CP6001/CP6001-R3/CP6001-V

6U CompactPCI Processor Boards

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BIOS Guide

kontron

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1.0	Initial issue	17-Dec-2007
2.0	General update; addition of information regarding the BIOS for the CP6001-R3 and the CP6001-V CompactPCI boards	19-Nov-2008

Applicability

This BIOS Guide applies to the CP6001, the CP6001-R3 and the CP6001-V CompactPCI boards, hereafter referred to as board. Information related to a specific Kontron CompactPCI board is identified accordingly. The screens presented are representative for all Kontron CompactPCI boards referred to in this manual except where explicitly otherwise indicated.

Imprint

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Chapter 1

Starting BIOS Setup

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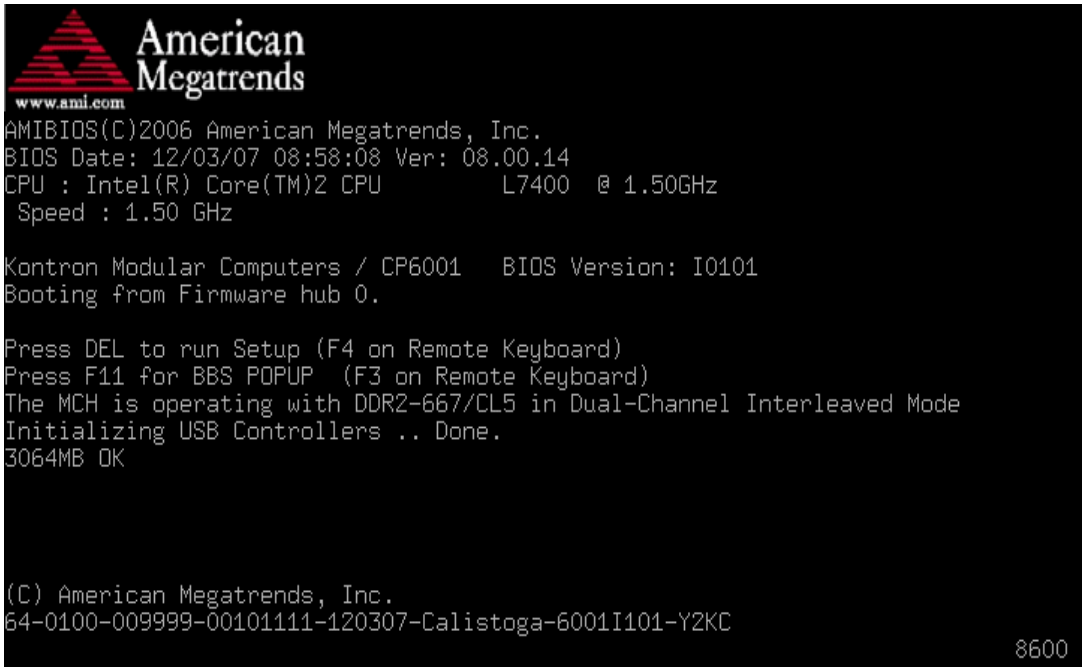
1. Starting BIOS Setup

The CP6001/CP6001-R3/CP6001-V is provided with a Kontron-customized, pre-installed and configured version of AMI's BIOS. This BIOS is based on the AMIBIOS®8 core which provides a variety of new and enhanced functions specifically tailored to the hardware features of the CP6001/CP6001-R3/CP6001-V.

To take advantage of these functions, the BIOS comes with a setup program which provides quick and easy access to the individual function settings for control or modification of the 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 BIOS Setup program, follow the steps below:

STEP	DESCRIPTION
1	Power on the board
2	Press the <Delete> key on your keyboard when the following text prompt appears: Press DEL to run Setup 
3	After pressing the <Delete> key, the Main BIOS Setup screen is displayed. Access is now available to all of the other setup screens by simply selecting the appropriate menu tab.

Note: The <Delete> key is normally used to start the BIOS Setup program. If the board is connected to a terminal, use the <F4> key to start the BIOS Setup program.

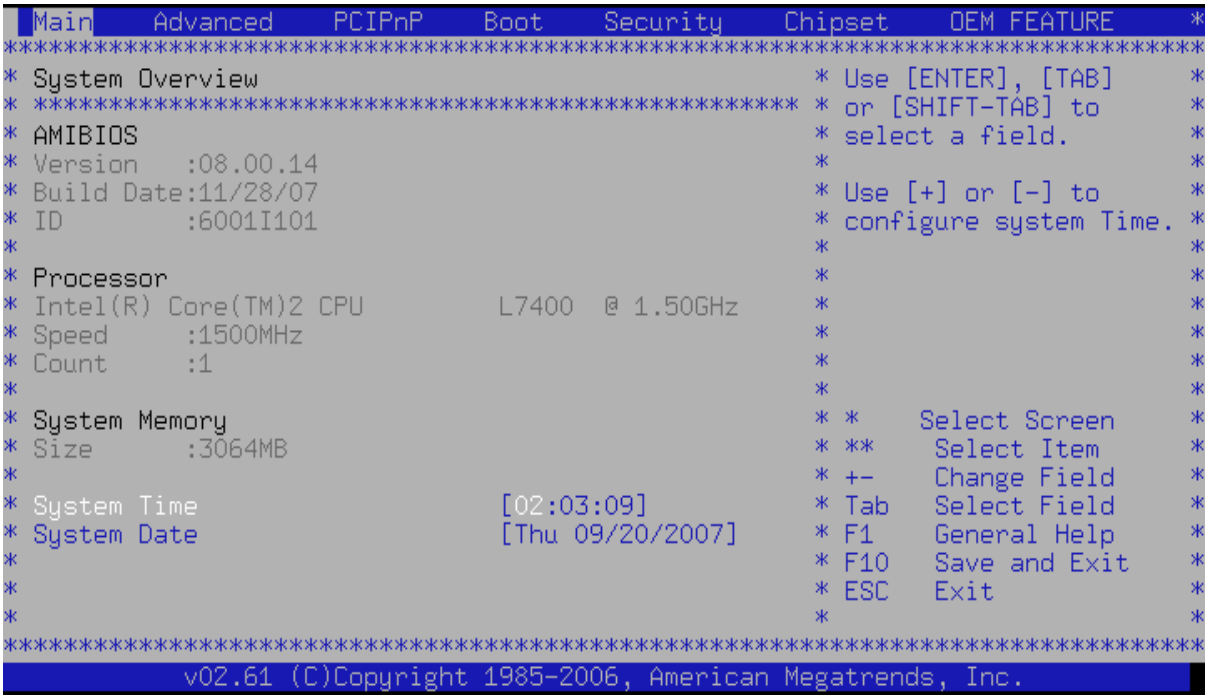
Main Setup Menu

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 an function is selected in the left frame, it is displayed in white. Often a text message will accompany it.



Setup Default Override (SDO)

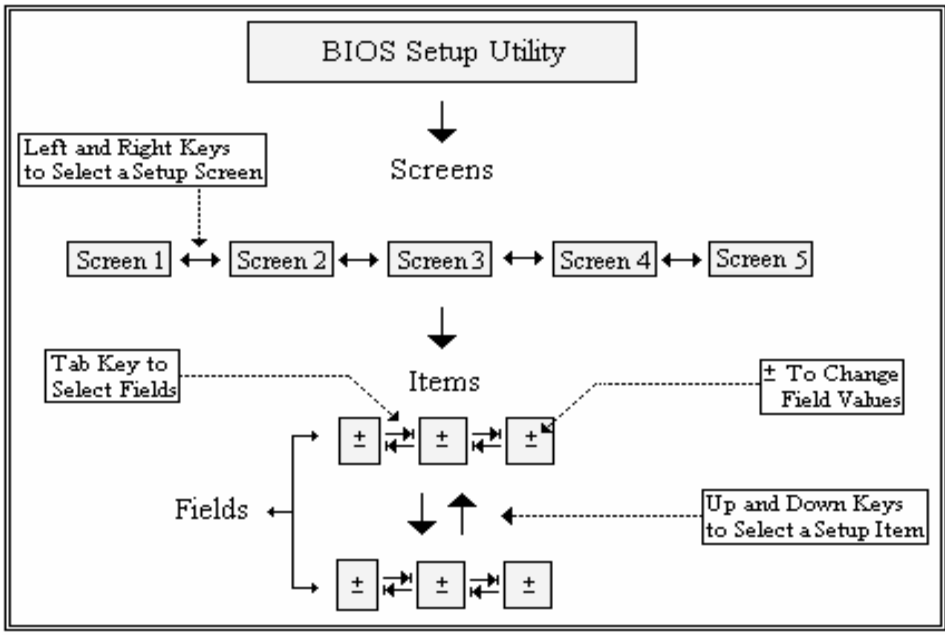
BIOS normally has to two types of default settings: Optimal and Fail-Safe, which can be loaded as required.

The CP6001/CP6001-R3/CP6001-V BIOS provides functionality which permits overriding of the default settings for Optimal and Fail-Safe defaults for certain functions to be specified. This functionality is known as “Setup Default Override” and its usage is documented under the OEM Feature: Setup Default Configuration (SDO).

Functions for which the Optimal and Fail-Safe defaults can be overridden are indicated by the superscripted letters SDO after the function title: e.g. **Remote Access** ^{SDO}.

Navigation

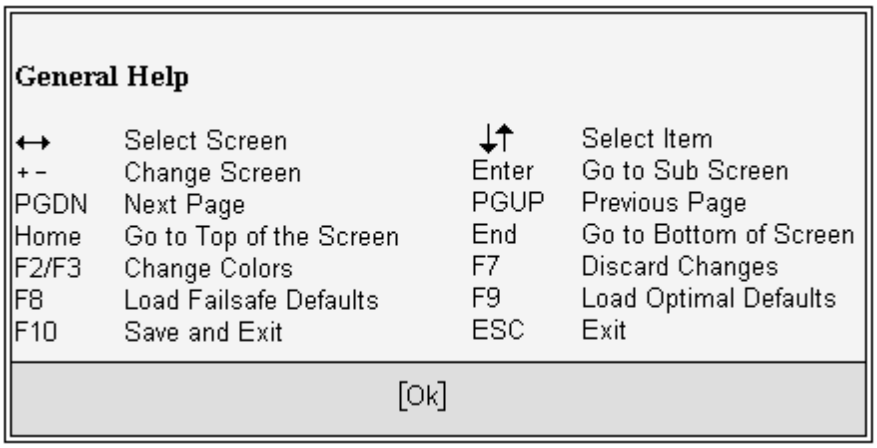
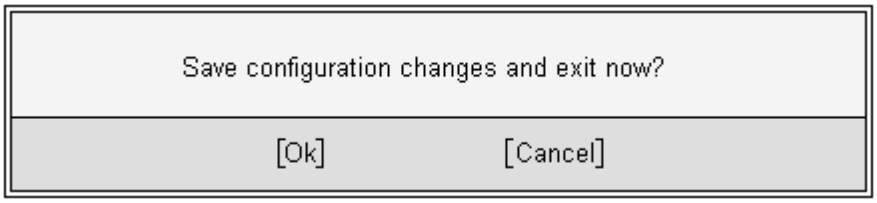
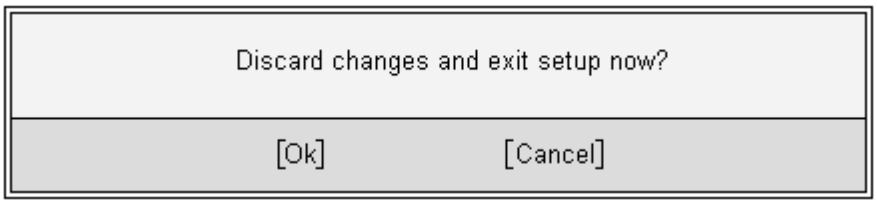
The BIOS setup program uses a hot key-based navigation system. Most of these hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.



Note: There is a hot key legend located in the right frame on most CP6001/CP6001-R3/CP6001-V BIOS setup screens.

HOT KEY	DESCRIPTION
→← Left/Right	The *Left and Right* <Arrow> keys are used to select a major setup screen. For example: Main Screen, Advanced Screen, Chipset Screen, and so on.
↑ ↓ Up/Down	The *Up and Down* <Arrow> keys are used to select a setup function or a sub-screen.
+- Plus/Minus	The *Plus and Minus* <Arrow> keys are used to change the field value of a particular setup function. For example: Date and Time.
Tab	The <Tab> key is used to select function fields.

Note: The <F8> key on the keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the <F8> key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow booting with the least amount of options set. This can lessen the probability of conflicting settings.

HOT KEY	DESCRIPTION
F1	The <F1> key is used to display the *General Help screen*. Press the <F1> key to open the *General Help screen*. 
F10	The <F10> key is used to save any changes you have made and exit BIOS Setup. Press the <F10> key to save your changes. The following screen will appear:  Press the <Enter> key to save the configuration and exit. To abort this function and return to the previous screen, use the <Arrow> key to select *Cancel* and then press the <Enter> key.
ESC	The <Esc> key is used to discard any changes you have made and exit the BIOS Setup. Press the <Esc> key to exit the CP6001/CP6001-R3/CP6001-V setup without saving the changes. The following screen will appear:  Press the <Enter> key to discard changes and exit. To abort this function and return to the previous screen, use the <Arrow> key to select *Cancel* and then press the <Enter> key.
Enter	The <Enter> key is used to display or change the function setting listed for a particular setup item. The <Enter> key can also be used to display the setup sub-screens.

Note: If the CP6001/CP6001-R3/CP6001-V is connected to a terminal, the <F8>, <F9> and <F10> keys cannot be used via the serial port.

Chapter 2

Main Setup

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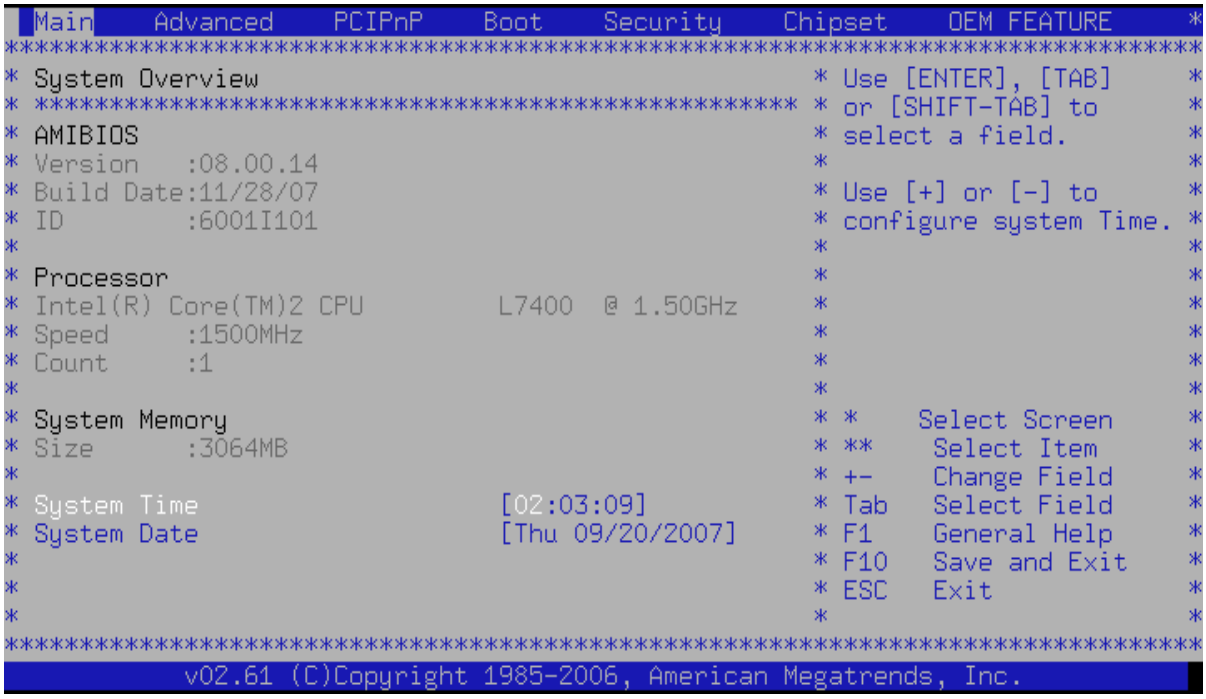
2. Main Setup

Upon entering the BIOS Setup program, the Main setup screen is displayed. This screen 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.



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. Press the <Tab> key or the Left and Right <Arrow> keys to move between fields.

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.

System Date

SETTING	DESCRIPTION
<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. Press the <Tab> key or the Left and Right <Arrow> keys to move between fields.

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Chapter 3

Advanced Setup

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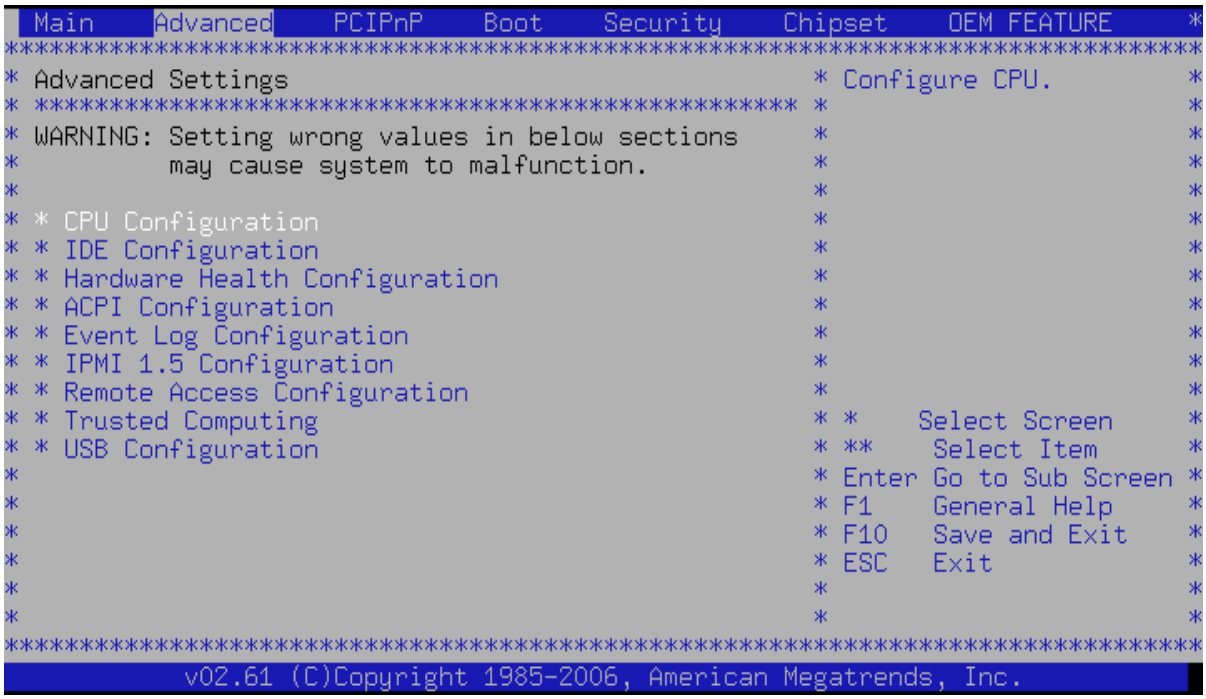
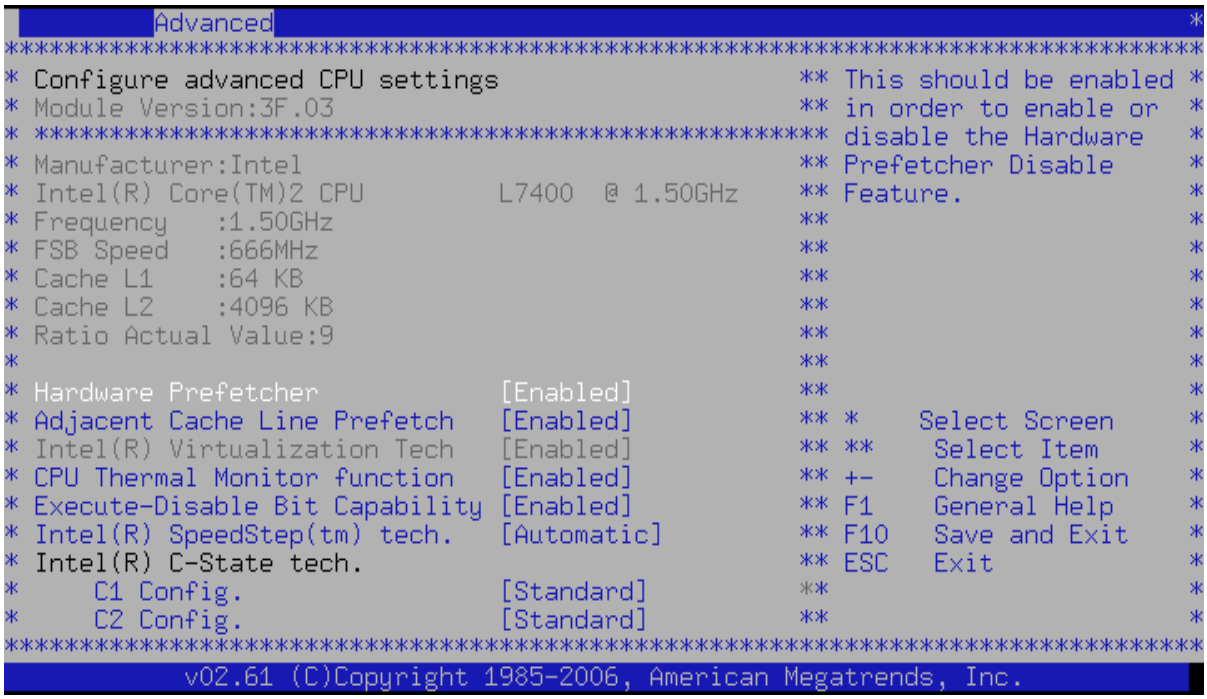
3. Advanced Setup

Select the Advanced tab to enter the Advanced Setup screen. This screen lists the advanced configuration sub-screens. To display a sub-screen, select it using the <Arrow> keys and press <Enter>.



CPU CONFIGURATION SCREEN

This screen provides basic information about the CPU and functions for specifying CPU configuration settings.



Max CPUID Value Limit

This function is used to determine the values that the operating system can write to the CPUID's EAX register to obtain information about the processor.

Note: This function must be disabled for Windows XP. Also it is only available with Core™ Duo versions.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Max CPUID Value Limit function.
Enabled	Use this setting to enable the Max CPUID Value Limit function.

Optimal and Fail-Safe default settings: Disabled

Hardware Prefetcher

This function is used to enable CPU hardware prefetching.

Note: This function is only available with Core™2 Duo versions.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the CPU hardware prefetching.
Enabled	Use this setting to enable the CPU hardware prefetching.

Optimal and Fail-Safe default settings: Enabled

Adjacent Cache Line Prefetch

This function is used to enable the prefetching of complete cache lines.

Note: This function is only available with Core™2 Duo versions.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the adjacent cache line prefetching.
Enabled	Use this setting to enable the adjacent cache line prefetching.

