CAD-0211 Series
Communication Appliance

User's Manual

Revision: 1.1

CE

This certificate of conformity of CAD-0211 series with actual required safety standards in accordance with 89/366 ECC-EMC Directive and LVD 73/23 ECC

UL

This product meets all safety requirements per UL60950 standard.

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Chapter 1 Introduction

1.1 About This Manual

This manual contains all required information for setting up and using the CAD-0211 series.

CAD-0211 provides the essential platform for delivering optimal performance and functionality in the entry communications appliance market segment. This manual should familiarize you with CAD-0211 operations and functions.CAD-0211 series provide up to 6 on-board Ethernet ports to serve communication applications like Firewall, requiring 6 Ethernet ports to connect external network (internet), demilitarized zone and internal network.

CAD-0211 series overview:

- ✧ INTEL ATOM D525 1.80GHz
- ✧ Memory: Two DDR3 SODIMM slot and up to 8GB
- ✧ Six Gigabit Ethernet interfaces with one Bypass segments
- ✧ Independent management console(RS232)
- ✧ One 2.5” SATA Hard disk

1.2 Manual Organization

This manual describes how to configure your CAD-0211 system to meet various operating requirements. It is divided into three chapters, with each chapter addressing the basic concept and operation of this system.

Chapter 1: Introduction. This section describes how this document is organized. It includes brief guidelines and overview to help find necessary information.

Chapter 2: Hardware Configuration Setting and Installation. This chapter demonstrated the hardware assembly procedure, including detailed information. It shows the definitions and locations of Jumpers and Connectors that can be used to configure the system.

Chapter 3: Operation Information. This section provides illustrations and information on the system architecture and how to optimize its performance.

Any updates to this manual, would be posted on the web site:

http://www.portwell.com

1.3 Technical Support Information

Users may find helpful tips or related information on Portwell's web site: http://www.portwell.com A direct contact to Portwell's technical person is also available. For further support, users may also Portwell’s headquarter in Taipei or local distributors.

Taipei Office Phone Number: +886-2-5591-1999

1.4 Board Layout

Figure 1-1 Board Layout of CAD-0211 M/B

1.5 System Block Diagram

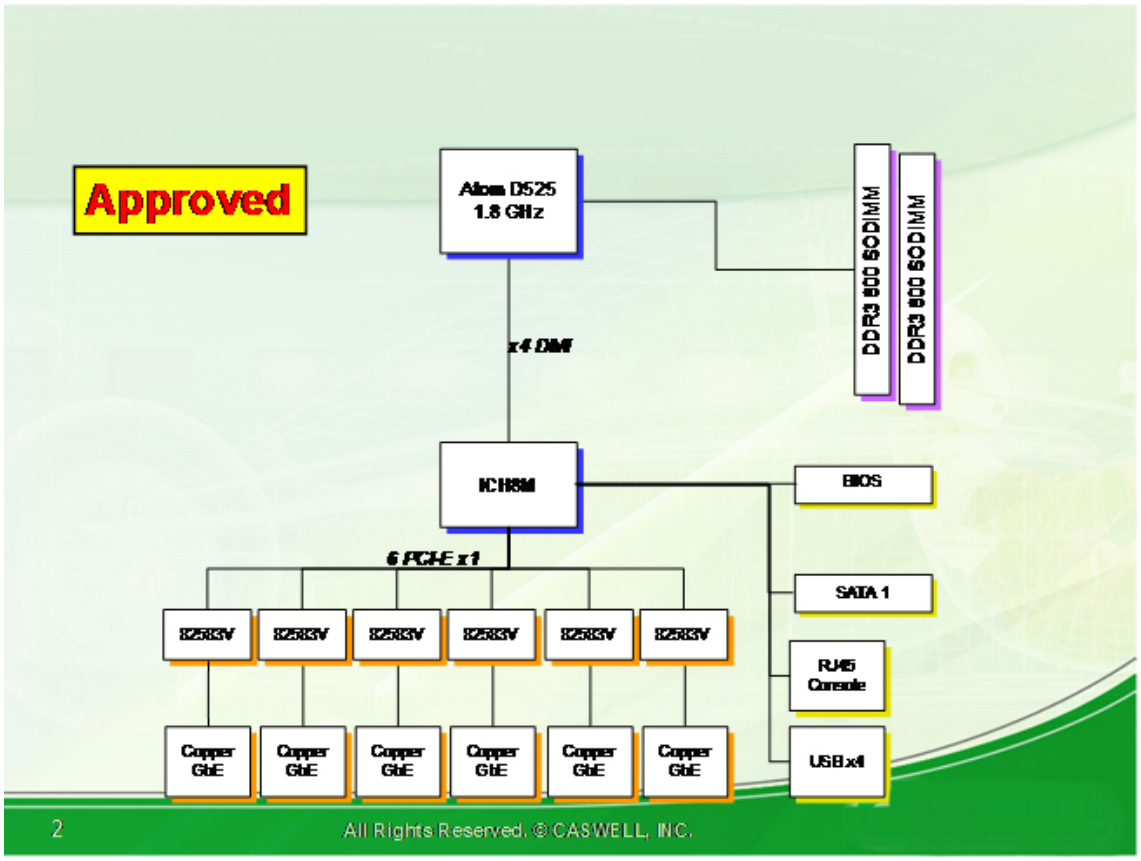
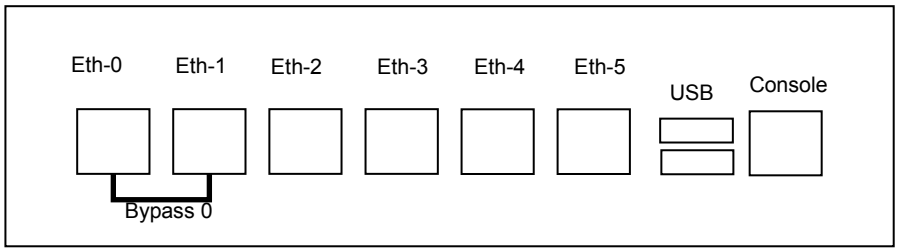
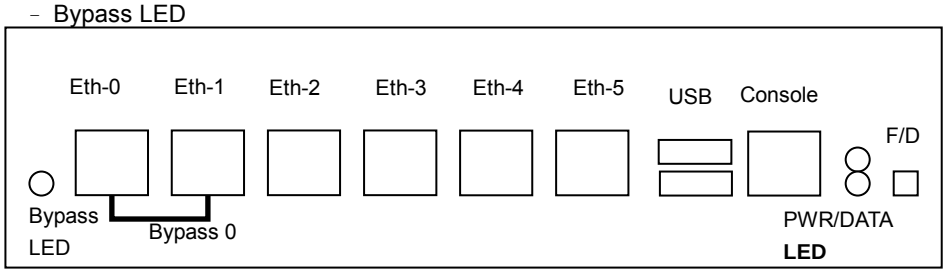
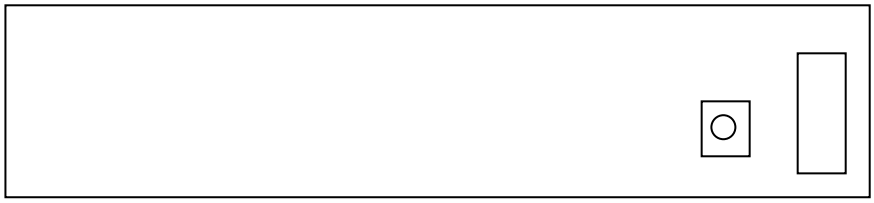


Figure 1-2 CAD-0211 Basic Block Diagram

1.6 Product Specification

	Feature	Detailed Description
1	System Description	◆ CAD-0211 system series is based on Intel® Atom D525 processors (Luna pier refresh platform)
2	CPU	◆ Intel Atom D525 1.8 GHz
3	CPU Board	◆ SB: Intel® 82801HM I/O Controller (ICH8M)
4	System Memory	◆ DDR3 800MHz 2Gx2
5	Power Supply	◆ 12 V AC/DC adapter ◆ Certification: CE, UL, 3C
6	Chassis	◆ Form factor: Desktop chassis. ◆ Support nameplate on front panel ◆ Hook for DC jack
7	Ethernet interfaces	◆ Six PCI-E (x1) Gigabit Ethernet port based on Intel 82583V Ethernet controller from ICH8M. ◆ One Gen 1.6 Bypass segments. ◆ RJ45 interface with built in LED for ACT/Link and 10/100/1000 signaling. ◆ Ethernet I/O sequence and Bypass location as below:  ◆ Eth-0 support PXE (boot on LAN) as default in BIOS
8	SATA & IDE Interfaces	◆ One SATA Interfaces on board
9	Storage	◆ System is equipped default with fixed HDD ◆ Space for 1x2.5” HDD with SATA interface is required.
10	VGA Interface	◆ Interface: One 2x5 pin connector on board.

	Feature	Detailed Description
11	**Front Panel**	◆ RJ45 connector for system console, tab-down, no LED. Pin-definition refers to Appendix-A. ◆ Six RJ-45 connector for PCI-E (x1) GbE interfaces ◆ Factory Default button. (On board or by cable) ◆ LED: Signaling standard refer to Appendix-E – System LED: Power, Data access. – Ethernet LED: For every Ethernet interface there should be LEDs for link status and speed of LAN-ports. – Bypass LED 
12	**Rear Panel**	◆ Power switch ◆ DC inlet 
13	**Dimension**	◆ Dimension: 210x210x40
14	**Environmental**	Temperature Range ◆ The system shall be able to sustain constant operation at temperatures between 0 and 40 degrees Celsius. Humidity Range ◆ At least 10% - 85% Non-Condensing. Vibrations ◆ The Platform shall be designed to comply with Office Vibration, and Transportation of GR-63-CORE. Audible Noise Level ◆ (< 40 dB)

Chapter 2 Getting Started

This section describes how the hardware installation and system settings should be done.

