ThinkIO™ - Duo

Intel® Core™ Duo DIN Rail PC

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BIOS Guide

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Kontron Modular Computers GmbH may be contacted via the following:

MAILING ADDRESS

Kontron Modular Computers GmbH

Sudetenstraße 7

D - 87600 Kaufbeuren Germany

TELEPHONE AND E-MAIL

+49 (0) 800-SALESKONTRON

sales@kontron.com

For information about other Kontron products, please visit our Internet web site:

www.kontron.com

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Chapter 1

Starting BIOS Setup

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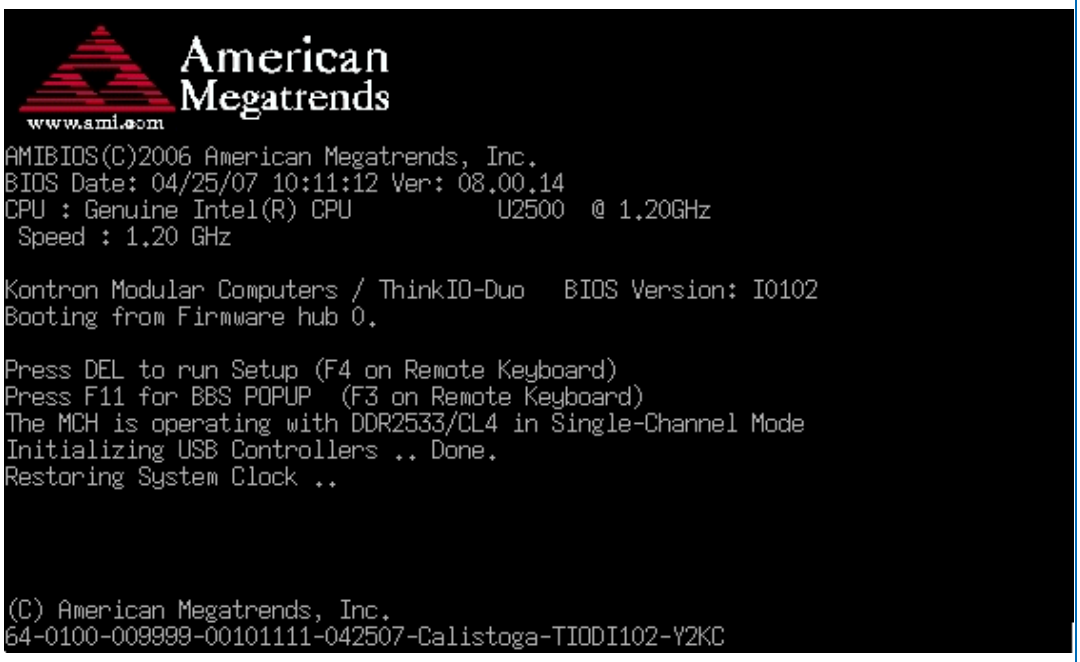
1. Starting BIOS Setup

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

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

This 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 configurable functions are described in this guide.

To start the BIOS setup program, follow the steps below:

STEP	DESCRIPTION
1	Power on the product
2	Press the <Delete> key on the keyboard when the following text prompt appears: Press DEL to run Setup 
3	After pressing the <Delete> key, the ThinkIO-Duo BIOS Main 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 ThinkIO-Duo is connected to a terminal, use the <F4> key to start the BIOS setup program.

1.1 Main Setup Menu

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

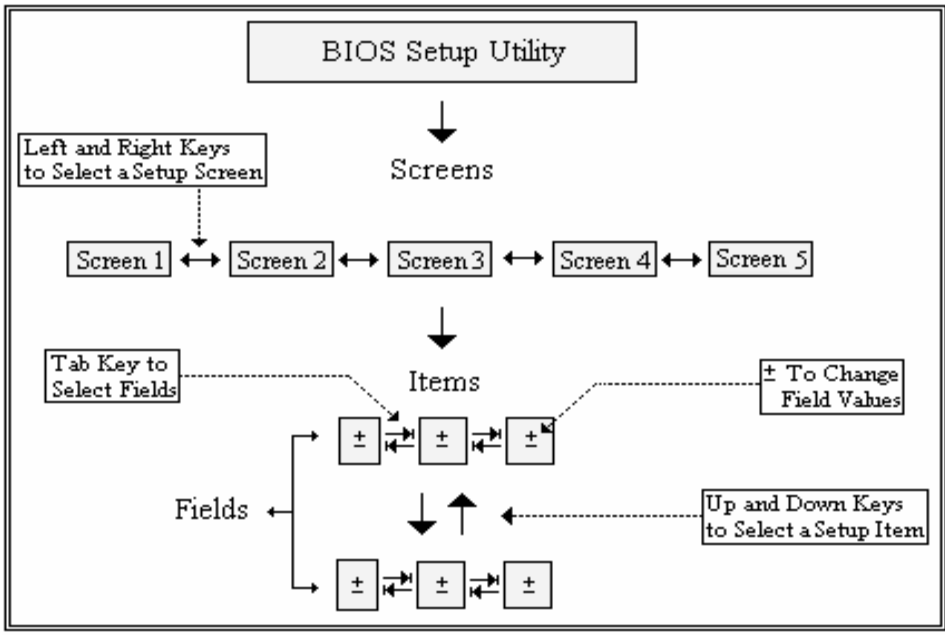
At the top of this screen and all of the other major screens, there is a setup menu selection bar, which permits access to all of the other major setup menus. These menus are selected via the left-right <Arrow> keys.

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

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

1.2 Navigation

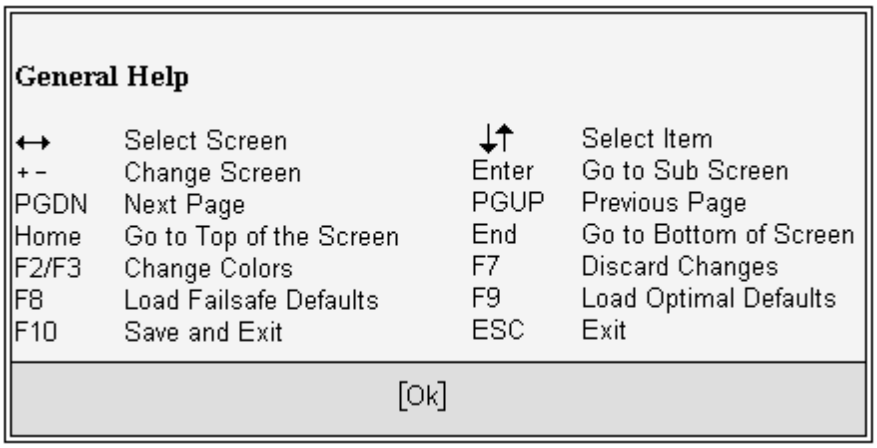
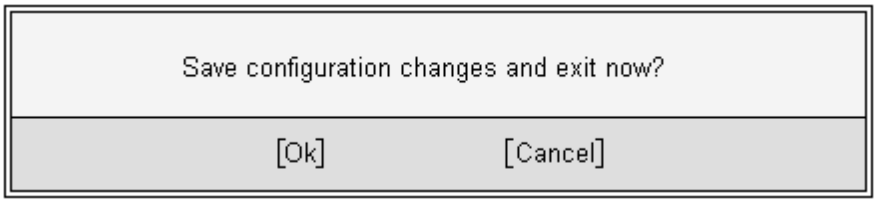
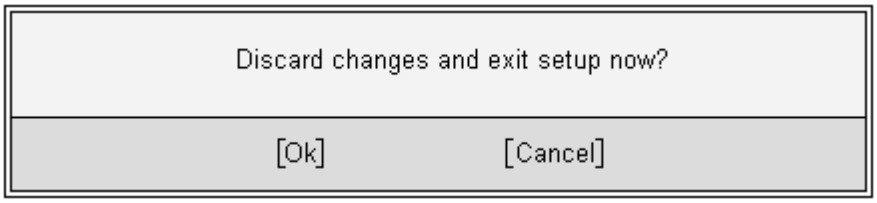
The ThinkIO-Duo BIOS setup program uses a hot key-based navigation system. Most of these hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.



Note: There is a hot key legend located in the right frame on most ThinkIO-Duo 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 sub-screen.
+- Plus/Minus	The plus and minus 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 ThinkIO-Duo 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 that have been made and exit BIOS Setup. Press the <F10> key to save the 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 that have been made and exit the BIOS Setup. Press the <Esc> key to exit the BIOS 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 ThinkIO-Duo 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-down <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the left-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-down <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the left-right <Arrow> keys to move between fields.

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Chapter 3

Advanced Setup

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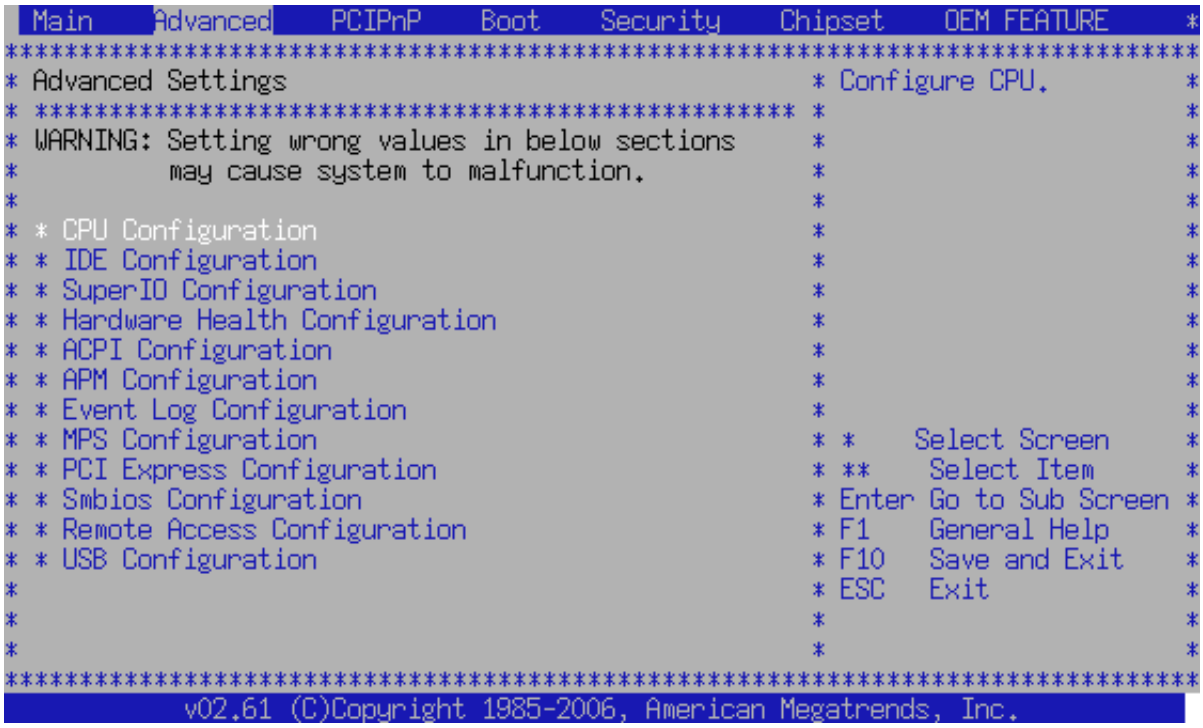
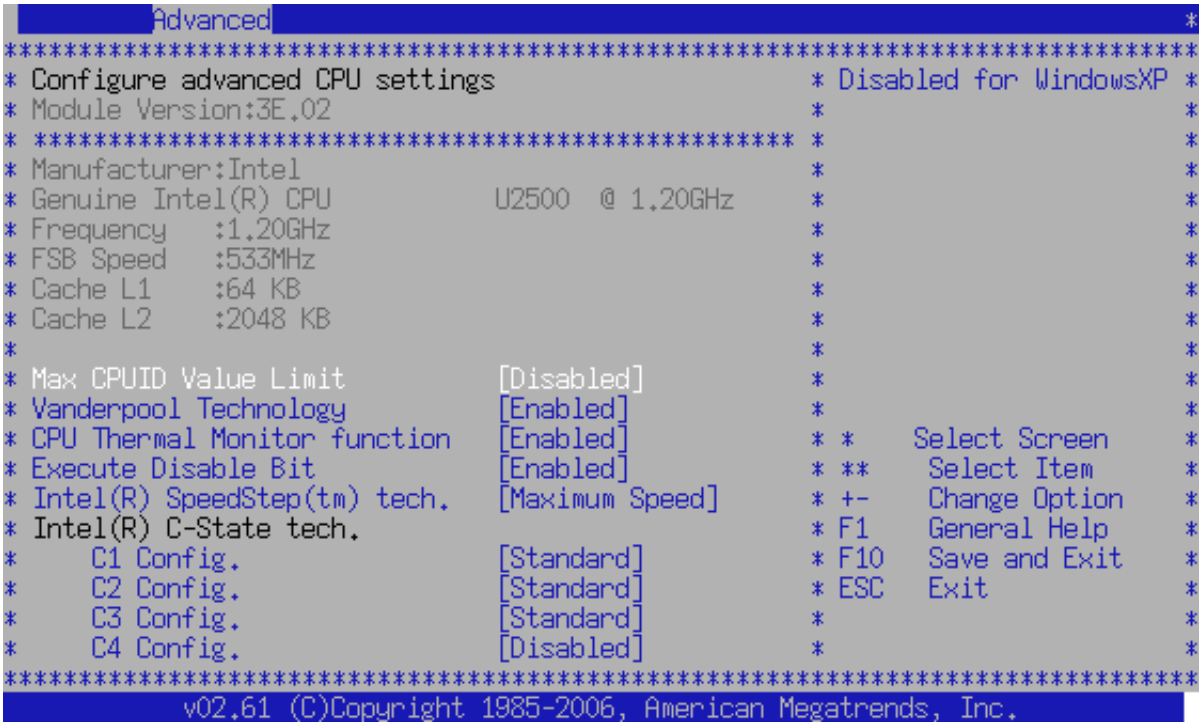
3. Advanced Setup

Select the Advanced tab to enter the Advanced Setup screen. This screen lists a variety of advanced configuration sub-screens. To gain access to a sub-screen, select it and press <Enter>.



CPU CONFIGURATION SCREEN

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



Max CPUID Value Limit

The Maximum CPUID Value Limit determines 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.

SETTING	DESCRIPTION
Disabled	Use this setting to disable this function.
Enabled	Use this setting to enable this function.

Optimal and Fail-Safe settings: Disabled

Vanderpool Technology

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

SETTING	DESCRIPTION
Disabled	Use this setting to disable this function.
Enabled	Use this setting to enable this function.

Optimal and Fail-Safe settings: Enabled

CPU Thermal Monitor function

This function to is used to specify the Thermal Monitor Feature.

Note: When Disabled is selected, the BIOS disables the CPU built in automatic thermal throttling. If the CPU becomes overheated, the ThinkIO-Duo will shut off automatically.

SETTING	DESCRIPTION
Disabled	Use this setting to disable this function.
Enabled	Use this setting to enable this function.

Optimal and Fail-Safe settings: Enabled

Execute Disable Bit

This function is used to specify the Execute Disable Bit feature.

SETTING	DESCRIPTION
Disabled	Use this setting to disable this function. If Disabled is selected, the BIOS forces the XD feature flag to always return to 0.
Enabled	Use this setting to enable this function.

Optimal and Fail-Safe settings: Enabled

Intel(R) SpeedStep(tm) tech.

This function is used to specify the Intel® SpeedStep™ feature

SETTING	DESCRIPTION
Disabled	Use this setting to disable this function. Use of this setting will force the BIOS to use minimum speed.
Minimum Speed	Use this setting to specify minimum speed.
Maximum Speed	Use this setting to specify maximum speed.
Automatic	Use this setting to permit the operating system to control the CPU speed. The BIOS will start with high CPU speed.

Optimal and Fail-Safe settings: Maximum Speed

Intel(R) C-State tech.: Cn Config

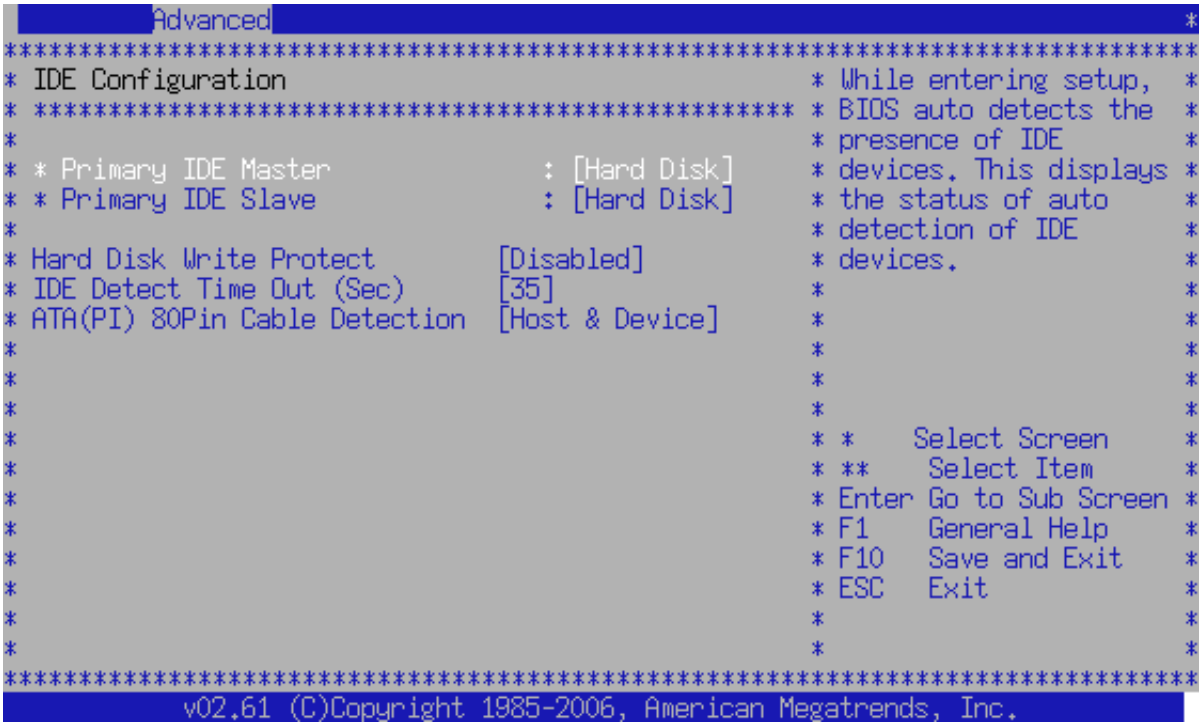
This function controls the availability of the CPU C-STATE power saving technology. The individual C-STATE functions are selectable independent of one another, i.e. C1, C2, C3, and C4 may be enabled/disabled in any combination.

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

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

IDE CONFIGURATION SCREEN

This screen provides functions for specifying IDE configuration settings.



Primary IDE Master

This function provides access to the Primary IDE Master sub-screen. This function is only available when an IDE device is detected as the primary IDE master.

To access the Primary IDE Master screen, select this function and press <Enter>

Refer to the Primary IDE Master screen below for further details concerning device configuration functions.

Primary IDE Slave

This function provides access to the Primary IDE Slave sub-screen. This function is only available when an IDE device is detected as the primary IDE slave.

To access the Primary IDE Slave screen, select this function and press <Enter>

Refer to the Primary IDE Master screen below for further details concerning device configuration functions.

Hard Disk Drive Write Protect

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

SETTING	DESCRIPTION
Disabled	Use this setting to disable the hard disk drive write protect. Read, write, and erase functions can be performed on all of the hard disk drives.
Enabled	Set this value to prevent all of the hard disk drives from being erased.

Optimal and Fail-Safe settings: Disabled

IDE Detect Time Out (Sec)

SETTING	DESCRIPTION
0, 5, 10, 15, 20, 25, 30, 35 (in seconds)	Use one of these settings to specify how long the BIOS is to wait for IDE devices to be detected before continuing with booting. Basically, this enables fine-tuning of the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all attached IDE disk drives is found.