Optimal and Fail-Safe default settings: Enabled

Intel® Virtualization Tech (CP6001/CP6001-R3)

This function is used to enable a Virtual Machine Manager (VMM) to utilize the additional hardware capabilities provided by the Vanderpool Technology. To change the state of this function, a hardware reset is necessary.

SETTING	DESCRIPTION
Disabled	Use this setting to disable CPU virtualization capability.
Enabled	Use this setting to enable the Vanderpool Technology. A VMM can utilize the additional hardware capabilities provided by the Vanderpool Technology.

Optimal and Fail-Safe default settings: Enabled

CPU Thermal Monitor Function SDO

This function is used to specify the Thermal Monitor Feature. BIOS chooses Intel® Thermal Monitor 1 (TM1) to control the processor temperature and the power consumption by activating the Thermal Control Circuit (TCC) when the processor silicon reaches its maximum operating temperature.

If the processor supports the Intel® Enhanced SpeedStep™ technology, BIOS chooses Intel® Thermal Monitor 2 (TM2), which controls the processor temperature and power consumption by initiating an Intel® Enhanced Speedstep™ Technology transition when the processor silicon reaches its maximum operating temperature.

If Disabled is selected, the BIOS disables the Thermal Monitor 1 or the Thermal Monitor 2 Feature respectively, i.e. the BIOS disables the CPU built in automatic thermal throttling. If the CPU becomes overheated, the CP6001/CP6001-R3/CP6001-V will shut off automatically.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the CPU Thermal Monitor function.
Enabled	Use this setting to enable the CPU Thermal Monitor function.

Optimal and Fail-Safe settings: Enabled

Note: Intel® Thermal Monitor 1 or Intel® Thermal Monitor 2 must be enabled for the processor to operate within specification.

Execute Disable Bit Capability

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Execute Disable Bit function. When this setting is used, the BIOS forces the XD feature flag to always return to 0.
Enabled	Use this setting to enable the Execute Disable Bit function.

Optimal and Fail-Safe default settings: Enabled

Intel® SpeedStep™ tech. SDO

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Intel® SpeedStep™ feature. Use of this setting will force the BIOS to use minimum speed.
Maximum Speed	Use this setting to set the maximum speed.
Minimum Speed	Use this setting to set the minimum speed.
Automatic	Use this setting to allow the operating system to control the CPU speed. The BIOS will start with high CPU speed.

Optimal and Fail-Safe default settings: Automatic

Intel® C-STATE tech.: Cn Config

This function controls the availability of the CPU C-STATE power saving technology. The individual C-STATE functions are selectable independent of one another, i.e. C1, C2, C3, and C4 may be enabled/disabled in any combination.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Cn Config.
Standard	Use this setting to make the Cn State available to the OS.

Optimal and Fail-Safe default settings for C1, C2 and C3: Standard
Optimal and Fail-Safe default settings for C4: Disabled

IDE CONFIGURATION SCREEN

This screen provides functions for specifying IDE configuration settings.

ATA/IDE Configuration

This function specifies the IDE channel modes.

SETTING	DESCRIPTION
Disabled	Use this setting to completely disable all PATA and SATA devices. This setting prevents the OS from detecting the controller devices.
Compatible	Use this setting to allow the PATA channel and two out of four SATA devices to be joined together to one legacy IDE compatible PCI controller device.
Enhanced	Use this setting to allow the PATA channel and the SATA devices to appear as two independent PCI controller devices.

Optimal and Fail-Safe default settings: Enhanced

Legacy IDE Channels

This function controls the configuration of the available device channels within the legacy compatible IDE controller device.

Note: This function is only available when the IDE Configuration is set to Compatible.

SETTING	DESCRIPTION
SATA Only	Use this setting to specify the onboard SATA connector (SATA0) as the primary master, the daughterboard connector (SATA2) as the secondary master, the RIO-1 channel (SATA1) as the primary slave, and the RIO-2 channel (SATA3) as the secondary slave.
PATA Pri, SATA Sec	Use this setting to specify the PATA channel as the primary channel, the RIO-1 SATA channel (SATA1) as the secondary master, and the RIO-2 (SATA3) as the secondary slave.
SATA Pri, PATA Sec	Use this setting to specify the onboard SATA connector as the primary master, the daughterboard SATA connector as the primary slave and the PATA channel as the secondary channel.
PATA Only	Use this setting to specify the PATA channel as the primary channel. With this setting, all SATA connectors are disabled by default.

Optimal and Fail-Safe default settings: SATA Pri, PATA Sec

Configure SATA as

This function controls the SATA controller device's operating mode.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the SATA controller.
IDE	Use this setting to allow the SATA controller to operate as a legacy IDE controller. In this case, old IDE drivers can be used.
RAID	Use this setting to allow the SATA controller to operate as a RAID controller. This setting is available only on the CP6001.
AHCI	Use this setting to allow the SATA controller to operate as an AHCI controller. In this case, AHCI drivers must be used.

Optimal and Fail-Safe default settings when the configuration is set to Enhanced: IDE
Optimal and Fail-Safe default settings when the configuration is set to PATA only: Disabled

Configure SATA Channels

This function configures the BIOS logical drive order.

Note: This function is only available when the IDE Configuration is set to Enhanced.

SETTING	DESCRIPTION
Before PATA	Use this setting to specify that the SATA controller device's channels are enumerated as primary and slave channels and the PATA controller's channel is enumerated as third.
Behind PATA	Use this setting to specify that the PATA controller channel is enumerated as primary and the SATA controller's channels are enumerated as third and forth.

Optimal and Fail-Safe default settings: Before PATA

Hard Disk Drive Write Protect

This function is used to enable write protection for all hard disk drives in the system.

SETTING	DESCRIPTION
Disabled	Use this setting to allow the hard disk drive to be used normally. Read, write, and erase functions can be performed to the hard disk drive.
Enabled	Use this setting to prevent the hard disk drive from being erased.

Optimal and Fail-Safe default settings: Disabled

IDE Detect Timeout (Seconds)

This function is used to specify the number of seconds after which the BIOS stops searching for IDE devices. Basically, this allows you to fine-tune the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all IDE disk drives attached is found.

Note: Different IDE disk drives take longer for the BIOS to locate than others do.

SETTING	DESCRIPTION
0	This value is the best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS.
5	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within five seconds. A large majority of ultra ATA hard disk drives can be detected well within five seconds.
10	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 10 seconds.
15	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 15 seconds.
20	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 20 seconds.
25	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 25 seconds.
30	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 30 seconds.
35	Use this setting to stop the BIOS from searching the IDE bus for IDE disk drives within 35 seconds. This is the recommended setting when all IDE connectors are set to *AUTO* in the BIOS setting.

Optimal and Fail-Safe default settings: 35

ATA (PI) 80-Pin Cable Detection

This function is used to select the method used to detect the ATA (PI) 80-pin cable.

SETTING	DESCRIPTION
Host & Device	Use this setting when both the motherboard onboard IDE controller and the IDE disk drive are to be used to detect the type of IDE cable used.
Host	Use this setting when the motherboard onboard IDE controller is to be used to detect the type of IDE cable used.
Device	Use this setting when the IDE disk drive is to be used to detect the type of IDE cable used.

Optimal and Fail-Safe default settings: Host & Device

The use of an 80-conductor ATA cable is mandatory for running Ultra ATA/66, Ultra ATA/100 and Ultra ATA/133 IDE hard disk drives. The standard 40-conductor ATA cable cannot handle the higher speeds.

The 80-conductor ATA cable is plug-compatible with the standard 40-conductor ATA cable. Because of this, the system must determine the presence of the correct cable.

This detection is achieved via an open in the host connector in one of the lines on the 80-conductor ATA cable that is normally an unbroken connection in the standard 40-conductor ATA cable. It is this break that is used to make this determination. The BIOS can instruct the drive to run at the correct speed for the cable type detected.

SATA Speed Limit

This function limits the maximum Serial ATA transfer speed.

SETTING	DESCRIPTION
No Limit	Use this setting when the SATA transfer speed is to depend on the drive capability up to 3.0 Gbit/s.
GEN1 Rate	Use this setting when the SATA transfer speed is to be limited to 1.5 Gbit/s (GEN1 Rate).

Optimal and Fail-Safe default settings: No Limit

Primary, Secondary, Third and Fourth IDE Master and Slave

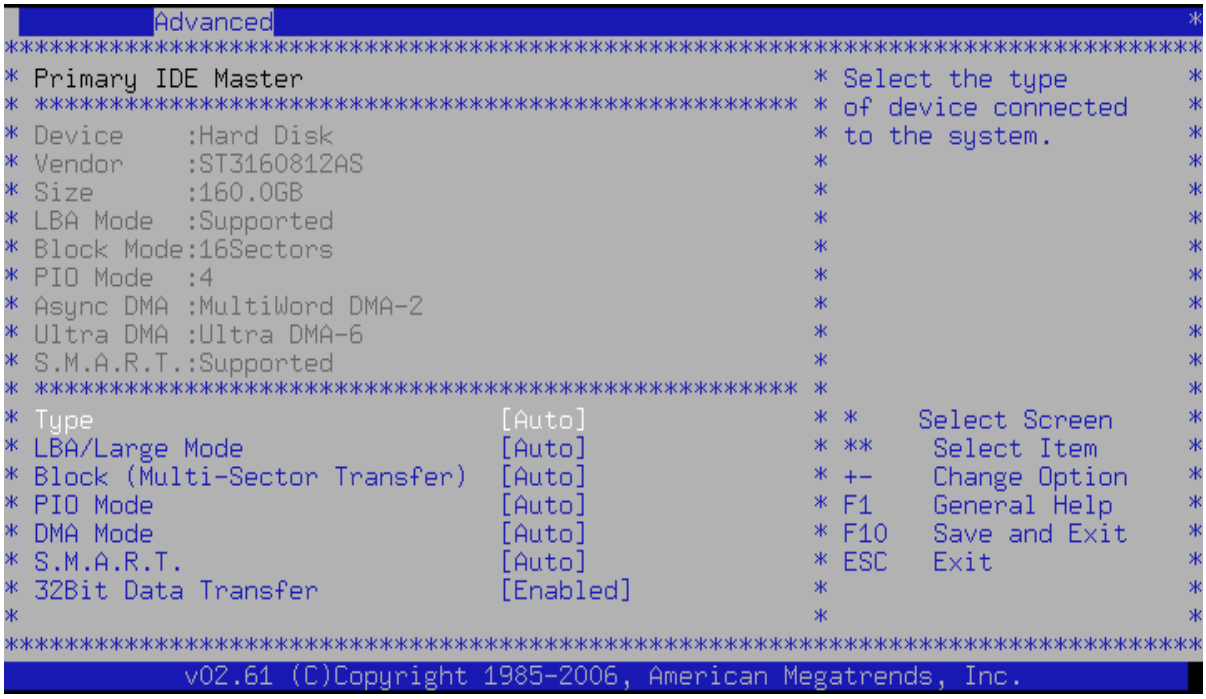
These functions provide access to the Primary, Secondary, Third and Fourth IDE Master and Slave sub-screens. They are only available if an IDE device is detected as Primary, Secondary, Third or Fourth IDE Master or Slave.

To access the submenu for the Primary, Secondary, Third and Fourth IDE Master and Slave drives, select the respective function from the IDE Configuration screen and press <Enter>.

The following screen is representative for the Primary, Secondary, Third and Fourth IDE Master and Slave devices.

PRIMARY IDE MASTER SCREEN

This screen provides information about the Primary IDE Master device and functions for specifying various device configuration settings.



Drive Parameters

The “grayed-out” items in the left frame are the IDE disk drive parameters taken from the firmware of the IDE disk drive selected. The drive parameters listed are as follows:

PARAMETER	DESCRIPTION
Device	Type of device, such as hard disk drive.
Vendor	Manufacturer of the device.
Size	The size of the device.
LBA Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The CP6001/CP6001-R3/CP6001-V supports 48-bit LBA mode. Thus, hard disks with a drive capacity of greater than 137 GB and can be used on the CP6001/CP6001-R3/CP6001-V.
Block Mode	Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
PIO Mode	IDE PIO mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.
Async DMA	This indicates the highest Asynchronous DMA Mode that is supported.
Ultra DMA	This indicates the highest Synchronous DMA Mode that is supported.
S.M.A.R.T.	Self-Monitoring Analysis and Reporting Technology protocol used by IDE drives of some manufacturers to predict drive failures.

Type

SETTING	DESCRIPTION
Not Installed	Use this setting to prevent the BIOS from searching for an IDE disk drive on the specified channel.
Auto	Use this setting to allow the BIOS to auto detect the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
CDROM	Use this setting to specify that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS will not attempt to search for other types of IDE disk drives on the specified channel.
ARMD	Use this setting to specify an ATAPI Removable Media Device. This includes, but is not limited to: • ZIP • LS-120

Optimal and Fail-Safe default settings: Auto

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

Note: For drive capacities over 137 GB, the BIOS must be equipped with 48-bit LBA mode addressing.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using Large Block Addressing mode control on the specified channel.
Auto	Use this setting to allow the BIOS to auto detect the Large Block Addressing mode control on the specified channel.

Optimal and Fail-Safe default settings: Auto

Block (Multi-Sector Transfer)

This function sets the block mode multi-sector transfer feature.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time.
Auto	Use this setting to allow the BIOS to auto detect device support for Multi-Sector Transfers on the specified channel. If supported, use this setting to allow the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to the memory. The data transfer to and from the device will occur multiple sectors at a time.

Optimal and Fail-Safe default settings: Auto

PIO Mode

The IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

SETTING	DESCRIPTION
Auto	Use this setting to allow the BIOS to auto detect the PIO mode if the IDE disk drive support cannot be determined.
0	Use this setting to allow the BIOS to use PIO mode 0. This mode has a data transfer rate of 3.3 Mbit/s.
1	Use this setting to allow the BIOS to use PIO mode 1. This mode has a data transfer rate of 5.2 Mbit/s.
2	Use this setting to allow the BIOS to use PIO mode 2. This mode has a data transfer rate of 8.3 Mbit/s.
3	Use this setting to allow the BIOS to use PIO mode 3. This mode has a data transfer rate of 11.1 Mbit/s.
4	Use this setting to allow the BIOS to use PIO mode 4. This mode has a data transfer rate of 16.6 Mbit/s. This setting generally works with all hard disk drives manufactured after 1999. For other disk drive, such as IDE CD-ROM drives, check the specifications of the drive.

Optimal and Fail-Safe default settings: Auto

DMA Mode

This function is used to adjust the DMA mode options.

SETTING	DESCRIPTION
Auto	Use this setting to allow the BIOS to auto detect the DMA mode if the IDE disk drive support cannot be determined.
SWDMA0	Use this setting to allow the BIOS to use Single Word DMA mode 0. This mode has a data transfer rate of 2.1 MB/s.
SWDMA1	Use this setting to allow the BIOS to use Single Word DMA mode 1. This mode has a data transfer rate of 4.2 MB/s.
SWDMA2	Use this setting to allow the BIOS to use Single Word DMA mode 2. This mode has a data transfer rate of 8.3 MB/s.
MWDMA0	Use this setting to allow the BIOS to use Multi Word DMA mode 0. This mode has a data transfer rate of 4.2 MB/s.
MWDMA1	Use this setting to allow the BIOS to use Multi Word DMA mode 1. This mode has a data transfer rate of 13.3 MB/s.
MWDMA2	Use this setting to allow the BIOS to use Multi Word DMA mode 2. This mode has a data transfer rate of 16.6 MB/s.
UDMA0	Use this setting to allow the BIOS to use Ultra DMA mode 0. This mode has a data transfer rate of 16.6 MB/s, which is the same transfer rate as the PIO mode 4 and the Multi Word DMA mode 2.
UDMA1	Use this setting to allow the BIOS to use Ultra DMA mode 1. This mode has a data transfer rate of 25 MB/s.
UDMA2	Use this setting to allow the BIOS to use Ultra DMA mode 2. This mode has a data transfer rate of 33.3 MB/s.
UDMA3	Use this setting to allow the BIOS to use Ultra DMA mode 3. This mode has a data transfer rate of 44.4 MB/s. To use this mode, it is required that an 80-conductor ATA cable is used.
UDMA4	Use this setting to allow the BIOS to use Ultra DMA mode 4. This mode has a data transfer rate of 66.6 MB/s. To use this mode, it is required that an 80-conductor ATA cable is used.
UDMA5	Use this setting to allow the BIOS to use Ultra DMA mode 5. This mode has a data transfer rate of 99.9 MB/s. To use this mode, it is required that an 80-conductor ATA cable is used.
UDMA6	Use this setting to allow the BIOS to use Ultra DMA mode 6. This mode has a data transfer rate of 133.2 MB/s. To use this mode, it is required that an 80-conductor ATA cable is used.

Optimal and Fail-Safe default settings: Auto

S.M.A.R.T. for Hard Disk Drives

The Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures.

SETTING	DESCRIPTION
Auto	Use this setting to allow the BIOS to auto detect hard disk drive support if the IDE disk drive support cannot be determined.
Disabled	Use this setting to prevent the BIOS from using the SMART feature.
Enabled	Use this setting to allow the BIOS to use the SMART feature on support hard disk drives.

Optimal and Fail-Safe default settings: Auto

32Bit Data Transfer

This function is used to set the 32-bit data transfer.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using 32-bit data transfers.
Enabled	Use this setting to allow the BIOS to use 32-bit data transfers on support hard disk drives.

Optimal and Fail-Safe default settings: Enabled

ARMD Emulation Type

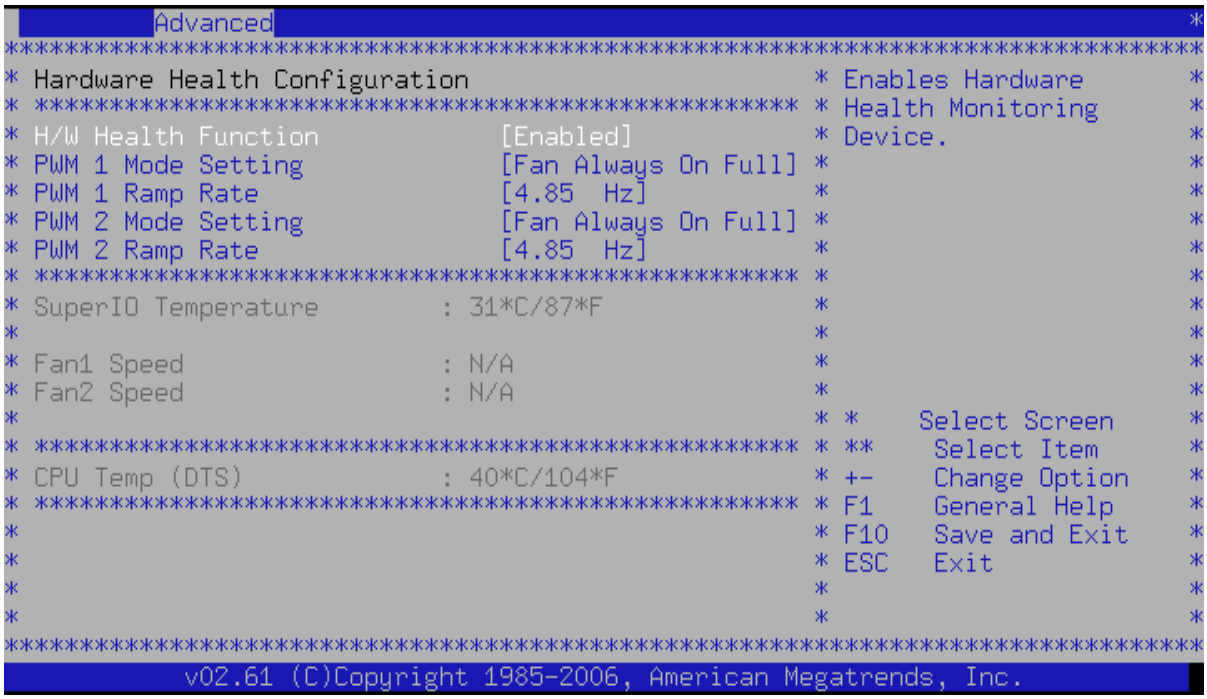
An ATAPI Removable Media Device (ARMD) is a device that uses removable media, such as the LS120, MO (Magneto-Optical), or Iomega Zip drives.To boot from media on an ARMD, it is required to emulate booting from a floppy or hard disk drive. This is especially necessary when trying to boot to DOS.

SETTING	DESCRIPTION
Auto	Use this setting to allow the BIOS to automatically set the emulation used by ARMD.
Floppy	Use this setting to specify that ARMD should emulate a floppy drive during boot up.
Hard disk drive	Use this setting to specify that ARMD should emulate a hard disk drive during boot up.

Optimal and Fail-Safe default settings: Auto

HARDWARE HEALTH CONFIGURATION SCREEN

This screen provides information about the hardware health attributes as well as functions for specifying the hardware health configuration settings.



Hardware Health Function

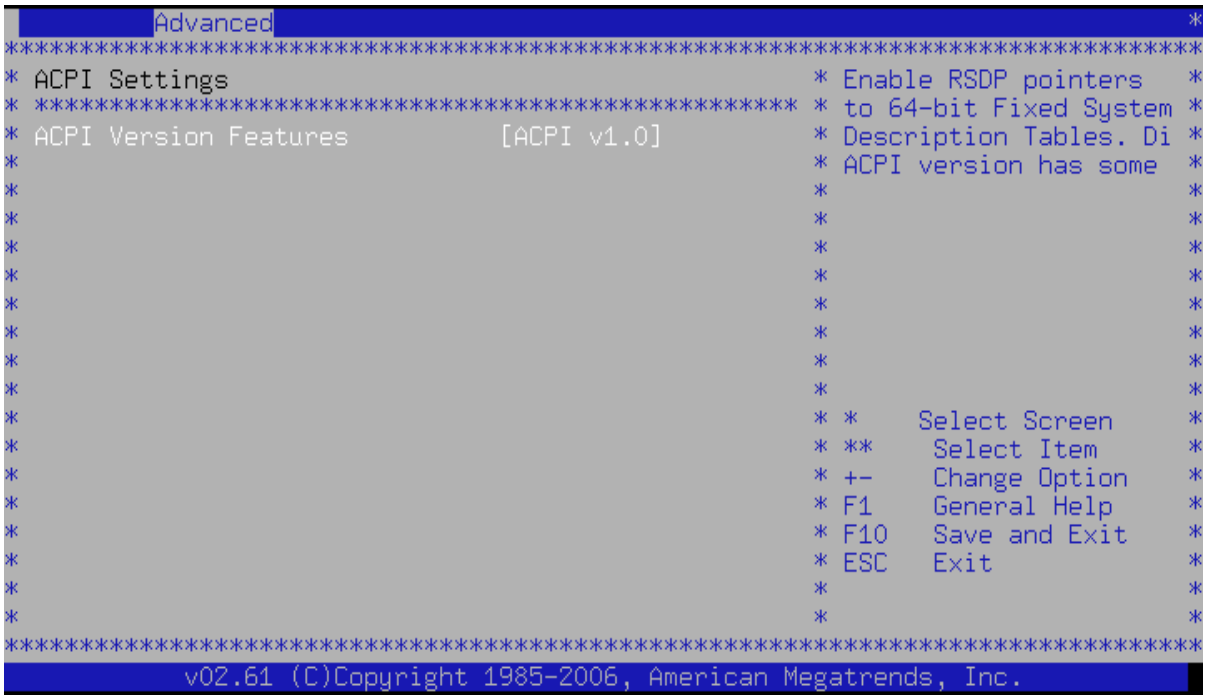
This function has no effect on the operation of the CP6001/CP6001-R3/CP6001-V.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the H/W Health Function.
Enabled	Use this setting to enable the H/W Health Function.