2.1 Included Hardware

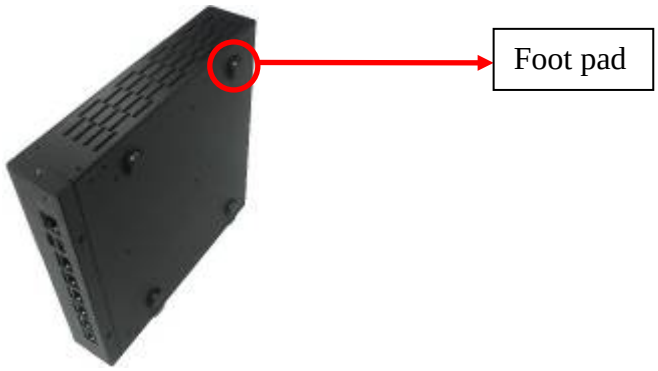
The following hardware is included in package:

- CAD-0211 Communication Appliance System Board
- One null serial port cable
- AC-DC Adapter
- SATA cable
- Hard disk ground cable
- Hard disk assembly kits
- Chassis foot pad

2.2 Before You Begin

Before starting, you should install foot pad, it can help the chassis has well airflow.

There are four foot pads should be installed.



To prevent damage to any system board, it is important to handle it with care. The following measures are generally sufficient to protect your equipment from static electricity discharge:

When handling the board, use a grounded wrist strap designed for static discharge elimination and touches a grounded metal object before removing the board from the antistatic bag. Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

When handling processor chips or memory modules, avoid touching their pins or gold edge fingers. Restore the communications appliance system board and peripherals back into the antistatic bag when they are not in use or not installed in the chassis.

Some circuitry on the system board can continue operating even though the power is switched off. Under no circumstances should the Lithium battery cell used to power the real-time clock be allowed to be shorted. The battery cell may heat up under these conditions and present a burn hazard.

WARNING!

1. **"CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS"**
2. **This guide is for technically qualified personnel who have experience installing and configuring system boards. Disconnect the system board power supply from its power source before you connect/disconnect cables or install/remove any system board components. Failure to do this can result in personnel injury or equipment damage.**
3. **Avoid short-circuiting the lithium battery; this can cause it to superheat and cause burns if touched.**
4. **Do not operate the processor without a thermal solution. Damage to the processor can occur in seconds.**
5. **Do not block air vents. Minimum 1/2-inch clearance required.**

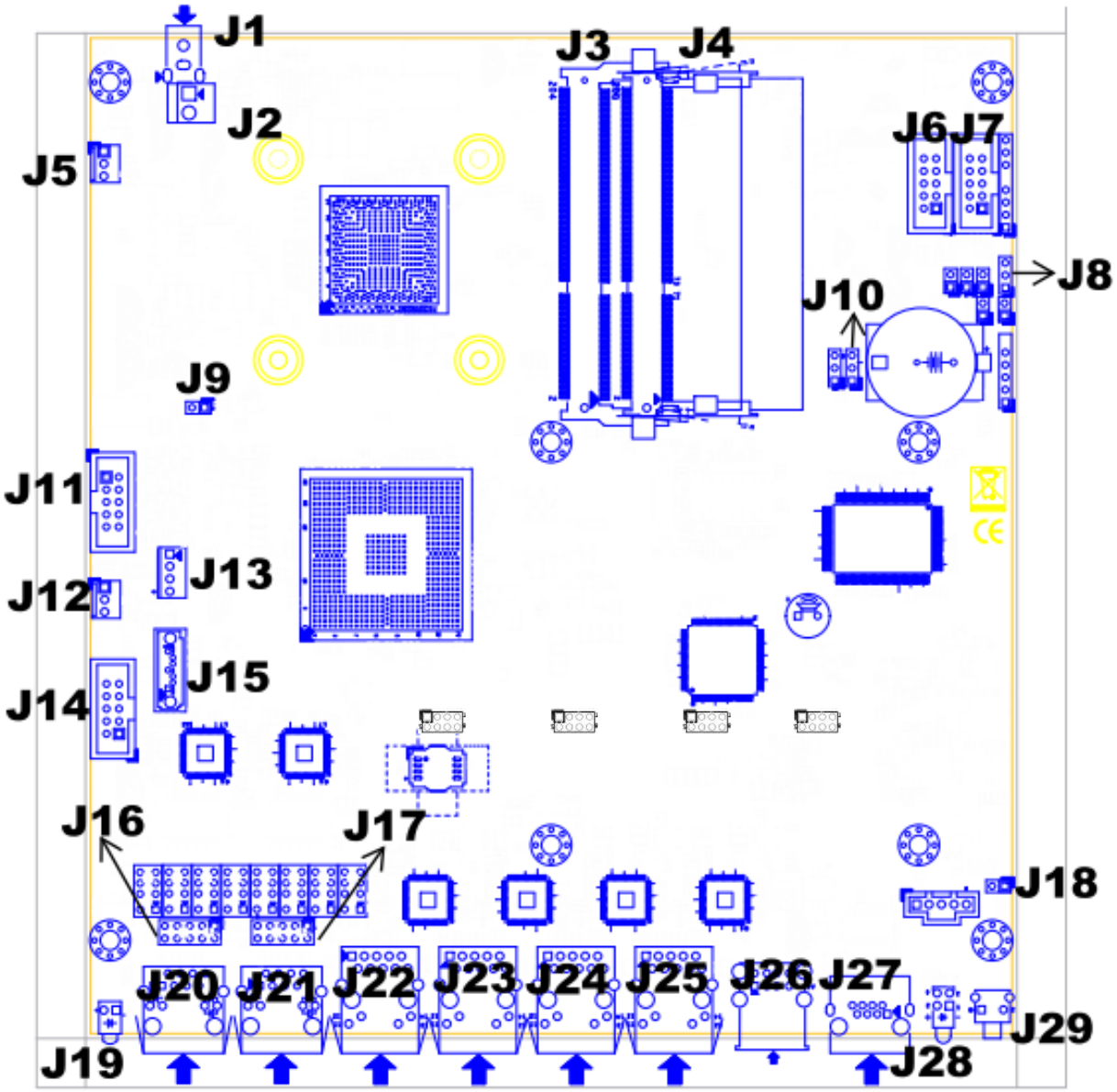
2.3 Hardware Configuration Setting

2.3.1 CAD-0211 System

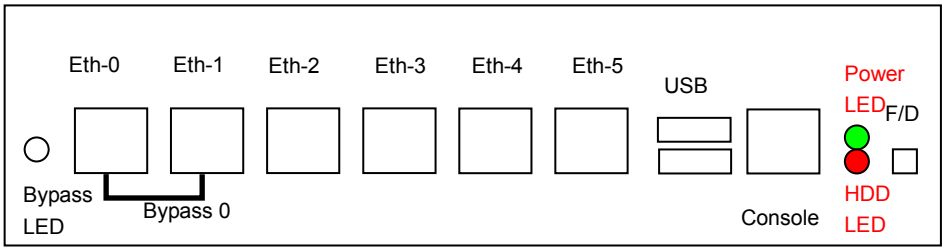
2.3.2 CAD-0211 System Board Jumper

In general, jumpers on CAD-0211 system board are used to select options for certain features. Some of the jumpers are configurable for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (Short) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for “Not Connected”.

Location of Jumpers



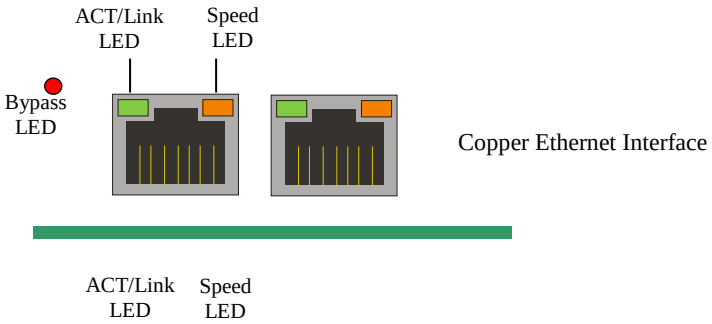
LED definition on board:



1. Power and Data-access LED

Lettering	Symbol	Function	Color	Signaling
PWR	⏻	Power status	Green	Off – No power, system off. On – Power good, system on.
Data Access	🛢	Data Access	Red	Off – no data access through IDE or SATA channel On – data is in transition through IDE or SATA channel

2. Ethernet LED



Label	Color	Indication	Status
ACT/LINK	**Green Or Others**	**On**	1. The Ethernet port is receiving power. 2. Good linkage between the Ethernet port and its supporting hub.
		Off	1. The adapter and switch are not receiving power. 2. No connection between both ends of network cable. 3. The drivers of Ethernet have not been loaded or does not function correctly.
	Green Or Others	**Flashing**	The adapter is sending or receiving network data. The frequency of the flashes varies with the amount of network traffic.
SPEED	**Yellow**	**On**	ACT/LNK LED must on then this LED show the operating at 1000 Mbps. If ACT/LINK is off and this function will be disable.
	Green	**On**	ACT/LNK LED must on then this LED show the operating at 100 Mbps. If ACT/LINK is off and this function will be disable.
		Off	ACT/LNK LED must on then this LED show the operating at 10 Mbps. If ACT/LINK is off and this function will be disable.