Optimal and Fail-Safe 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 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.

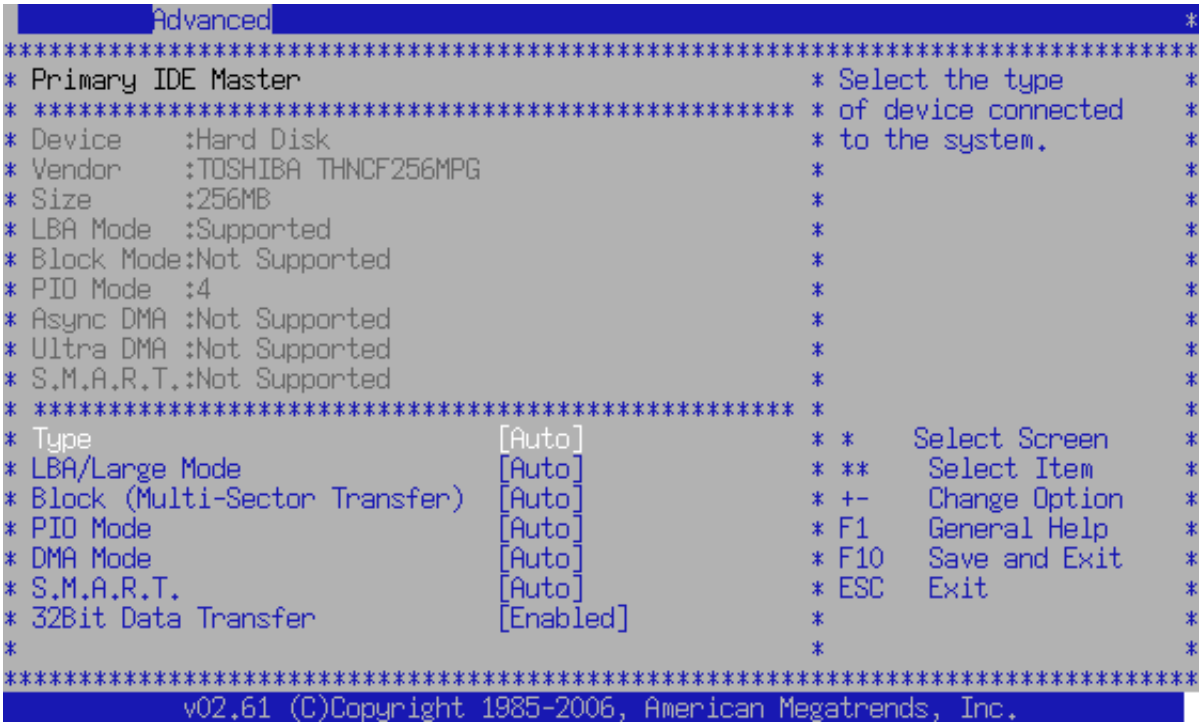
The 80-conductor ATA cable is plug-compatible with the standard 40-conductor ATA cable. Because of this, the system must determine the presence of the correct cable.

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.

PRIMARY IDE MASTER SCREEN

This screen provides basic information concerning the primary IDE master device and functions for specifying device configuration settings. This screen is only available when a device has been detected.

This screen and the descriptions which follow are representative for the primary, secondary, third, and fourth IDE master and slave devices.



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 ThinkIO-Duo supports 48-bit LBA mode. Thus, hard disks with a drive capacity greater than 137 GB can be used on the ThinkIO-Duo.
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 permit 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. In this case, 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 settings: Auto

LBA/Large Mode

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 permit the BIOS to auto detect the Large Block Addressing mode control on the specified channel.

Optimal and Fail-Safe settings: Auto

Block (Multi-Sector Transfer)

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using Multi-Sector Transfer on the specified channel. The data transfer to and from the device will be one sector at a time.
Auto	Use this setting to permit the BIOS to auto detect device support for Multi-Sector Transfers on the specified channel. If supported, the data transfer to and from the device will be multiple sectors at a time.

Optimal and Fail-Safe settings: Auto

PIO Mode

SETTING	DESCRIPTION
Auto	Use this setting to permit the BIOS to auto detect the PIO mode. Specify Auto if the IDE disk drive support cannot be determined.
0	Use this setting to permit the BIOS to use PIO mode 0. This mode has a data transfer rate of 3.3 Mbit/s.
1	Use this setting to permit the BIOS to use PIO mode 1. This mode has a data transfer rate of 5.2 Mbit/s.
2	Use this setting to permit the BIOS to use PIO mode 2. This mode has a data transfer rate of 8.3 Mbit/s.
3	Use this setting to permit the BIOS to use PIO mode 3. This mode has a data transfer rate of 11.1 Mbit/s.
4	Use this setting to permit 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 drives, such as IDE CD-ROM drives, check the specifications of the drive.

Optimal and Fail-Safe settings: Auto

DMA Mode

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

Optimal and Fail-Safe settings: Auto

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.): This feature can help predict impending drive failures.

SETTING	DESCRIPTION
Auto	Use this setting to permit the BIOS to auto detect hard disk drive support. Specify Auto if the IDE disk drive support cannot be determined.
Disabled	Use this setting to prevent the BIOS from using the S.M.A.R.T. feature.
Enabled	Use this setting to permit the BIOS to use the S.M.A.R.T. feature with hard disk drives that support this feature.

Optimal and Fail-Safe settings: Auto

32Bit Data Transfer

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the BIOS from using 32-bit data transfers. This is the default setting.
Enabled	Use this setting to permit the BIOS to use 32-bit data transfers with hard disk drives that support this feature.

Optimal and Fail-Safe settings: Disabled

ARMD Emulation Type

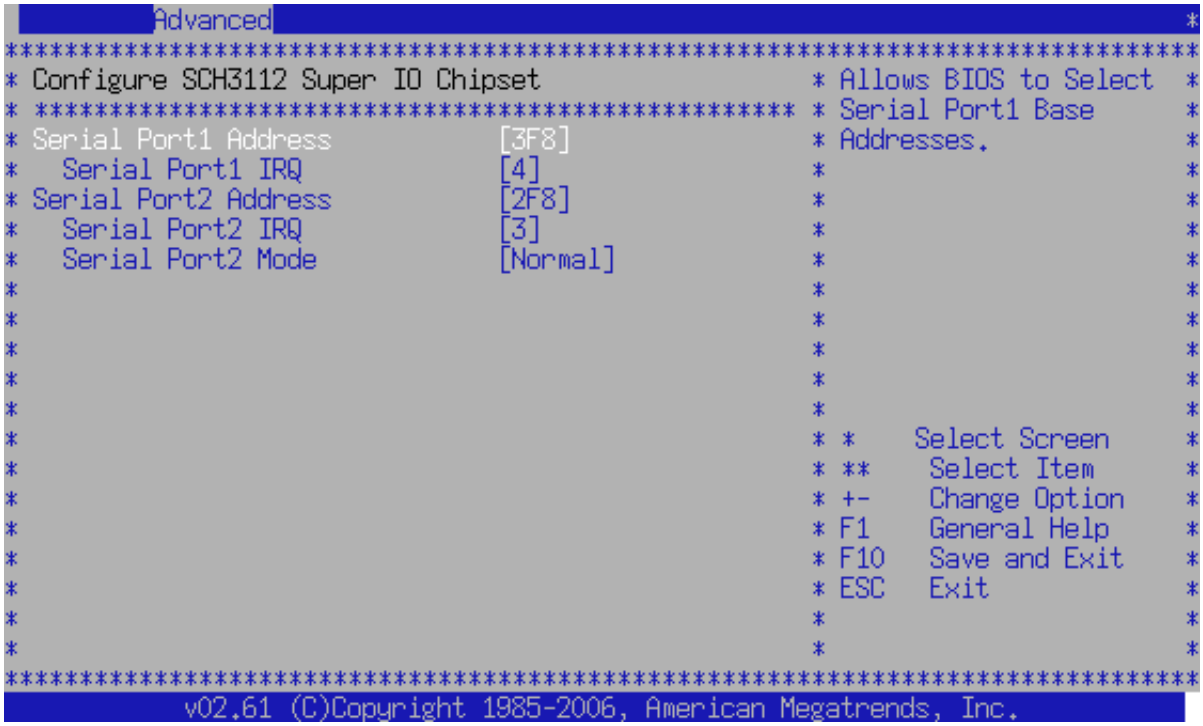
An ATAPI Removable Media Device (ARMD) is a device that uses removable media such as the LS120, MO (Magneto-Optical), or Iomega Zip drives. To boot from media on an ARMD, it is required to emulate booting from a floppy or hard disk drive. This is especially necessary when trying to boot to DOS.

SETTING	DESCRIPTION
Auto	Use this setting to permit the BIOS to automatically set the emulation used by ARMD.
Floppy	Use this setting to specify that the ARMD is to emulate a floppy drive during booting.
Hard disk drivel	Use this setting to specify that the ARMD to emulate a hard disk drive during booting.

Optimal and Fail-Safe settings: Auto

SUPER IO CONFIGURATION SCREEN

This screen provides functions for specifying serial port configuration settings.



Serial Port1 Address

This function is used to specify the base I/O port address of Serial Port 1. If the system does not use this port, it is recommended to use the setting: Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the Serial Port 1 from accessing any system resources. When this setting is used, the serial port physically becomes unavailable.
3F8, 2F8, 3E8, 2E8	Use one of these settings to specify an I/O address for Serial Port 1.

Optimal and Fail-Safe settings: 3F8

Serial Port1 IRQ

This function is not available if Serial Port1 Address is set to Disabled.

SETTING	DESCRIPTION
3, 4	Use one of these settings to specify an IRQ for Serial Port 1.

Optimal and Fail-Safe settings: 4

Serial Port2 Address

This function is used to specify the base I/O port address of Serial Port 2. If the system does not use this port, it is recommended to use the setting: Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the Serial Port 2 from accessing any system resources. When this setting is used, the serial port physically becomes unavailable.
3F8, 2F8, 3E8, 2E8	Use one of these settings to specify an I/O address for Serial Port 2.

Optimal and Fail-Safe settings: Disabled

Serial Port2 IRQ

This function is not available if Serial Port2 Address is set to Disabled.

SETTING	DESCRIPTION
3, 4	Use one of these settings to specify an IRQ for Serial Port 2.

Serial Port2 Mode

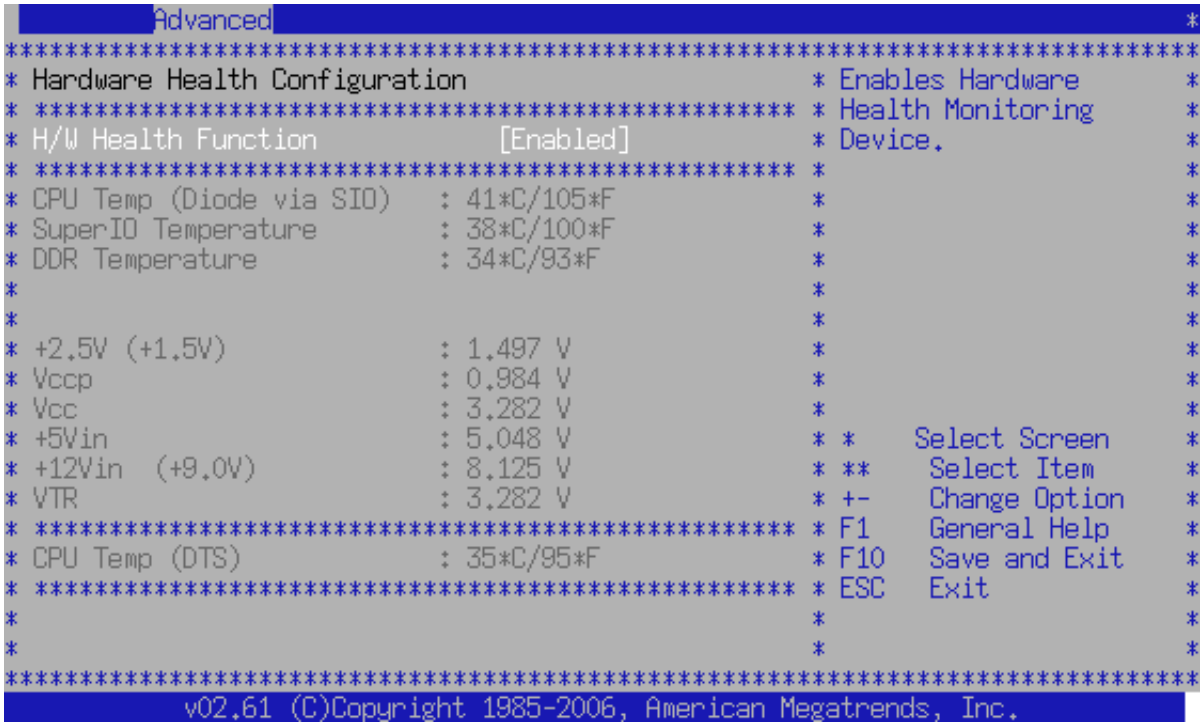
This function has no effect on the operation of the ThinkIO-Duo. In any event, it is not available if Serial Port2 Address is set to Disabled.

SETTING	DESCRIPTION
Normal	Leave this setting set to Normal.

Optimal and Fail-Safe settings: Normal

HARDWARE HEALTH CONFIGURATION SCREEN

This screen provides basic information concerning hardware health and one function for specifying a configuration setting.



H/W Health Function

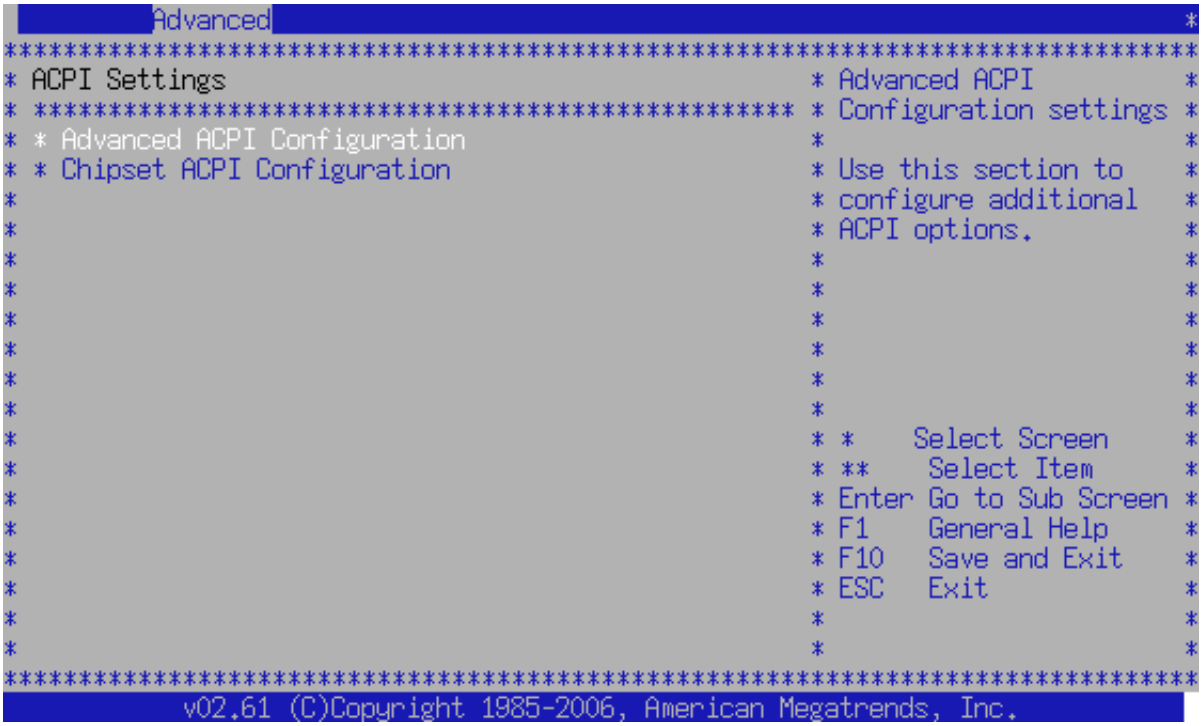
This function has no effect on the operation of the ThinkIO-Duo. It is recommended to use the setting: Enabled.

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 settings: Enabled

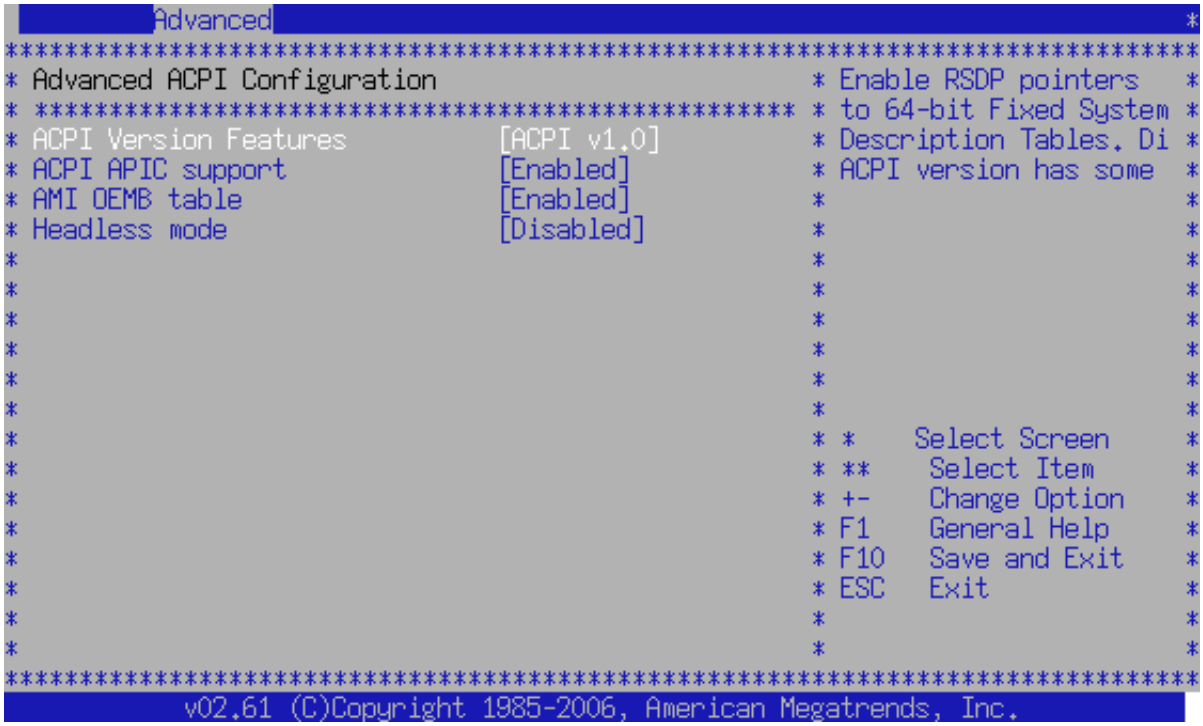
ACPI CONFIGURATION SCREEN

This screen provides access to sub-screens which permit the configuration of various Advanced Configuration and Power Interface (ACPI) functions. To gain access to a sub-screen, select it and press <Enter>.



ADVANCED ACPI CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings.