Optimal and Fail-Safe default settings: Enabled

ACPI CONFIGURATION SCREEN

This screen provides one function for specifying the ACPI version to be used.



ACPI Version Features

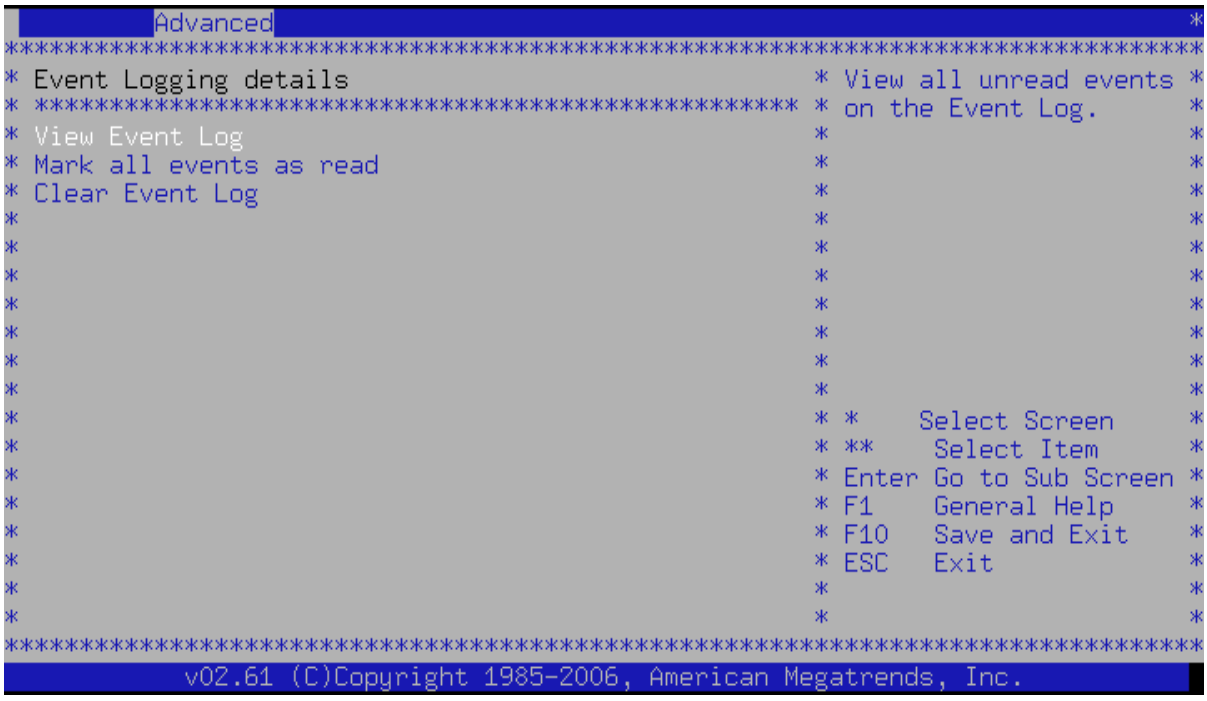
This function is used to select the ACPI specification version required by the BIOS for generating the ACPI tables.

SETTING	DESCRIPTION
ACPI v. 1.0	Use this setting to specify that RSDT, FACP and MADT follow the ACPI 1.0 specification.
ACPI v. 2.0	Use this setting to specify that XSDT, FACP and MADT follow the ACPI 2.0 specification.
ACPI v. 3.0	Use this setting to specify that XSDT, FACP and MADT follow the ACPI 3.0 specification.

Optimal and Fail-Safe default settings: ACPI v. 1.0

EVENT LOG CONFIGURATION SCREEN

This screen provides functions for viewing and clearing the event log.



View Event Log

This function is used to display a pop-up window which contains all unread events (for example “01/01/02 13:12:56” or “CMOS time not set”, etc.).

Mark all events as read

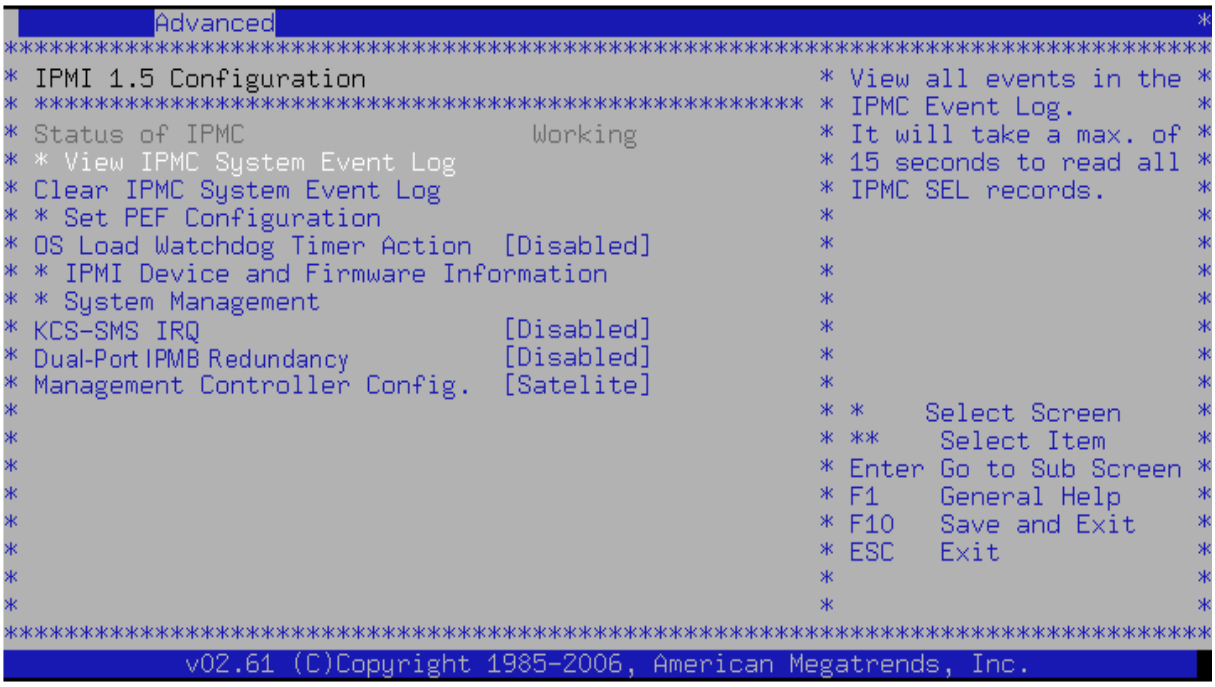
This function is used to mark all unread events as read.

Clear Event Log

This function is used to remove all events from the event log.

IPMI 1.5 CONFIGURATION SCREEN (CP6001/CP6001-R3)

This screen provides functions for specifying IPMI configuration settings.

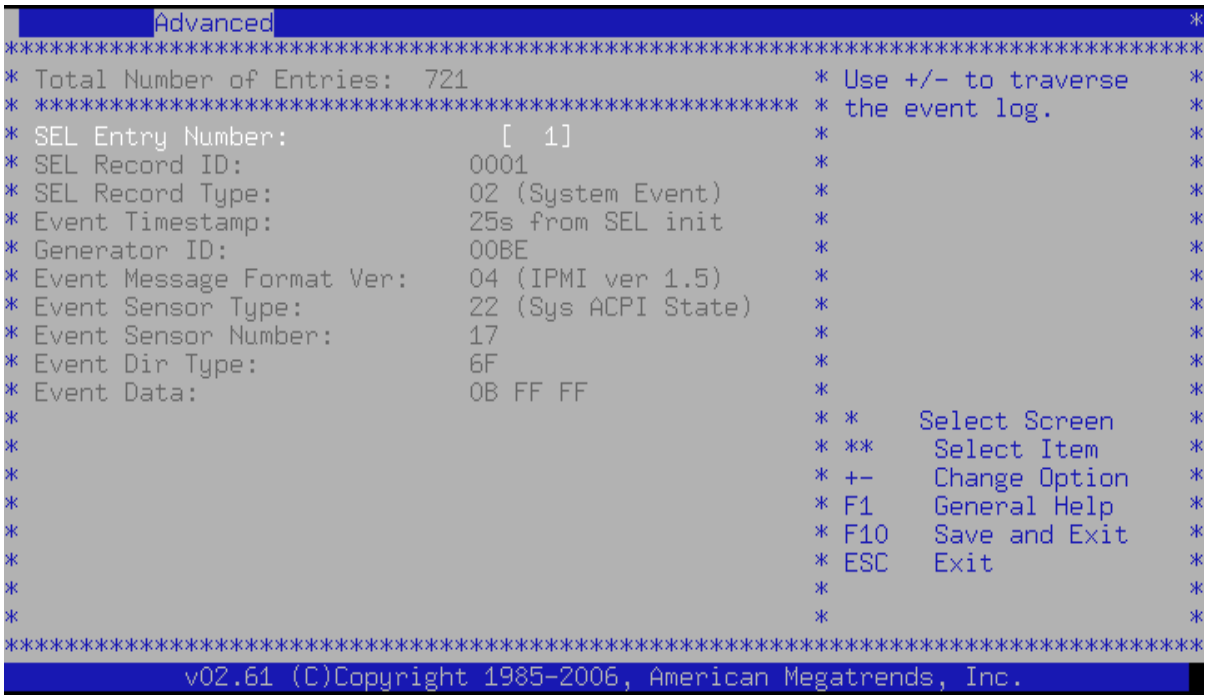


Status of IPMC

This is a display-only function which indicates the operational status of the IPMC.

IPMC SYSTEM EVENT LOG SCREEN

This screen provides access to the IPMC system event log. Each log entry can be selected and viewed using this screen.



SEL Entry Number

This function is used to select IPMC system event log entries.

Clear IPMC System Event Log

This function is used to delete all events recorded in the IPMC System Event Log.

Set PEF Configuration

This function and the screen associated with it are not supported by the CP6001.

OS Load Watchdog Timer Action SDO

This function is used to specify what action, if any, the IPMC is to perform in the event of a Watchdog timeout.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the computer system from invoking the IPMC Watchdog function.
Reset System	Use this setting to specify that the IPMC is to reset the system in the event of a Watchdog timeout.
Power Down	Use this setting to specify that the IPMC is to power the system down in the event of a Watchdog timeout.
Power Cycle	Use this setting to specify that the IPMC is to turn system power off and then on again in the event of a Watchdog timeout.

Optimal and Fail-Safe settings: Disabled

IPMC Watchdog Timeout SDO

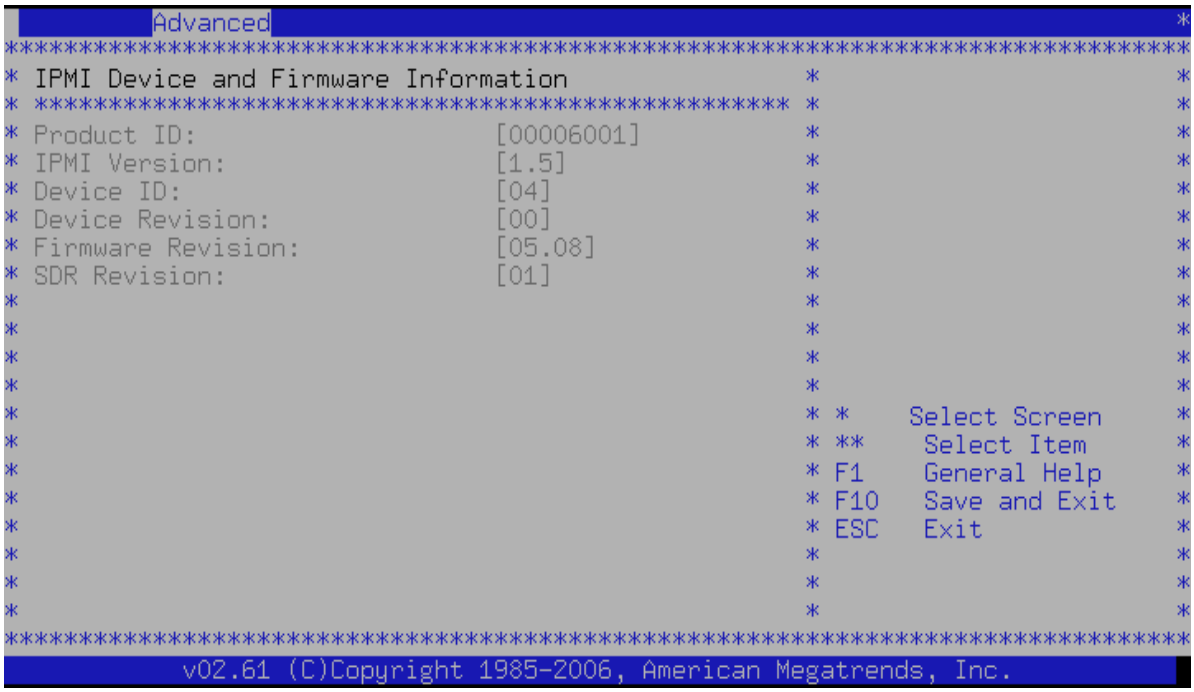
This function is used to specify how long the IPMC is to wait before assuming the system is no longer operating properly and requires remedial action. This function is only available if the OS Load Watchdog Timer Action function has been set to other than Disabled.

SETTING	DESCRIPTION
10 Sec, 30 Sec, 1 Min, 5 Min	Use one of these settings to specify how long the IPMC is to wait before performing the action specified by the IPMC Watchdog function.

Optimal and Fail-Safe settings: 5 Min

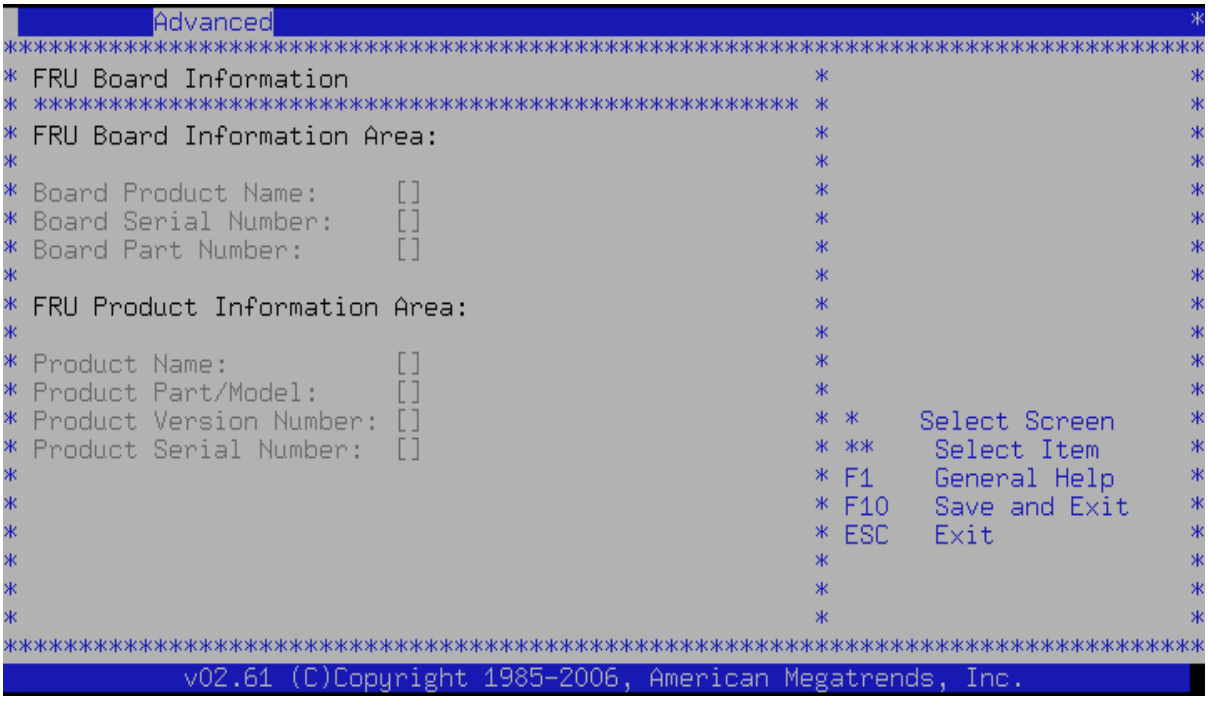
IPMI Device and Firmware Information

This function provides access to a screen which provides basic information concerning IPMI. There are no user configurable functions on the screen.



SYSTEM MANAGEMENT SCREEN

This screen provides basic information concerning the FRU. There are no user configurable functions on this screen.



KCS-SMS IRQ

This function is used to reserve an IRQ for the system management software.

SETTING	DESCRIPTION
Disabled	Use this setting to disable IRQ reservation for the system management software.
IRQ10/IRQ11	Use this setting to reserve an IRQ for the system management software.

Optimal and Fail-Safe settings: Disabled

Dual-Port IPMB Redundancy

This function is used to select the dual-port Intelligent Platform Management Bus (IPMB) redundancy.

SETTING	DESCRIPTION
Disabled	Use this setting to specify that IPMB0 and IPMB1 operate as separate channels.
Enabled	Use this setting to specify that IPMB1 is hidden behind IPMB0 and used as a redundancy channel.

Optimal and Fail-Safe default settings: Disabled

Management Controller Config.

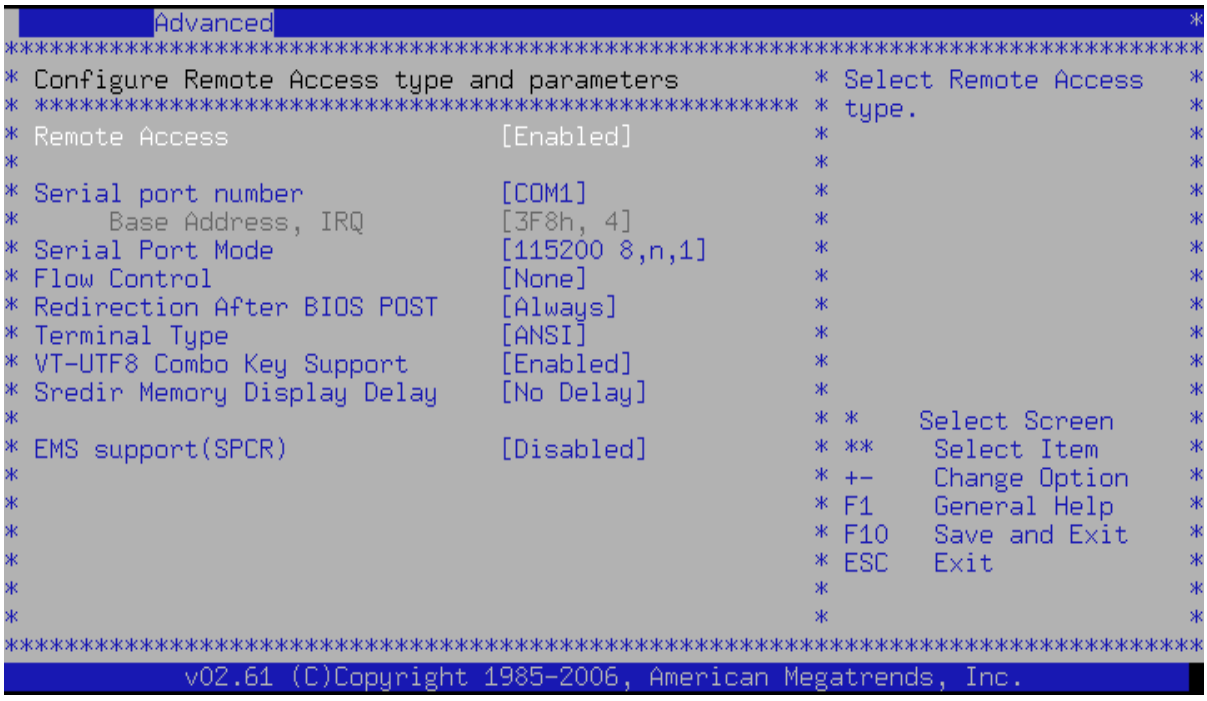
This function is used to specify the IPMI operational mode of the board.

SETTING	DESCRIPTION
Satellite	Use this setting to specify that the board is to operate as a Satellite board.
Baseboard	Use this setting to specify that the board is to operate as a baseboard manager without a shelf manager in the system.

Optimal and Fail-Safe default settings: Satellite

REMOTE ACCESS CONFIGURATION SCREEN

This screen provides functions for specifying remote access configuration settings.



Remote Access SDO

This function is used to enable the BIOS remote access feature.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using Remote Access.
Enabled	Use this setting to allow the system to use the remote access feature. The remote access feature requires a dedicated serial port connection.

Optimal and Fail-Safe default settings: Disabled

Serial Port Number SDO

This function is used to select the serial port for console redirection.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
ICH COM1	Use this setting to select ICH COM1 (Communication port 1) as the remote access interface.
ICH COM2	Use this setting to select ICH COM2 (Communication port 2) for the remote access interface.

Optimal and Fail-Safe default settings: ICH COM1

Serial Port Mode SDO

This function is used to select the baud rate (transmitted bits per second) of the serial port for console redirection.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
115200 8,n,1	Use this setting to select 115200 as the baud rate of the serial port.
57600 8,n,1	Use this setting to select 57600 as the baud rate of the serial port.
38400 8,n,1	Use this setting to select 38400 as the baud rate of the serial port.
19200 8,n,1	Use this setting to select 19200 as the baud rate of the serial port.
09600 8,n,1	Use this setting to select 09600 as the baud rate of the serial port.

Optimal and Fail-Safe default settings: 115200 8,n,1

Flow Control SDO

This function is used to select the flow control for console redirection.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
None	Use this setting to deactivate flow control.
Hardware	Use this setting to select the flow control by hardware.
Software	Use this setting to select the flow control by software.

Optimal and Fail-Safe default settings: None

Redirection After BIOS POST SDO

This function is used to select the redirection after BIOS POST.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
Disabled	Use this setting to turn off the redirection after POST.
BootLoader	Use this setting to activate the redirection during POST and during BootLoader.
Always	Use this setting to specify that the redirection is always active.

Optimal and Fail-Safe default settings: Always

Terminal Type SDO

This function is used to select the target terminal type.
Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
ANSI	Use this setting to specify that the target terminal type is ANSI.
VT100	Use this setting to specify that the target terminal type is VT100.
VT-UTF8	Use this setting to specify that the target terminal type is VT-UTF8.