Connector	Function	Remark
J1	DC Power Jack (12V)	
J2	12V power switch	
J3,J4	DDR3 800 DIMM Slot	
J5	CPU Smart Fan Power connector	
J6	80 port	
J7	PS/2	
J8	CMOS Clear	*1-2 short : normal, 2-3 short : clear
J9	NMI	
J10	Bypass function	*1-2 short : enable, 2-3 short: disable
J11	VGA connector	
J12	System Smart Fan Power connector	
J13	Sata power	
J14	USB pin header	
J15	SATA connector	
J16,J17	Open mode jumper	J16(1-2,3-4,5-6,7-8),J17(1-2,3-4,5-6,7-8,9-10) short : normal mode J16(1-2,3-4,5-6,7-8),J17(1-2,3-4,5-6,7-8,9-10) open : open mode
J18	System WDT	1-2 short : enable, 2-3 open : disable
J19	Bypass LED	Bypass: red Normal: green
J20~J26	RJ45 connector	
J27	Console Port	
J28	HDD LED +Power LED	
J29	F/D Button	

J11: VGA connector define

Pin	Signal Name	Pin	Signal Name
1	RED	2	DDCCLK
3	GREEN	4	Ground
5	BLUE	6	DDCDATA
7	HSYNC	8	Ground
9	VSYNC	10	N/C

J13: +5V & +12V Power Connector (Only Output)

Pin	Signal Name
1	VDD_12V
2	GND
3	GND
4	VDD_5V

Factory Default : D-TYPE FLIP-FLOPS

Pin	Signal Name
PRE#	Factory Default Button
CLR#	ICH8_GPIO3
Q	ICH8_GPIO4

System Reset : Or Gate

Pin	Signal Name
A	ICH8_GPIO33
B	SIO Watch dog timer
Y	System Reset

2.4 The Chassis

The system is integrated in a 1U desktop chassis (**Fig. 2-1, Fig. 2-2**). On the front panel you will find a Power / HDD / Ethernet LED.

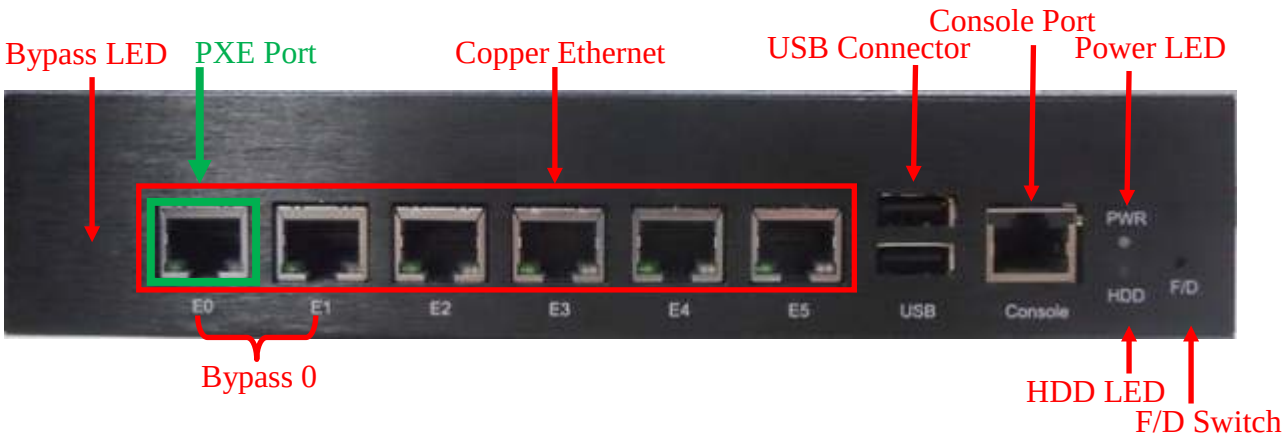


Fig. 2-1 **Front view of the chassis**

Fig. 2-2 **Rear view of the chassis**

2.5 Open the Chassis

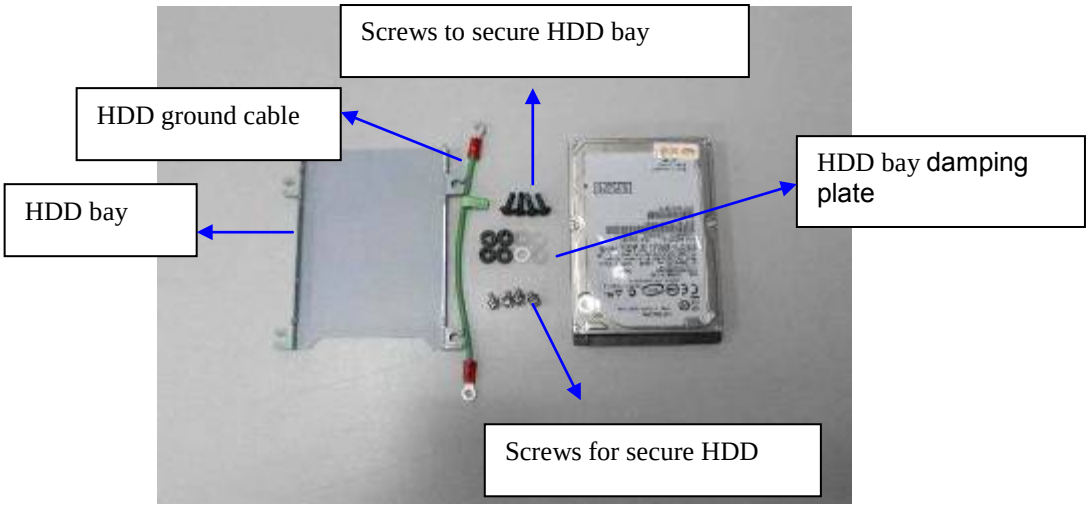
If you want to install or change I/O devices, please open top cover of chassis.

Loosen the 4 screws of bottom side of the chassis; two are on the right/left side and two are on bottom side, then to remove the top cover

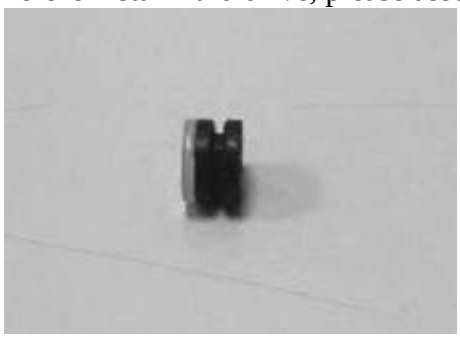
Top cover screw

2.6 Hard drive Install

The CAD-0211 system has supported SATA HDD function; please follow steps to install SATA HDD drive.



1. Before install hard drive, please assembly damping plate, and Install damping plate to HDD bay



2. Use 4 screws to secure the drive into HDD bay and also secure HDD ground cable


3. Fix HDD bay and connect SATA cable to hard drive and board connector

4. Connect HDD ground cable to M/B

2.7 Remove and Install DIMM

Follow these steps to upgrade RAM module:

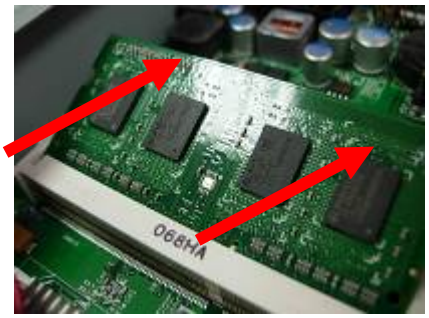
Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Obliquity inserts the DIMM into the socket and depresses DIMM until the retaining clips back in place

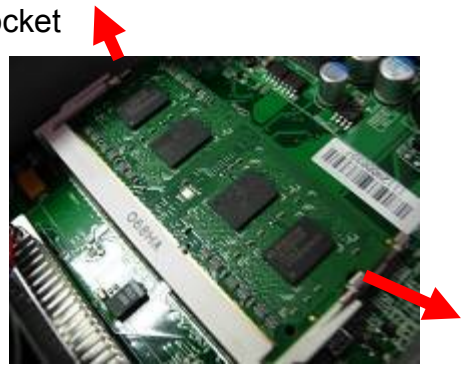
A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

Follow these steps to remove a DIMM:

1. Pull the retaining clips of DIMM socket simultaneously to unlock the DIMM



2. Remove the DIMM from the socket



2.8 Use a Client Computer

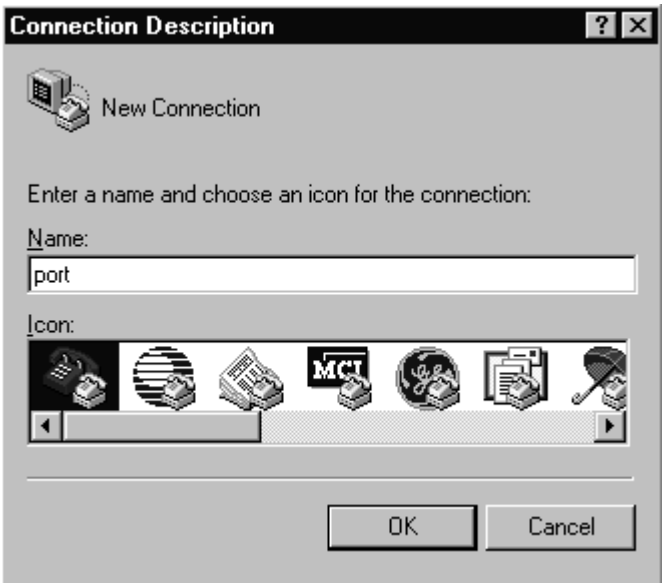
Connection Using Hyper Terminal

To access CAD-0211 via the console, Hyper Terminal is one of many choices. Follow the steps below for the setup:

***Note**: Terminal software may need to update for correct console output.*

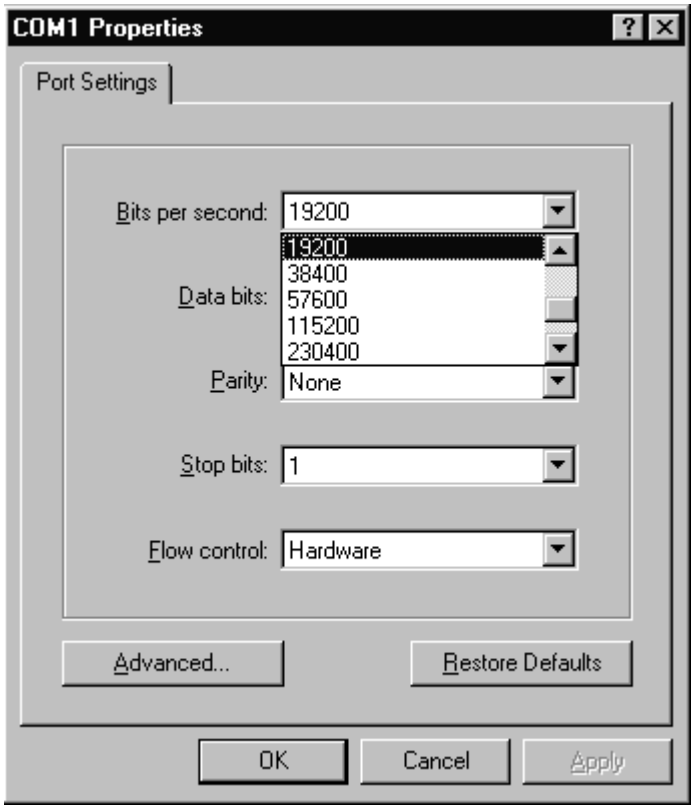
1. Execute HyperTerminal under C:\Program Files\Accessories\HyperTerminal

2. Enter a name to create new dial

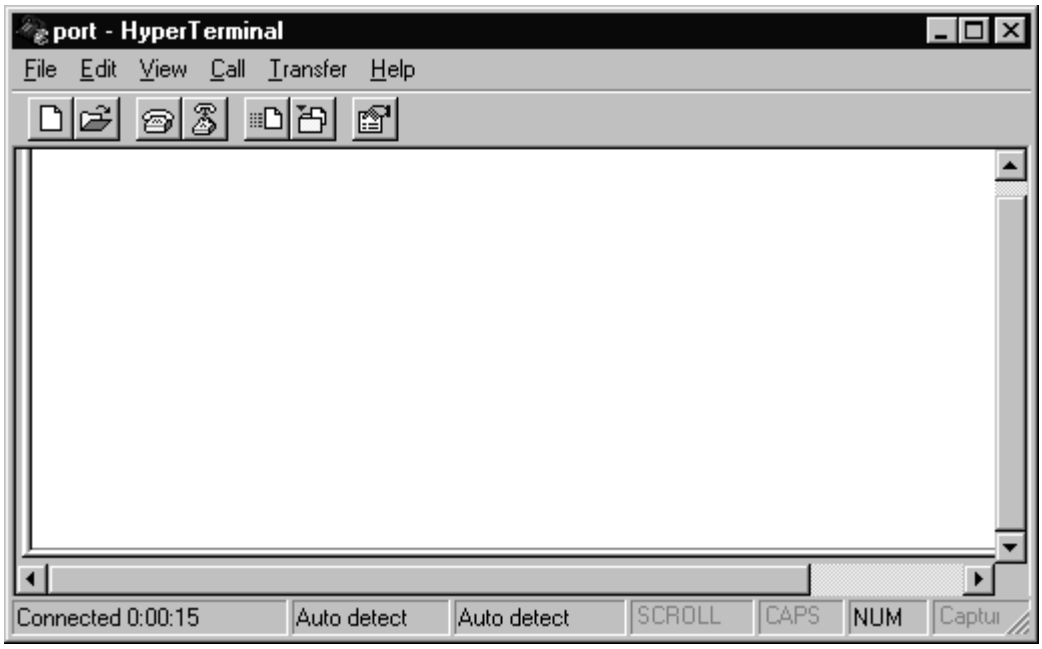


3. For the connection settings, make it Direct to Com1.

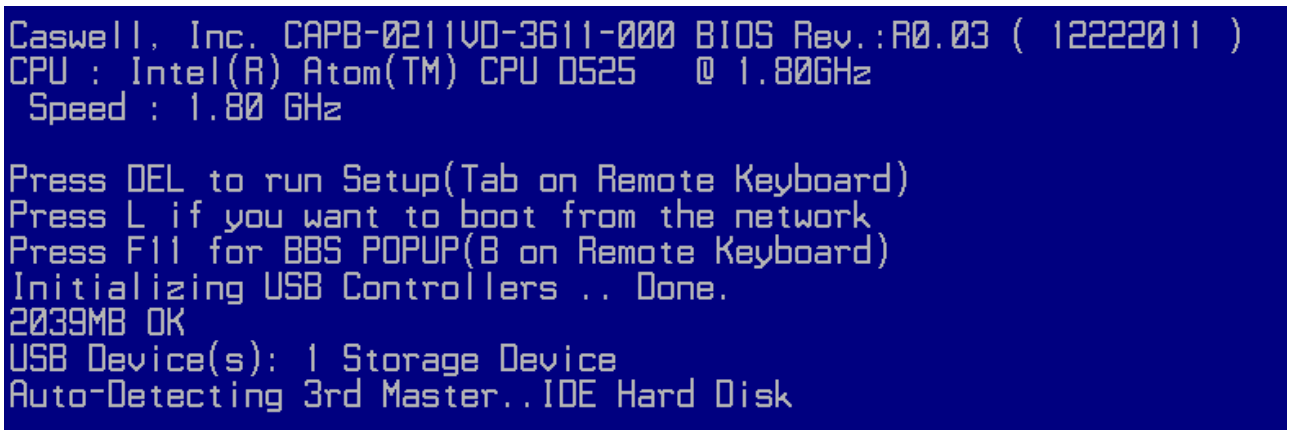
4. Please make the port settings to Baud rate 19200, Parity None, Data bits 8, Stop bits 1



5. Turn on the power of CAD-0211 system, after following screen was shown:



6. User can see the boot up information of CAD-0211



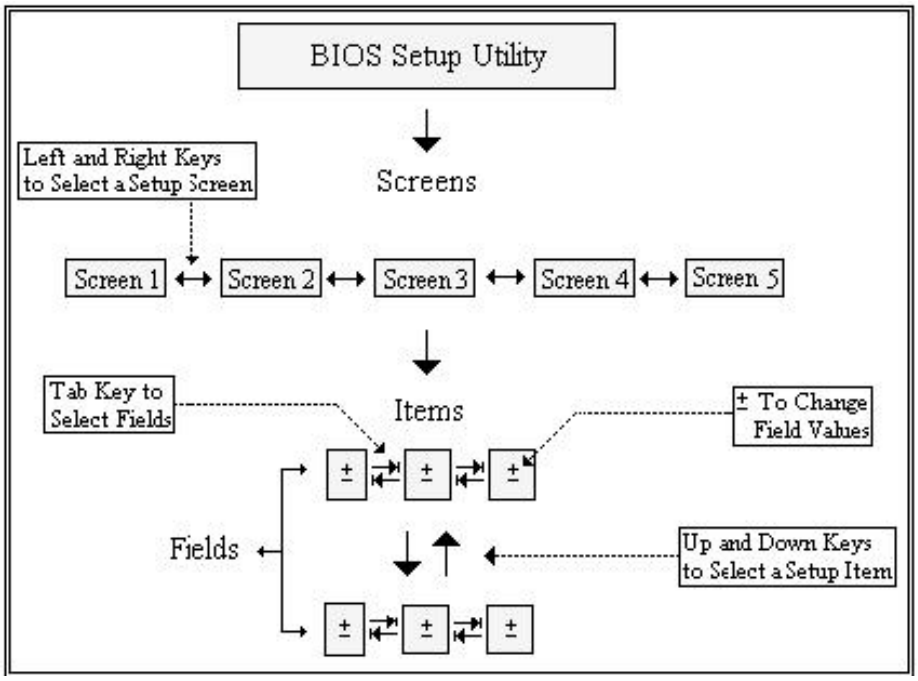
7. When message “Hit <DEL> if user want to run Setup” appear during POST, after turning on or rebooting the computer, press **<Tab>** key ***immediately*** to enter BIOS setup program.

This is the end of this section. If the terminal did not port correctly, please check the previous steps.