ACPI Version Features

This function is used to specify 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 settings: ACPI v. 1.0

ACPI APIC Support

SETTING	DESCRIPTION
Disabled	Use this setting to exclude the ACPI APIC table pointer from the RSDT pointer list
Enabled	Use this setting to include the ACPI APIC table pointer to the RSDT pointer list

Optimal and Fail-Safe settings: Disabled

AMI OEMB Table

SETTING	DESCRIPTION
Disabled	Use this setting to exclude the OEMB table pointer from the R(X)SDT pointer list
Enabled	Use this setting to include the OEMB table pointer to the R(X)SDT pointer list

Optimal and Fail-Safe settings: Disabled

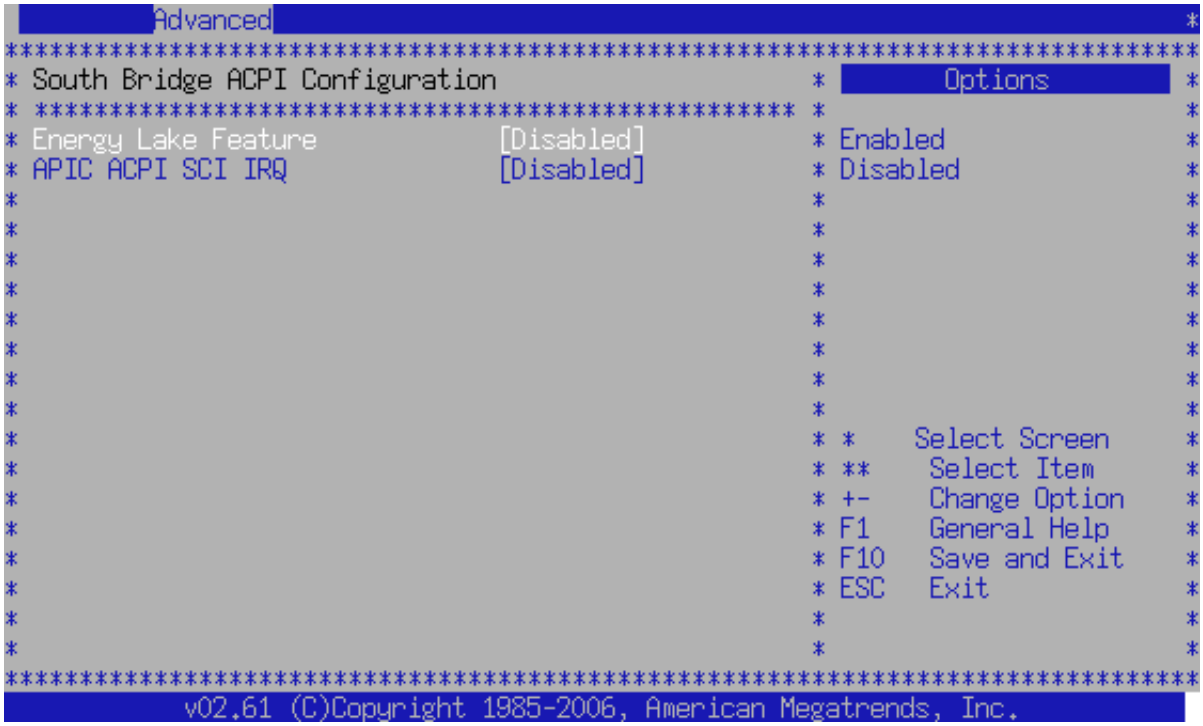
Headless Mode

SETTING	DESCRIPTION
Disabled	Use this setting to disable updating of the ACPI FACP table to indicate headless operation.
Enabled	Use this setting to permit updating of the ACPI FACP table to indicate headless operation.

Optimal and Fail-Safe settings: Disabled

CHIPSET ACPI CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings.



Energy Lake Feature

This function is not supported by the ThinkIO-Duo

SETTING	DESCRIPTION
Disabled	Leave this function set to Disabled

Optimal and Fail-Safe settings: Disabled

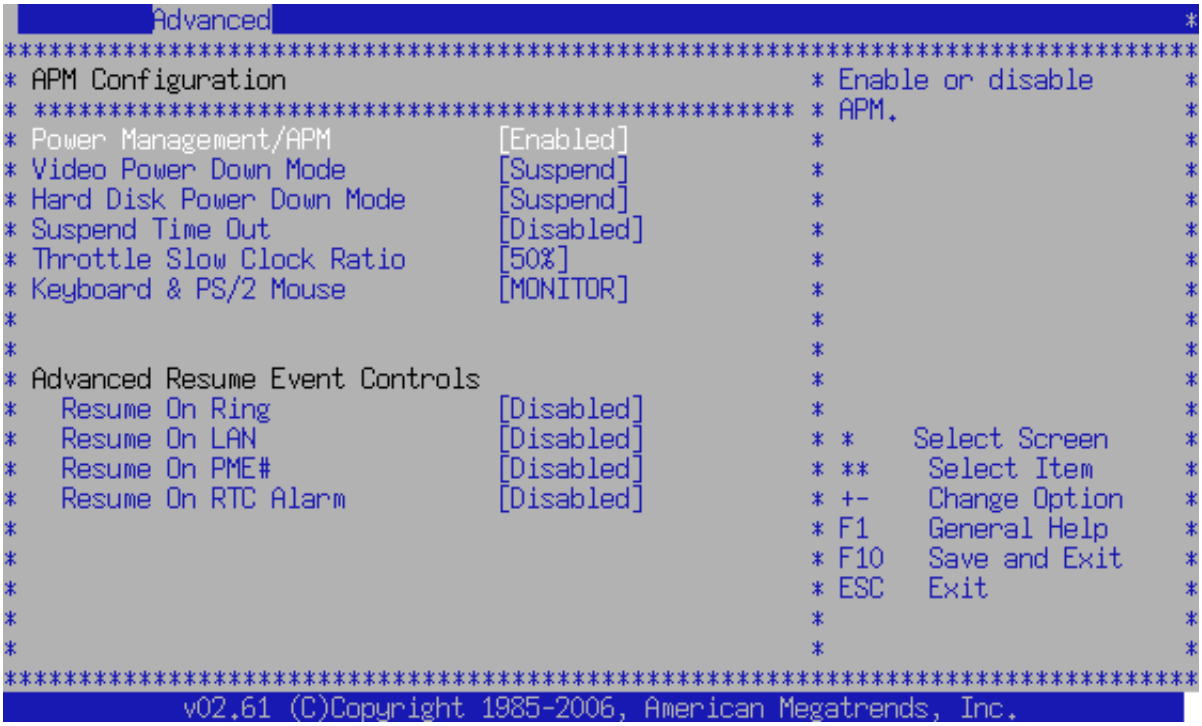
APIC ACPI SCI IRQ

SETTING	DESCRIPTION
Disabled	Use this setting to disable the APIC ACPI SCI IRQ
Enabled	Use this setting to enable the APIC ACPI SCI IRQ

Optimal and Fail-Safe settings: Disabled

APM CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings.



Power Management/APM

SETTING	DESCRIPTION
Disabled	Use this setting to disable the chipset power management and APM (Advanced Power Management).
Enabled	Use this setting to permit the chipset power management and APM (Advanced Power Management).

Optimal and Fail-Safe settings: Enabled

Video Power Down Mode

This function is used to control the state of the video devices in the event APM power save is requested by the OS.

This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the state change of the video devices.
Suspend	Use this setting to permit the state change of the video devices.

Optimal setting: Suspend

Fail-Safe setting: Disabled

Hard Disk Power Down Mode

This function is used to control the state of the hard disk devices in the event APM power save is requested by the OS. This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the state change of the hard disk devices.
Suspend	Use this setting to permit the state change of the hard disk devices.

Optimal setting: Suspend

Fail-Safe setting: Disabled

Suspend Timeout (Minute)

This function is used to specify the length of time the system waits before it enters suspend mode. This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to prevent the system from entering suspend mode.
1, 2, 4, 8, 10, 20, 30, 40, 50, 60 (all values are in minutes)	Use one of these settings to permit the computer system to enter suspend mode after being inactive for the specified number of minutes.

Optimal and Fail-Safe settings: Disabled

Throttle Slow Clock Ratio

This function is used to specify the CPU throttling duty cycle if the system is put into throttling mode via APM. This function is active only when the computer system has entered suspend mode.

This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
12.5, 25, 37.5, 50, 62.5, 75, 87.5 (all values are in percent)	Specify one of these settings for the CPU duty cycle in suspend mode.

Optimal and Fail-Safe settings: 50

Keyboard and PS/2 Mouse

This function is used to specify whether the keyboard and the PS/2 mouse actions reset the APM standby timers. This function is only available if Power Management/APM is set to Enable.

Note: This function is not relevant for the ThinkIO-Duo

SETTING	DESCRIPTION
MONITOR	Use this setting to monitor the keyboard and PS/2 actions.
IGNORE	Use this setting to ignore the keyboard and PS/2 actions.

Optimal and Fail-Safe settings: MONITOR

Advanced Resume Event Controls: Resume on Ring

This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable wake from sleep state upon serial RI# event.
Enabled	Use this setting to permit wake from sleep state upon serial RI# event.

Optimal and Fail-Safe settings: Disabled

Advanced Resume Event Controls: Resume on PME#

This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable PME (Power Management Event) wake from sleep state.
Enabled	Use this setting to permit PME (Power Management Event) wake from sleep state.

Optimal and Fail-Safe settings: Disabled

Advanced Resume Event Controls: Resume on LAN

This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable resume on RoL magic package.
Enabled	Use this setting to permit resume on RoL magic package.

Optimal and Fail-Safe settings: Disabled

Advanced Resume Event Controls: Resume on RTC Alarm

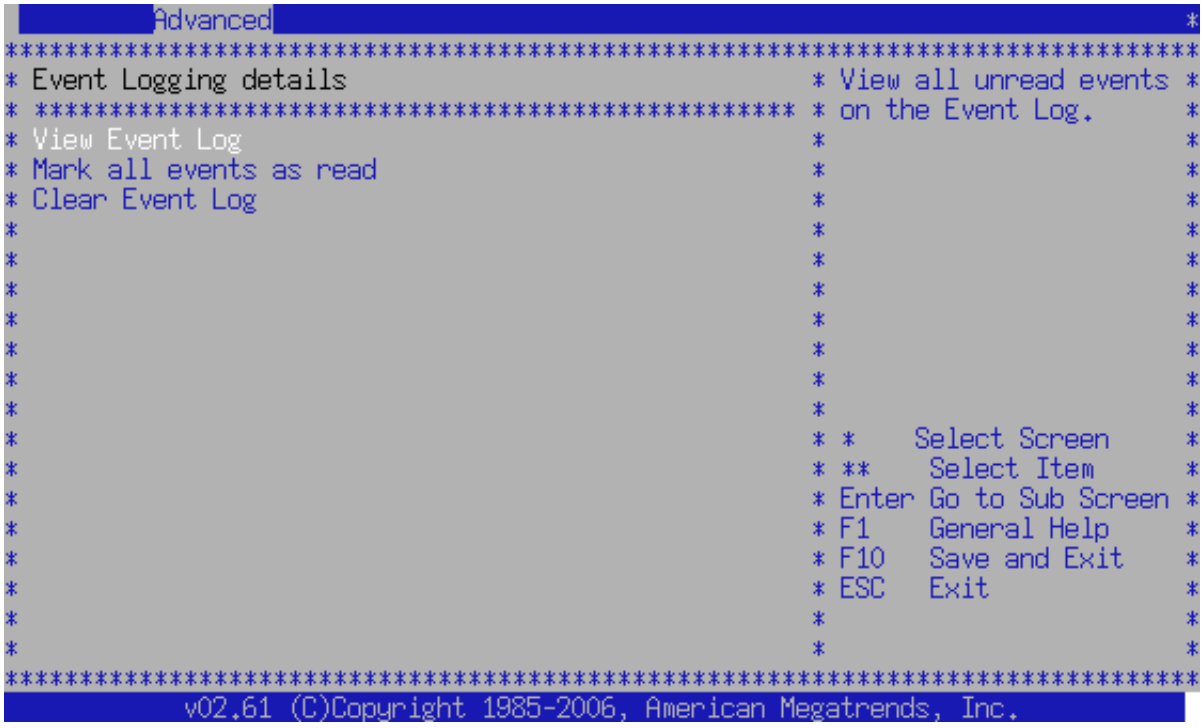
This function is only available if Power Management/APM is set to Enable.

SETTING	DESCRIPTION
Disabled	Use this setting to disable resume on RTC alarm.
<HH:MM:SS>	Specify time to resume on RTC alarm.

Optimal and Fail-Safe settings: Disabled

EVENT LOG CONFIGURATION SCREEN

This screen provides the ability to view the event log, mark events as read, and to clear the event log.



View Event Log

Selection of this function causes a popup window to appear with all unread events, for example:

01/01/02 13:12:56

CMOS time not set

Mark all events as read

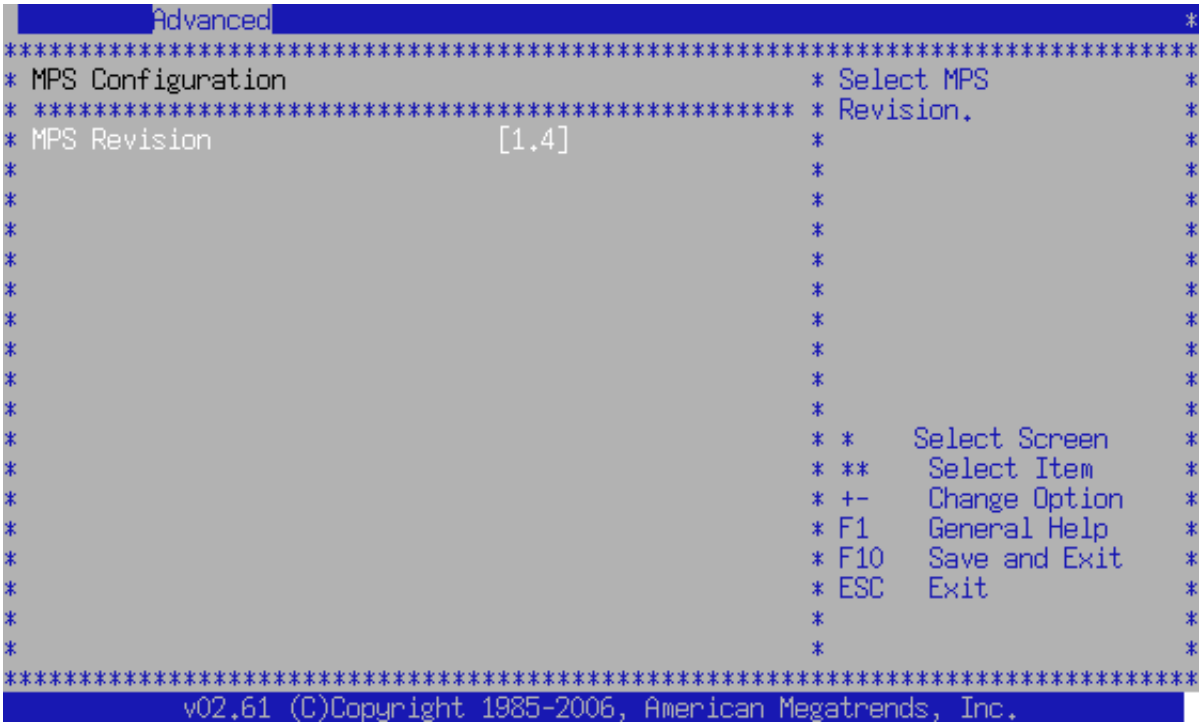
Selection of this function causes all unread events to be marked as read.

Clear Event Log

Selection of this function causes the contents of the event log to be deleted.

MPS CONFIGURATION SCREEN

This screen provides one function for specifying the revision compliance setting for the Multi-Processor Specification (MPS) table.



MPS Revision

This function is used to specify the revision of the MP Specification to be used for generation of the MP table.

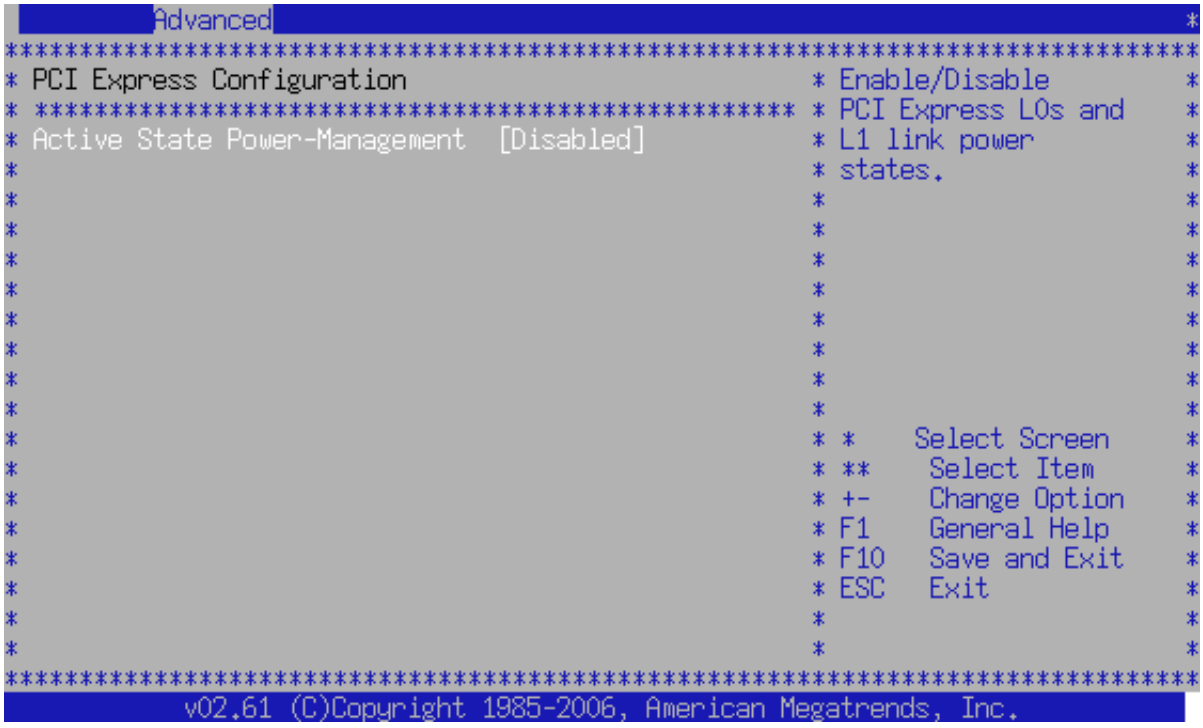
SETTING	DESCRIPTION
1.1	Use this setting to specify generation of the MP table in compliance with MPS Revision 1.1.
1.4	Use this setting to specify generation of the MP table in compliance with MPS Revision 1.4.

Optimal setting: 1.4

Fail-Safe setting: 1.1

PCI EXPRESS CONFIGURATION SCREEN

This screen provides one function for specifying the configuration of the PCI Express Active State Power-Management.



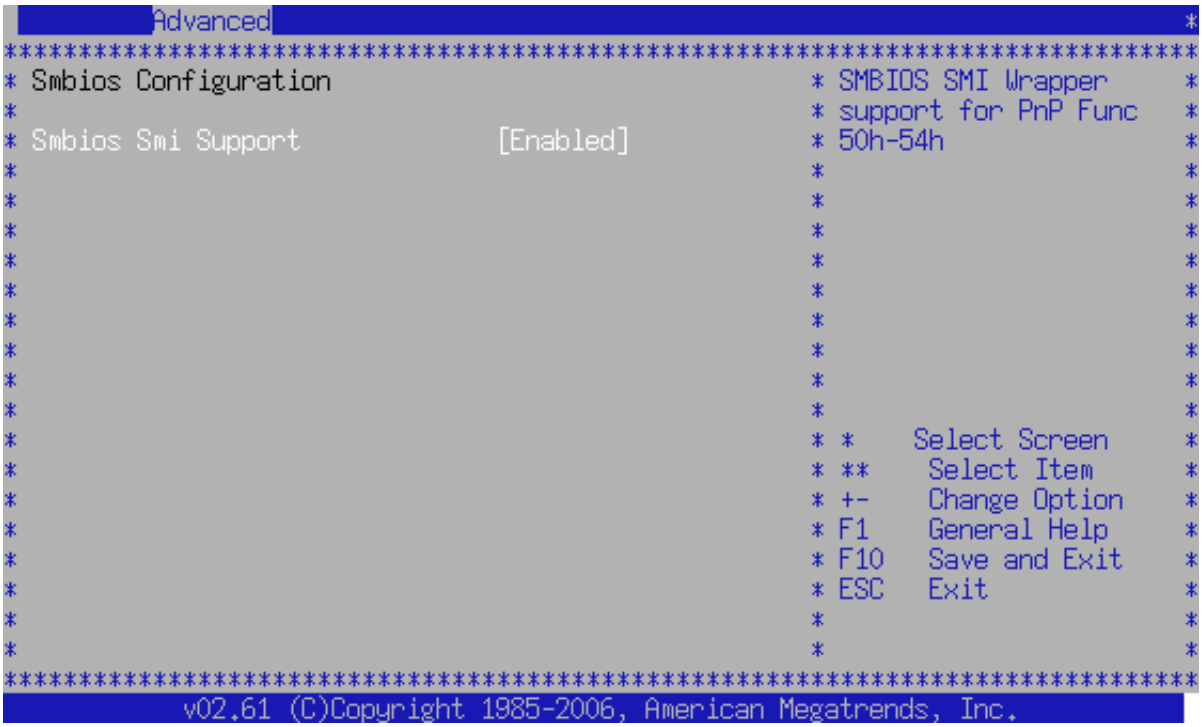
Active State Power-Management

SETTING	DESCRIPTION
Disabled	Use this setting to disable the PCI Express Active State Power Management on the A0, A1 and B0 links.
Enabled	Use this setting to permit the PCI Express Active State Power Management on the A0, A1 and B0 links.

