisk :BlockDevice - Alias (null)</pre> <pre> VenMsg' (93B5F448-127A-4B29-B306-</pre> <pre> 5BE8AAC4826E)</pre> <pre>Success - Force file system to mount</pre> <pre>rd:\> myramdisk:</pre> <pre>myramdisk:\> echo testfile > testfile</pre> <pre>myramdisk:\> ls</pre> <pre>Directory of: myramdisk:\</pre> <pre>05/24/08 04:39a 22 testfile</pre> <pre>1 File(s) 22 bytes</pre> <pre>0 Dir(s)</pre>

6.2.9 kpassword uEFI Shell Command

kpassword

FUNCTION:	Control uEFI setup and shell passwords
SYNTAX:	<pre>kpassword [-u [-n <password>] [-o <password>]] [-s [-n <password>] [-o <password>]]</pre> <p>where:</p> <ul style="list-style-type: none"> -u Install or change user password -s Install or change superuser password <p style="padding-left: 40px;">Additional options for automated scripting</p> <ul style="list-style-type: none"> -n <password> New password to be set -o <password> Password to be overwritten if one is already set <p style="padding-left: 40px;">When used without option “-n” the password is cleared</p>
DESCRIPTION:	<p>The kpassword command is used to determine the status of both passwords (set or not set) and to set or clear the uEFI shell and setup passwords. Both user and superuser (Administrator) passwords can be controlled with this command.</p> <p>Call without options to get current password status</p> <p>If a password has been previously entered, it must be re-entered to validate the command (-o <old-password>).</p> <p>Entering an empty password clears the password.</p>
USAGE:	<p>Set User password for uEFI setup and shell</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>kpassword -u No password is installed! Enter new USER password --> Retype password --> Done.</pre>



6.2.10 kresetconfig uEFI Shell Command

kresetconfig

FUNCTION:	Control the board reset behavior
SYNTAX:	<p>kresetconfig [-?] <parameter></p> <p>where:</p> <p>-? Show help</p> <p><parameter> pcislave [on off]</p> <p>Controls if the board shall react on a CPCI backplane reset if it is used as slave board in a peripheral slot. It has no effect if the board is located within a CPCI master slot.</p> <p>Note: This parameter is volatile and at next start is set to off.</p>
DESCRIPTION:	The kresetconfig command controls the board's reset behavior.
USAGE:	<p>Enable cPCI backplane reset:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kresetconfig pcislave on Reset from system master is enabled</pre> <p>Disable cPCI backplane reset:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kresetconfig pcislave off Reset from system master is disabled</pre>



6.2.11 kSettings uEFI Shell Command

kSettings

FUNCTION:	Verify the validity of the setup settings
SYNTAX:	<pre>kSettings [-?] [[-s] [-c] <file>]</pre> <p>where:</p> <ul style="list-style-type: none"> -? show help -s Save current setup settings to “file” -c Compare current setup settings to “file” <file> “file” to be used for saving or comparison
DESCRIPTION:	<p>The kSettings command is used to create a binary file of the current setup settings. This file can later be used to check whether the settings have changed or not.</p> <p>To use this command a device with a FAT file system is required to be connected.</p>
USAGE:	<p>Save current setup settings (assumes that FAT file system is mapped to fs0:)</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>fs0:\> kSettings -s companyDefaults.bin Reading flash content... done Saving setup settings to file... done</pre> <p>Check whether current setup settings differ from “file”</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>fs0:\> kSettings -c companyDefaults.bin Reading flash content... done Setup settings and file match</pre>



6.2.12 kwdt uEFI Shell Command

kwdt

FUNCTION:	Configure the Kontron onboard Watchdog
SYNTAX:	<pre>kwdt [-?] [-t <timeindex>]</pre> <p>where:</p> <ul style="list-style-type: none"> -? Show help Call kwdt -? to obtain a list of time index values and related times -t <timeindex> Configure the Watchdog with the time related to time-index and activate it with reset routing
DESCRIPTION:	The kwdt command allows to enable the Kontron onboard Watchdog with reset target before OS boot. This can be used to detect if the OS fails to boot and react by reset. The OS Watchdog driver is required for this functionality to operate.
USAGE:	<p>Get help:</p> <p>COMMAND / RESPONSE EXAMPLE:</p> <pre>Shell> kwdt -? -t [time] - set Timer value 0 = 125ms value 1 = 250ms value 2 = 500ms value 3 = 1s value 4 = 2s value 5 = 4s value 6 = 8s value 7 = 16s value 8 = 32s value 9 = 64s value 10 = 128s value 11 = 256s value 12 = 512s value 13 = 1024s value 14 = 2048s value 15 = 4096s</pre> <p>Set Watchdog to 16 seconds and activate it</p> <p>COMMAND / RESPONSE EXAMPLE (none):</p> <pre>Shell> kwdt -t 7</pre> <p>Note: Because there is no application which triggers the Watchdog, the system will be reset after 16 seconds in this case. This command should be invoked from a script, followed by an operating system boot, and the OS then has to start triggering the Watchdog.</p>



kwdt (continued)

USAGE: (continued)

Display Watchdog configuration:

COMMAND / RESPONSE EXAMPLE:

```
Shell> kwdt
Kontron Board Watchdog Configuration:
Watchdog Configuration Register (0x28C): 0x00
```

6.3 uEFI Shell Scripting

6.3.1 Startup Scripting

If the ESC key is not pressed and the timeout is run out, the uEFI Shell tries to execute some startup scripts automatically. It searches for scripts and executes them in the following order:

1. Kontron flash-stored startup script
2. If there is no Kontron flash-stored startup script present, the uEFI-specified `startup.nsh` script is used. This script must be located on any of the attached FAT formatted disk drives under `\efi\boot\startup.nsh`.
3. If none of the startup scripts is present or the startup script terminates, the default boot order is continued.