Chapter 3 BIOS Setting

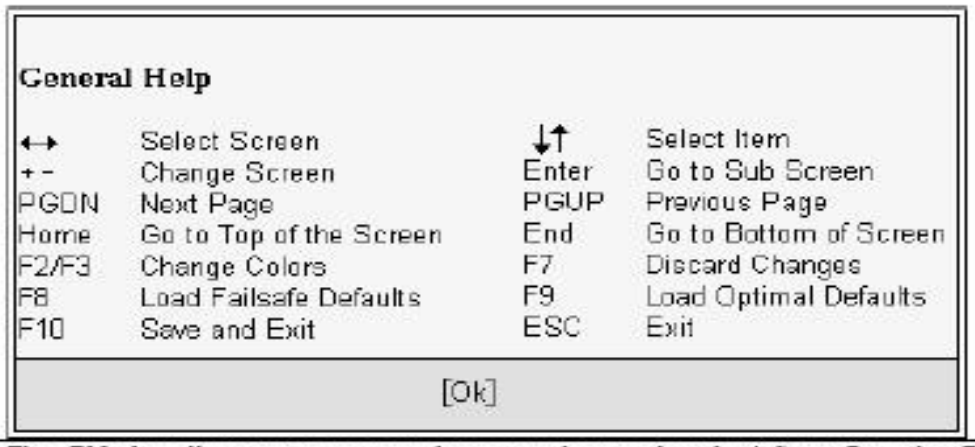
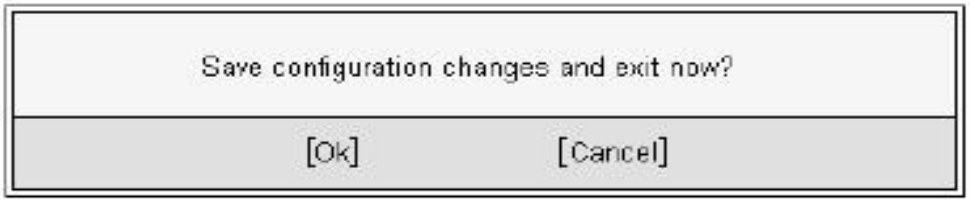
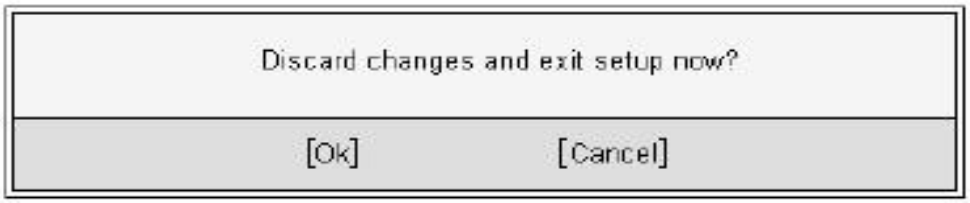
Power on the system, press the <Del> to run BIOS setup (remote mode is <Tab>). After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility 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.



Control Keys

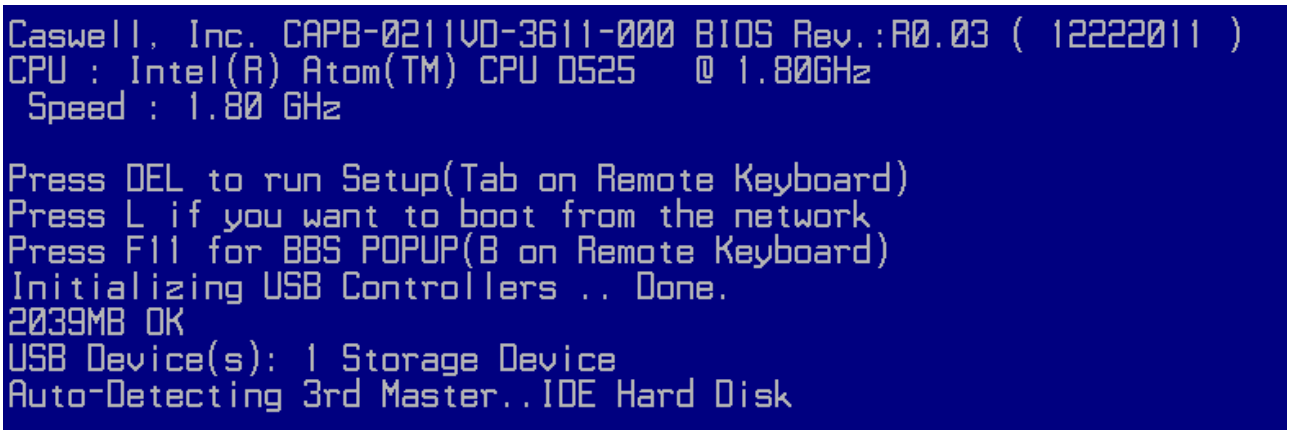
Key	Function
↑↓**Up /Down**	The Up and Down <Arrow> keys allow you to select a setup item or sub-screen.
→ ← **Left/Right**	The Left and Right <Arrow> keys allow you to select a setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
+ - Plus/ Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item. For example: Date and Time.
Tab	The <Tab> key allows you to select setup fields.

Hot Key	Description
F1	The <F1> key allows you to display the *General Help screen*. Press the <F1> key to open the *General Help screen*. 
F10	The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes. The following screen will appear:  Press the <Enter> key to save the configuration and exit. You can also use the <Arrow> key to select *Cancel* and then press the <Enter> key to abort this function and return to the previous screen.
ESC	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes. The following screen will appear:  Press the <Enter> key to discard changes and exit. You can also use the <Arrow> key to select *Cancel* and then press the <Enter> key to abort this function and return to the previous screen.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

Main Menu

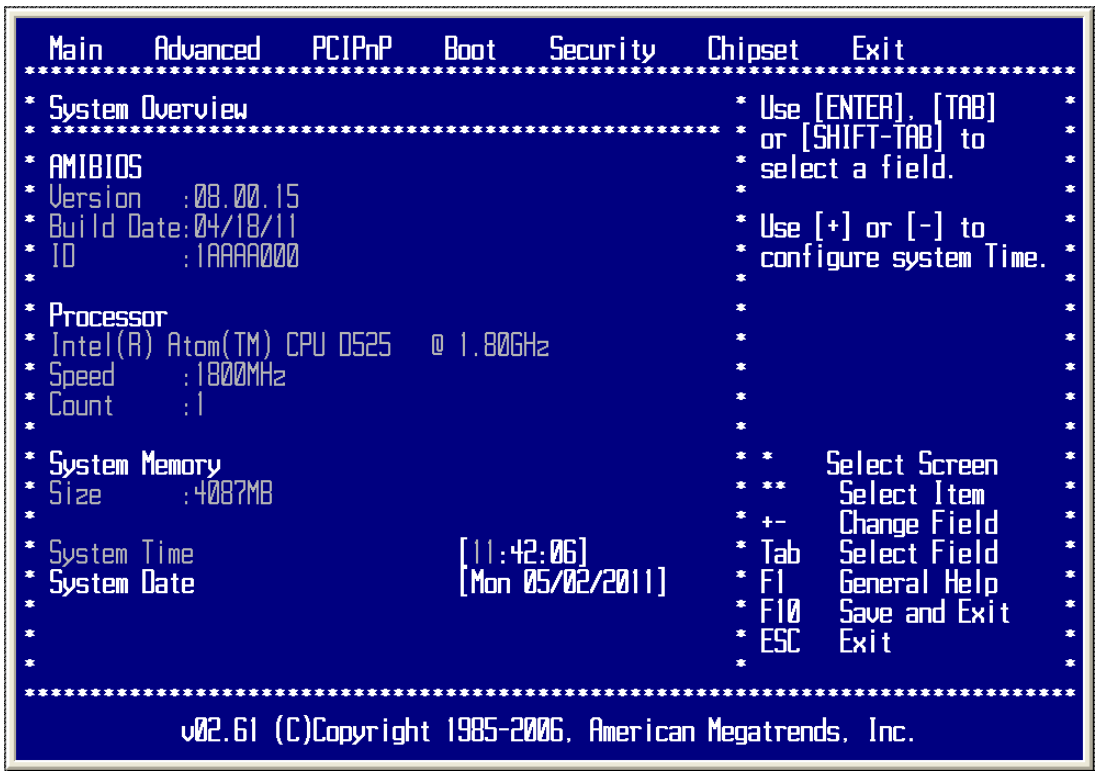
When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section.