Optimal and Fail-Safe default settings: ANSI

VT-UTF8 Combo Key Support

This function is used to enable or disable the VT-UTF8 combo key support.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the VT-UTF8 combination key support for the ANSI/VT100 terminals.
Enabled	Use this setting to enable the VT-UTF8 combination key support for the ANSI/VT100 terminals.

Optimal and Fail-Safe default settings: Enabled

Sredir Memory Display Delay

This function is used to select the time during which the serial redirection memory usage information is displayed on the serial console at start of POST.

Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
No Delay	Use this setting to specify that the memory display does not pause during redirection.
Delay 1 Sec	Use this setting to set the delay to display memory information to one second.
Delay 2 Sec	Use this setting to set the delay to display memory information to two seconds.
Delay 4 Sec	Use this setting to set the delay to display memory information to four seconds.

Optimal and Fail-Safe default settings: No Delay

EMS Support (SPCR)

This function is used to enable the EMS (Emergency Management Services) support via the ACPI SPCR (Serial Port Console Redirection) table if console redirection is enabled.

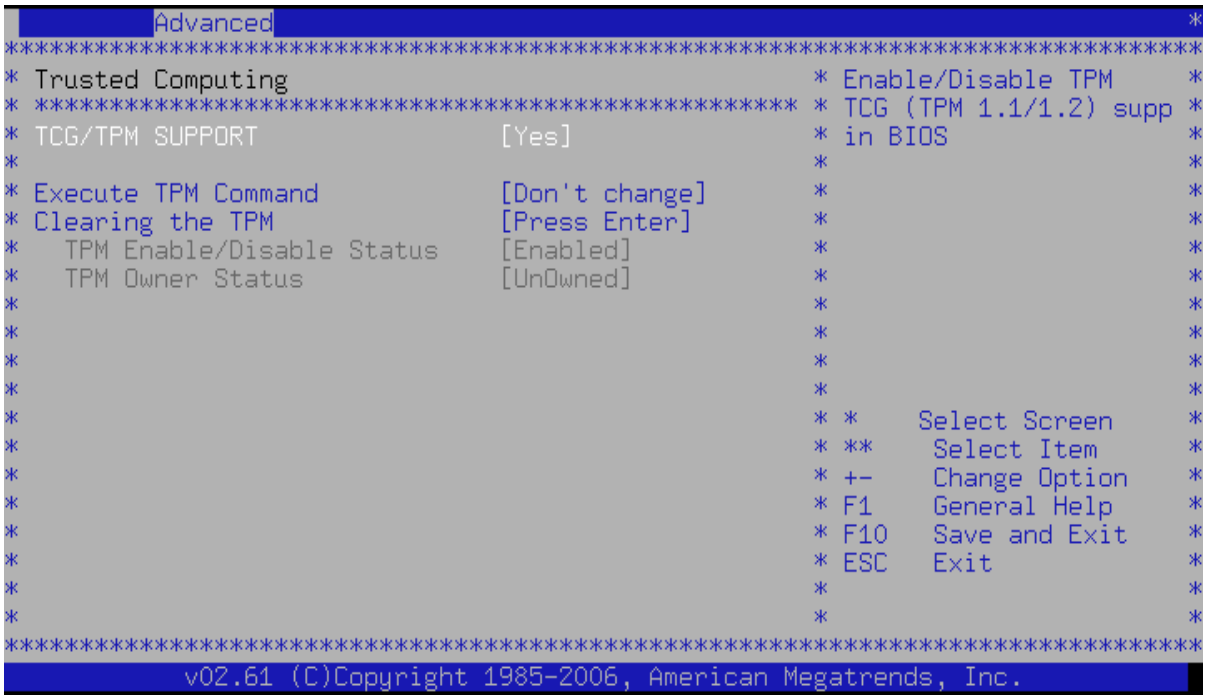
Note: This function is only available when the Remote Access function is set to Enabled.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the system from filling the SPCR table. No EMS will be available.
Enabled	Use this setting to fill the SPCR table if console redirection is enabled. EMS will be available.

Optimal and Fail-Safe default settings: Disabled

TRUSTED COMPUTING SCREEN (CP6001/CP6001-R3)

This screen provides functions for specifying the trusted computing configuration settings as well as TPM owner status information.



TCG/TPM SUPPORT SDO

This function is used to specify the initialization of the on board trusted computing module.

SETTING	DESCRIPTION
Disabled	Use this setting to disable TCG/TPM support.
Enabled	Use this setting to enable TCG/TPM support.

Optimal and Fail-Safe default settings: Disabled

Execute TPM command

This function is used to specify the execution of the TPM enable or disable command during POST. When "Disable" or "Enable" is selected, BIOS executes the selected command during the POST and then changes the setting back to "Don't Change".

SETTING	DESCRIPTION
Don't Change	This is the BIOS default setting and is automatically set after each Enable or Disable command is executed.
Disable	Use this setting to execute the TPM disable command during POST.
Enable	Use this setting to execute the TPM enable command during POST.

Optimal and Fail-Safe default settings: Don't Change

Clearing the TPM

This function is used to clear all settings and keys stored inside the TPM device. After pressing ENTER and confirming the clear request, the CP6001 will be immediately reset. Prior to executing this function, save any changes made to the BIOS settings or they will be lost.

WARNING! Clearing the TPM results in the loss of all data (keys and other information) stored within the TPM. The user must ensure that all **PRECAUTIONS** necessary to protect against data loss **ARE TAKEN PRIOR** to issuing this command!

For example, disable Microsoft BitLocker prior to executing this function. If BitLocker is not disabled or the user does not have a record of the encryption keys, all data protected by BitLocker will not be accessible after clearing.

Kontron disclaims any and all liability for damage or improper operation resulting from failure of the user to comply with the above warning.

TPM Enable/Disable Status

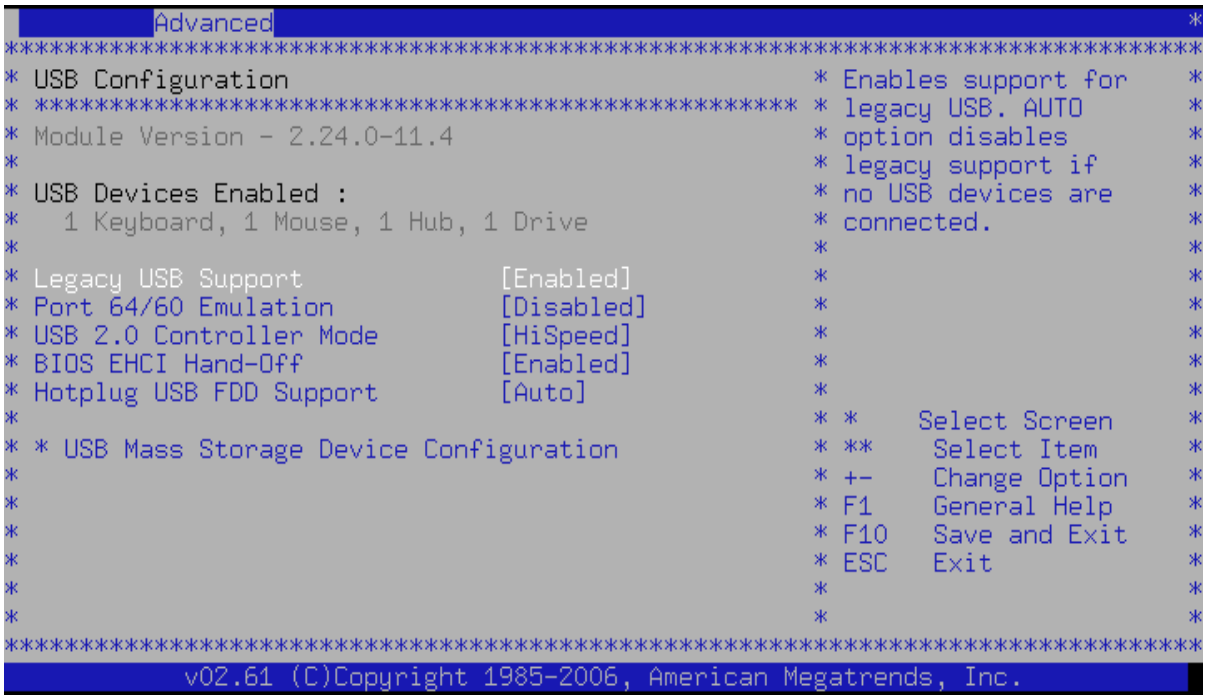
This is a display-only function which indicates the operational status of the TPM: enabled or disabled. Enabled indicates that the TPM is in operation. Disabled indicates that the TPM is not in operation.

TPM Owner Status

This is a display-only function which indicates the current TPM owner status. "UnOwned" indicates that no user has assumed ownership of the TPM. "Owned" indicates that a user has taken over ownership of the TPM.

USB CONFIGURATION SCREEN

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



USB Devices Enabled

This is a display-only function which indicates any USB devices connected to the CP6001/CP6001-R3/CP6001-V. If a USB device is connected, it is indicated with its own function below.

Legacy USB Support

This function is used to allow the system to enable legacy USB support.

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 disable legacy USB support if no USB devices are connected.

Optimal and Fail-Safe default settings: Enabled

Port 64/60 Emulation

This function is used to allow the system to enable the I/O Port 64/60 emulation support.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the I/O Port 64/60 emulation support.
Enabled	Use this setting to enable the I/O Port 64/60 emulation support.

Optimal and Fail-Safe default settings: Disabled

USB 2.0 Controller Mode SDO

This function is used to allow the system to configure the USB 2.0 controller.

SETTING	DESCRIPTION
Full Speed	Use this setting to configure the USB 2.0 controller in Full Speed (12 Mbit/s).
HiSpeed	Use this setting to configure the USB 2.0 controller in HiSpeed (480 Mbit/s).

Optimal and Fail-Safe default settings: HiSpeed

BIOS EHCI Hand-Off SDO

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 ECHI driver.

SETTING	DESCRIPTION
Disabled	Use this setting to disable EHCI hand-off support.
Enabled	Use this setting to enable EHCI hand-off support.

Optimal and Fail-Safe default settings: Enabled

Hotplug USB FDD Support

This function is used to allow the system to create a dummy FDD device which will later be assigned to a hotplugged USB FDD device.

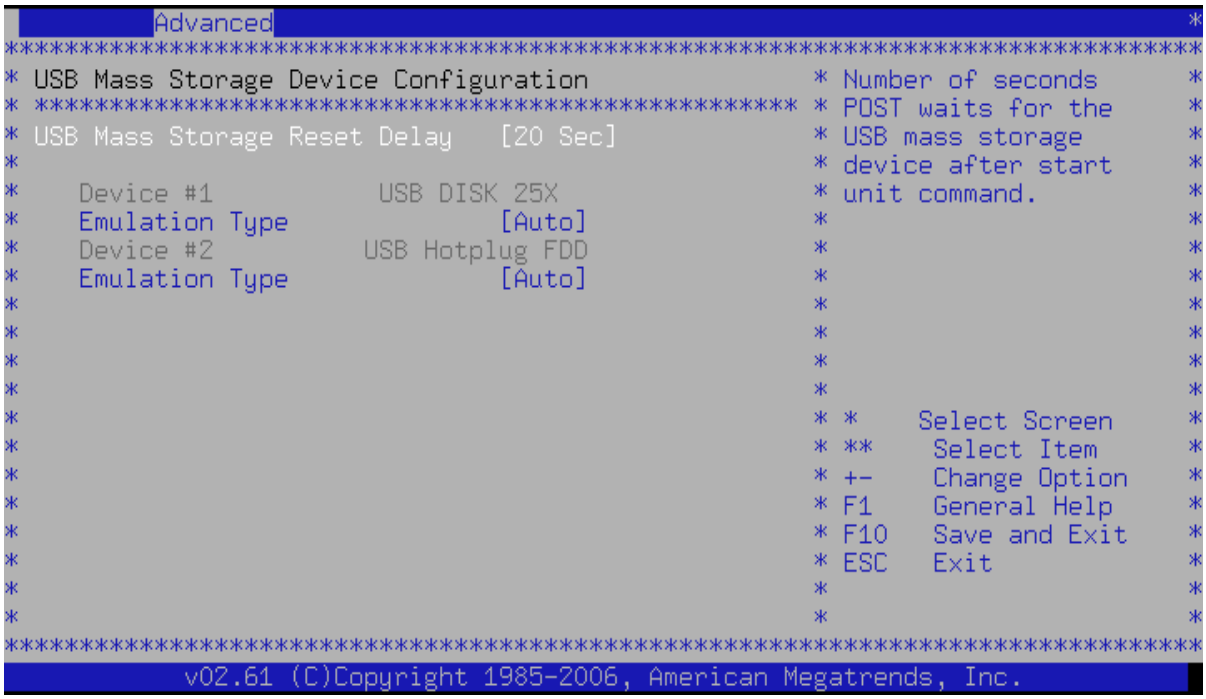
SETTING	DESCRIPTION
Disabled	Use this setting to prevent the system from creating a dummy FDD device.
Enabled	Use this setting to allow the system to create a dummy FDD device.
Auto	Use this setting to allow the system to create a dummy FDD device if no USB FDD device is present.

Optimal and Fail-Safe default settings: Auto

USB Mass Storage Device Configuration Screen

This screen provides basic information concerning the USB mass storage device configuration and functions for specifying configuration settings.

Note: This function is only available when a USB Mass Storage Device is detected.



USB Mass Storage Reset Delay

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

Optimal and Fail-Safe default settings: 20 Sec

Emulation Type

SETTING	DESCRIPTION
Auto Floppy Forced FDD Hard Disk CD-ROM	Use one of these settings to specify the type of device to emulate.

Optimal and Fail-Safe settings: Auto

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Chapter 4

PCI/PnP Setup

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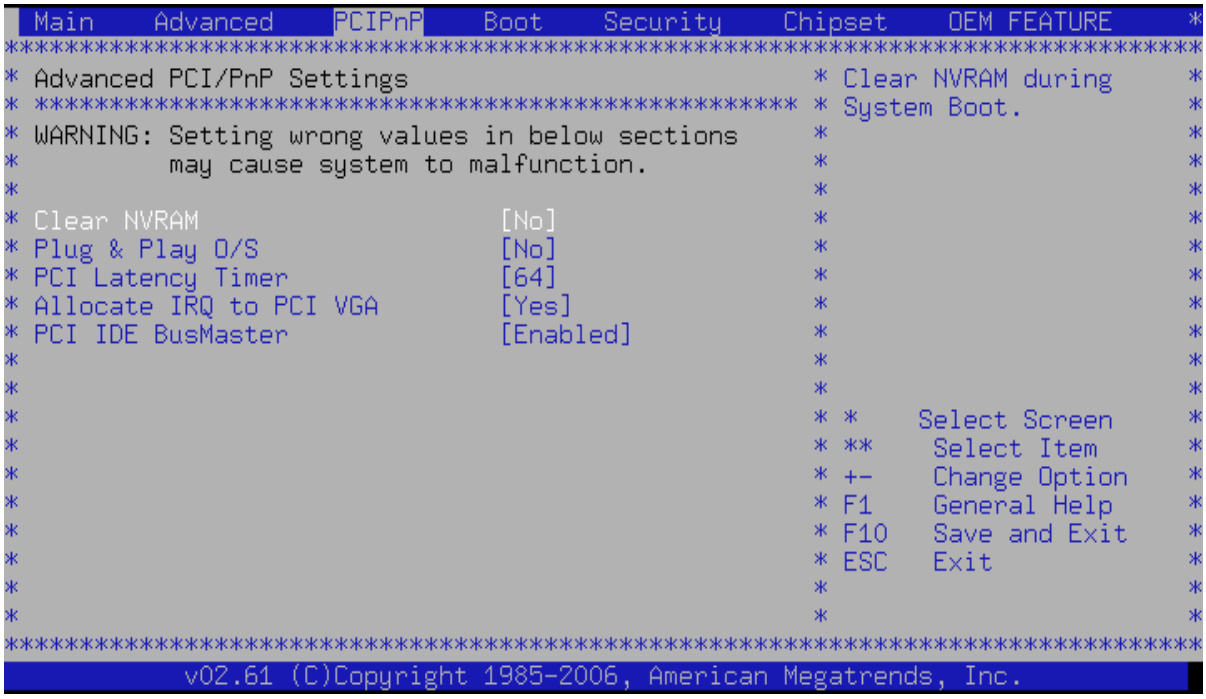
4. PCI/PnP Setup

Select the PCI/PnP tab to enter the PCI/PnP Setup screen. This screen provides functions for specifying various advanced PCI/PnP configuration settings.



Clear NVRAM

This function is used to force the BIOS to clear the Non-Volatile Random Access Memory (NVRAM).

SETTING	DESCRIPTION
No	Use this setting to prevent the BIOS from clearing the NVRAM.
Yes	Use this setting to allow the system to reset the NVRAM before the system is booted up. After booting, the system sets this function back to No automatically.

Optimal and Fail-Safe default settings: No

Plug and Play O/S

This function is used to modify the settings for Plug and Play operating system support.

SETTING	DESCRIPTION
No	Use this setting to allow the BIOS to configure all the devices in the system if the operating systems do not meet the Plug and Play specifications.
Yes	Use this setting to allow the operating system to change the interrupt, I/O, and DMA settings if the system is running Plug and Play aware operating systems.

Optimal and Fail-Safe default settings: No

PCI Latency Timer

This function is used to specify the PCI Latency Timer. It sets the latency of all PCI devices on the PCI bus.

SETTING	DESCRIPTION
32 64 96 128 160 192 224 248	Use this setting to set the number of PCI clocks for the latency timer.

Optimal and Fail-Safe default settings: 64

Allocate IRQ to PCI VGA

This function is used to allow or restrict the system from giving the VGA adapter card an interrupt address.

SETTING	DESCRIPTION
Yes	Use this setting to allow the allocation of an IRQ to a VGA adapter card that uses the PCI local bus.
No	Use this setting to prevent the allocation of an IRQ to a VGA adapter card that uses the PCI local bus.

Optimal and Fail-Safe default settings: Yes

PCI IDE BusMaster

This function is used to allow or prevent the use of PCI IDE busmastering.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent PCI busmastering.
Enabled	Use this setting to specify that the IDE controller on the PCI local bus has mastering capabilities.

Optimal and Fail-Safe default settings: Enabled

Chapter 5

Boot Setup

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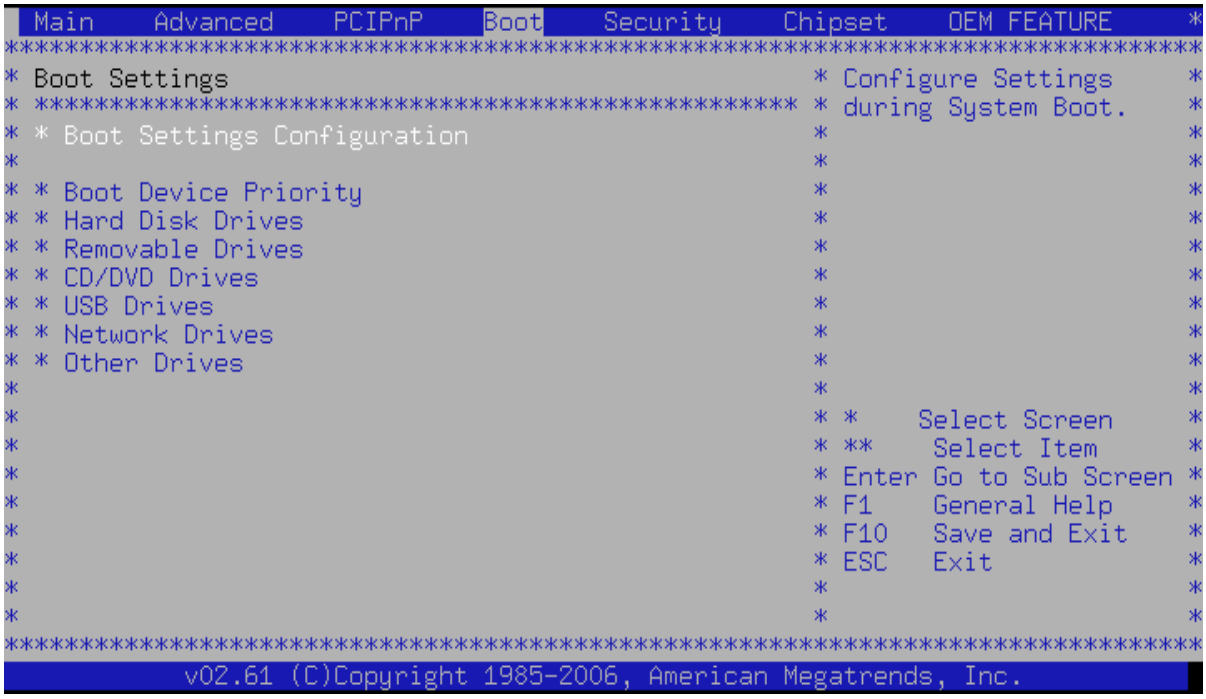
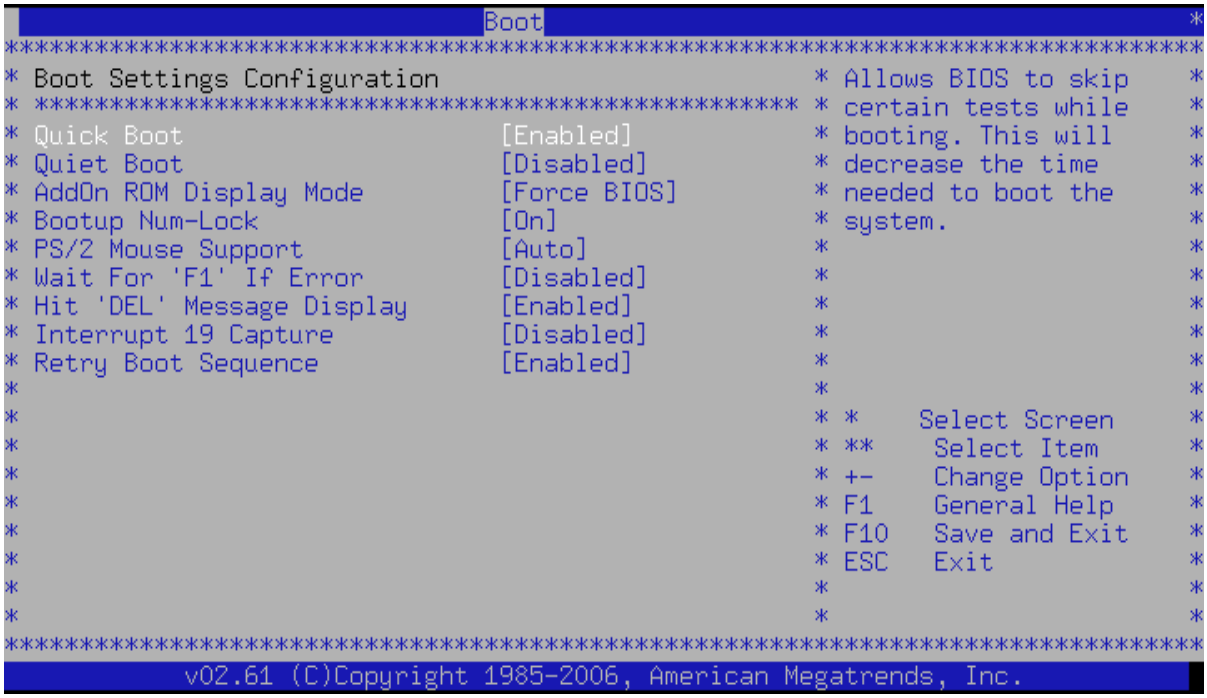
5. Boot Setup

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



BOOT SETTINGS CONFIGURATION SCREEN

This screen provides functions for specifying various boot settings. Use the up and down <Arrow> keys to select a function. Use the <Plus> and <Minus> keys to change the value of the selected functions.