Optimal and Fail-Safe settings: Disabled

SMBIOS CONFIGURATION SCREEN

This screen provides one function for specifying the configuration of the SMBIOS SMI support.



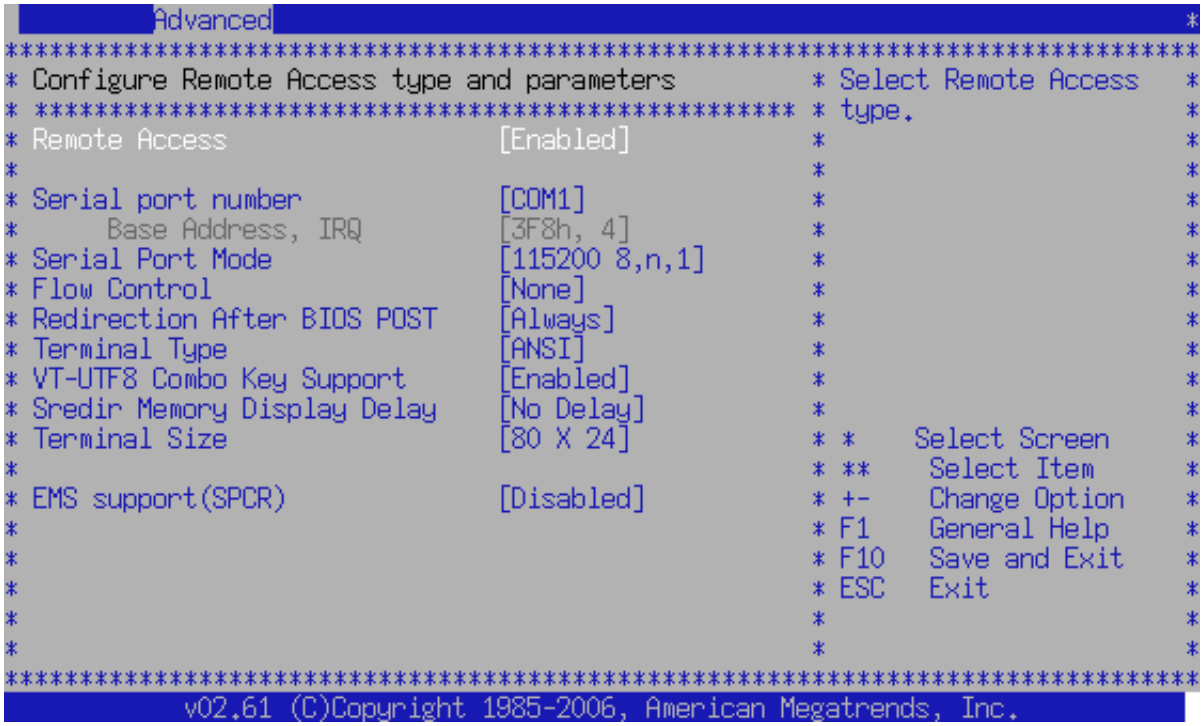
Smbios Smi Support

SETTING	DESCRIPTION
Disabled	Use this setting to disable the SMBIOS SMI support.
Enabled	Use this setting to permit the SMBIOS SMI Support for the PNP Function 50 h – 54 h.

Optimal and Fail-Safe settings: Enabled

REMOTE ACCESS CONFIGURATION SCREEN

This screen provides functions for specifying particular remote access configuration settings.



Remote Access

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 settings: Disabled

Serial port number

This function is used to select the serial port for console redirection. It is not available if Remote Access is set to Disabled.

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

Optimal and Fail-Safe settings: COM1

Base Address, IRQ

This is a display only function which indicates the base address and IRQ for the serial port specified above. This information is derived from the settings specified via the Super IO Configuration screen.

Serial Port Mode

This function is used to select the baud rate of the serial port used for console redirection. It is not available if Remote Access is set to Disabled.

SETTING	DESCRIPTION
115200 8,n,1 57600 8,n,1 38400 8,n,1 19200 8,n,1 09600 8,n,1	Use one of these settings to specify the baud rate for the serial port used for console redirection.

Optimal and Fail-Safe settings: 11520 8,n,1

Flow Control

This function is used to select the flow control of the serial port used for console redirection. It is not available if Remote Access is set to Disabled.

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

Optimal and Fail-Safe settings: None

Redirection After BIOS POST

This function is used to select redirection after BIOS POST for the serial port used for console redirection. It is not available if Remote Access is set to Disabled.

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 set redirection to always active.

Optimal and Fail-Safe settings: Always

Terminal Type

This function is used to select the target terminal type for the serial port used for console redirection. It is not available if Remote Access is set to Disabled.

SETTING	DESCRIPTION
ANSI	Use this setting to select the target terminal type: ANSI.
VT100	Use this setting to select the target terminal type: VT100.
VT-UTF8	Use this setting to select the target terminal type: VT-UTF8.

Optimal and Fail-Safe settings: ANSI

VT-UTF8 Combo Key Support

This function is used to enable or disable the VT-UTF8 combo key support for the serial port used for console redirection. It is not available if Remote Access is set to Disabled.

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 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. It is not available if Remote Access is set to Disabled.

SETTING	DESCRIPTION
No Delay	Use this setting to disable delaying.
Delay 1 sec. Delay 2 sec. Delay 4 sec.	Use one of these settings to specify displaying of the serial redirection memory usage information for the time specified (in seconds)

Optimal and Fail-Safe settings: No Delay

EMS support (SPCR)

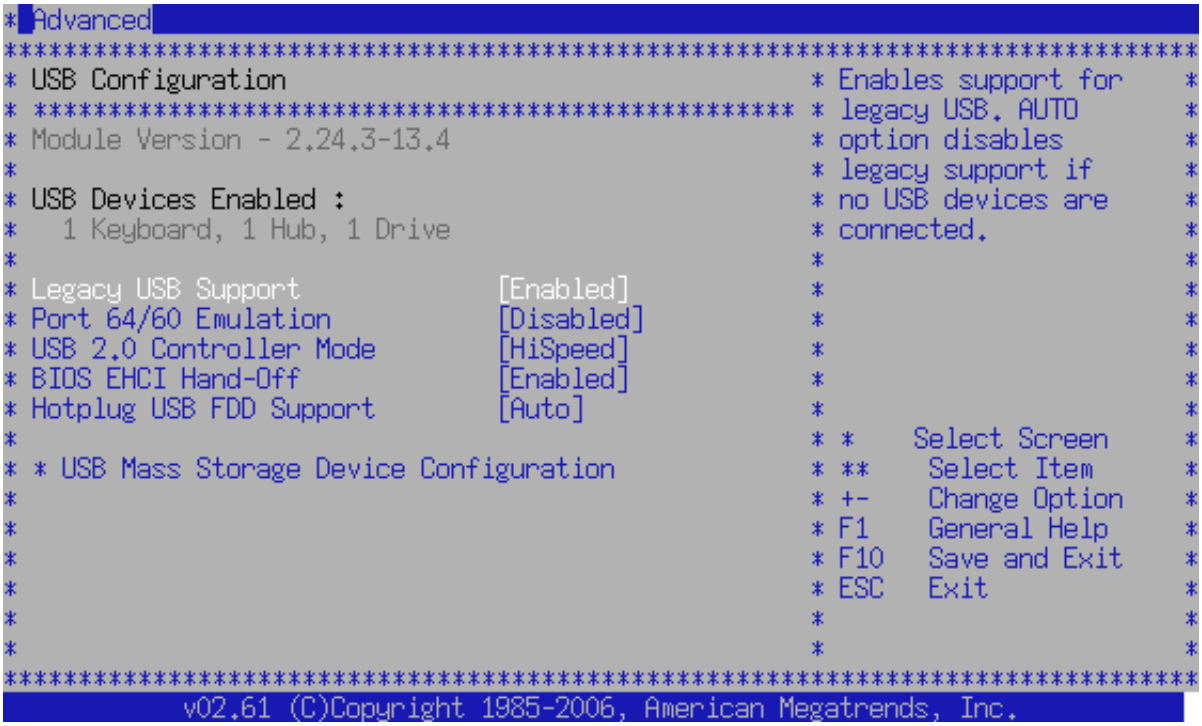
This function is used to control the ACPI SPCR table settings. The SPCR table is required by the Windows 2003 server or newer for the serial management console (EMS) in order to be operated. It is not available if Remote Access is set to Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to disable initialization the SPCR table.
Enabled	Use this setting to initialize the SPCR table.

Optimal and Fail-Safe settings: Enabled

USB CONFIGURATION SCREEN

This screen provides basic information concerning the USB configuration and functions for specifying particular configuration settings.



Module Version

This is a display only function which indicates the module version.

USB Devices Enabled :

This is a display only function which indicates any USB devices connected to the ThinkIO-Duo.

Legacy USB Support

SETTING	DESCRIPTION
Disabled	Use this setting to disable the legacy USB support.
Enabled	Use this setting to enable the legacy USB support.
Auto	Use this setting to disable the legacy USB support if no USB devices are connected.

Optimal and Fail-Safe settings: Disabled

Port 64/60 Emulation

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 settings: Disabled

USB 2.0 Controller Mode

SETTING	DESCRIPTION
Full Speed	Use this setting to configure the USB 2.0 controller for Full Speed (12 Mbps).
HiSpeed	Use this setting to configure the USB 2.0 controller for HiSpeed (480 Mbps).

Optimal and Fail-Safe settings: HiSpeed

BIOS EHCI Hand-Off

This function is used to enable or disable 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 EHC1 hand-off support.
Enabled	Use this setting to enable EHC1 hand-off support.

Optimal and Fail-Safe settings: Enabled

Hotplug USB FDD Support

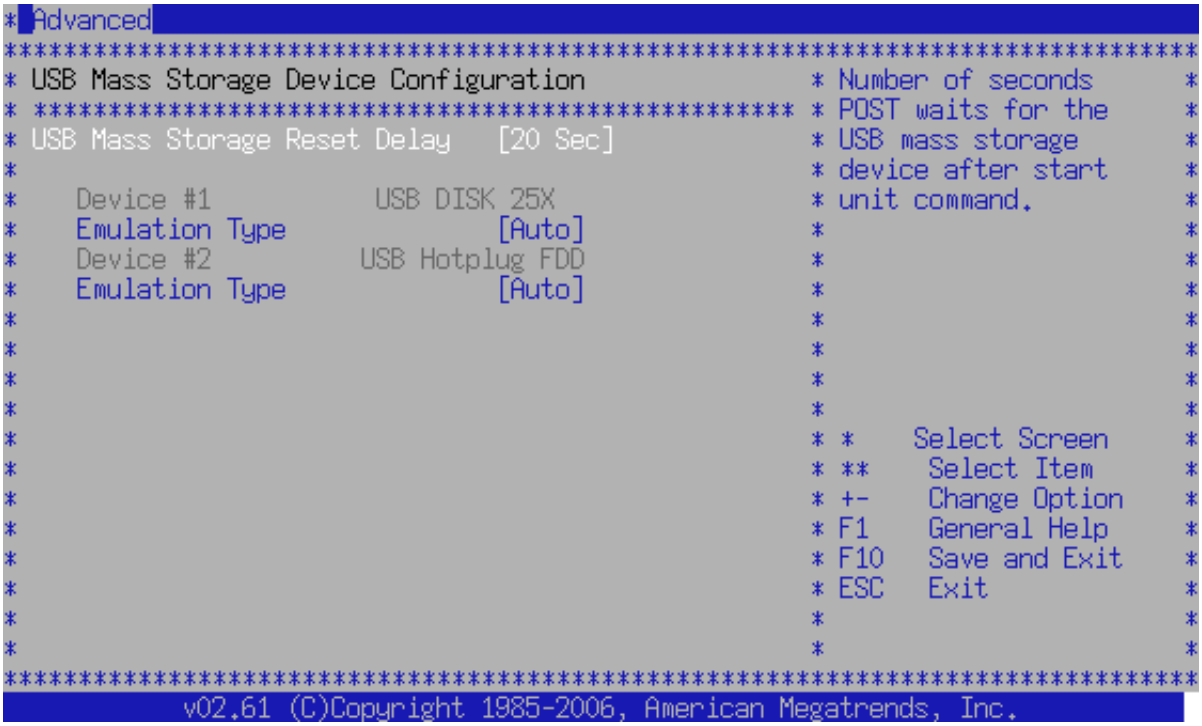
This function is used to create a dummy FDD device which will later be assigned to a hot-plugged USB FDD device.

SETTING	DESCRIPTION
Disabled	Use this setting to disable creation of a dummy FDD device.
Enabled	Use this setting to create a dummy FDD device.
Auto	Use this setting to only create a dummy FDD device if no USB FDD device is present.

Optimal and Fail-Safe settings: Auto

USB MASS STORAGE DEVICE CONFIGURATION SCREEN

This screen provides basic information concerning the USB mass storage device configuration and functions for specifying particular configuration settings. This screen 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 is to wait for the USB mass storage device after the start unit command.

Optimal and Fail-Safe settings: 20 Sec

Emulation Type

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

Optimal and Fail-Safe settings: Auto

Chapter 4

PCI/PnP Setup

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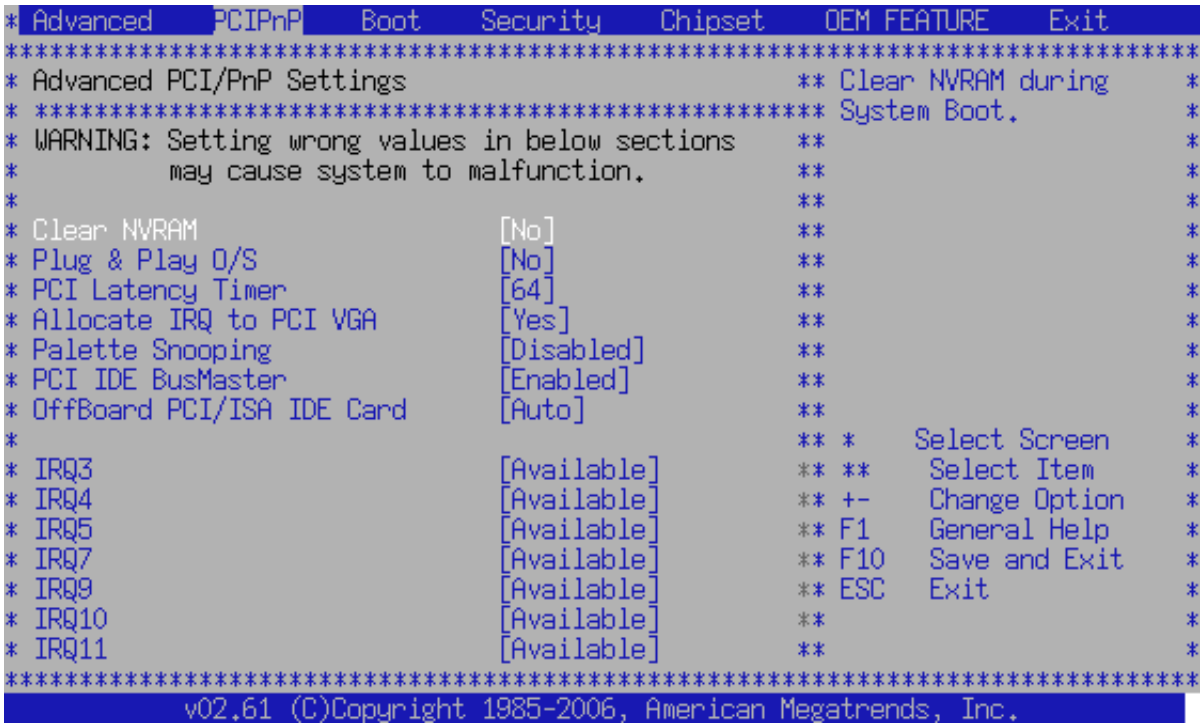
4. PCI/PnP Setup

Select the PCI/PnP tab to enter the PCI/PnP Setup screen. This screen provides functions for specifying particular configuration settings. There are more functions available than can be displayed on one screen page. To access these functions, scroll the screen page.



Clear NVRAM

SETTING	DESCRIPTION
No	Use this setting to disable clearing the NVRAM.
Yes	Use this setting to clear the NVRAM before the system has booted. The system sets this function back to No automatically after booting.

Optimal and Fail-Safe settings: No

Plug and Play O/S

SETTING	DESCRIPTION
No	Use this setting for operating systems that do not meet the Plug and Play specifications. It allows the BIOS to configure all the devices in the system.
Yes	Use this setting to permit the operating system to change the interrupt, I/O, and DMA settings. This setting is for a system which is running a Plug and Play aware operating system.

Optimal and Fail-Safe settings: No

PCI Latency Timer

This function is used to specify the number of PCI clock cycles for 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 one of these settings to select the number of PCI clock cycles for the latency timer.

Optimal and Fail-Safe settings: 64

Allocate IRQ to PCI VGA

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

Optimal and Fail-Safe settings: Yes

Palette Snooping

SETTING	DESCRIPTION
Disabled	Use this setting to disable palette snooping. If palette snooping is not required, ensure that this function is set to Disabled.
Enabled	Use this setting to specify to the PCI devices that an ISA based graphics device is installed in the system. Before using this setting, explicitly verify that palette snooping is required by the graphics device, otherwise, use Disabled.

Optimal and Fail-Safe settings: Disabled

PCI IDE BusMaster

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

Optimal and Fail-Safe settings: Enabled

Offboard PCI/ISA IDE Card

This function is not relevant for the ThinkIO-Duo. It is recommended to leave the setting set to Auto.

IRQn

This function specifies the usage of the IRQs: 3, 4, 5, 7, 9, 10, 11, 14, and 15. Each of these IRQs may be individually specified. To access IRQs not displayed, scroll the PCI/PnP Setup screen.

SETTING	DESCRIPTION
Reserved	Use this setting to permit the specified IRQ to be used by a legacy ISA device.
Available	Use this setting to permit the specified IRQ to be used by a PCI/PnP device.

Optimal and Fail-Safe settings: Available

DMA Channel n

This function specifies the usage of the DMA channels: 0, 1, 3, 5, 6, and 7. Each of these DMA channels may be individually specified. Gaining access to this function normally requires scrolling of the PCI/PnP Setup screen.

SETTING	DESCRIPTION
Reserved	Use this setting to permit the specified DMA channel to be used by a legacy ISA device.
Available	Use this setting to permit the specified DMA channel to be used by a PCI/PnP device.

Optimal and Fail-Safe settings: Available

Reserved Memory Size

This function is used to specify the amount of memory to reserve for usage by ISA devices. Gaining access to this function normally requires scrolling of the PCI/PnP Setup screen.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the reservation of memory for ISA devices.
16K, 32K, 64K	Use one of these settings to reserve the specified amount (in kilobytes) of system memory for the ISA devices.