In console mode:
Press “TAB” key can into BISO setup man menu
Press “B” key can popup device boot menu
Press “L” key can boot from network



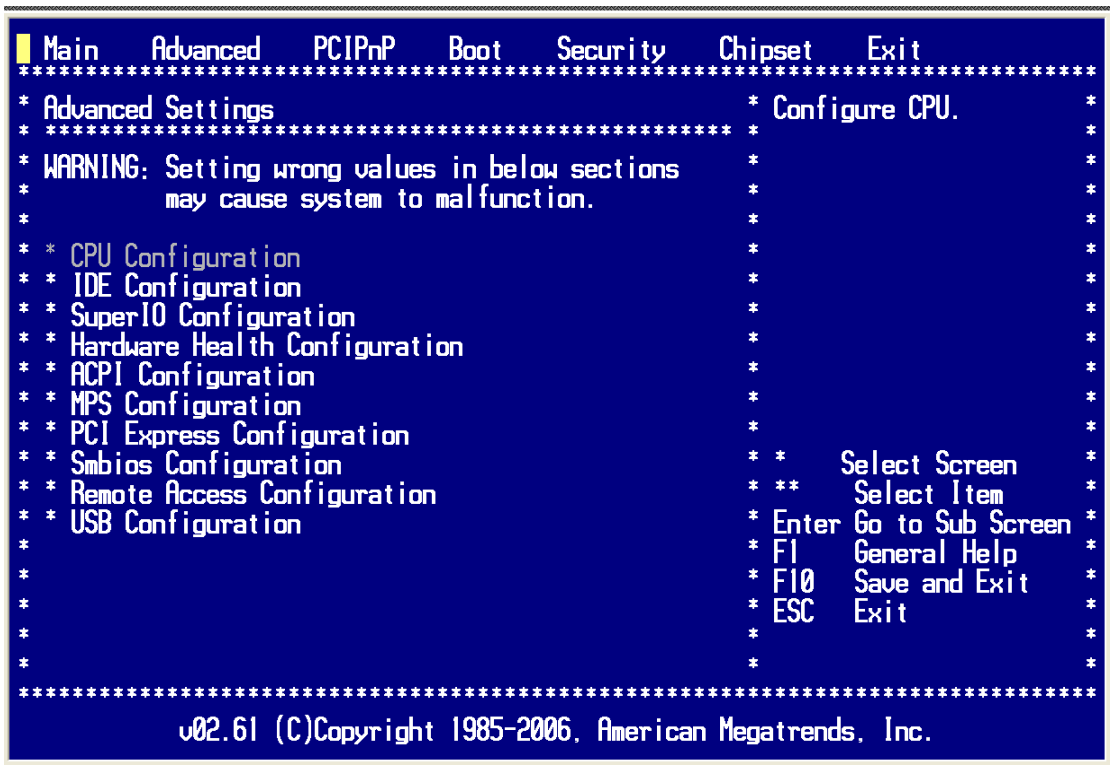
- **System Date / Time**

  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.



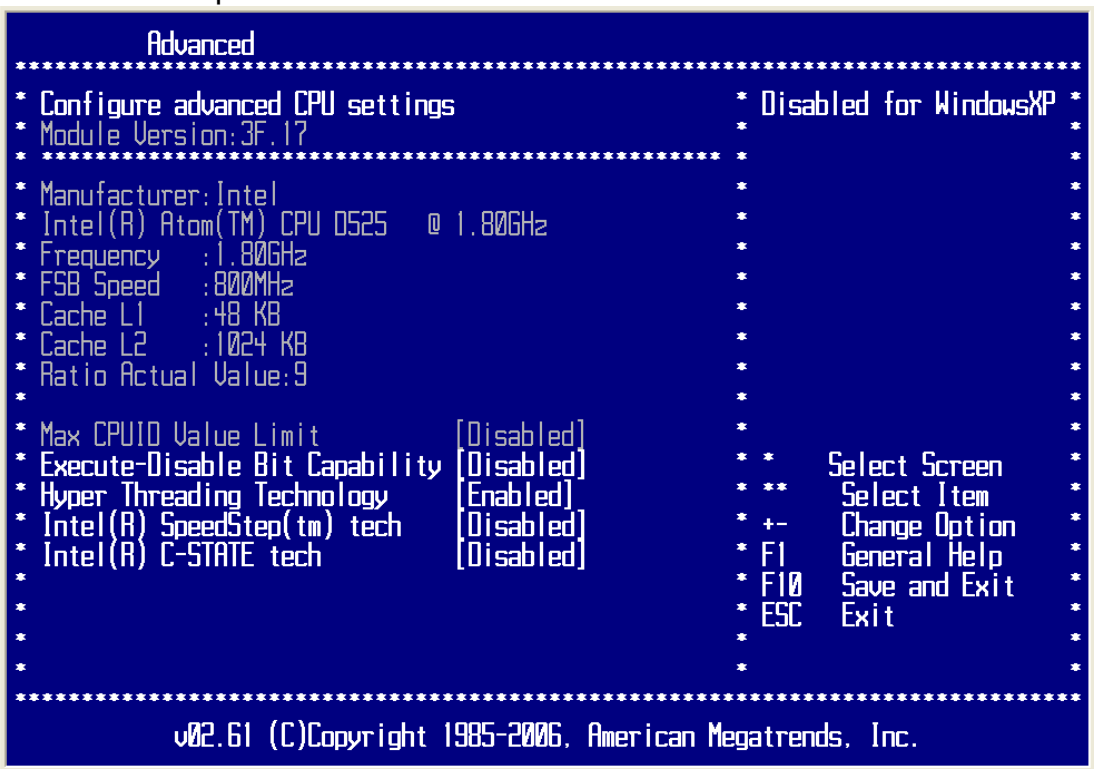
➢ Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



➢ CPU Configuration

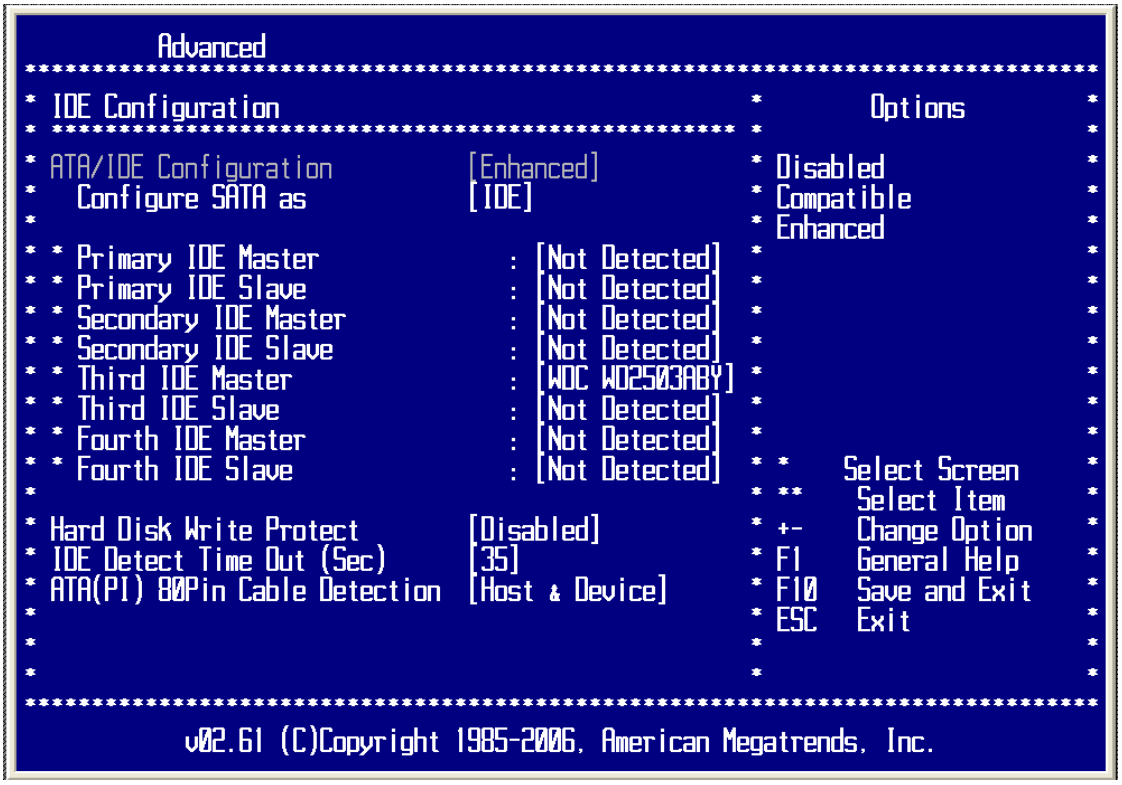
You can use this screen to select options for the CPU Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



Note: The CPU Configuration setup screen varies depending on the installed processor.

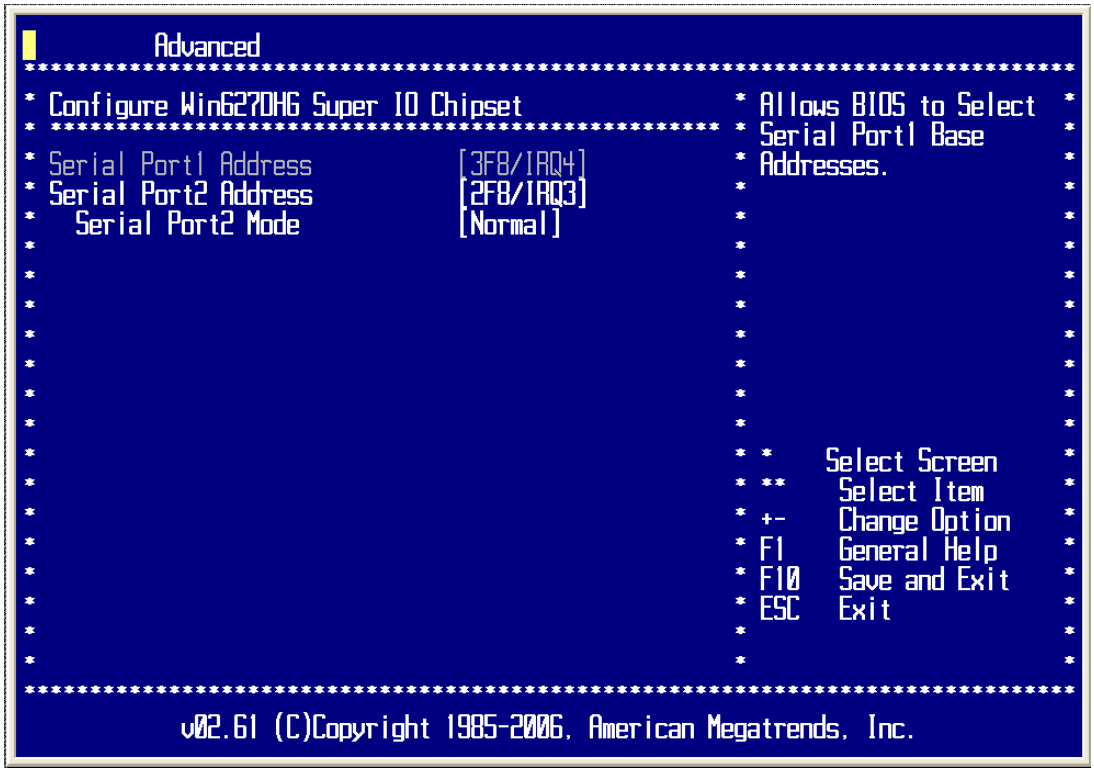
➢ IDE Configuration Setup

From the IDE Configuration screen, press <Enter> to access the sub menu. Use the up and down <Arrow> keys to select an item. The settings are described on the following pages.