Quick Boot SDO

This function is used to skip certain POST tests to speed-up the boot process.

SETTING	DESCRIPTION
Disabled	Use this setting to allow the BIOS to perform all POST tests.
Enabled	Use this setting to allow the BIOS to skip certain POST tests to boot faster.

Optimal and Fail-Safe default settings: Enabled

Quiet Boot SDO

This function is used to allow the boot-up screen options to be modified between POST messages or OEM logo.

SETTING	DESCRIPTION
Disabled	Use this setting to allow the system to display the POST messages during boot-up.
Enabled	Use this setting to allow the system to display the OEM logo during boot-up.

Optimal and Fail-Safe default settings: Disabled

Add-On ROM Display Mode

This function is used to display add-on ROM (read-only memory) messages such as SCSI BIOS or VGA BIOS in addition to CP6001/CP6001-R3/CP6001-V-specific information.

SETTING	DESCRIPTION
Force BIOS	Use this setting to allow the system to display third party BIOS messages during boot-up as well.
Keep Current	Use this setting to allow the system to display only CP6001/CP6001-R3/CP6001-V information during system boot.

Optimal and Fail-Safe default settings: Force BIOS

Boot-Up Num-Lock

This function is used to allow the Number Lock setting to be modified during boot-up.

SETTING	DESCRIPTION
Off	Use this setting to prevent the system from automatically enabling the keyboard Number Lock during boot-up. To use the 10-key numeric keypad on the keyboard, press the Number Lock key located on the upper left-hand corner of the numeric keypad. The Number Lock LED on the keyboard will light up when the Number Lock is active.
On	Use this setting to allow the Number Lock on the keyboard to be automatically enabled during boot-up. This allows the immediate use of 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard will be lit.

Optimal and Fail-Safe default settings: On

PS/2 Mouse Support

This function is used to allow the PS/2 mouse support to be adjusted.

Note: When a serial mouse is installed, use the setting Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the PS/2 mouse port from using system resources and becoming active.
Enabled	Use this setting to allow the system to use a PS/2 mouse.
Auto	Use this setting to allow the system to automatically use a PS/2 mouse if a PS/2 mouse is connected.

Optimal and Fail-Safe default settings: Auto

Wait for ‘F1’ If Error SDO

This function is used to allow the Wait for ‘F1’ Error setting to be modified.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the CP6001/CP6001-R3/CP6001-V from waiting on an error for user intervention. If this setting is used, the system will continue to boot up the operating system. If ‘F1’ is enabled, the system will wait until the BIOS setup is entered. This setting should be used if there is a known reason for a BIOS error to occur. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached.
Enabled	Use this setting to allow the BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognize it.

Optimal and Fail-Safe default settings: Disabled

Hit ‘DEL’ Message Display

This function is used to allow the Hit ‘DEL’ to enter Setup Message Display to be modified.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the display of the message `Hit Del to enter Setup` during memory initialization. If Quiet Boot is enabled, the Hit ‘DEL’ message will not be displayed.
Enabled	Use this setting to allow the display of the message `Hit Del to enter Setup` during memory initialization.

Optimal and Fail-Safe default settings: Enabled

Interrupt 19 Capture

This function is used to allow option ROMs such as network controllers to trap BIOS interrupt 19.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent option ROMs from trapping interrupt 19.
Enabled	Use this setting to allow option ROMs to trap interrupt 19.

Optimal and Fail-Safe default settings: Disabled

Retry Boot Sequence SDO

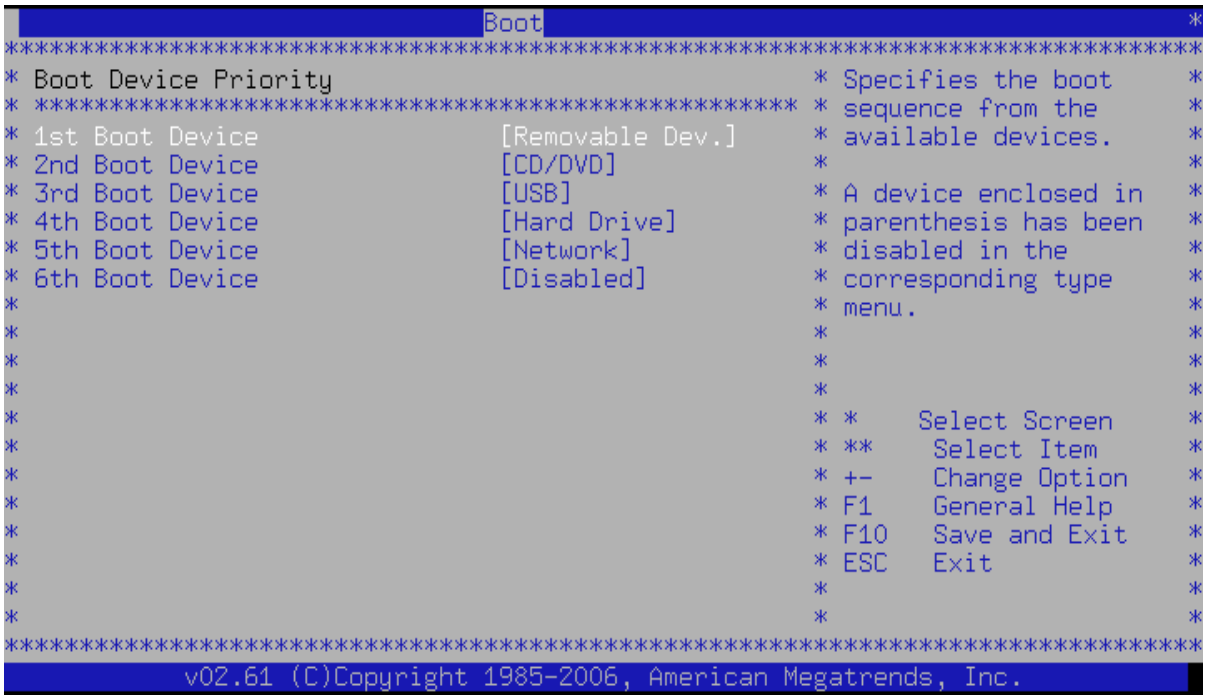
This function is used to specify how the system is to respond to a boot error.

SETTING	DESCRIPTION
Disabled	Use this setting to finish booting and show error message in case of boot failure.
Enabled	Use this setting to specify that booting should be attempted again until a boot device is found. To interrupt retrying, the system must be reset. Use this setting when booting from a network drive.

Optimal and Fail-Safe default settings: Enabled

BOOT DEVICE PRIORITY SCREEN

This screen provides functions for specifying the category of boot devices as well as the boot category sequence.



1st - 6th Boot Device SDO

These functions are used to specify the boot device category sequence.

SETTING	DESCRIPTION
Removable Device CD/DVD USB Hard Drive Network Other/Disabled	Use one of these settings to specify the boot device category for the selected function.

Optimal and Fail-Safe default settings:

- 1st Boot Device: Removable Device
- 2nd Boot Device: CD/DVD
- 3rd Boot Device: USB
- 4th Boot Device: Hard Drive
- 5th Boot Device: Network
- 6th Boot Device: Other/Disabled

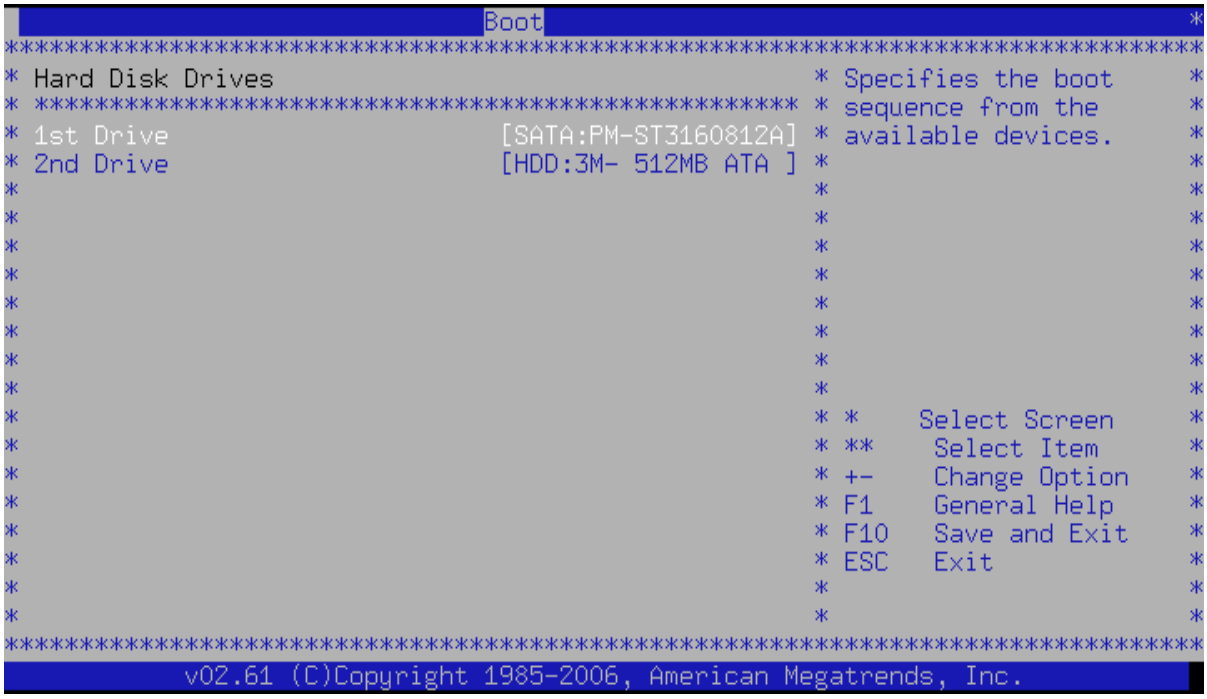
To establish the boot category sequence, select for each boot device (1st, 2nd, etc.) a boot category.

When a boot category is selected, a list of devices in that category appears. For example, if the system has three hard disk drives connected, then the list will show all three hard disk drives. The order in which the drives appear is also the boot order within the category.

The selection of the physical device boot order within a category is done via the Drives sub-screen accessible from the Boot Setup screen.

HARD DISK DRIVES SCREEN

This screen will provide a list of hard disk drives if drives are installed in the system. If more than one drive is installed, this screen also indicates the boot sequence of the drives. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

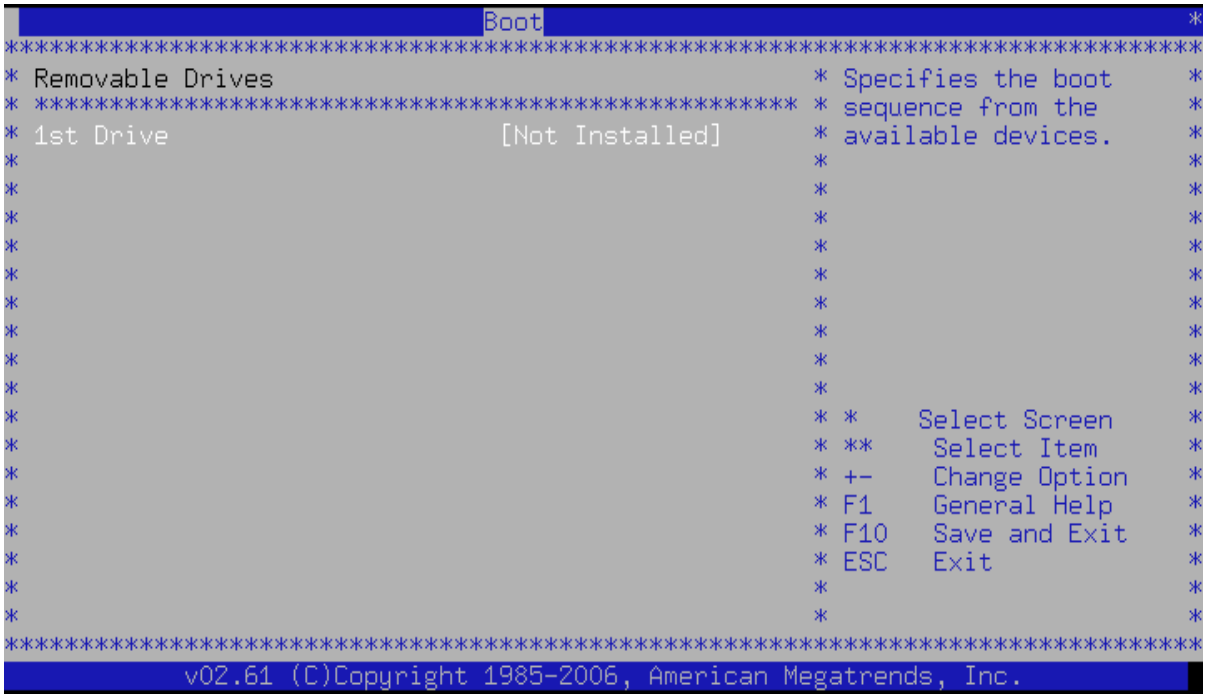
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective hard disk drives are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

REMOVABLE DRIVES SCREEN

This screen will provide a list of removable drives if drives are installed in the system. If more than one drive is installed, this screen also indicates the boot sequence of the drives. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

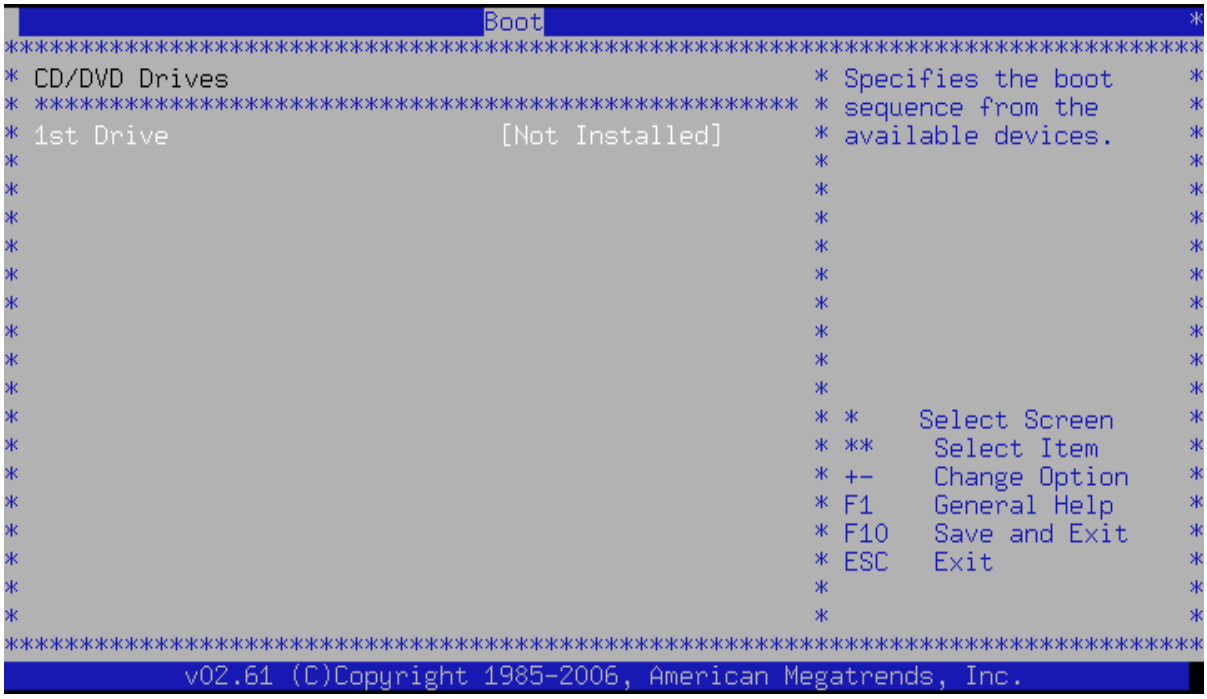
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective removable disk drives are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

CD/DVD DRIVES SCREEN

This screen will provide a list of CD/DVD drives if drives are installed in the system. If more than one drive is installed, this screen also indicates the boot sequence of the drives. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

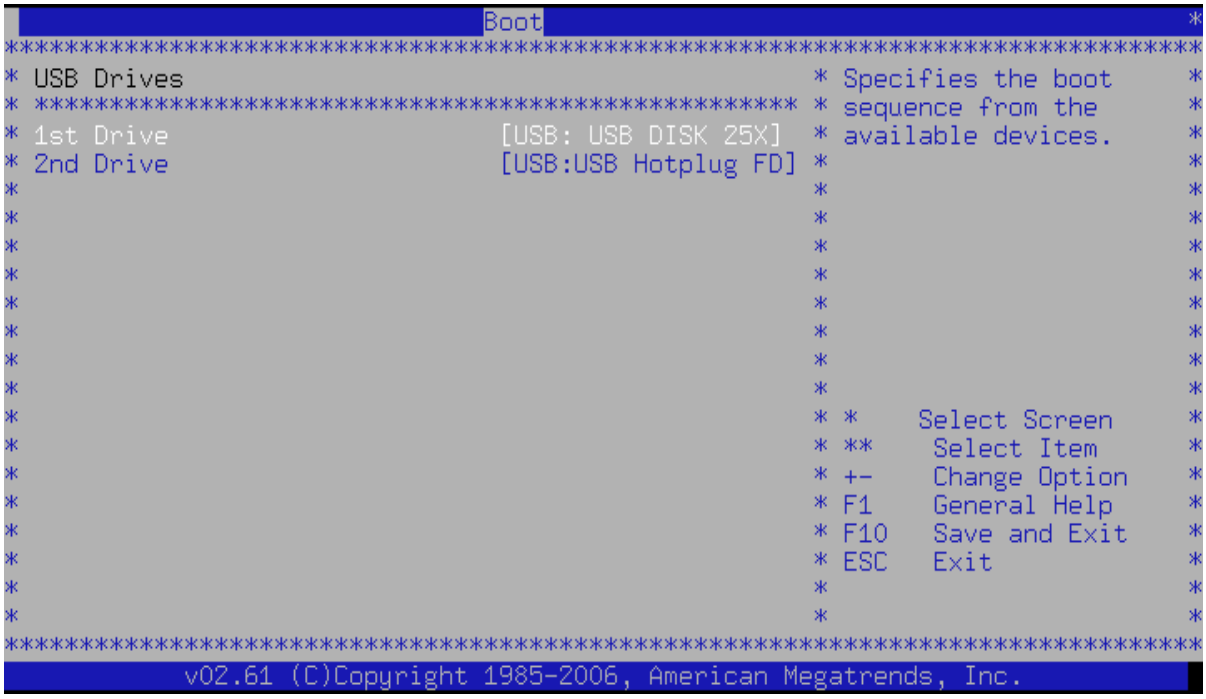
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective CD/DVD drives are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

USB DRIVES SCREEN

This screen will provide a list of USB drives if drives are installed in the system. If more than one drive is installed, this screen also indicates the boot sequence of the drives. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

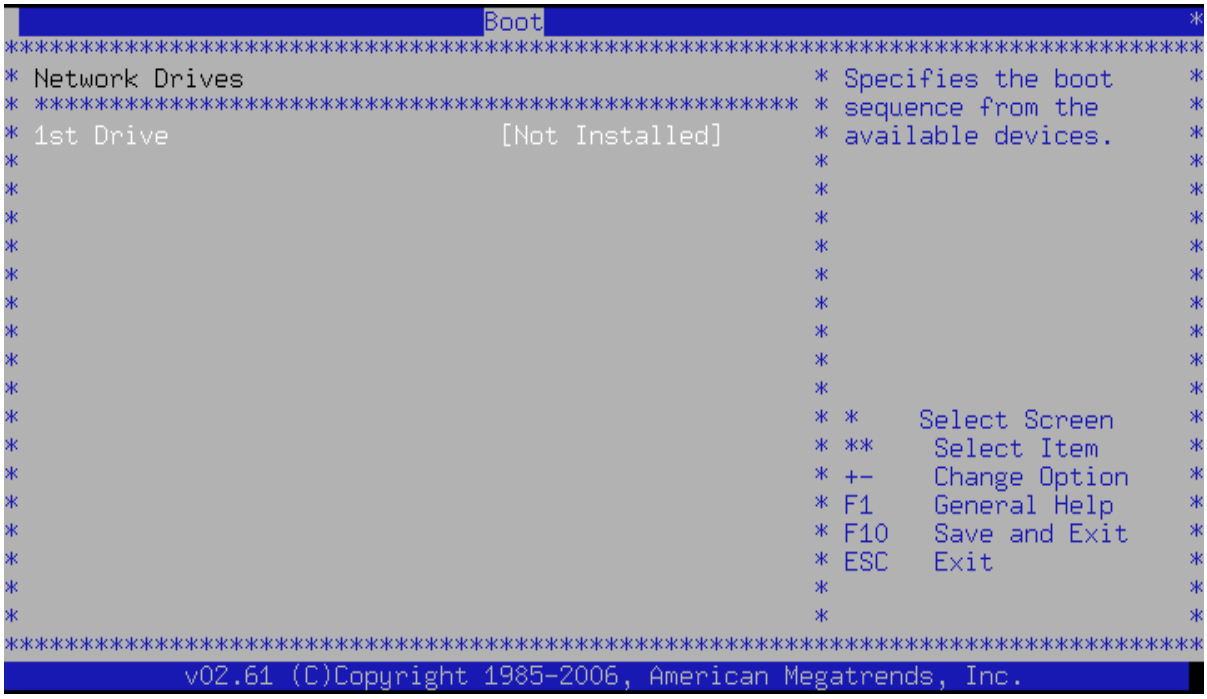
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective USB drives are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

NETWORK DRIVES SCREEN

This screen will provide a list of network devices detected by BIOS which may provide the possibility of booting from a network drive via PXE. If more than one device is available, this screen also shows the boot sequence of the devices. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

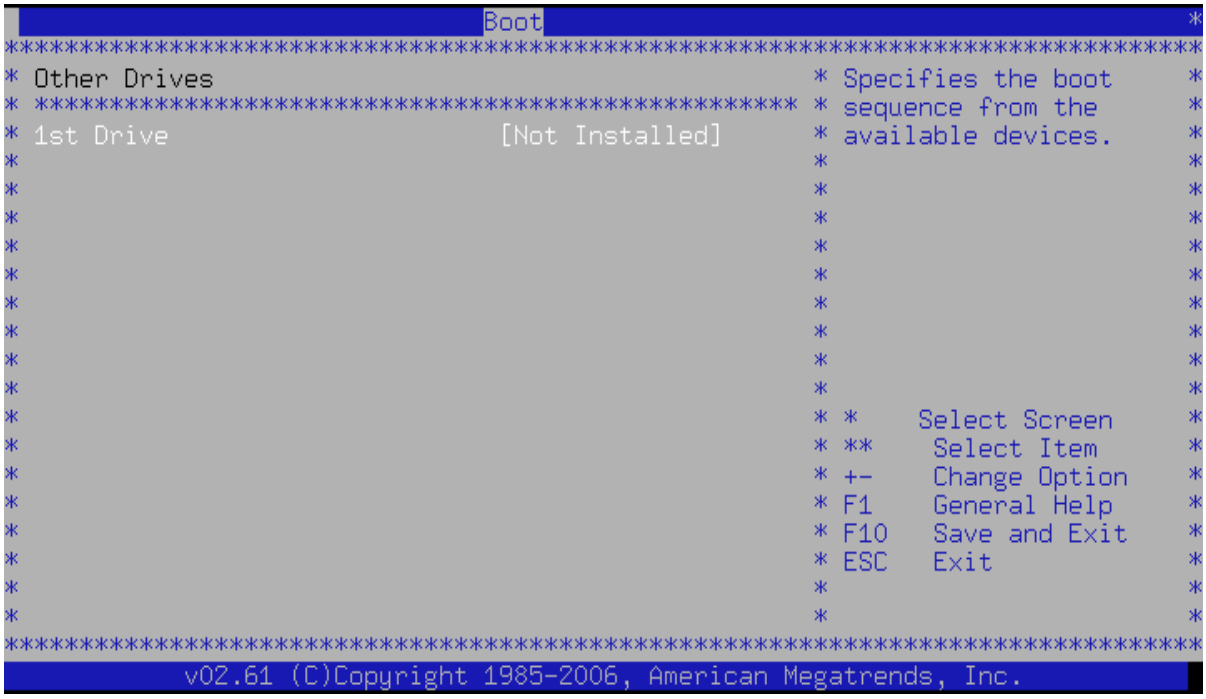
The function 1st Drive is used to provide generic information about the currently selected device if available. If more than one device is available, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective network devices are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

OTHER DRIVES SCREEN

This screen will provide a list of other drives if drives are installed in the system. If more than one drive is installed, this screen also indicates the boot sequence of the drives. Furthermore, this screen provides functions for specifying the BIOS boot order of the drives when more than one drive is installed.