Optimal and Fail-Safe settings: Disabled

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Chapter 5

Boot Setup

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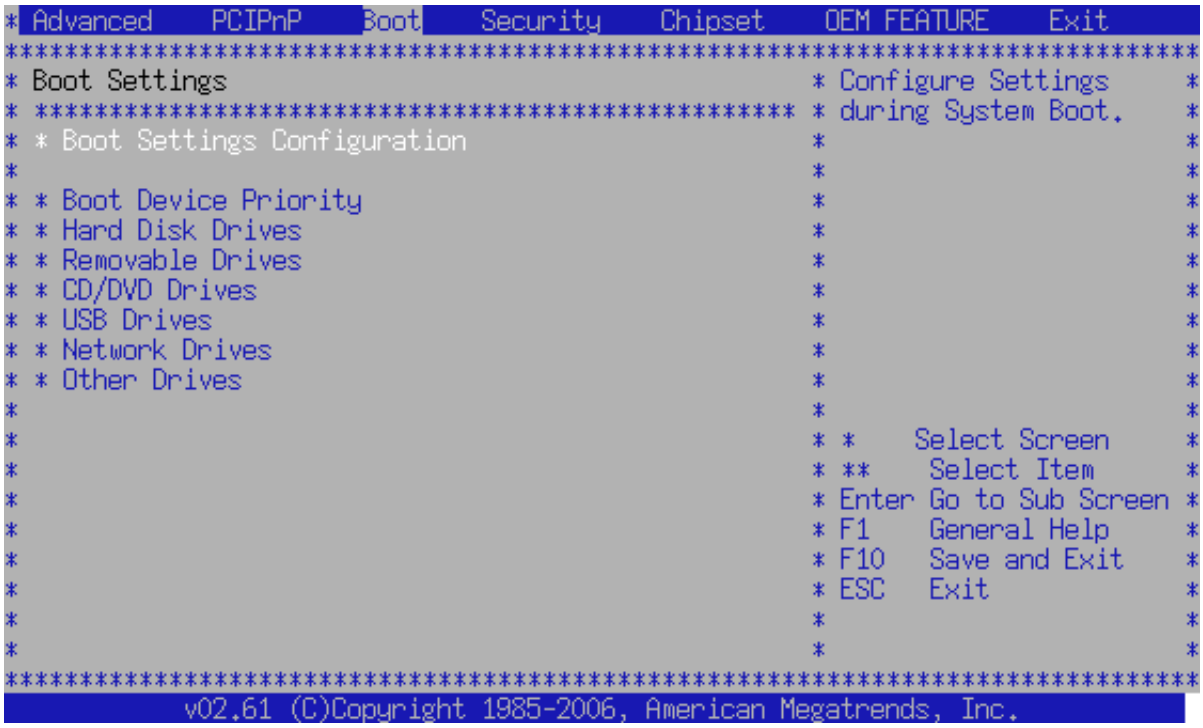
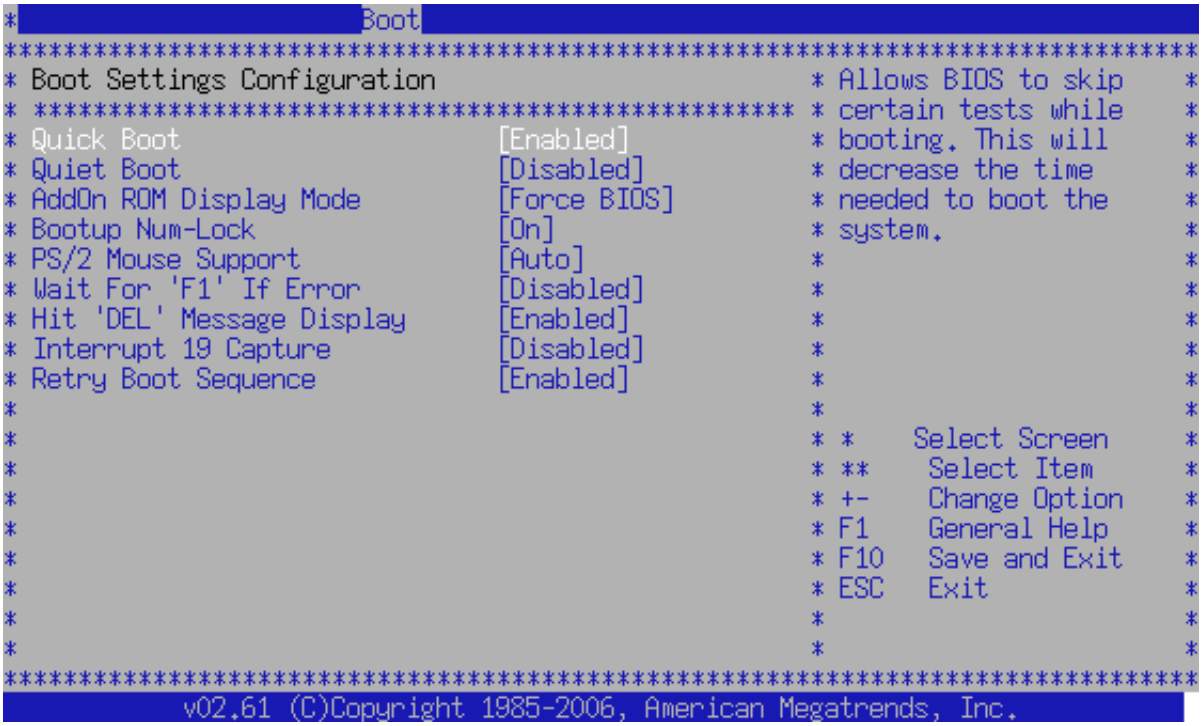
5. Boot Setup

Select the Boot tab to enter the Boot Setup screen. This screen lists a variety of configuration sub-screens. To gain access to a sub-screen, select it and press <Enter>.



BOOT SETTINGS CONFIGURATION SCREEN

This screen provides functions for specifying particular boot configuration settings.



Quick Boot

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

Optimal and Fail-Safe settings: Enabled

Quiet Boot

SETTING	DESCRIPTION
Disabled	Use this setting to specify the displaying of the POST messages during booting.
Enabled	Use this setting to specify the displaying of the OEM logo during booting.

Optimal and Fail-Safe 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 ThinkIO-Duo-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 ThinkIO-Duo information during system boot.

Optimal and Fail-Safe settings: Force BIOS

Boot-Up Num-Lock

SETTING	DESCRIPTION
Off	Use this setting to specify that the keyboard Number Lock is not to be set during booting. To use the 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 specify that the keyboard Number Lock is to be set during booting. This allows the immediate use of the 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 settings: On

PS/2 Mouse Support

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

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

Optimal and Fail-Safe settings: Auto

Wait for ‘F1’ If Error

SETTING	DESCRIPTION
Disabled	Use this setting to preclude the BIOS from waiting on an error for user intervention. In this case the system will continue booting up to the operating system. This setting should be used if there is a known reason for a BIOS error to occur such as the computer system does not have a keyboard currently attached.
Enabled	Use this setting to direct the BIOS to wait on an error for user intervention. If an error is detected, it may be possible to correct it by changing a BIOS setting. To do this, press <F1> to enter the BIOS Setup, and then change the BIOS setting as required. This can happen when upgrading the hardware, and the BIOS has not been set to recognize it.

Optimal and Fail-Safe settings: Disabled

Hit ‘DEL’ Message Display

SETTING	DESCRIPTION
Disabled	Use this setting to preclude displaying of the message: "Hit Del to enter Setup" during memory initialization. If Quiet Boot is enabled, this message will not be displayed.
Enabled	Use this setting to specify displaying of the message: "Hit Del to enter Setup" during memory initialization.

Optimal and Fail-Safe settings: Enabled

Interrupt 19 Capture

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

SETTING	DESCRIPTION
Disabled	Use this setting to preclude option ROMs from trapping the BIOS interrupt 19.
Enabled	Use this setting to permit option ROMs from trapping the BIOS interrupt 19.

Optimal and Fail-Safe settings: Enabled

Retry Boot Sequence

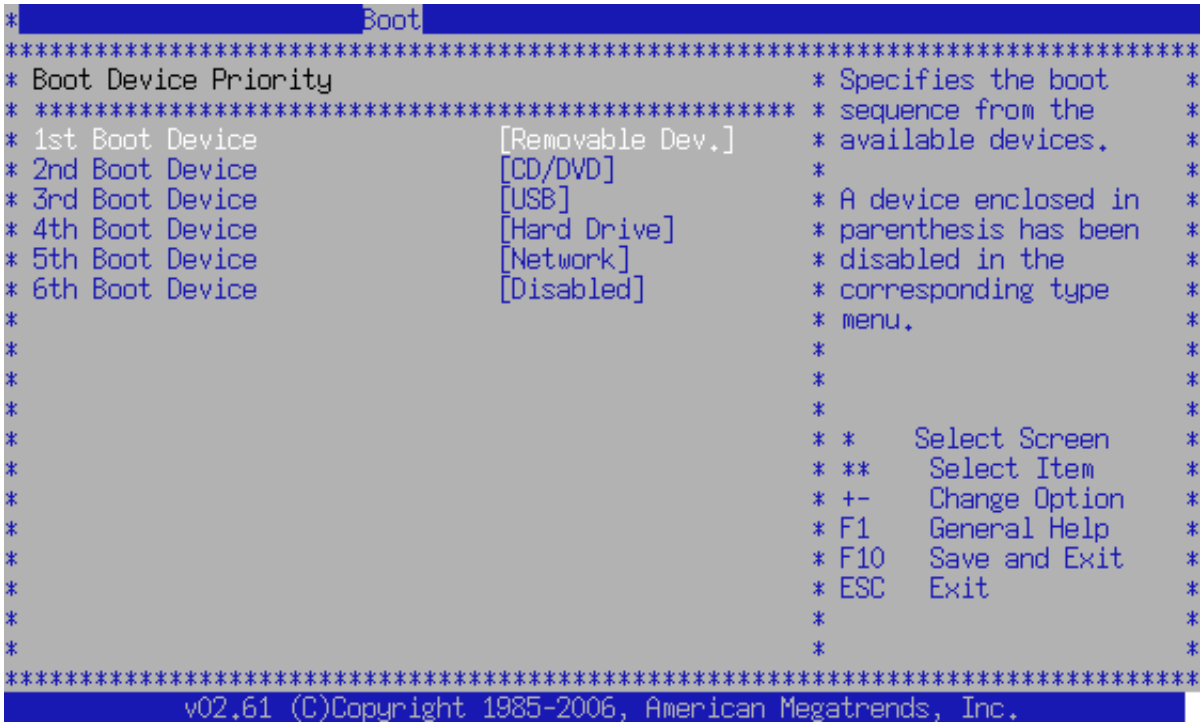
This function is used to specify how the system is to respond to a boot error.

SETTING	DESCRIPTION
Disabled	Use this setting to direct the termination of booting and the display of an error message when a boot error has occurred.
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 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

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

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

Optimal and Fail-Safe 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)

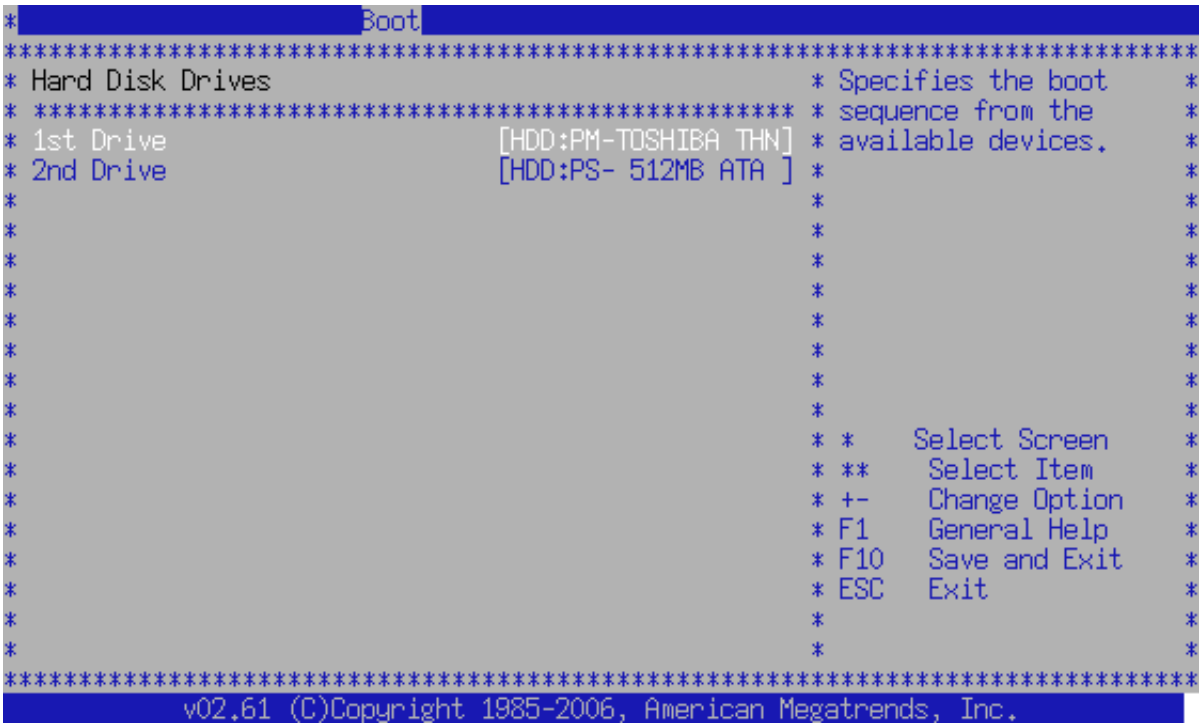
To establish the boot category sequence, select for each boot device (1st, 2nd, etc.) a boot category type from this menu.

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 subscreens 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.

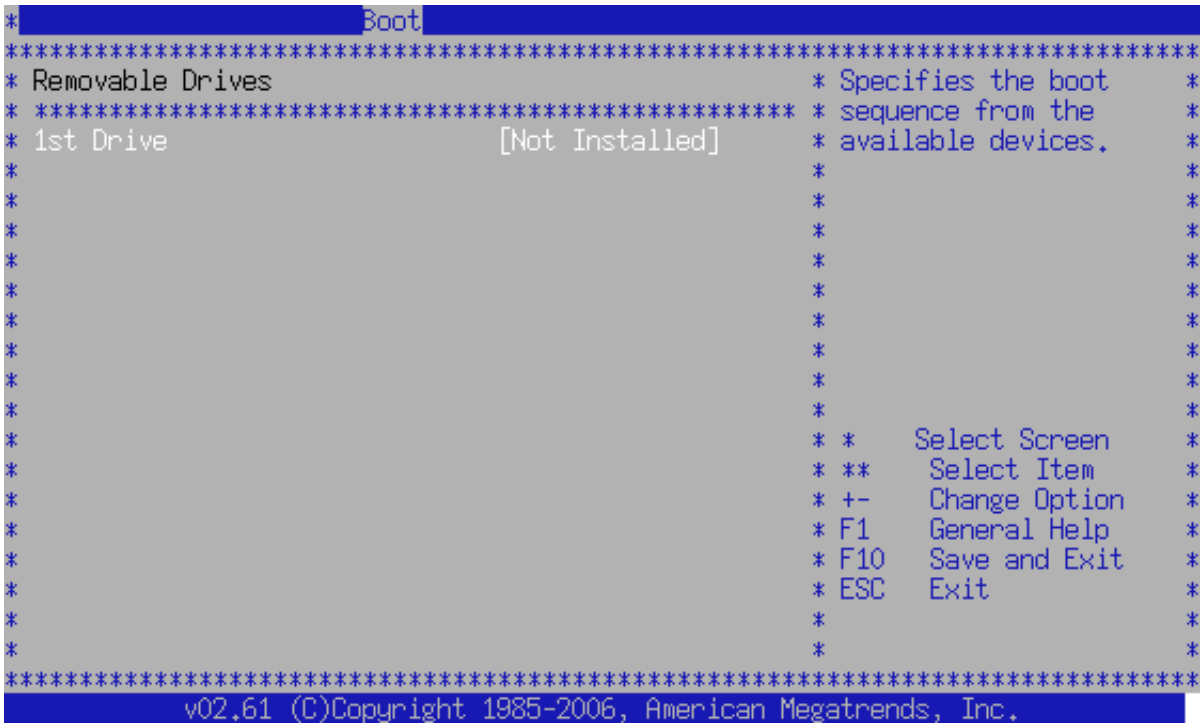
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

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 the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings 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.

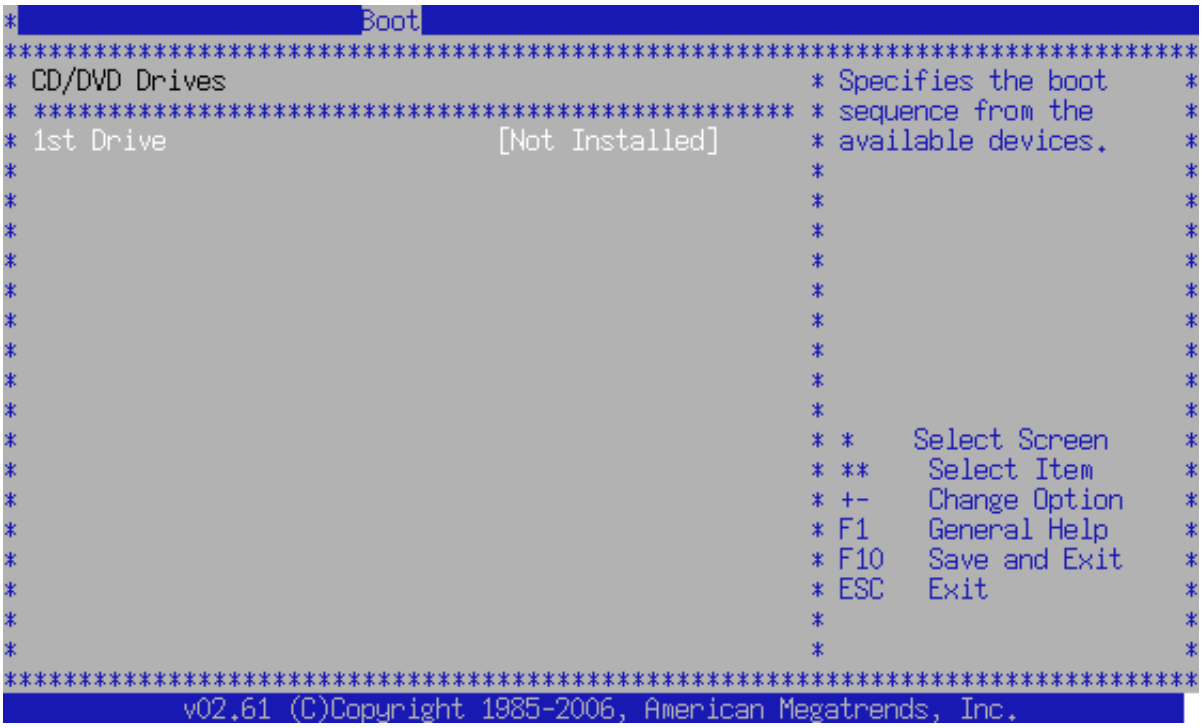
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

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

SETTING	DESCRIPTION
Not Installed	When displayed, indicates that there are no drives installed
<generic_drive_info>	When displayed, indicates the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings 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.