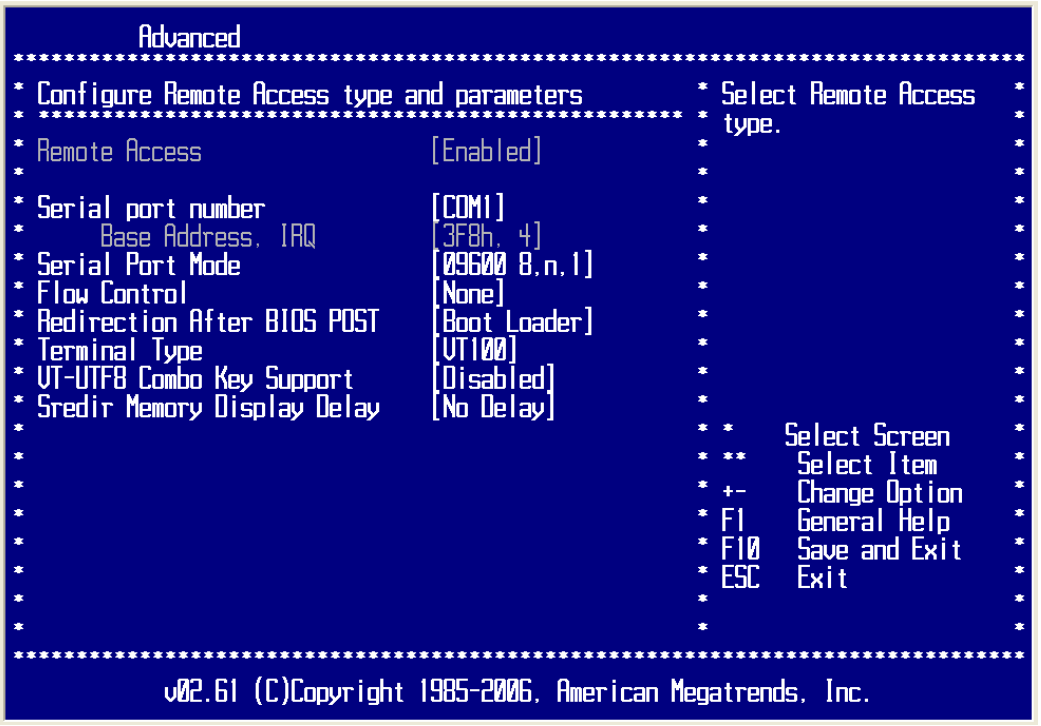
➢ SUPER IO CONFIGURATION

You can use this screen to select options for the Super I/O settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



➢ REMOTE ACCESS CONFIGURATION

You can use this screen to select options for the Remote Access Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Remote Access

You can disable or enable the BIOS remote access feature here.

Serial Port Number

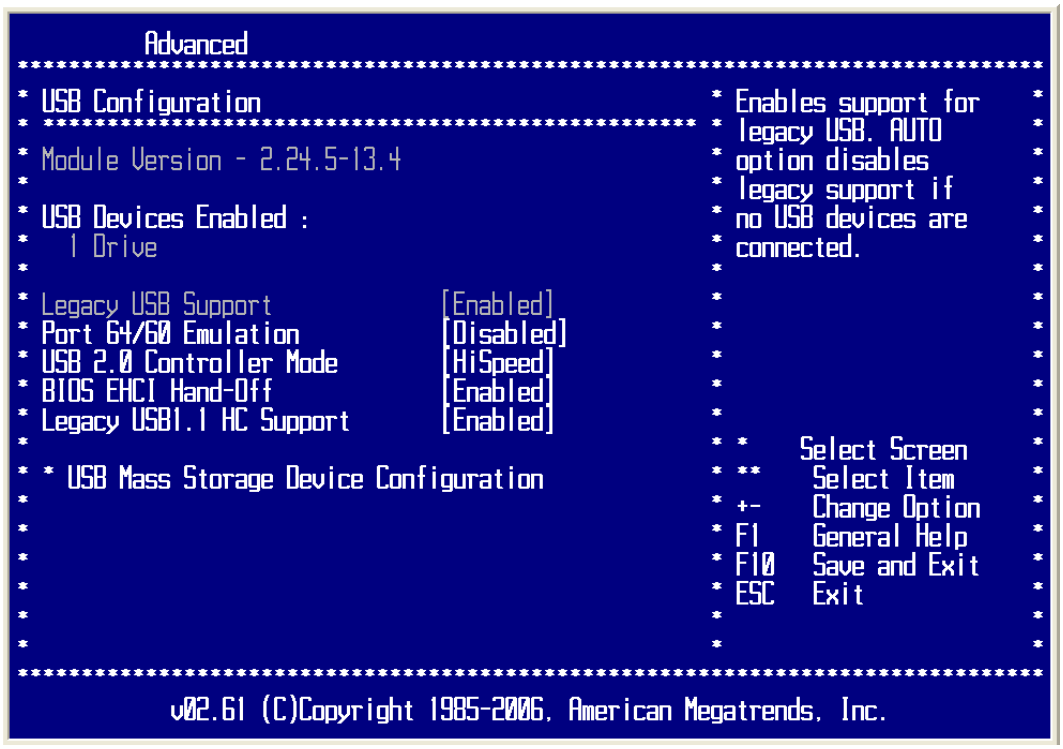
Select the serial port you want to use for console redirection. You can set the value for this option to either COM1 or COM2.

Serial Port Mode

Select the baud rate you want the serial port to use for console redirection.

➢ USB Configuration

You can use this screen to select options for the USB Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

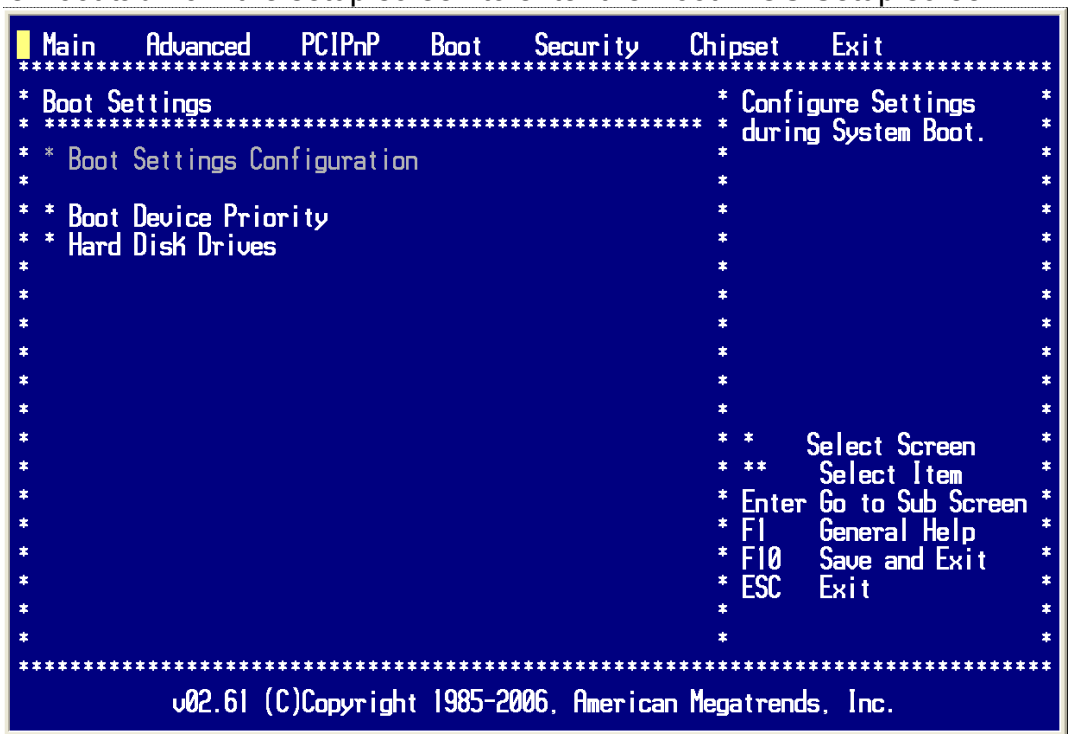


Legacy USB Support

Legacy USB Support refers to the USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support. The Optimal and Fail-Safe default setting is Disabled.