6.3.2 Create a Startup Script

Startup scripts can be created using the uEFI Shell built-in editor `edit` or under any OS with a plain text editor of your choice. To create a startup shell script, simply save the script on any FAT-formatted drive attached to the system under the file name `\efi\boot\startup.nsh`. To copy the startup script to the flash use the `kbootnsh` uEFI Shell command.

In case there is no mass storage device attached, the startup script can be generated in a RAM disk and stored in the flash bank.

6.3.3 Examples of Startup Scripts

6.3.3.1 Automatic Booting from USB Flash Drive

Automatic booting is made from a USB flash drive, if present, otherwise the boot is made from the harddrive.

```
kboot -t usb-harddrive
kboot -t harddrive
```

If neither a USB flash drive nor a harddrive is present, the boot order is continued.



6.3.3.2 Execute Shell Script on Other Harddrive

This example executes the shell script named `bootme.nsh` located in the root of the first detected disc drive (`fs0`).

```
fs0:  
bootme.nsh
```

6.3.3.3 Enable Watchdog and Control PXE Boot

The uEFI Shell provides environment variables used to control the execution flow.

The following sample start-up script shows two uEFI Shell environment variables, `wdt_enable` and `pxe_first`, used to control the boot process and the Watchdog.

```
echo -off  
echo "Executing sample startup.nsh..."  
if %wdt_enable% == "on" then  
    kwdt -t 15  
    echo "Watchdog enabled"  
endif  
if %pxe_first% == "on" then  
    echo "forced booting from network"  
    kboot -t network  
endif
```

To create uEFI Shell environment variables, use the **set** uEFI Shell command as shown below:

```
Shell> set wdt_enable on  
Shell> set pxe_first on  
Shell> set  
    pxe_first : on  
    wdt_enable : on  
Shell> reset
```



6.3.3.4 Handling the Startup Script in the Flash Bank

In case there is no mass storage device attached, the startup script can be generated in a RAM disk and stored in the flash bank using the following instructions:

1. Press <ESC> during power-up to log into the uEFI Shell.
2. Create a RAM disk and set the proper working directory as shown below:

```
Shell> kmkramdisk -s 3 myramdisk
Shell> myramdisk:
```

3. Enter the sample start-up script mentioned above in this section using the **edit** uEFI Shell command.

```
myramdisk:\> edit boot.nsh
```

4. Save the start-up script to the uEFI flash bank using the **kbootnsh** uEFI Shell command.

```
myramdisk:\> kbootnsh -p boot.nsh
```

5. Reset the board to execute the newly installed script using the **reset** uEFI Shell command.

```
myramdisk:\> reset
```

6. If a script is already installed, it can be edited using the following **kbootnsh** uEFI Shell commands.

```
myramdisk:\> kbootnsh -g boot.nsh
myramdisk:\> edit boot.nsh
```



Chapter

7

Updating the uEFI BIOS



This page has been intentionally left blank.





7. Updating the uEFI BIOS

BIOS updates are typically delivered as an Update CD ISO image. This ISO image needs just to be burned to a CD and booted. Follow the menu for updating the uEFI BIOS.

7.1 uEFI BIOS Fail-Over Mechanism

The CP3003-SA/CP3003-V has two SPI boot flashes programmed with the uEFI BIOS, a standard SPI boot flash and a recovery SPI boot flash. The basic idea behind that is to always have at least one working uEFI BIOS flash available regardless if there have been any flashing errors or not.

7.2 Updating Procedure

An Update CD ISO image is provided for flashing the latest uEFI BIOS on the standard SPI boot flash. The standard SPI boot flash can also be programmed with the latest uEFI BIOS via the **kflash -p** uEFI Shell command.

Note: To have the same content in both SPI boot flashes, clone the standard SPI boot flash to the recovery SPI boot flash. For further information, please refer to Chapter 6.2.7, **kflash** uEFI Shell Command.

7.3 uEFI BIOS Recovery

In case of the standard SPI boot flash being corrupted and therefore the board not starting up, the board can be booted from the recovery SPI boot flash if the DIP switch SW1, switch 2 is set to OFF.

For further information about the boot configuration, refer to the respective chapters in the board's user guide or contact Kontron for further assistance. Information about the boot configuration for the CP3003-SA/CP3003-V is provided in the CP3003-SA/CP3003-V User Guide, Chapter 4.1.

7.4 Determining the Active Flash

Sometimes it may be necessary to check which flash is active. On the AMI Aptio-based uEFI BIOS, the information is available using the **kboardinfo** uEFI Shell command. For further information, refer to Chapter 6.2.3, **kboardinfo** uEFI Shell Command.



This page has been intentionally left blank.