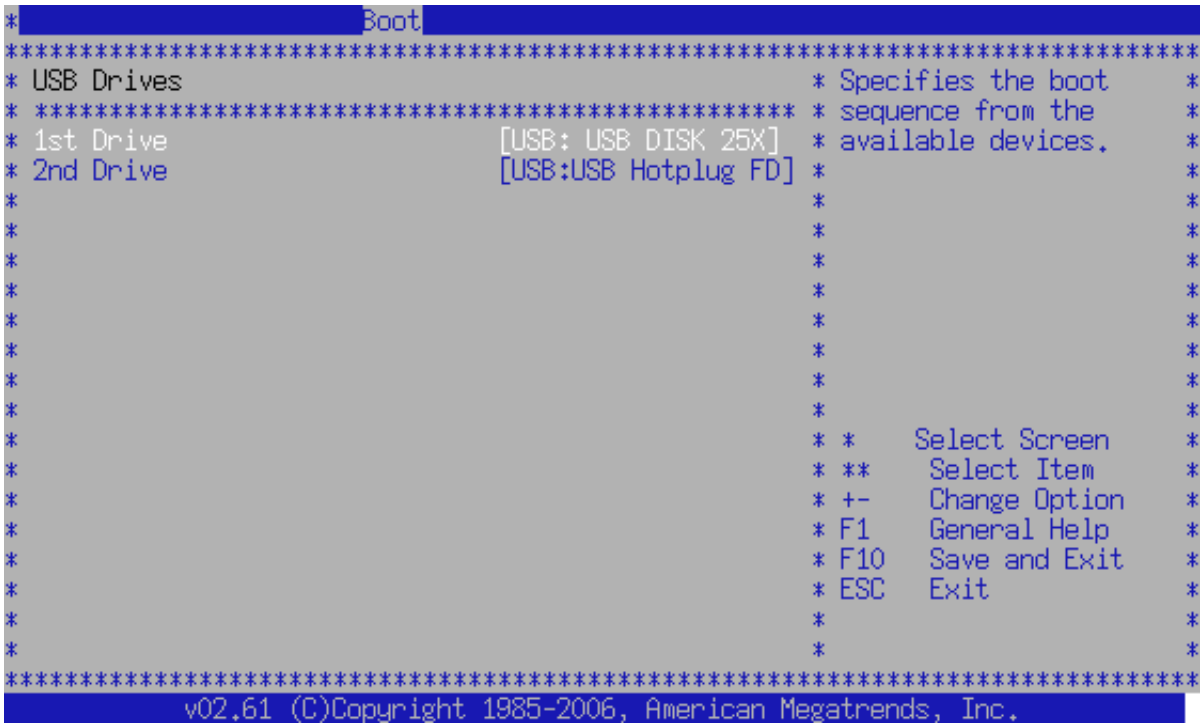
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

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 the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings 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.

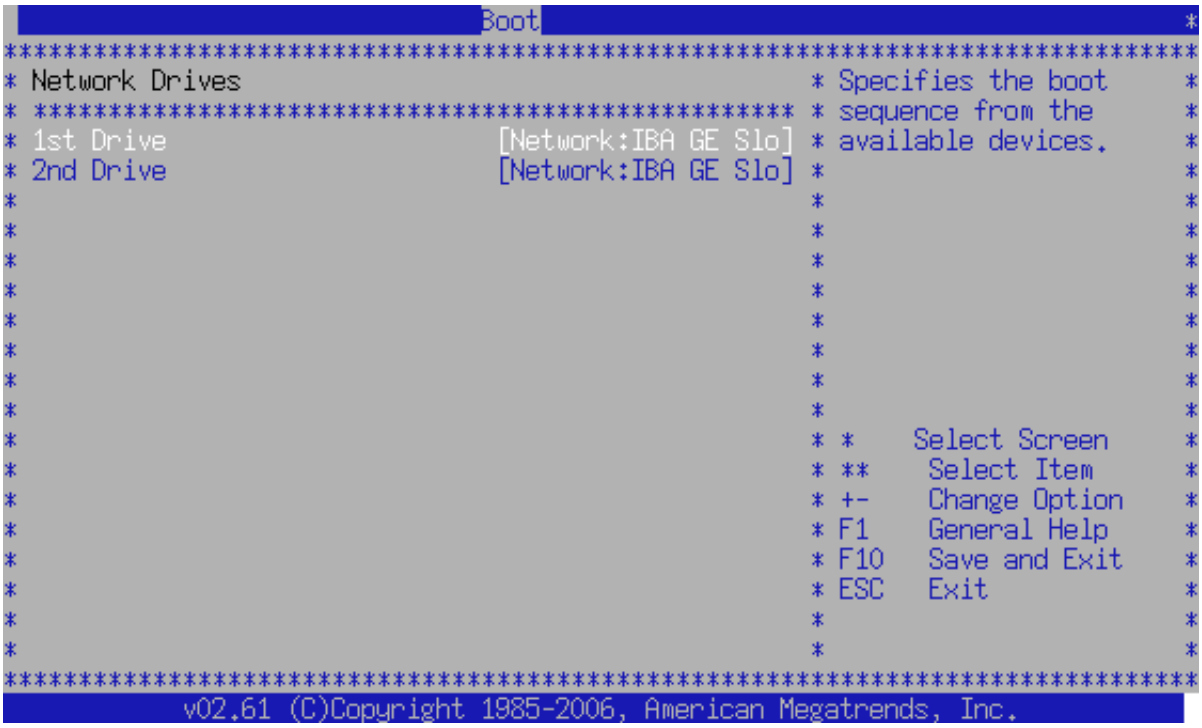
The function 1st Drive is used to provide generic information about the currently selected drive if a drive is installed. If more than one drive is installed, a list of the installed drives is provided, which allows the selection of one of the listed drives as the 1st Drive.

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 the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings to select a new 1st Drive.

NETWORK DRIVES SCREEN

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



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

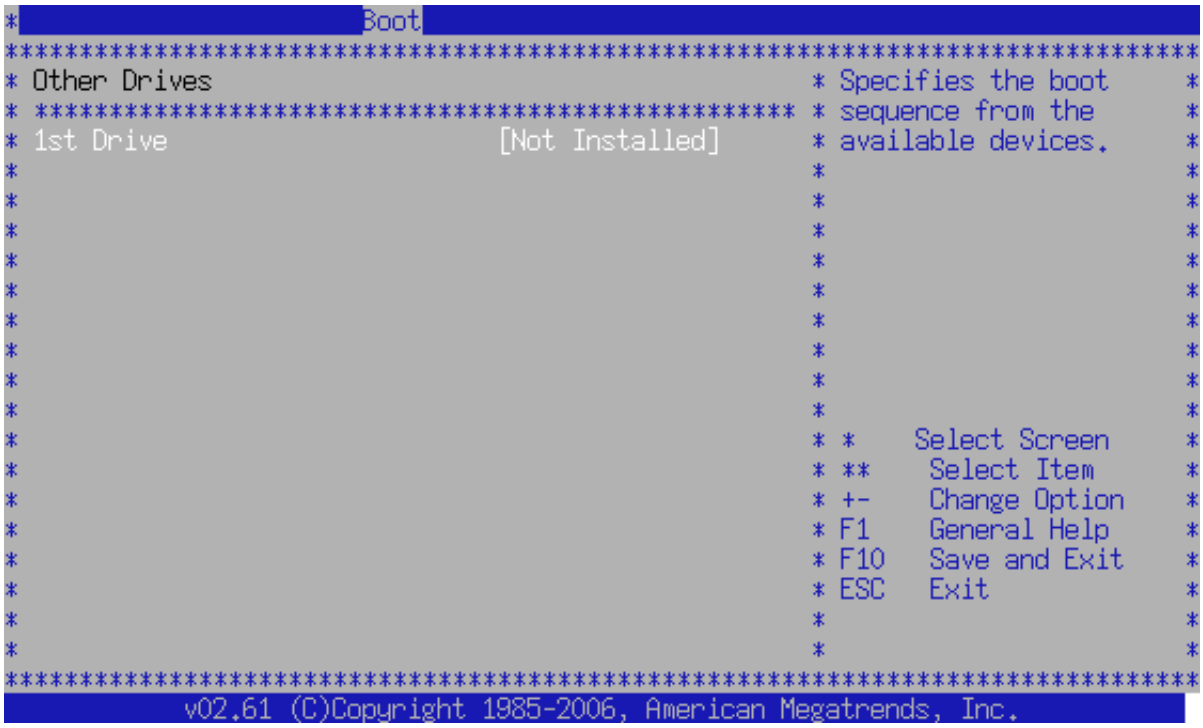
The function 1st Drive is used to provide generic information about the currently selected device if available. If more than one device is available, a list of the devices is provided, which allows the selection of one of the listed devices as the 1st Drive.

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

SETTING	DESCRIPTION
Not Installed	When displayed, indicates that there are no drives installed
<generic_drive_info>	When displayed, indicates the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings 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 Other drives are installed.

SETTING	DESCRIPTION
Not Installed	When displayed, indicates that there are no drives installed
<generic_drive_info>	When displayed, indicates the generic drive information of the 1st Drive
<generic_drive_info_1> ⋮ <generic_drive_info_n>	When displayed, indicates the drives installed and their current ordering for booting. As required, use one of these settings to select a new 1st Drive.

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Chapter 6

Security Setup

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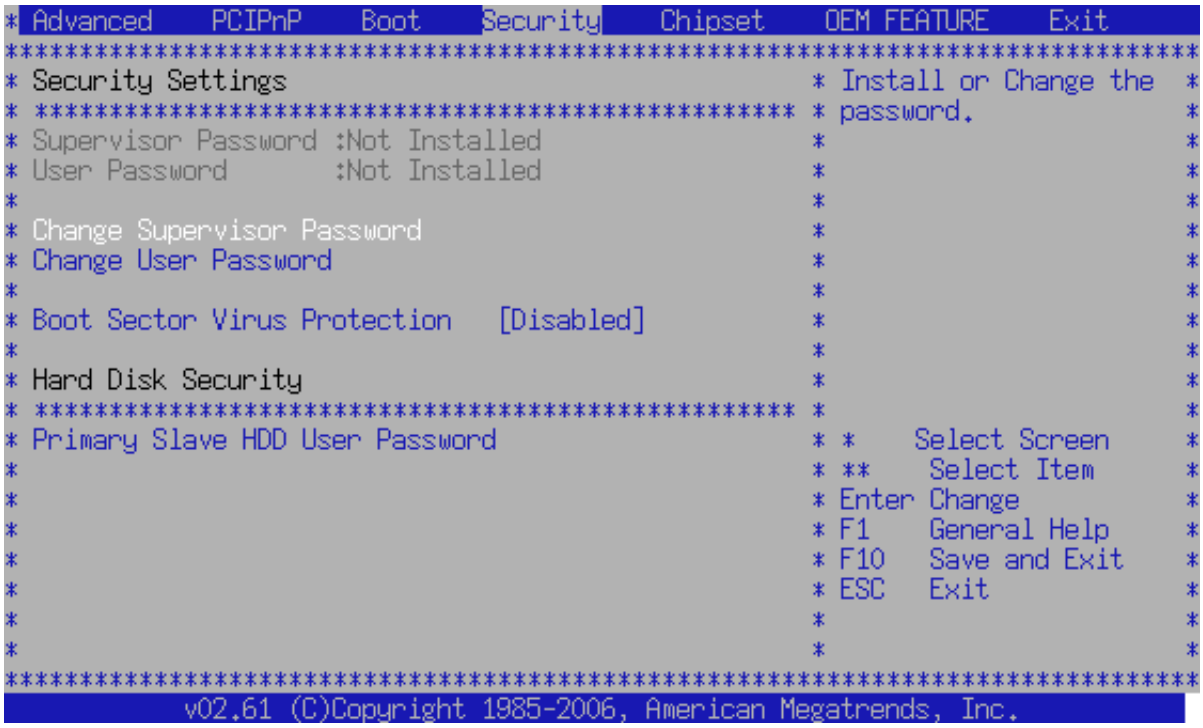
6. Security Setup

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



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 of 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 of 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 User 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 confirming the deinstallation of the password.
3. Press <Enter>.

User Access Level

This function is used to specify the type of usage restriction(s) 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 permit a user to have full access to the BIOS Setup program except tor changing the Supervisor password.

Optimal and Fail-Safe 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 system supervisor or user to enter the appropriate password to access to the BIOS Setup program.
Always	Use this setting to require the system supervisor or user to enter the appropriate password to access to the BIOS Setup program or for system booting.

Optimal and Fail-Safe settings: Setup

Boot Sector Virus Protection

SETTING	DESCRIPTION
Disabled	Use this setting to disable the Boot Sector Virus Protection.
Enabled	Use this setting to specify boot sector protection. ThinkIO-Duo 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 settings: Disabled

Primary Master/Slave HDD User Password

These functions are only available if IDE devices are detected. In the case of the ThinkIO-Duo this will be the soldered CompactFlash and the removable CompactFlash if installed.

Warning! Before using these functions, contact Kontron's Technical Support for assistance.

Failure to comply with the instruction above may result in an irreparable CompactFlash lockout.

6.1 ThinkIO-Duo Password Support

6.1.1 Two Levels of Password Protection

ThinkIO-Duo 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.

6.1.2 Remember the Password

It is highly recommended to keep a record of all passwords in a safe place. Forgotten passwords can lead to being completely locked out of the system. Booting may not be possible, and in the worst case the BIOS setup program will also not be accessible.

In this event, it will be necessary to contact Kontron's Technical Support for further assistance.

Chapter 7

Chipset Setup

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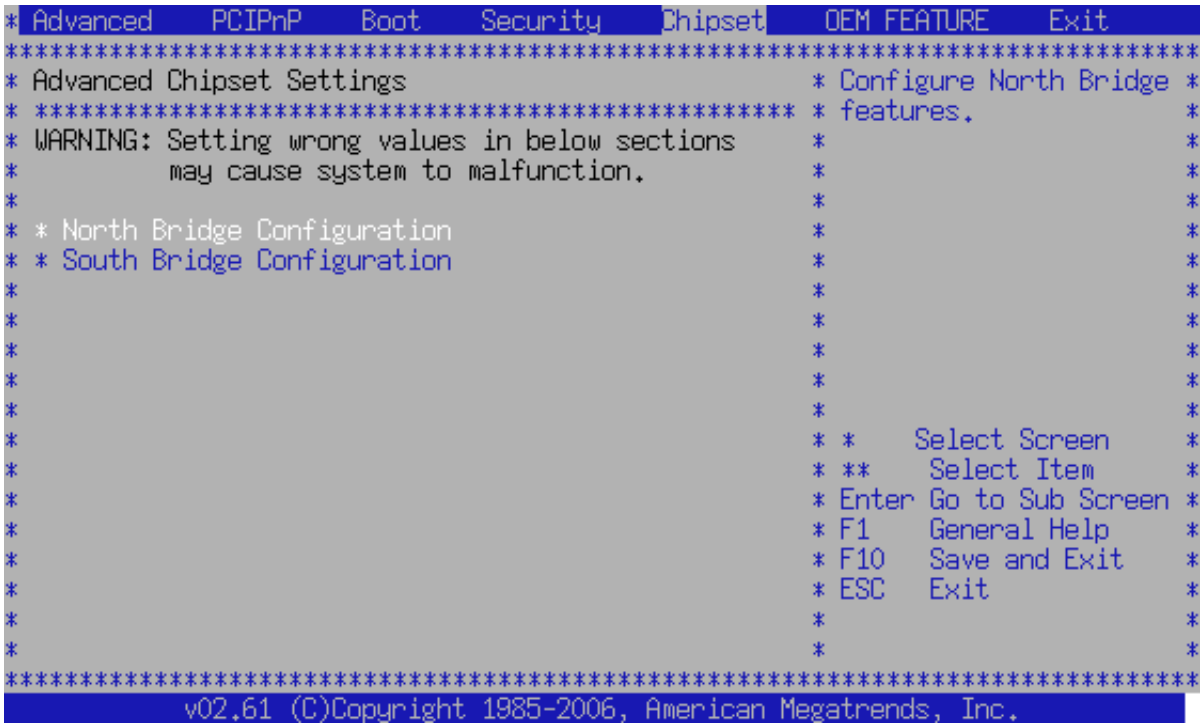
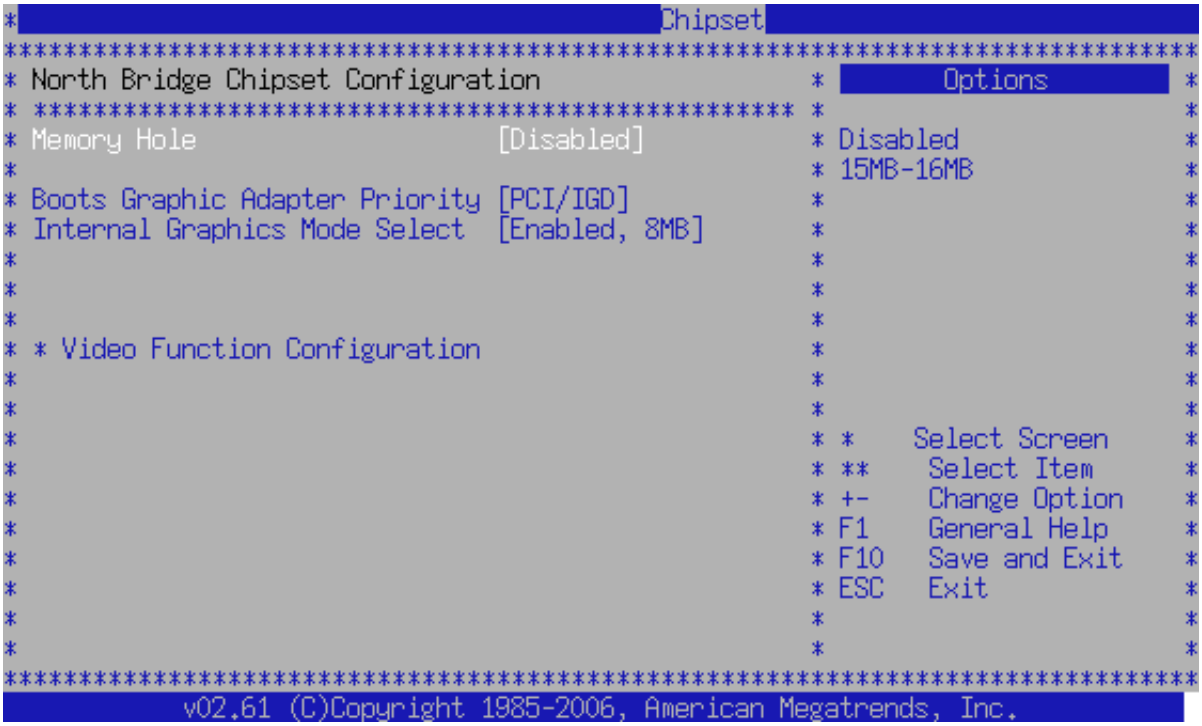
7. Chipset Setup

Select the Chipset tab to enter the Chipset Setup screen. This screen lists two configuration sub-screens. To gain access to a sub-screen, select it and press <Enter>.



NORTHBRIDGE CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings as well as access to a configuration sub-screen.



Memory Hole

This function is used to specify a memory hole between the 15th and 16th megabyte. Enabling the Memory Hole is normally only required for the OS/2 operating system.

SETTING	DESCRIPTION
Disabled	Use this setting to disable allocation of a memory hole.
15MB-16MB	Use this setting to specify allocation of a memory hole.

Optimal and Fail-Safe settings: Disabled

Boots Graphic Adapter Priority

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

SETTING	DESCRIPTION
IGD	Use this setting to specify that the internal graphics device is always to be used to display the POST messages.
PCI/IGD	Use this setting to specify that if a PCI VGA adapter is available, it is to used to display the POST messages. If a PCI/ VGA adapter is not available, the internal graphics device is used to display the POST codes.