1st Drive, 2nd Drive, 3rd Drive, etc.

The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

The functions 2nd Drive, 3rd Drive, etc. are only available when the respective drives are installed.

SETTING	DESCRIPTION
Not installed	When displayed, indicates that there are no drives installed.
<generic_drive_info>	When displayed, indicates generic drive information of the 1st Drive.
<generic_drive_info_1> • • • <generic_drive_info_n>	When displayed, indicates the drives installed and their current boot order. Use this setting to select a new 1st Drive.

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Chapter 6

Security Setup

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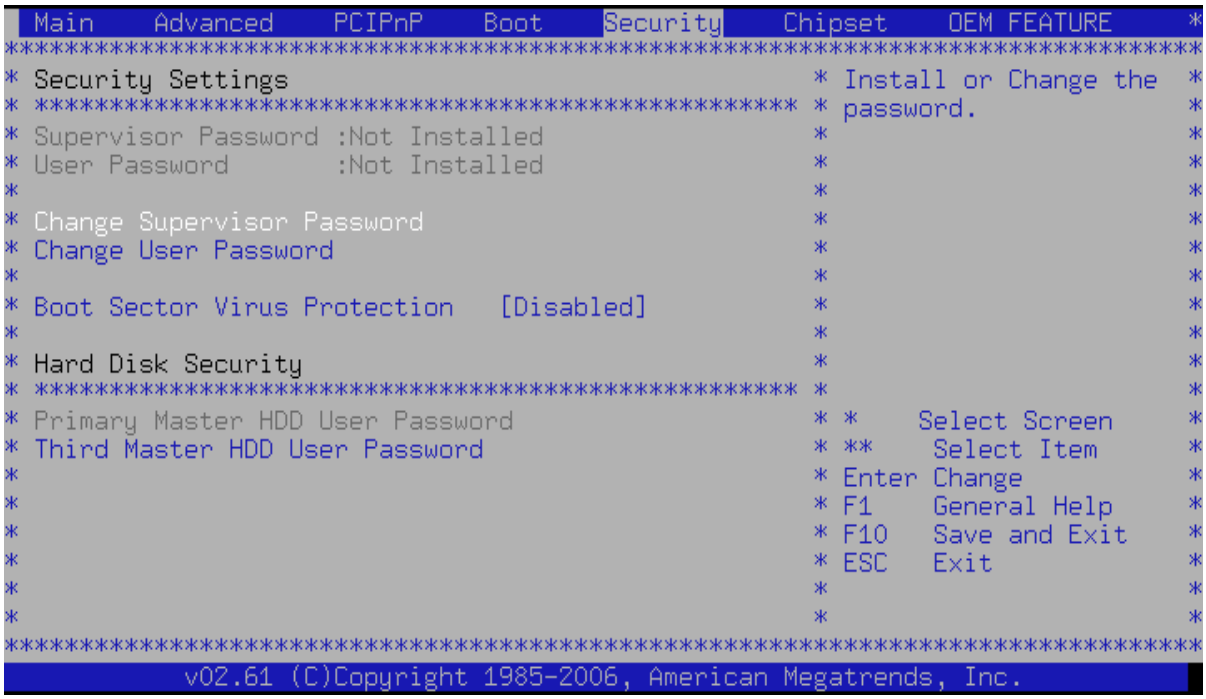
6. Security Setup

Select the Security tab to enter the Security Setup screen. This screen provides information about the passwords and functions for specifying the security settings. To access a submenu, select the respective function and press <Enter>.



Supervisor Password

This is a display-only function indicating whether a Supervisor password has been assigned or not.

User Password

This is a display-only function indicating whether a User password has been assigned or not.

Change Supervisor Password

This function is used to specify the Supervisor password. To set or change this password perform the following:

1. Select Change Supervisor Password and press <Enter>

   A popup display appears requesting entry the new password.

   There is a six character limit for the password.
2. Type the password and press <Enter> to set or change the password.

   A popup display appears again requesting password confirmation.
3. Type the password again and press <Enter>

   A popup display appears confirming the installation of the password.

   The following two new functions appear on the screen:

   - User Access Level
   - Password Check

   These functions are used to specify the type of accessibility the user has within the BIOS Setup program as well as the password requirements for system booting and starting the BIOS Setup program.
4. Record the Supervisor password for future reference.

Change User Password

This function is used to specify the User password. To set or change this password perform the following:

1. Select Change User Password and press <Enter>

   A popup display appears requesting entry the new password.

   There is a six character limit for the password.
2. Type the password and press <Enter>

   A popup display appears again requesting password confirmation.
3. Type the password again and press <Enter>

   A popup display appears confirming the installation of the password.

   The following new function appears on the screen:

   - Password Check

   This function is used to specify the password usage requirements for the user when booting the system or attempting to start the BIOS Setup program.
4. Record the Supervisor password for future reference.

Clearing a Supervisor/User Password

Use the following procedure to clear a Supervisor/User password.

1. Select Change Supervisor/User Password and press <Enter>
   A popup display appears requesting entry the new password.
2. Press <Enter> again without making any entries
   A popup display appears again requesting password confirmation.
3. Press <Enter> again without making any entries
   A popup display appears confirming the deinstallation of the password. The password has now been cleared.

User Access Level

This function is used to specify the type of usage restrictions) that a system supervisor may impose upon a user for the BIOS Setup program.

SETTING	DESCRIPTION
No Access	Use this setting to prevent a user from having access to the BIOS Setup program.
View Only	Use this setting to allow a user to only view the BIOS settings.
Limited	Use this setting to allow a user limited access to the BIOS Setup program. This setting allows only certain setting changes such as date and time.
Full Access	Use this setting to allow the user to have full access to the BIOS Setup program except for changing the Supervisor password.

Optimal and Fail-Safe default settings: Full Access

Password Check

This function is used to specify the password usage requirements for the user when booting the system or attempting to start the BIOS Setup program.

SETTING	DESCRIPTION
Setup	Use this setting to require the user or the system supervisor to enter the appropriate password when accessing the BIOS Setup program.
Always	Use this setting to require the user or the system supervisor to enter the appropriate password when accessing the BIOS Setup program or booting the system.

Optimal and Fail-Safe default settings: Setup

Boot Sector Virus Protection

This function is used to enable or disable the boot sector virus protection.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent Boot Sector Virus Protection.
Enabled	Use this setting to enable boot sector protection. CP6001/CP6001-R3/CP6001-V displays a warning when any program (or virus) issues a disk format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. It may be necessary to type N several times to prevent the boot sector write. Boot Sector Write! Possible VIRUS: Continue (Y/N)? _ The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard disk drive Service: Format!!! Possible VIRUS: Continue (Y/N)? _

Optimal and Fail-Safe default settings: Disabled

HDD User Password

This function is only available if a hard disk is detected which supports password security.

Warning! Before using this function, contact Kontron for assistance.
Failure to comply with the instruction above may result in an irreparable hard disk lockout.

CP6001/CP6001-R3/CP6001-V Password Support

Two Levels of Password Protection

The CP6001/CP6001-R3/CP6001-V BIOS provides both a Supervisor and a User password. If both passwords are used, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when starting the BIOS Setup program, using either the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security.

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. Booting may not be possible, and in worst case the BIOS setup program will also not be accessible.

If the system cannot be booted because neither the User password nor the Supervisor password are known, refer to the respective chapter about clearing the BIOS CMOS setup in the board's user guide, or contact Kontron for further assistance.

Chapter 7

Chipset Setup

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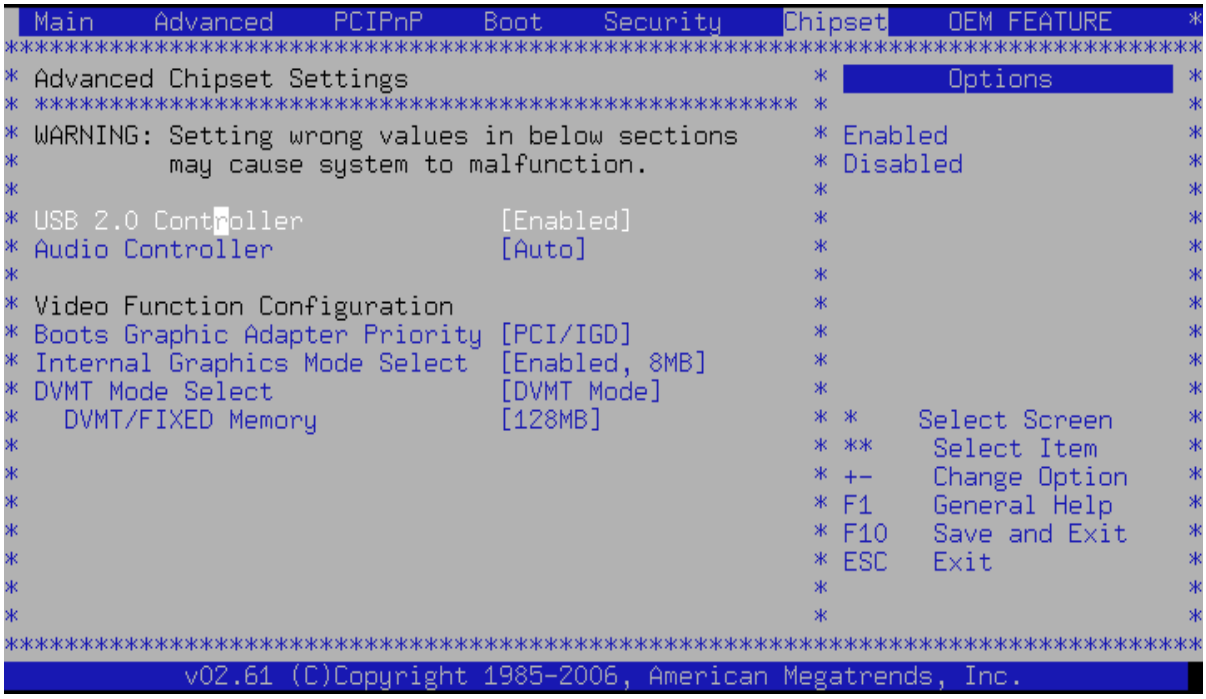
7. Chipset Setup

Select the Chipset tab to enter the Chipset Setup screen. This screen lists the chipset configuration sub-screens. To display a sub-screen, select it using the <Arrow> keys and press <Enter>.



USB 2.0 Controller SDO

This function is used to enable or disable the USB 2.0 controller.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the USB 2.0 controller. When this setting is used, the USB 2.0 controller is removed from the PCI bus. Use this setting if installing an OS which is not supporting USB 2.0 (e.g. Windows 2000, early Windows XP).
Enabled	Use this setting to enable the USB 2.0 controller (EHCI).

Optimal and Fail-Safe default settings: Enabled

Audio Controller (CP6001/CP6001-R3)

This function is used to configure the operational mode of the audio controller.

SETTING	DESCRIPTION
Auto	Use this setting to allow automatic determination.
Azalia	Use this setting to enable the controller as an Intel® HD audio controller.
AC'97 Audio And Modem	This setting is reserved for future use.
All disabled	Use this setting to disable the audio feature.

Optimal and Fail-Safe default settings: Auto

Boots Graphic Adapter Priority SDO

This function is used to select the VGA adapter to be used to display the POST messages.

SETTING	DESCRIPTION
PCI/IGD	Use this setting to specify that if a PCI VGA adapter is available, it is used to display the POST messages. If no PCI/ VGA adapter is available, the internal graphics device is used to display the POST codes.
IGD	Use this setting to specify that the internal graphics device is always used to display the POST messages.

Optimal and Fail-Safe default settings: PCI/IGD

Internal Graphics Mode Select

This function is used to select the amount of the main memory to share with the graphics controller.

SETTING	DESCRIPTION
Enabled, 1 MB	Use this setting to specify that 1 MB of main memory is used for the graphics controller.
Enabled, 8 MB	Use this setting to specify that 8 MB of main memory is used for the graphics controller.
Disabled	Use this setting to disable the Internal Graphics Controller.

Optimal and Fail-Safe default settings: Enabled, 8 MB

DVMT Mode Select

This function is used to select the DMVT operating mode. The Dynamic Video Memory Technology (DMVT) allows the system to dynamically allocate memory resources according to the demands of the system.

SETTING	DESCRIPTION
DVMT Mode	Use this setting to allocate the graphics memory on demand. The size selected via the DVMT/FIXED function is the maximum amount of memory the driver may allocate.
FIXED Mode	Use this setting to allocate a fixed amount of graphics memory via the DVMT/FIXED function.

Optimal and Fail-Safe default settings: DVMT Mode

DVMT/FIXED Memory

This function is used to set the maximum amount of system memory that can be allocated as graphics memory for the DVMT Mode and the Fixed Mode.

Optimal and Fail-Safe default settings: 128 MB

Chapter 8

OEM Feature

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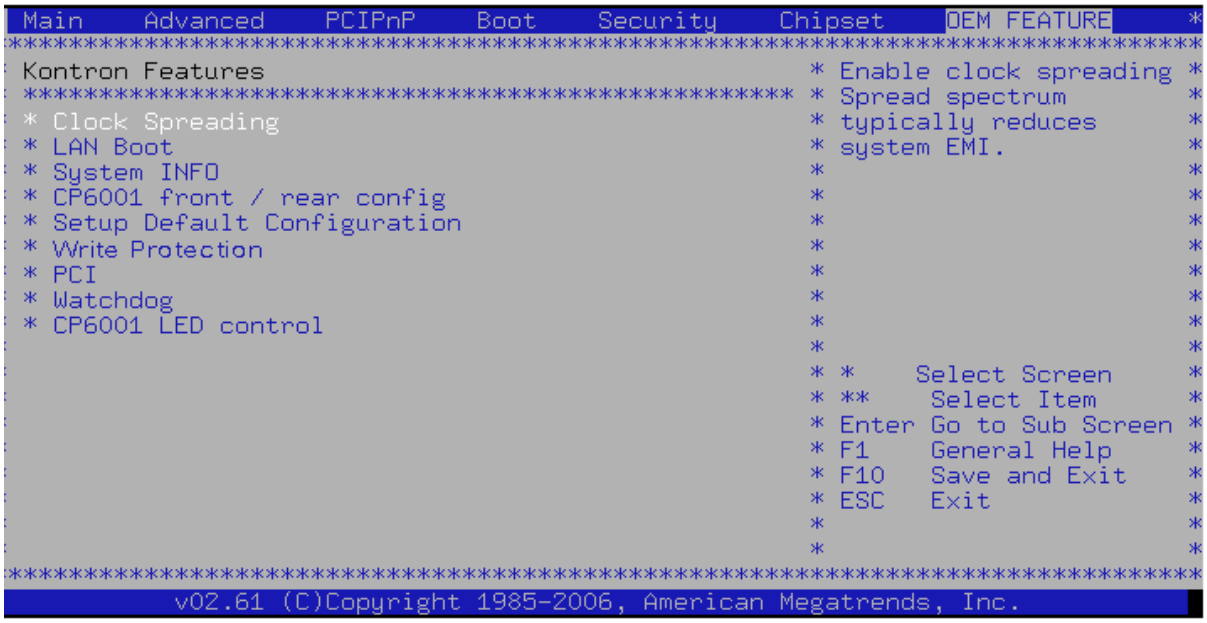
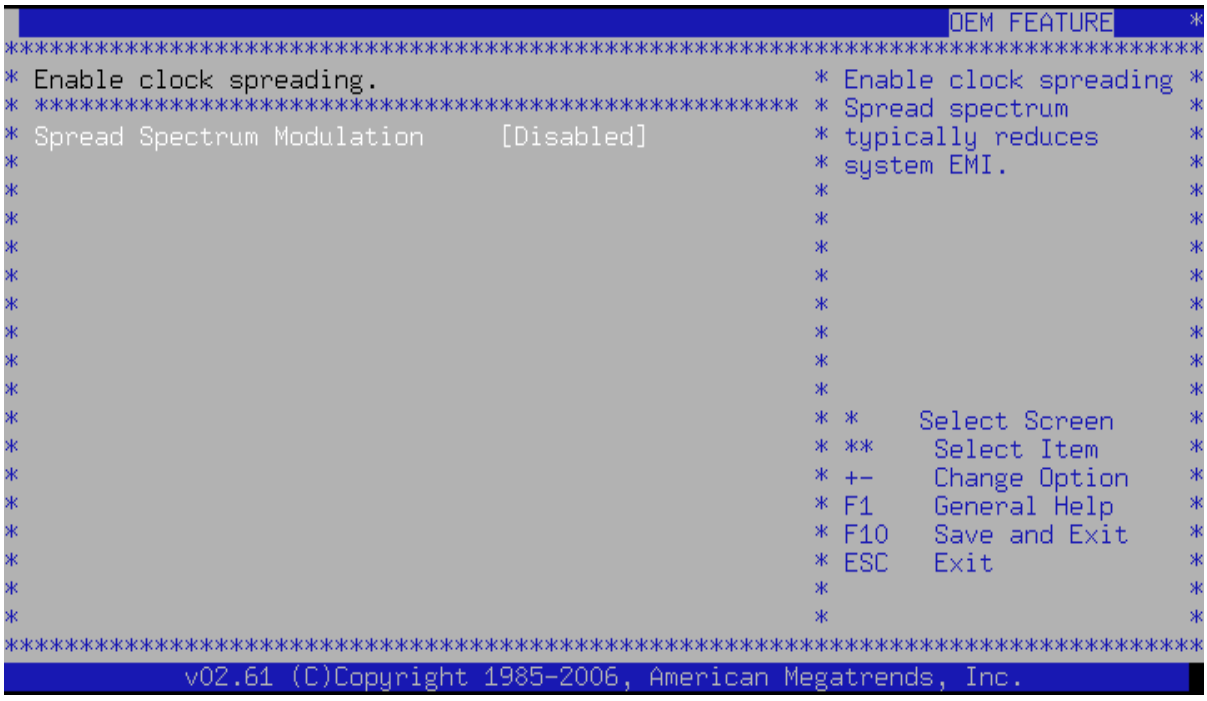
8. OEM Feature

Select the OEM Feature tab to enter the OEM Feature Setup screen. This screen lists the OEM Feature configuration sub-screens. To display a sub-screen, select it using the <Arrow> keys and press <Enter>.



CLOCK SPREADING SCREEN

This screen provides one function for specifying the clock spreading configuration settings.



Spread Spectrum Modulation [SDO]

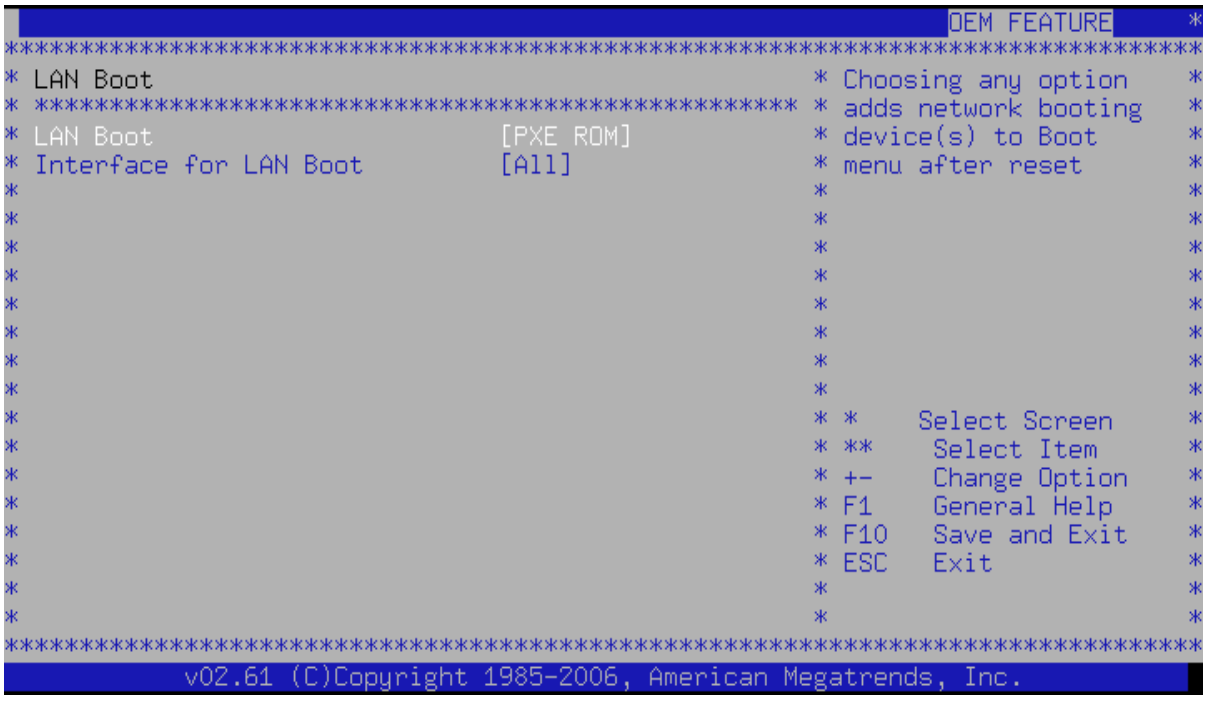
This function is used to enable or disable the spread spectrum modulation of the CPU clock.