Optimal and Fail-Safe settings: PCI/IGD

Internal Graphics Mode Select

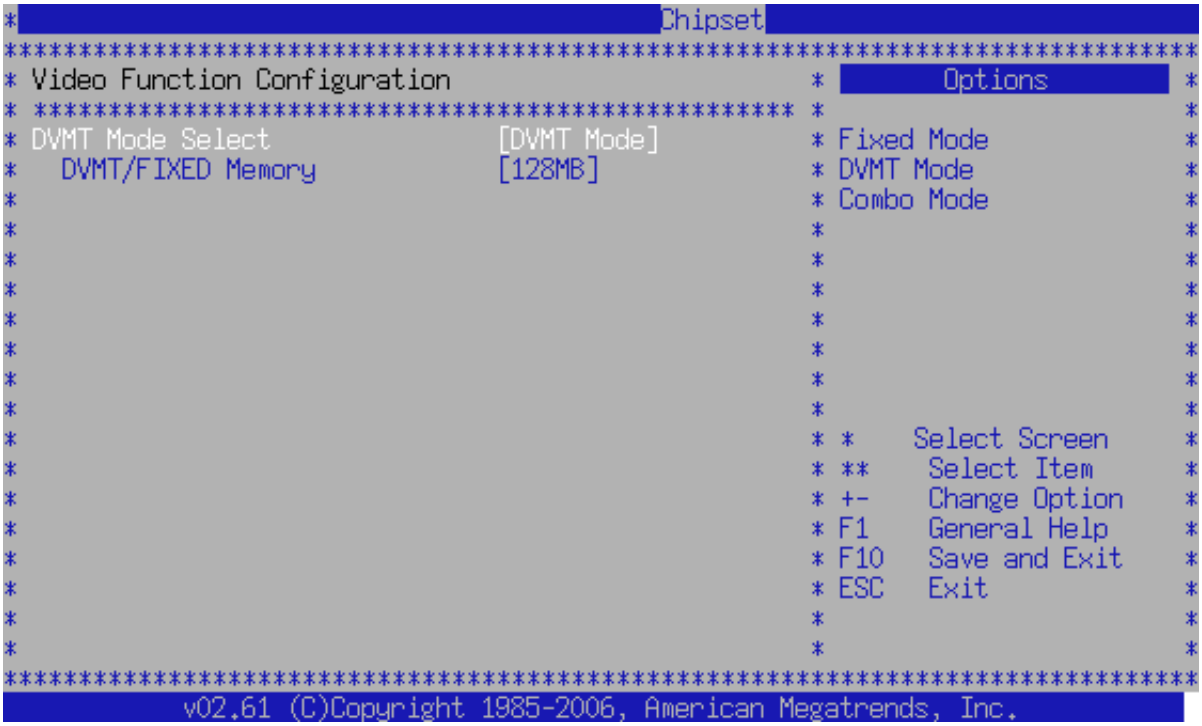
This function is use to specify the amount of the main memory to share with the graphics controller.

SETTING	DESCRIPTION
Enabled, 1 MB	Use this setting to specify 1 MB of main memory for the graphics controller.
Enabled, 8 MB	Use this setting to specify 8 MB of main memory for the graphics controller.

Optimal and Fail-Safe settings: Enabled, 1 MB

VIDEO FUNCTION CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings



DVMT Mode Select

This function is used to specify how main memory is allocated between graphics and system requirements.

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

Optimal and Fail-Safe settings: DVMT Mode

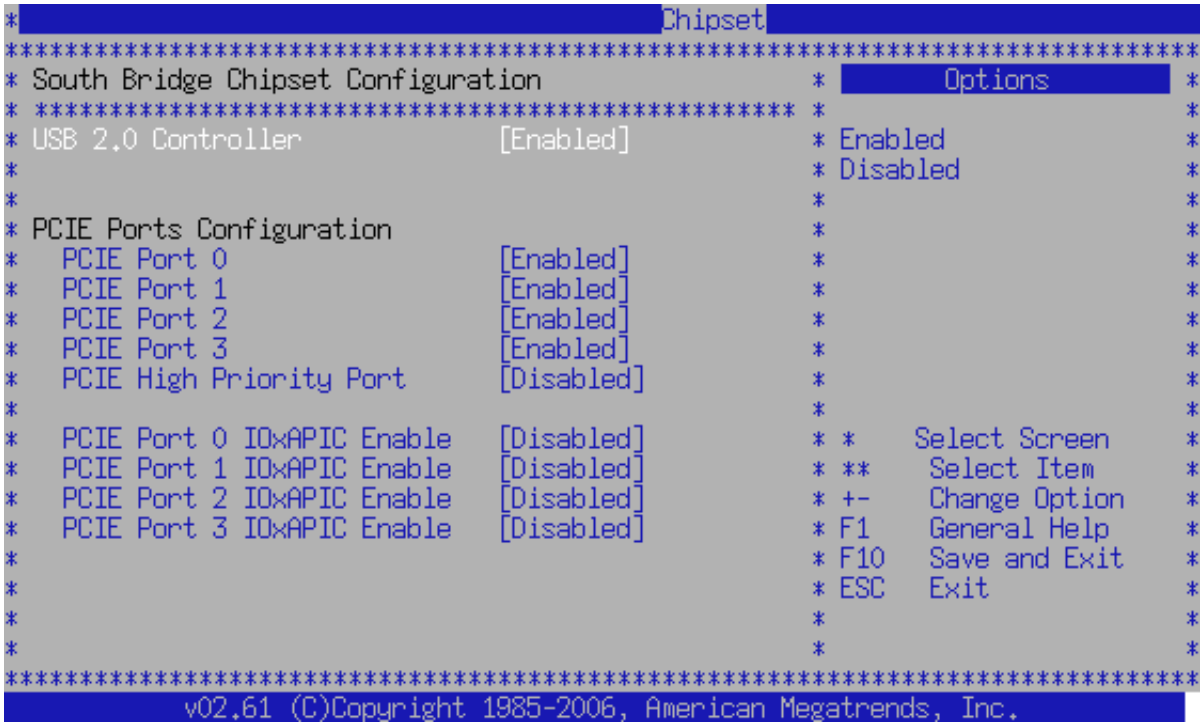
DVMT/FIXED Memory

This function is used to specify the amount of main memory for use as graphic memory. The possible setting depends on the memory configuration.

Optimal and Fail-Safe setting: 128 MB.

SOUTHBRIDGE CONFIGURATION SCREEN

This screen provides functions for specifying configuration settings.



USB 2.0 Controller

SETTING	DESCRIPTION
Disabled	Use this setting to specify disabling of the USB 2.0 controller. In this case, 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.
Enabled	Use this setting to specify enabling of the USB 2.0 controller (EHCI).

Optimal and Fail-Safe settings: Enabled

PCIe Ports Configuration: PCIe Port 0

SETTING	DESCRIPTION
Disabled	Use this setting to disable the PCIe port 0 and all devices behind it.
Enabled	Use this setting to enable the PCIe port 0.

Optimal and Fail-Safe settings: Enabled

PCIe Ports Configuration: PCIe Port 1

SETTING	DESCRIPTION
Disabled	Use this setting to disable the PCIe port 1 and all devices behind it.
Enabled	Use this setting to enable the PCIe port 1.

Optimal and Fail-Safe settings: Enabled

PCIe Ports Configuration: PCIe Port 2

SETTING	DESCRIPTION
Disabled	Use this setting to disable the PCIe port 2 and all devices behind it.
Enabled	Use this setting to enable the PCIe port 2.

Optimal and Fail-Safe settings: Enabled

PCIe Ports Configuration: PCIe Port 3

SETTING	DESCRIPTION
Disabled	Use this setting to disable the PCIe port 3 and all devices behind it.
Enabled	Use this setting to enable the PCIe port 3.

Optimal and Fail-Safe settings: Enabled

PCIe Ports Configuration: PCIe High Priority Port

This function is used to specify the priority of the PCIe ports. When a port is selected, transactions on this port have a higher priority than the other port.

SETTING	DESCRIPTION
Disabled	Use this setting to specify that all ports have the same priority.
Port 0	Use this setting to specify port 0 as the higher priority port.
Port 1	Use this setting to specify port 1 as the higher priority port.
Port 2	Use this setting to specify port 2 as the higher priority port.
Port 3	Use this setting to specify port 3 as the higher priority port.

Optimal and Fail-Safe settings: Disabled

PCIe Ports Configuration: PCIe Port 0 IOxAPIC Enable

SETTING	DESCRIPTION
Disabled	Use this setting to disable access of the OS to the Port 0 IOxAPIC.
Enabled	Use this setting to permit the OS to have access to the Port 0 IOxAPIC.

Optimal and Fail-Safe settings: Disabled

PCIe Ports Configuration: PCIe Port 1 IOxAPIC Enable

SETTING	DESCRIPTION
Disabled	Use this setting to disable access of the OS to the Port 1 IOxAPIC.
Enabled	Use this setting to permit the OS to have access to the Port 1 IOxAPIC.

Optimal and Fail-Safe settings: Disabled

PCIe Ports Configuration: PCIe Port 2 IOxAPIC Enable

SETTING	DESCRIPTION
Disabled	Use this setting to disable access of the OS to the Port 2 IOxAPIC.
Enabled	Use this setting to permit the OS to have access to the Port 2 IOxAPIC.

Optimal and Fail-Safe settings: Disabled

PCIe Ports Configuration: PCIe Port 3 IOxAPIC Enable

SETTING	DESCRIPTION
Disabled	Use this setting to disable access of the OS to the Port 3 IOxAPIC.
Enabled	Use this setting to permit the OS to have access to the Port 3 IOxAPIC.

Optimal and Fail-Safe settings: Disabled

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Chapter 8

OEM Feature

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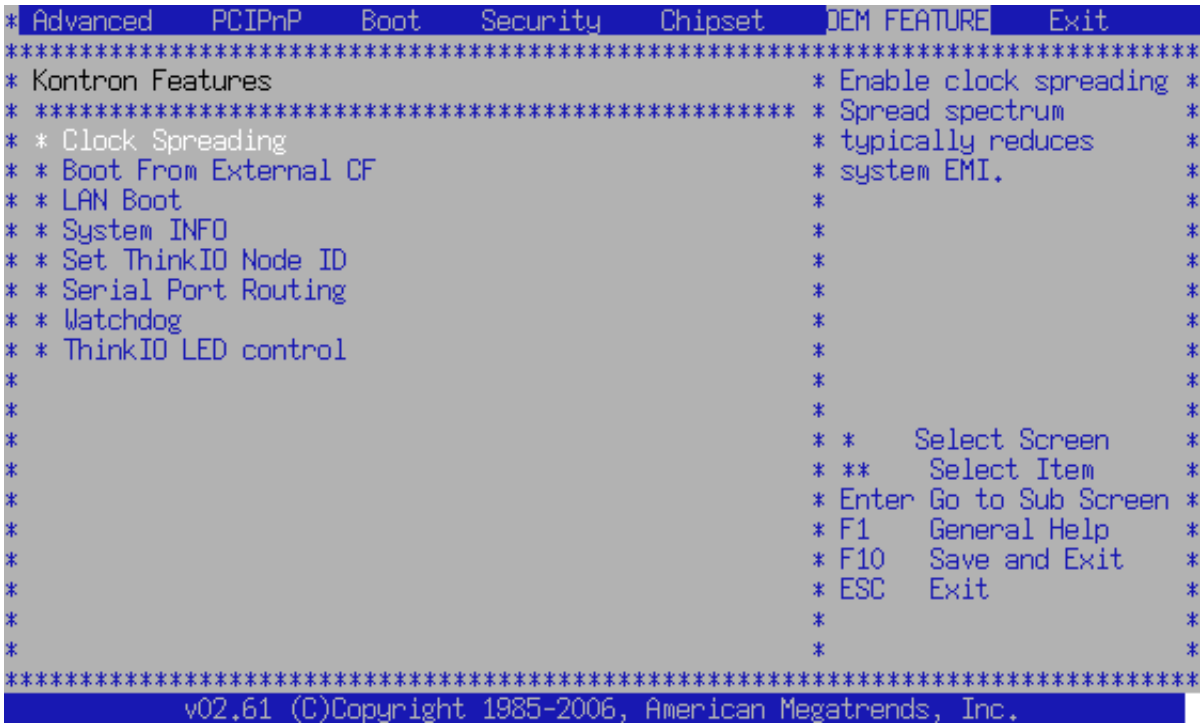
8. OEM Feature Setup

Select the OEM Feature tab to enter the OEM Feature Setup screen. This screen provides a list of configuration sub-screens. To gain access to a sub-screen, select it and press <Enter>.



CLOCK SPREADING SCREEN

This screen provides one function for specifying a configuration setting.

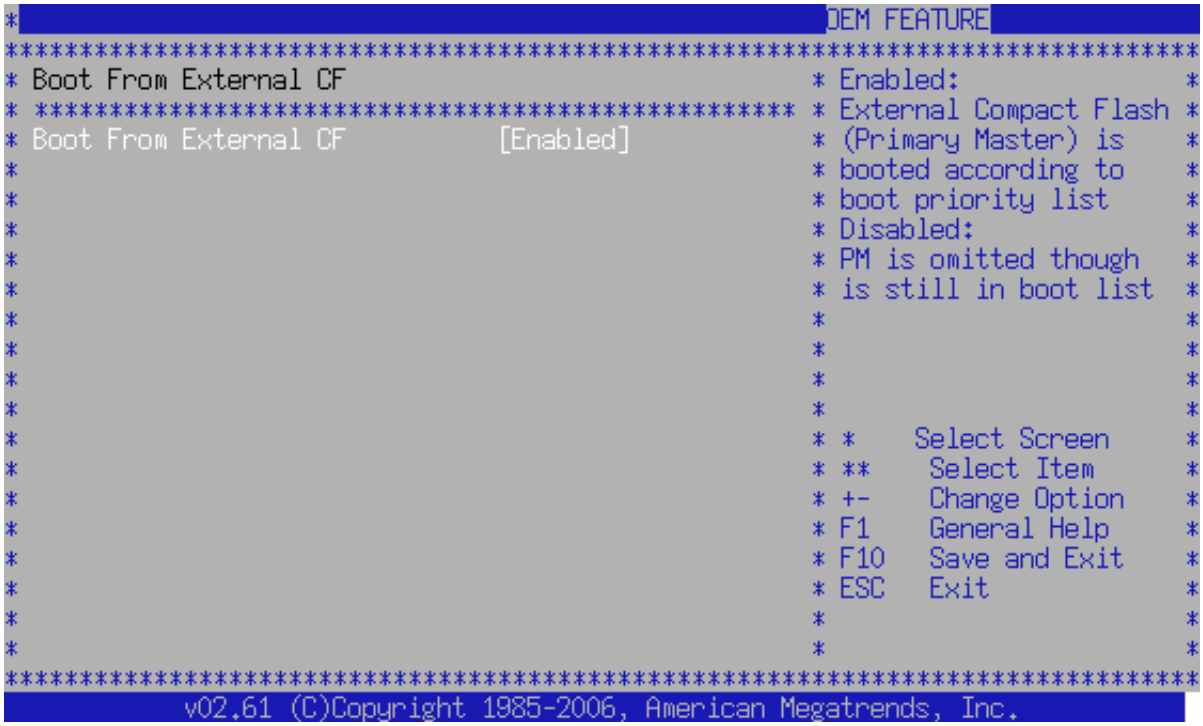
Spread Spectrum Modulation

SETTING	DESCRIPTION
Disabled	Use this setting to disable clock spread spectrum modulation.
Enabled	Use this setting to enable clock spread spectrum modulation. This typically reduces system EMI.

Optimal and Fail-Safe settings: Disabled

BOOT FROM EXTERNAL CF SCREEN

This screen provides one function for specifying a configuration setting.



Boot From External CF

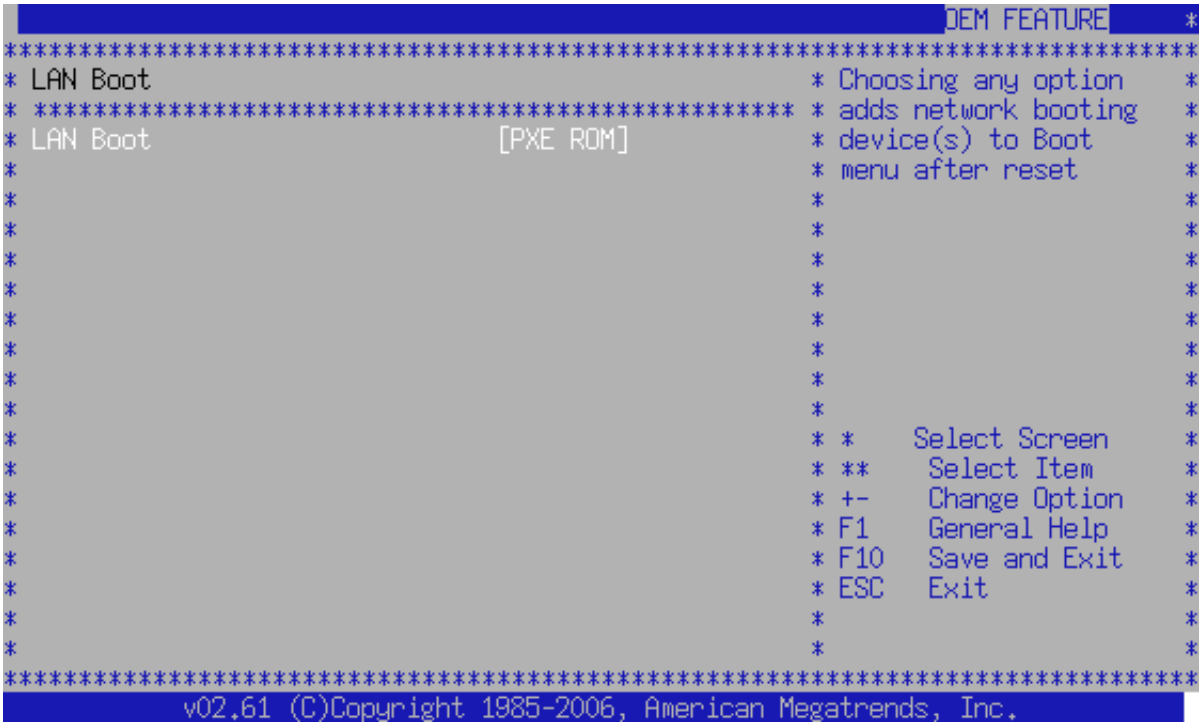
This function is used to specify the exclusion of the external CompactFlash from booting regardless of it's position in the regular boot order.

SETTING	DESCRIPTION
Disabled	Use this setting to exclude the external CompactFlash from the boot order.
Enabled	Use this setting to include the external CompactFlash in the boot order.

Optimal and Fail-Safe settings: Enabled

LAN BOOT SCREEN

This screen provides one function for specifying a configuration setting.



LAN Boot

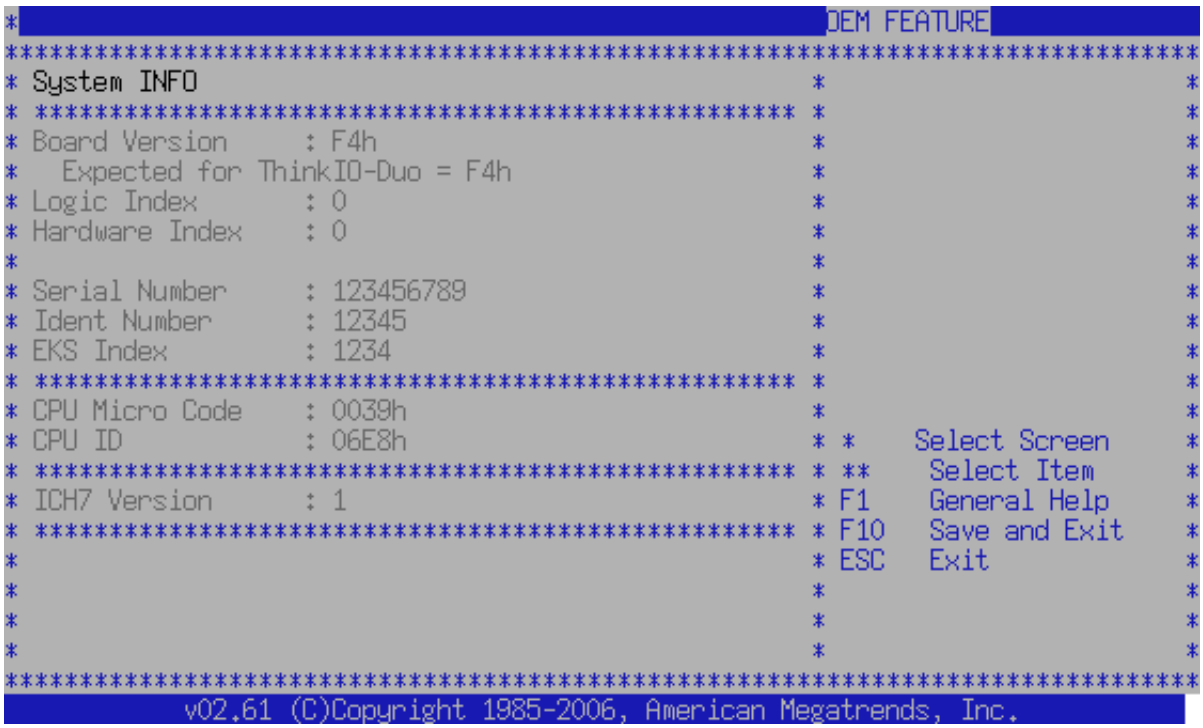
This function is used to specify the loading of the Ethernet expansion ROM.

SETTING	DESCRIPTION
Disabled	Use this setting to disable the loading of the Ethernet expansion ROM.
PXE ROM	Use this setting to specify the loading of the Ethernet expansion ROM to permit PXE booting.

Optimal and Fail-Safe settings: PXE ROM

SYSTEM INFO SCREEN

This screen provides basic status information of various system elements. There are no user configurable functions on this screen. All of the functions listed on this screen are display only functions.



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

Ident Number

This function provides Kontron internal information about the board.

EKS Index

This function provides Kontron internal information about the board.

CPU Micro Code

This function provides the current CPU microcode revision.

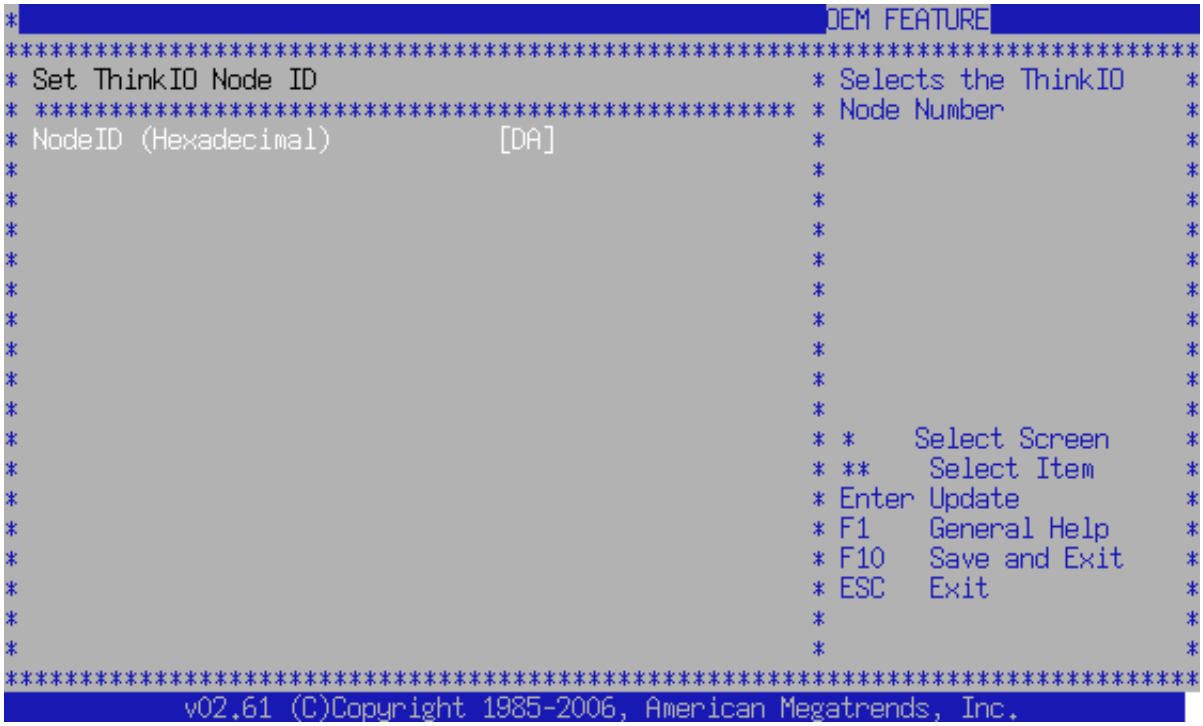
CPU ID

This function provides the ID of the current installed CPU.

ICH7 Version

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

SET THINKIO NODE SCREEN



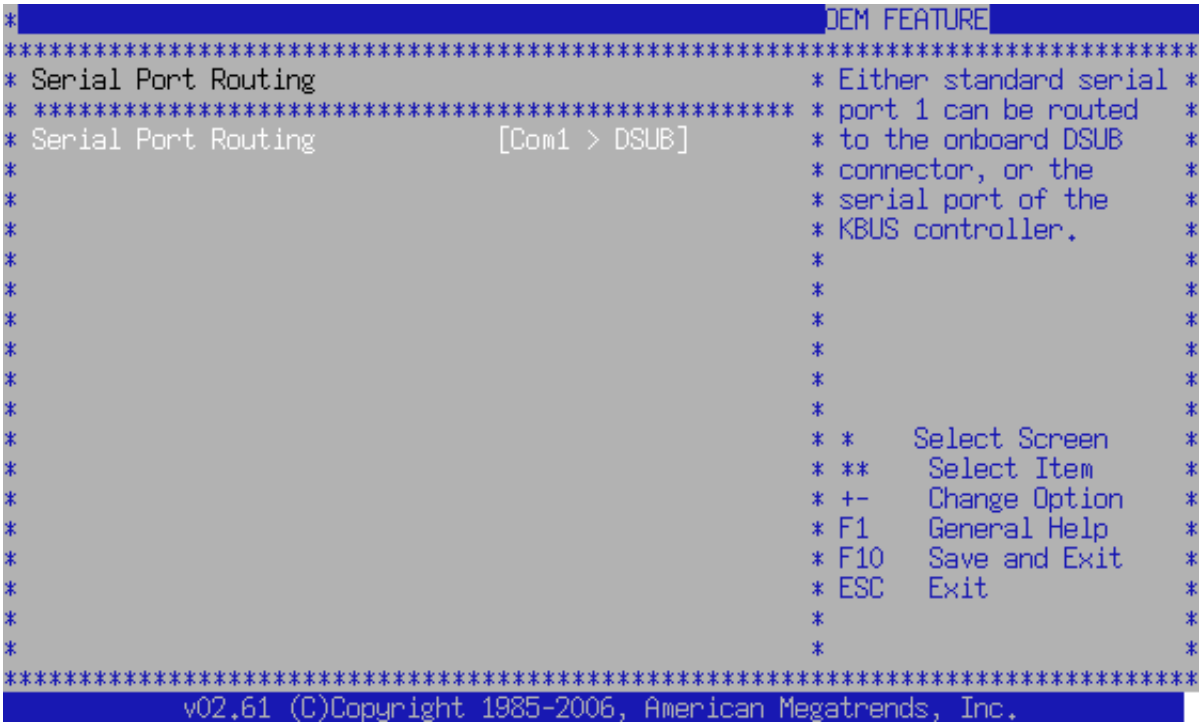
NodeID (Hexadecimal)

This function is used to specify the fieldbus node ID for this ThinkIO-Duo.

SETTING	DESCRIPTION
<xx>	Use this function to specify the fieldbus node ID. Enter the setting in hexadecimal format.

There are no Optimal and Fail-Safe settings for this function.

SERIAL PORT ROUTING SCREEN



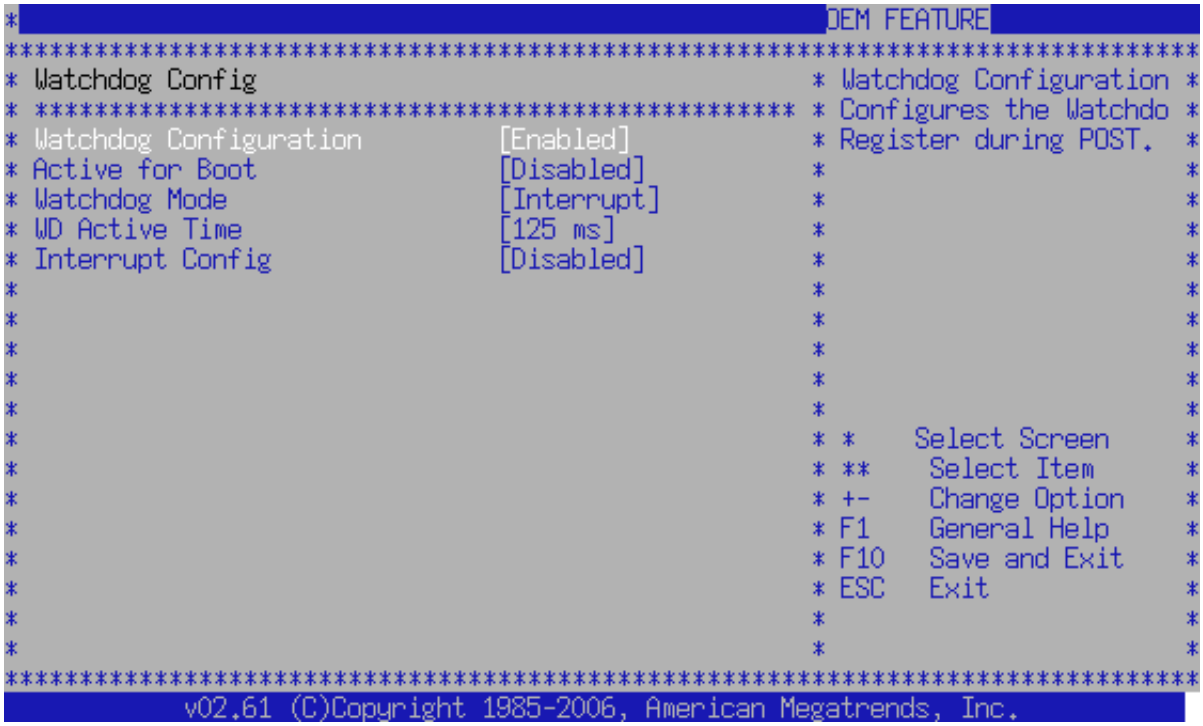
Serial Port Routing

This function is used to route either the ThinkIO-Duo serial port or the K-Bus serial port to the X5 front panel D-Sub connector.

SETTING	DESCRIPTION
Com1 > DSUB	Use this setting to route the ThinkIO-Duo serial port to the X5 connector.
KBUS Serial > DSUB	Use this setting to route the K-Bus module serial port to the X5 connector.

Optimal and Fail-Safe settings: Com1 > DSUB

WATCHDOG SCREEN



Watchdog Configuration

SETTING	DESCRIPTION
Disabled	Use this setting to disable configuring of the Watchdog at end of the POST.
Enabled	Use this setting to specify the configuration of the Watchdog at end of the POST.

Optimal and Fail-Safe settings: Disabled

Active for Boot

This function is not available if Watchdog Configuration is set to Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to specify that the Watchdog timer must be started from the OS.
Enabled	Use this setting to specify that the Watchdog timer is to be started before the operating system is booted.

Optimal and Fail-Safe settings: Disabled

Watchdog Mode

This function is not available if Watchdog Configuration is set to Disabled.

SETTING	DESCRIPTION
Timer Only	Use this setting to specify that the Watchdog is to be operated in Timer Only mode.
Reset	Use this setting to specify that the Watchdog is to reset the system if it is not retriggered within the selected time.
Interrupt	Use this setting to specify that the Watchdog is to generate an interrupt if it is not retriggered within the selected time.
Cascade (Interrupt + Reset)	Use this setting to specify that the Watchdog is to be operated in Cascade mode. In this mode, if the Watchdog is not retriggered within the selected time, an interrupt is generated and the Watchdog is automatically retriggered. If the Watchdog subsequently times out again, the system will be reset. If the Watchdog is retriggered normally after the interrupt, the next timeout will result in the generation of an interrupt and the automatic retriggering of the Watchdog.

Optimal and Fail-Safe settings: Timer Only

WD Active Time

This function is not available if Watchdog Configuration is set to Disabled.

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 settings to specify the time after which the action selected occurs if the Watchdog timer is not retriggered.

Optimal and Fail-Safe settings: 125 ms

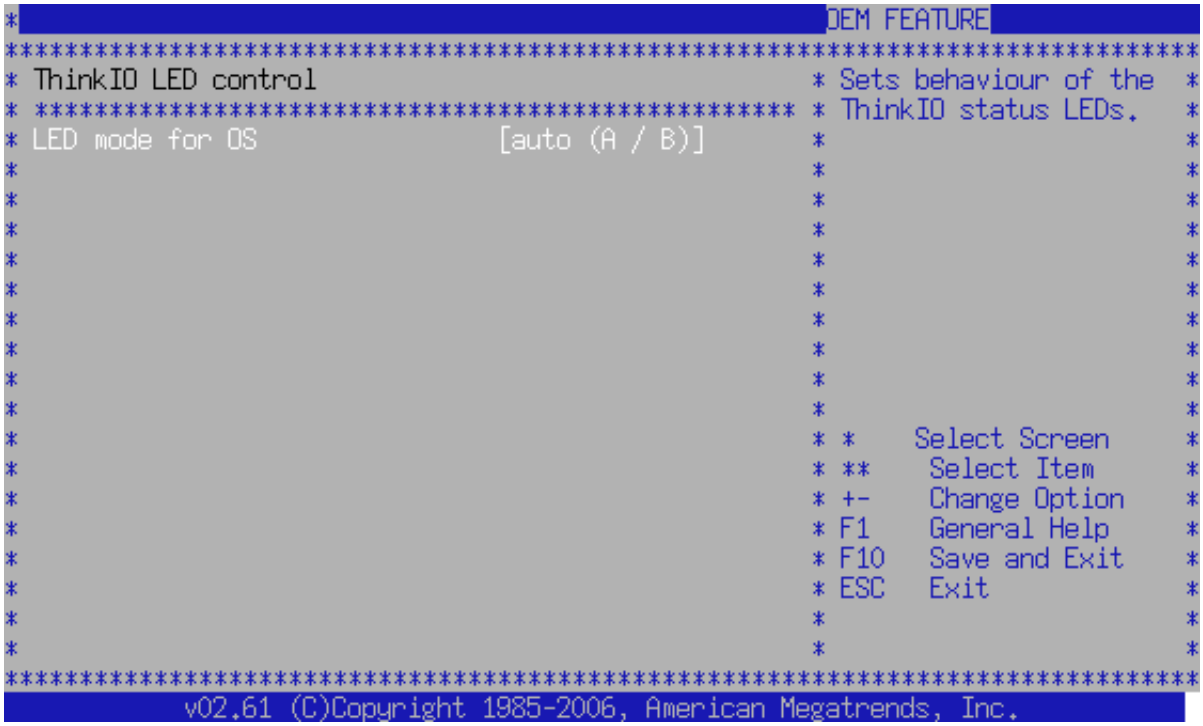
Interrupt Config

This function is not available if Watchdog Configuration is set to Disabled.

SETTING	DESCRIPTION
Disabled	Use this setting to specify that the Watchdog does not require an interrupt.
IRQ5	Use this setting to specify that the Watchdog requires IRQ5.
NMI	Use this setting to specify that the Watchdog requires an NMI.

Optimal and Fail-Safe settings: Disabled

THINKIO-DUO LED CONTROL SCREEN



LED mode for OS

SETTING	DESCRIPTION
auto (A / B)	Use this setting to specify the automatic selection between special mode A or B.
I/O 80h	Use this setting to specify that the LEDs are to remain in the POST display mode. In this case, the LEDs reflect the contents of the I/O 80h register.
mode A	Use this setting to specify mapping of the LEDs to special mode A.
mode B	Use this setting to specify mapping of the LEDs to special mode B.
mode C	Use this setting to specify mapping of the LEDs to special mode C.
test mode	Use this setting to specify mapping of the LEDs to test mode.

Optimal and Fail-Safe settings: auto (A / B)

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Chapter 9

Exit Menu

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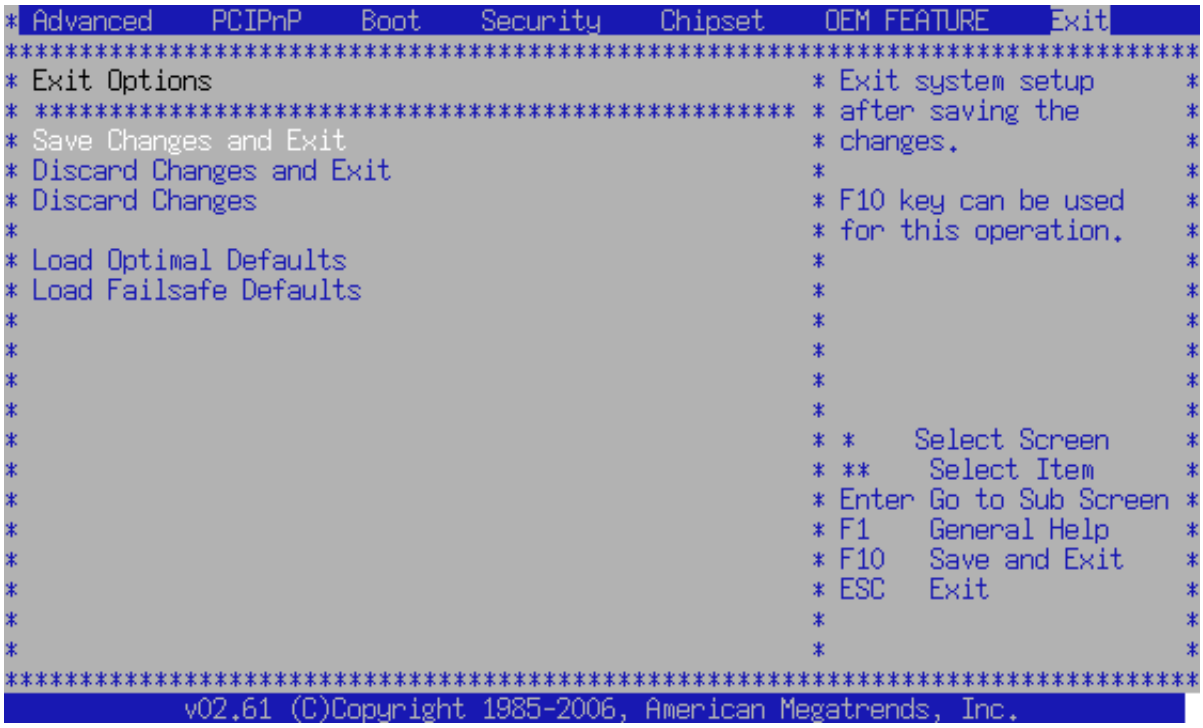
9. Exit Menu

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 settings



Save Changes and Exit

Upon completion 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 can take effect.

To accomplish this select this function 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 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. This function is used to reset the BIOS configuration to the last stored setup configuration so that new changes may be made.

To accomplish this select this function 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>.

Load Optimal Defaults

This function is used to reconfigure the BIOS settings to a predefined set of Optimal 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 settings select this function 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 Failsafe Defaults

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

To load the Fail-Safe settings select this function 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>.

Chapter 10

POST Codes

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10. POST Codes

The POST code is visible on the front panel LEDs. For information on the LEDs, refer to the ThinkIO-Duo Hardware Guide.

10.1 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 4GB 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 512KB memory. Adjust policies and cache first 8MB. 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 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel). See POST Code Checkpoints section of document for more information.

10.2 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.

10.3 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 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.

CHECKPOINT	DESCRIPTION
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.
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 CPU's before boot, which includes the programming of the MTRRs.

CHECKPOINT	DESCRIPTION
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).

10.4 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 non-compliant 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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