SETTING	DESCRIPTION
Disabled	Use this setting to disable spread spectrum modulation of the CPU clock.
Enabled	Use this setting to enable spread spectrum modulation of the CPU clock. Spread spectrum modulation typically reduces system EMI.

Optimal and Fail-Safe default settings: Disabled

LAN BOOT SCREEN (CP6001/CP6001-R3)

This screen provides one function for specifying the LAN boot configuration settings.



LAN Boot SDO

This function is used to load the Ethernet expansion ROM.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the loading of the Ethernet expansion ROM.
PXE ROM	Use this setting to load the Ethernet expansion ROM to allow PXE booting.

Optimal and Fail-Safe default settings: Disabled

Interface for LAN Boot SDO

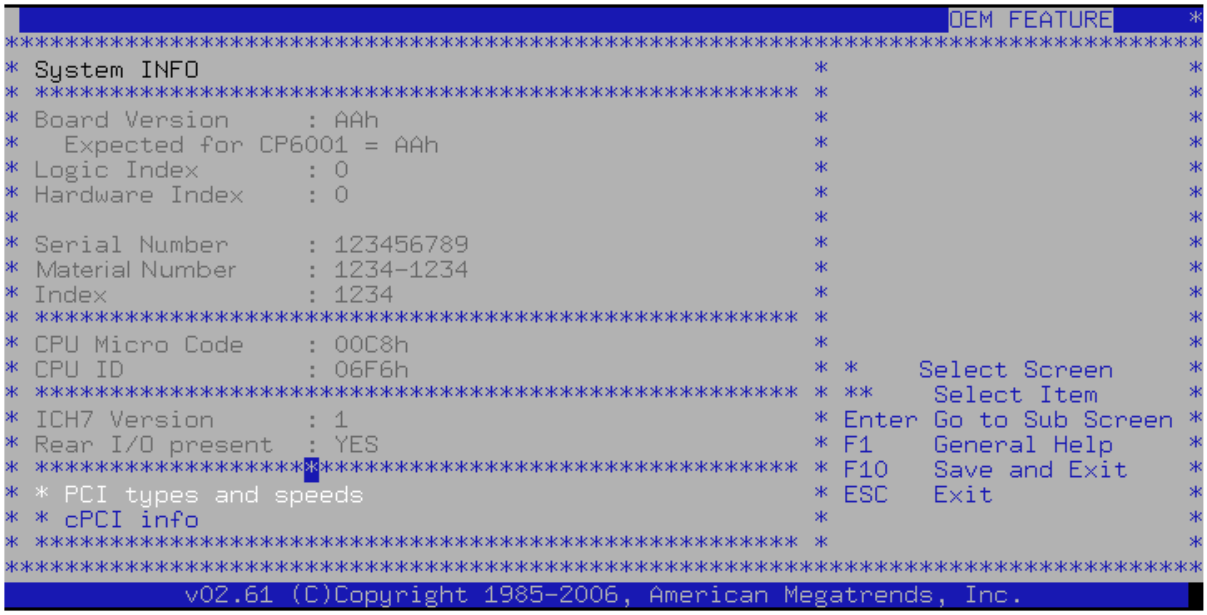
This function is used to select the Ethernet channel to be used for PXE boot.

SETTING	DESCRIPTION
All	Use this setting to attempt to boot from all channels in the order: GbE C, GbE B, GbE A
GbE A	Use this setting to select GbE A only.
GbE B	Use this setting to select GbE B only.
GbE C	Use this setting to select GbE C only. This setting has not effect on the CP6001-R3.

Optimal and Fail-Safe default settings: All

SYSTEM INFO SCREEN

This screen provides basic information about various system elements. All functions listed on this screen are display only-functions and are not user-configurable.



Board Version

This function provides information which reflects the value of an onboard register. This must always correspond with the CPU on which the BIOS is installed.

Logic Index

This function provides information which reflects the value of an onboard register. It shows the index of the onboard logic.

Hardware Index

This function provides information which reflects the value of an onboard register. It shows the index of the hardware.

Serial Number

This function provides information which shows Kontron internal information about the board. The serial number is unique to each board produced by Kontron and identifies a specific board.

Material Number

This function provides information which shows Kontron internal information about the board.

Index

This function provides Kontron internal information about the board.

CPU Micro Code

This function provides the current CPU microcode revision.

CPU ID

This function provides information which shows the ID of the current installed CPU.

ICH7 Version

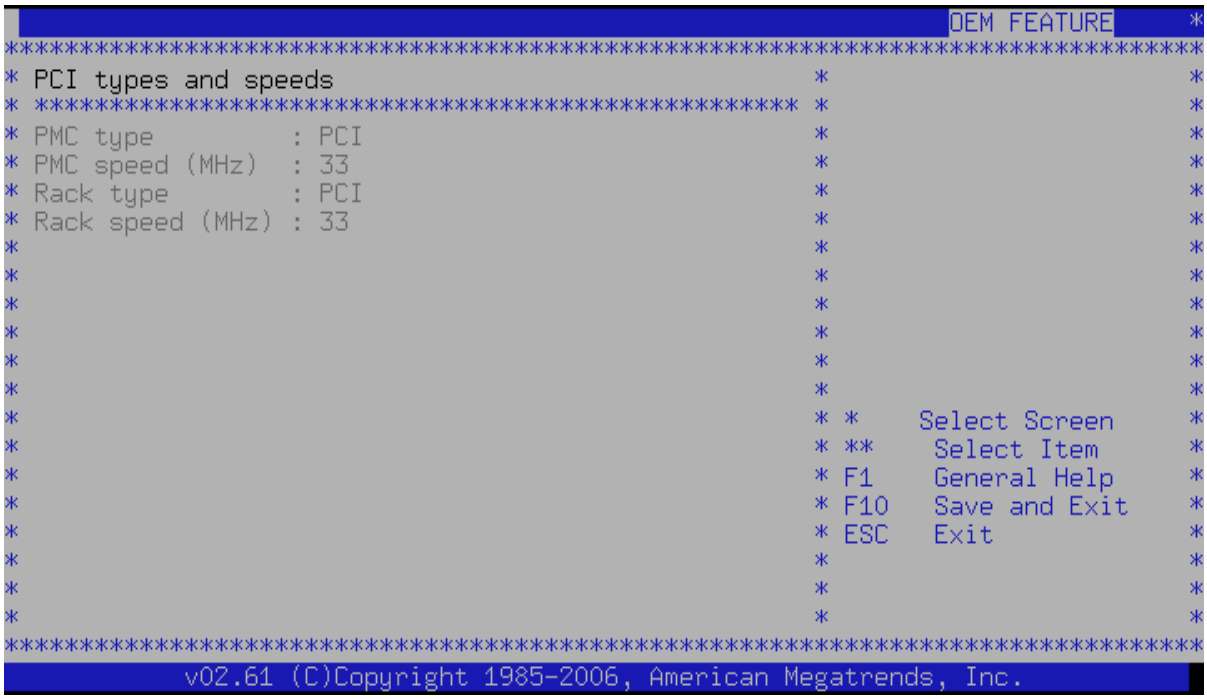
This function provides the chip revision of the onboard ICH7 SouthBridge.

Rear I/O Present

This function provides information which indicates if a Rear I/O board is installed or not.

PCI TYPES AND SPEEDS SCREEN

This screen provides basic information about various system elements. All functions listed on this screen are display-only functions and are not user-configurable.



PMC type

This function provides information about the PCI mode configuration of the PMC module: either PCI or PCI-X.

PMC speed (MHz)

This function provides information about the PMC PCI bus operating frequency.

Rack type

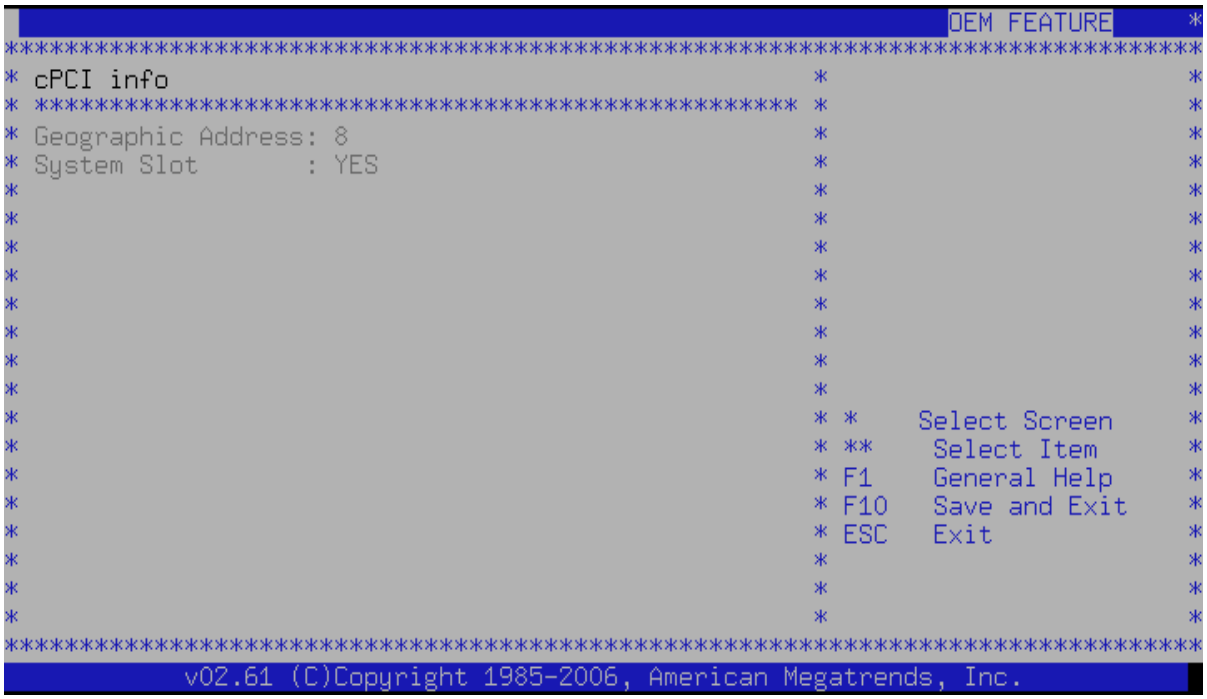
This function provides information about the PCI mode configuration of the cPCI rack bus: either PCI or PCI-X.

Rack speed (MHz)

This function provides information about the rack PCI bus operating frequency.

cPCI INFO SCREEN

This screen provides basic information about various system elements. All functions listed on this screen are display-only functions and are not user-configurable.



Geographic Address

This function provides information about this board's cPCI geographic address.

System Slot

This function indicates if the board is installed in a system slot or not.

CP6001 FRONT / REAR CONFIG SCREEN (CP6001)

This screen provides functions for specifying the CP6001 front/rear configuration settings.

Note: The functions indicated on this screen have no effect on the CP6001-R3 as the interfaces mentioned below are permanently routed to the rear I/O.

VGA Connector SDO

This function is used to select the VGA connector routing.

Warning! Do not route the VGA connector to rear I/O if there is no rear I/O module installed!

Failure to comply with the instruction above will cause the monitor to display a blank screen and may result in damage to the board. If this occurs, contact Kontron for further assistance.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the VGA connector. This does not include the VGA device.
Auto	Use this setting to allow the BIOS to automatically detect where a monitor is installed.
Front	Use this setting to specify that only the front connector is usable.
Rear **SEE WARNING ABOVE!**	Use this setting to specify that VGA is routed to rear I/O.

Optimal and Fail-Safe default settings: Front

Gig. Ethernet A / Gig. Ethernet B SDO

This function is used to select the appropriate interface routing for Gigabit Ethernet A and B.

SETTING	DESCRIPTION
Front	Use this setting to specify that the GbA and GbB interfaces are to be routed to the front panel.
Rear	Use this setting to specify that GbA and GbB interfaces are to be routed to rear I/O.

Optimal and Fail-Safe default settings: Front

Serial ATA #0 and #2 SDO

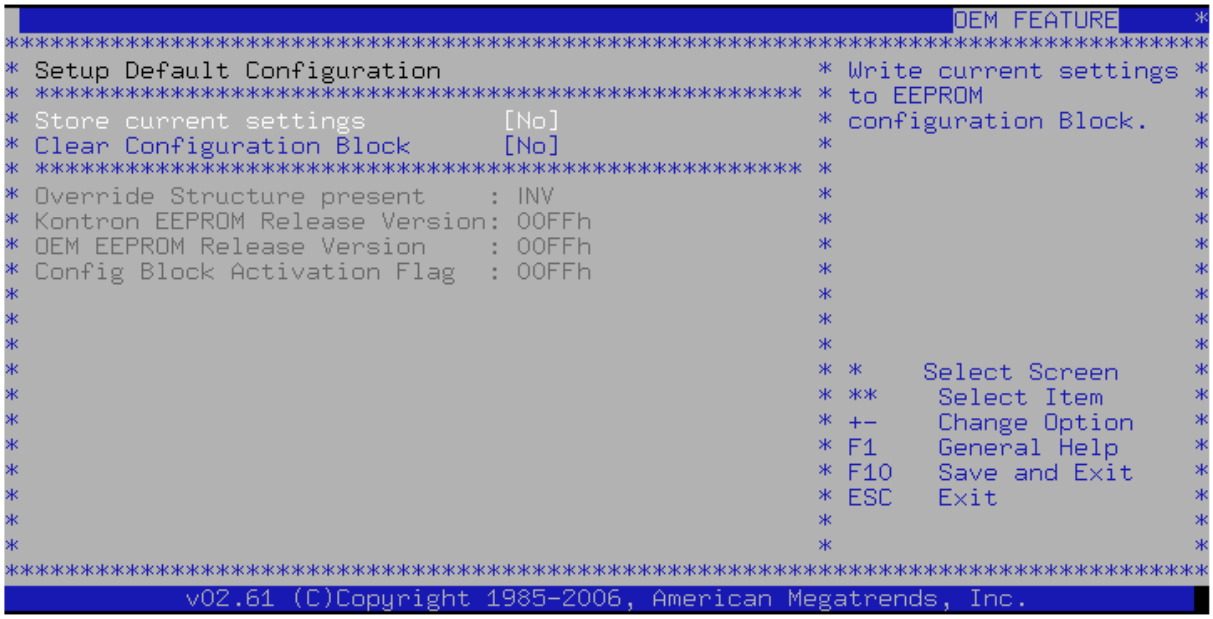
This function is used to select the routing of the SATA ports #0 and #2.

SETTING	DESCRIPTION
Rear	Use this setting to route the SATA ports #0 and #2 to rear I/O.
Onboard	Use this setting to route the SATA ports #0 and #2 to onboard connectors.

Optimal and Fail-Safe default settings: Onboard

SETUP DEFAULT CONFIGURATION SCREEN

This screen provides functions for specifying BIOS setup Optimal and Fail-Safe default override settings.



Note: Function settings that are included in the setup default override are indicated by the letters SDO after the function: e.g. **Remote Access** SDO

Store current settings

This function is used to specify that the current BIOS settings which are included in the setup default override are to be stored as override settings for Optimal and Fail-Safe defaults.

SETTING	DESCRIPTION
No	This is the BIOS default setting and is automatically set to “No” during the next boot operation.
Yes	Use this setting to enable storing of current settings during the next boot operation

Optimal and Fail-Safe default settings: No

Clear Configuration Block

This function is used to clear the previously stored settings in the setup default override configuration block. When cleared, the optimal and fail-safe default settings are no longer overridden when used for booting. Clearing the configuration block does not affect the current settings in use.

SETTING	DESCRIPTION
No	This is the BIOS default setting and is automatically set to “No” after the configuration block is cleared.
Yes	Use this setting to enable clearing of the configuration block during the next boot operation.

Optimal and Fail-Safe default settings: No

Override Structure present

This is a display-only function which indicates whether or not an override structure is available or valid.

SETTING	DESCRIPTION
No	This setting indicates that the override structure is not present.
Yes	This setting indicates that the override structure is present and valid.
INV	This setting indicates that the override structure is present, but is was previously invalidated by the command “Clear Configuration Block”.

Kontron EEPROM Release Version

This is a display-only function which indicates the Kontron release version of the current override structure. The setting of this function is only valid if the override structure was provided by Kontron.

OEM EEPROM Release Version

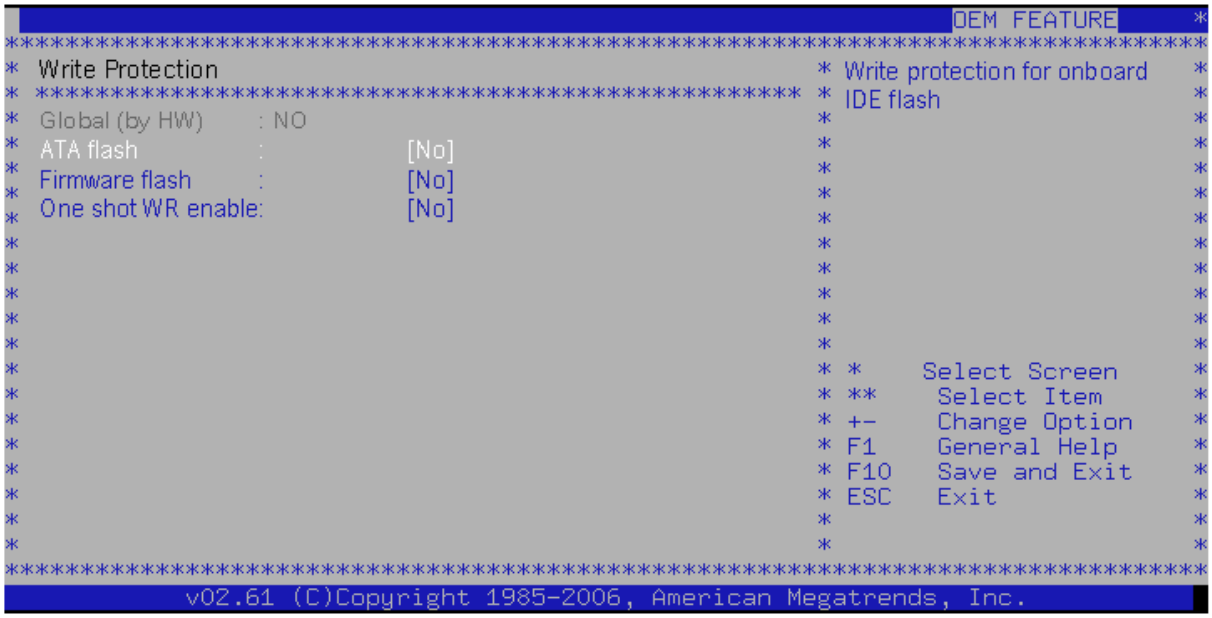
This is a display-only function which indicates the OEM release version of the current override structure.

Config. Block Activation Flag

This is a display-only function and is reserved for Kontron internal use.

WRITE PROTECTION SCREEN

This screen provides information regarding write protection for non-volatile memory devices and functions for specifying software write protection.



Global (by HW) (CP6001/CP6001-R3)

This function provides information about hardware write protection for non-volatile memory devices. For further information about hardware write protection for non-volatile memory devices, please refer to the “Write Protection for Non-Volatile Memory Devices” section in the respective user guide..

SETTING	DESCRIPTION
No	This setting is displayed when hardware write protection for all non-volatile memory devices is disabled (unprotected).
Yes	This setting is displayed when hardware write protection for all non-volatile memory devices is enabled (protected).

ATA flash SDO (CP6001/CP6001-R3)

When displayed, this function is used to specify software write protection for the onboard ATA flash device.

SETTING	DESCRIPTION
No	Use this setting to disable software write protection for the onboard ATA flash device.
Yes	Use this setting to enable software write protection for the onboard ATA flash device.

Optimal and Fail-Safe default settings: No

Firmware flash SDO

When displayed, this function is used to specify software write protection for the onboard firmware (BIOS) flash device.

SETTING	DESCRIPTION
No	Use this setting to disable software write protection for the onboard firmware (BIOS) flash device.
Yes	Use this setting to enable software write protection for the onboard firmware (BIOS) flash device. If this setting is used, the BIOS itself does not permit writing event logs or storing ESCD data in its flash. Furthermore, it is also not possible to update the BIOS as long as write protection is enabled.

Optimal and Fail-Safe default settings: No

One shot WR enable

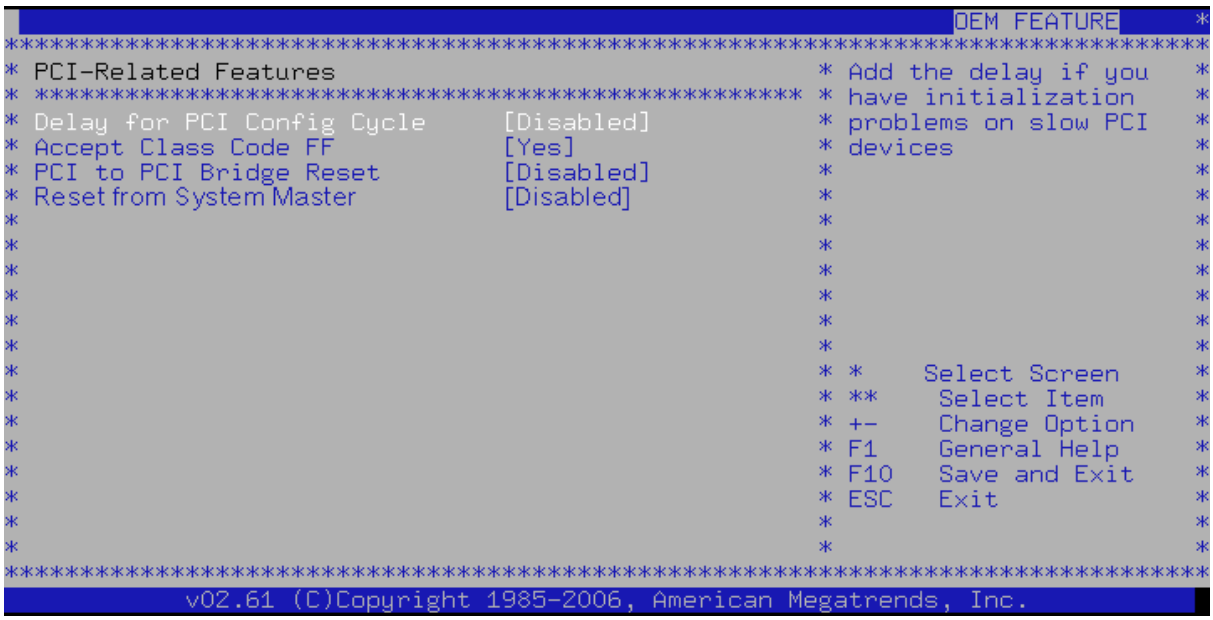
When displayed, this function is used to enable writing to the firmware (BIOS) flash for the current session until the next boot operation. If the function Firmware Flash is set to *Yes*, it can be used to override the BIOS flash write protection.

SETTING	DESCRIPTION
No	This setting is automatically selected by the BIOS.
Yes	Use this setting to disable BIOS Flash write protection when the Firmware Flash is set to *Yes*. The system sets this function back to *No* automatically after booting.

Optimal and Fail-Safe default setting: No

PCI SCREEN

This screen provides functions for specifying the PCI screen configuration settings.



Delay for PCI Config Cycle SDO

This function is used to specify a delay time if required for slower PCI devices.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Delay for PCI Config Cycle function.
250 ms 500 ms 1 s	Use one of these settings to specify a delay time for slower PCI devices.

Optimal and Fail-Safe default settings: Disabled

Accept Class Code FF SDO

This function is used to initialize all PCI devices with class code FF.

SETTING	DESCRIPTION
Yes	Use this setting to initialize all of the PCI devices.
No	Use this setting to prevent the PCI devices with class code FF from being initialized.

Optimal and Fail-Safe default settings: Yes

PCI-to-PCI Bridge Reset SDO

This function is used to perform a PCI-to-PCI bridge reset using a software reset mechanism prior to configuring the PCI devices on the bus behind the PCI-to-PCI bridge.

SETTING	DESCRIPTION
Disabled	Use this setting to disable a PCI-to-PCI bridge reset.
Enabled	Use this setting to enable a PCI-to-PCI bridge reset.

Optimal and Fail-Safe default settings: Disabled

Reset from System Master

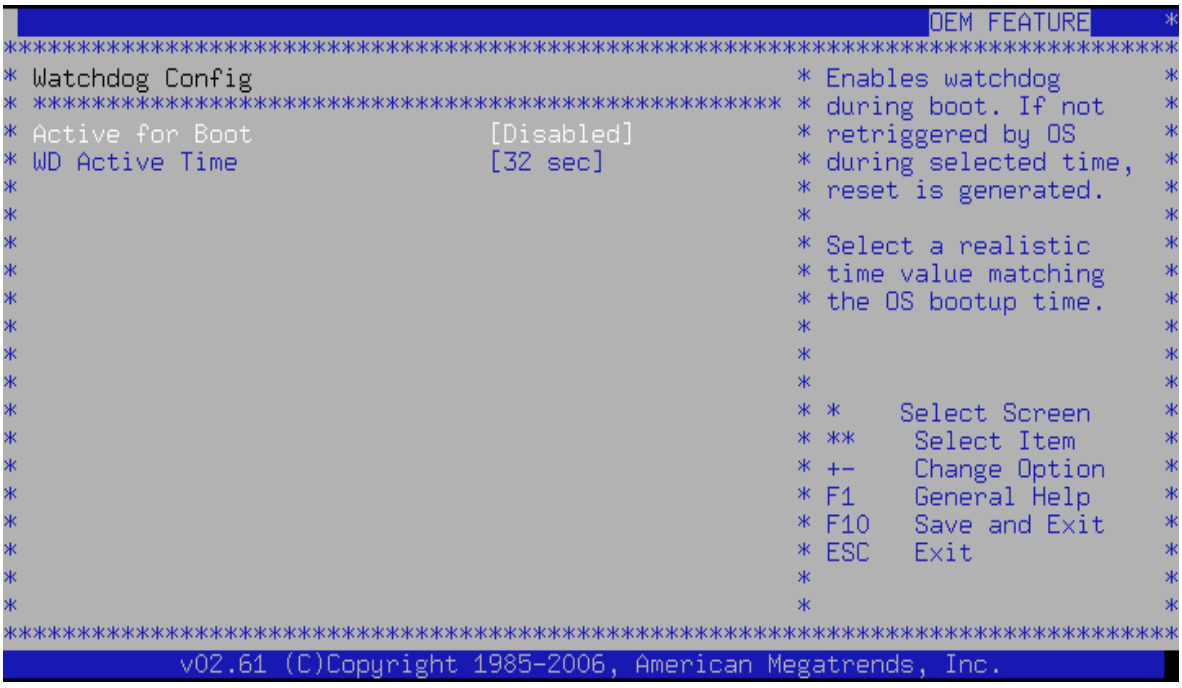
This function is used to perform a board reset from the system master.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the reset from system master.
Enabled	Use this setting to enable the reset from system master.

Optimal and Fail-Safe default settings: Disabled

WATCHDOG SCREEN

This screen provides functions for specifying the Watchdog configuration settings.



Active for Boot SDO

This function is used to specify activation of the Watchdog by the BIOS prior to booting the OS. If activated, the Watchdog will trigger a reset if not retriggered by the OS within the selected WD Active Time.

SETTING	DESCRIPTION
Disabled	Use this setting to disable activation of the Watchdog.
Enabled	Use this setting to enable activation of the Watchdog prior to booting the OS.

Optimal and Fail-Safe default settings: Disabled

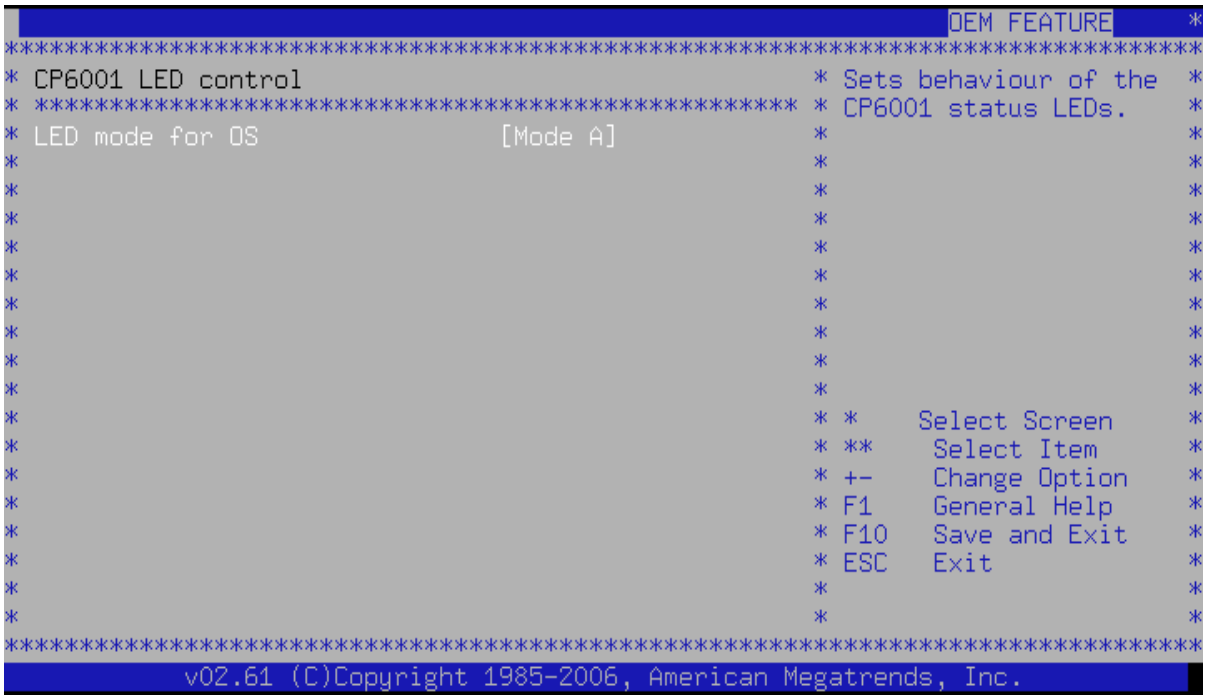
WD Active Time SDO

SETTING	DESCRIPTION
125 ms 250 ms 500 ms 1 s 2 s 4 s 8 s 16 s 32 s 64 s 128 s 256 s	Use one of these setting to select the time after which the Watchdog times out if not retrigered.

Optimal and Fail-Safe default settings: 125 ms

CP6001 LED CONTROL SCREEN (CP6001/CP6001-V)

This screen provides functions for specifying the CP6001/CP6001-V LED configuration settings.



LED Mode for OS

This function is used to select the operational mode of the POST code LEDs.

SETTING	DESCRIPTION
Mode A	Use this setting to specify the special LED mode A as described in the CP6001 User Guide / CP6001-V User Guide.
Post	Use this setting to select the output of the POST code (IO port 80 contents). Refer to the CP6001 User Guide / CP6001-V User Guide for information on POST code encoding.

Optimal and Fail-Safe default settings: Mode A

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Chapter 9

Exit Menu

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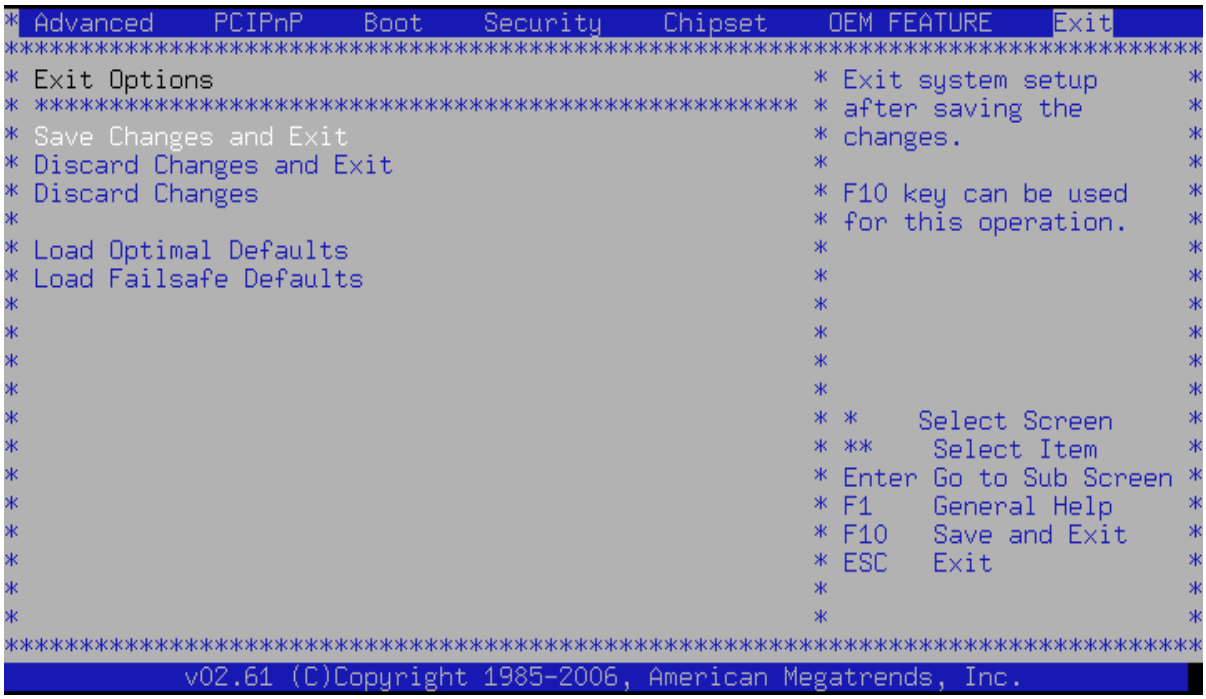
9. Exit Menu

Select the Exit tab to enter the Exit menu screen. This screen provides functions for handling changes made to the BIOS settings and the exiting of the BIOS setup program. In addition, it provides functions for loading the Optimal and Fail-Safe default settings.



Save Changes and Exit

Upon completion of the BIOS configuration changes, select this function to save the changes, exit the BIOS setup program, and reboot the computer so that the new configuration settings cant take effect.

To accomplish this, select this function from the Exit menu and press <Enter>. A popup display appears requesting confirmation of the changes. To confirm, select [OK] and then press <Enter>. To return to the BIOS setup program without saving changes, select [Cancel] and then press <Enter>.

Discard Changes and Exit

This function is used to exit the BIOS setup program without making any permanent changes to the BIOS configuration.

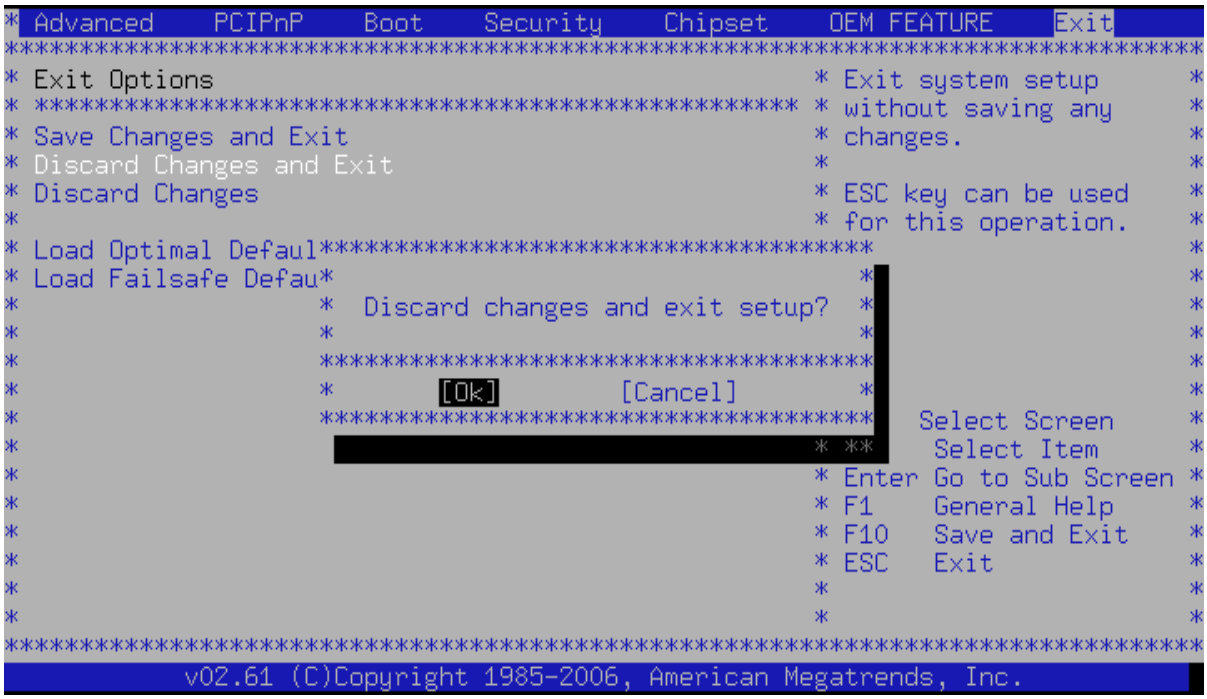
To accomplish this, select this function from the Exit menu and press <Enter>. A popup display appears requesting confirmation of the discarding of changes and setup exit. To confirm, select [OK] and then press <Enter>. To return to the BIOS setup program without discarding the changes made, select [Cancel] and then press <Enter>.

Discard Changes

In the course of making configuration changes, it may be necessary to revert back to the previously stored settings and start over again without leaving the BIOS setup program so that new changes may be made.

To accomplish this, select this function from the Exit menu and press <Enter>. A popup display appears requesting confirmation of the discarding of changes. To confirm, select [OK] and then press <Enter>. To return to the BIOS setup program without discarding the changes made, select [Cancel] and then press <Enter>.

Discard Changes Screen

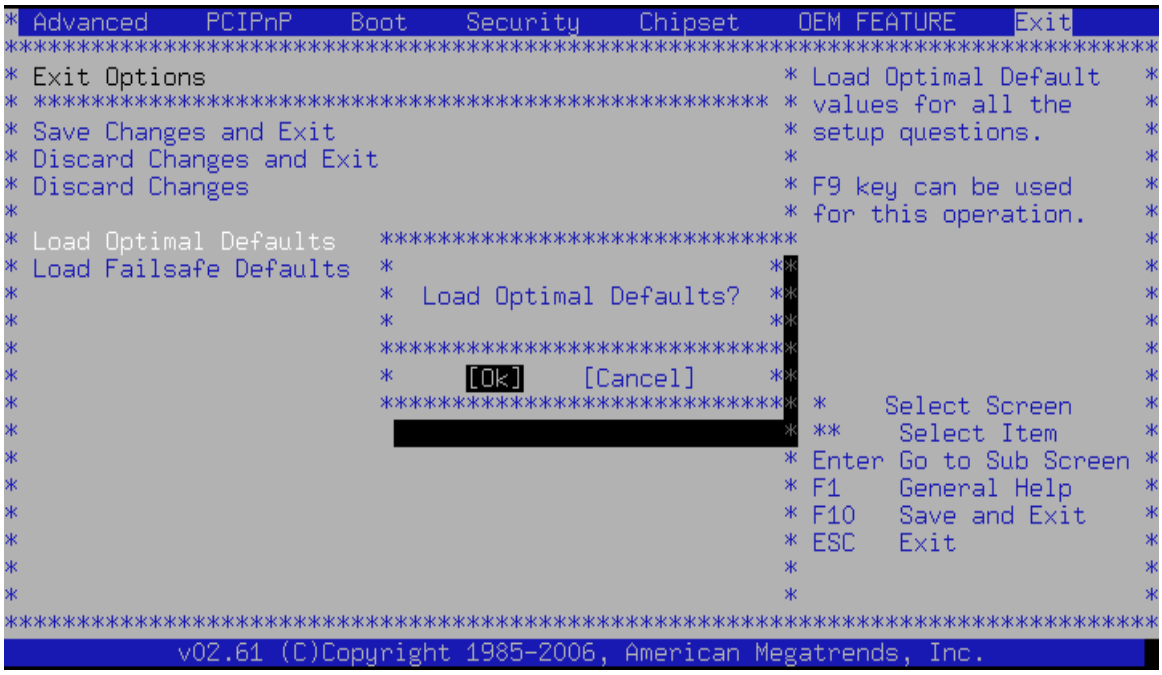


Load Optimal Defaults

This function is used to reconfigure the BIOS settings to a predefined set of Optimal default settings. The Optimal settings are designed for maximum system performance, but may not work well for all computer applications. In particular, do not use the Optimal settings if configuration problems are being experienced with the system.

To load the Optimal default settings, select this function from the Exit menu and press <Enter>. A popup display appears requesting confirmation of the loading. To confirm, select [OK] and then press <Enter>. To return to the BIOS setup program without loading, select [Cancel] and then press <Enter>.

Load Optimal Defaults Screen



NOTE: If an override structure has been defined, the default values for optimal will differ according to the override structure. Refer to OEM Feature: Setup Default Configuration for further information.

Load Fail-Safe Defaults

This function is used to reconfigure the BIOS settings to a predefined set of Fail-Safe default settings. The Fail-Safe default settings are designed for maximum system stability, but not maximum system performance. Select the Fail-Safe default settings if configuration problems are being experienced with the system.

To load the Fail-Safe default settings, select this function from the Exit menu and press <Enter>. A popup display appears requesting confirmation of the loading. To confirm, select [OK] and then press <Enter>. To return to the BIOS setup program without loading, select [Cancel] and then press <Enter>.

NOTE: If an override structure has been defined, the default values for fail-safe will differ according to the override structure. Refer to OEM Feature: Setup Default Configuration for further information.

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Chapter 10

POST Codes

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10. POST Codes

For information about the POST code display LEDS, refer to the board's user guide, section "General Purpose LEDs".

Bootblock Initialization Code Checkpoints

The Bootblock initialization code sets up the chipset, memory and other components before system memory is available. The following table describes the type of checkpoints that may occur during the Bootblock initialization portion of the BIOS:

CHECKPOINT	DESCRIPTION
Before D1	Early chipset initialization is done. Early super I/O initialization is done including RTC and keyboard controller. NMI is disabled.
D1	Perform keyboard controller BAT test. Check if waking up from power management is in suspend state. Save power-on CPUID value in scratch CMOS.
D0	Go to flat mode with 4 GB limit and GA20 enabled. Verify the Bootblock checksum.
D2	Disable CACHE before memory detection. Execute full memory sizing module. Verify that flat mode is enabled.
D3	If memory sizing module not executed, start memory refresh and do memory sizing in Bootblock code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512 KB memory. Adjust policies and cache first 8 MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. Main BIOS checksum is tested. If BIOS recovery is necessary, control flows to checkpoint E0. See *Bootblock Recovery Code Checkpoints* section of document for more information.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1 MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (Execute POST Kernel). See *POST Code Checkpoints* section of document for more information.

Bootblock Recovery Code Checkpoints

The Bootblock recovery code gets control when the BIOS determines that a BIOS recovery needs to occur because the user has forced the update or the BIOS checksum is corrupt. The following table describes the type of checkpoints that may occur during the Bootblock recovery portion of the BIOS:

CHECKPOINT	DESCRIPTION
E0	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	Set up floppy controller and data. Attempt to read from floppy.
EA	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	Disable ATAPI hardware. Jump back to checkpoint E9.
EF	Read error occurred on media. Jump back to checkpoint EB.
E9 or EA	Determine information about root directory of recovery media.
F0	Search for pre-defined recovery file name in root directory.
F1	Recovery file not found.
F2	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.
F3	Start reading the recovery file cluster by cluster.
F5	Disable L1 cache.
FA	Check the validity of the recovery file configuration to the current configuration of the flash part.
FB	Make flash write enabled through chipset and OEM specific method. Detect proper flash part. Verify that the found flash part size equals the recovery file size.
F4	The recovery file size does not equal the found flash part size.
FC	Erase the flash part.
FD	Program the flash part.
FF	The flash has been updated successfully. Make flash write disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

CHECKPOINT	DESCRIPTION
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with Fail-Safe default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache - Init Local APIC
C1	Set up boot strap processor Information
C2	Set up boot strap processor for POST
C5	Enumerate and set up application processors
C6	Re-enable cache for boot strap processor
C7	Early CPU Init Exit
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that has optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.

CHECKPOINT	DESCRIPTION
38	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, etc.) successfully installed in the system and update the BDA, EBDA, etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRAM.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPUs before boot, which includes the programming of the MTRRs.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).

DIM Code Checkpoints

The Device Initialization Manager module gets control at various times during BIOS POST to initialize different BUSes. The following table describes the main checkpoints where the DIM module is accessed:

CHECKPOINT	DESCRIPTION
2A	Initialize different buses and perform the following functions: Reset, Detect, and Disable (function 0); Static Device Initialization (function 1); Boot Output Device Initialization (function 2). Function 0 disables all device nodes, PCI devices, and PnP ISA cards. It also assigns PCI bus numbers. Function 1 initializes all static devices that include manual configured onboard peripherals, memory and I/O decode windows in PCI-PCI bridges, and noncompliant PCI devices. Static resources are also reserved. Function 2 searches for and initializes any PnP, PCI, or AGP video devices.
38	Initialize different buses and perform the following functions: Boot Input Device Initialization (function 3); IPL Device Initialization (function 4); General Device Initialization (function 5). Function 3 searches for and configures PCI input devices and detects if system has standard keyboard controller. Function 4 searches for and configures all PnP and PCI boot devices. Function 5 configures all onboard peripherals that are set to an automatic configuration and configures all remaining PnP and PCI devices.

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