➢ Boot Settings

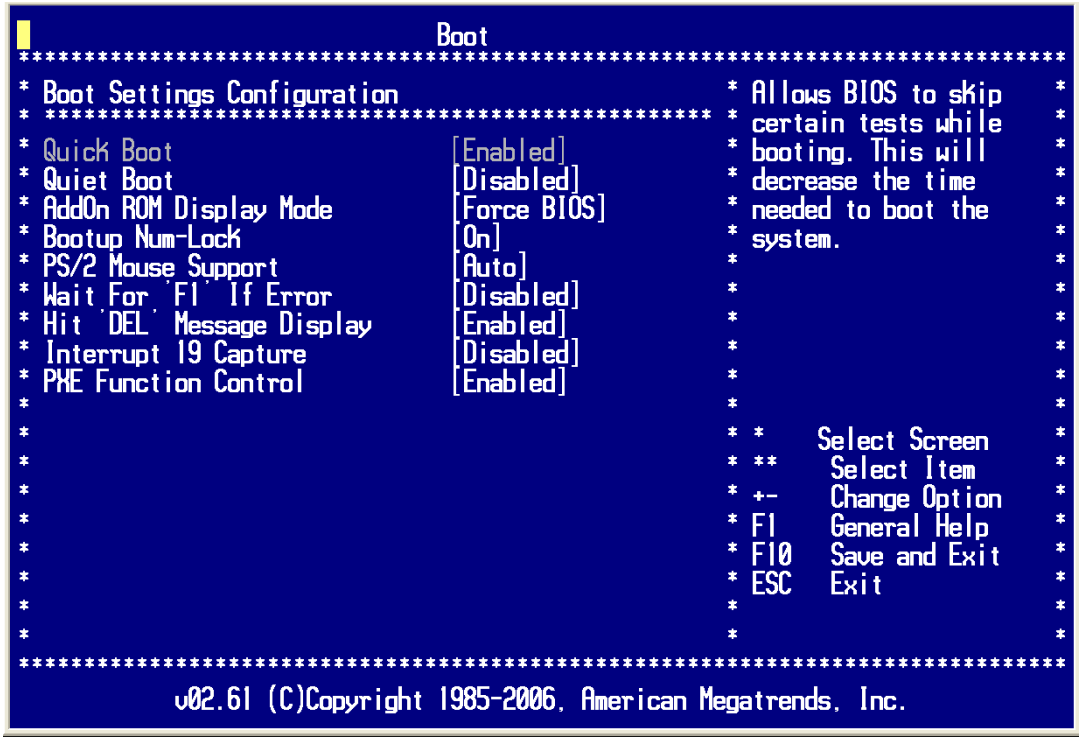
Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen.



➢ BOOT SETTINGS CONFIGURATION SCREEN

Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Quick Boot

The Optimal and Fail-Safe default setting is Enabled.

Quiet Boot

Set this value to allow the boot up screen options to be modified between POST messages or OEM logo. The Optimal and Fail-Safe default setting is *Disabled*

Add-On ROM Display Mode

Set this option to display add-on ROM (read-only memory) messages. The Optimal and Fail-Safe default setting is *Force BIOS*. An example of this is a SCSI BIOS or VGA BIOS.

Boot up Num-Lock

Set this value to allow the Number Lock setting to be modified during boot up. The Optimal and Fail-Safe default setting is *On.*

PS/2 Mouse Support

Set this value to allow the PS/2 mouse support to be adjusted. The Optimal and Fail-Safe default setting is Auto

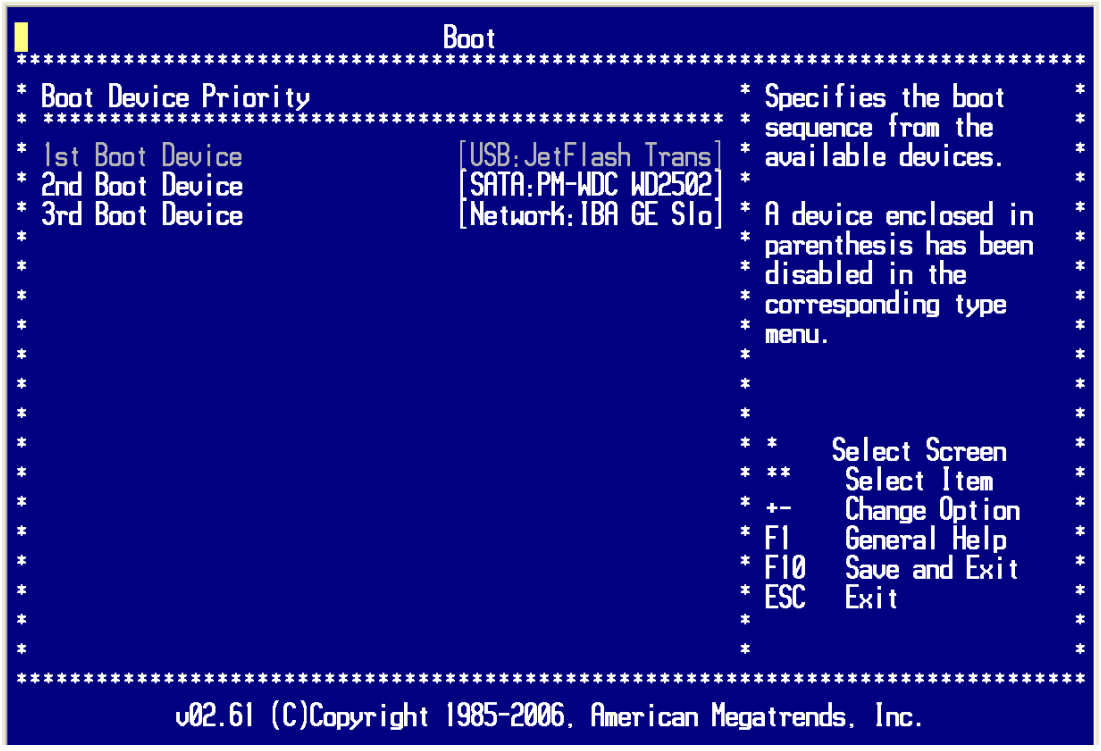
Interrupt 19 Capture

Set this value to allow option ROMs such as network controllers to trap BIOS interrupt 19.

➢ BOOT DEVICE PRIORITY

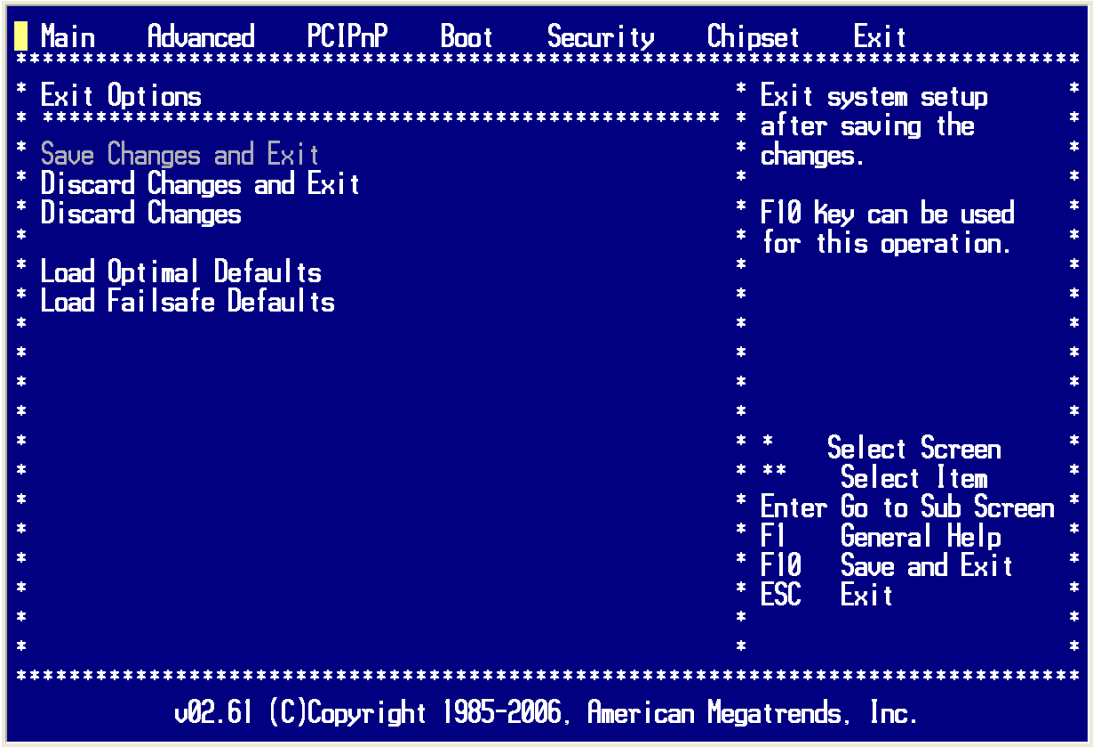
Boot Device Priority

Use this screen to specify the order in which the system checks for the device to boot from. To access this screen, select Boot Device Priority on the Boot Setup screen and press <Enter>. The following screen displays:



➢ Exit Menu

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. All Exit BIOS Setup options are described in this section. The Exit BIOS Setup screen is shown below.



Saving Changes and Exit
When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Exit Saving Changes from the Exit menu and press <Enter>.

Discarding Changes and Exit
Select this option to quit Setup without making any permanent changes to the system configuration. Select Exit Discarding Changes from the Exit menu and press <Enter>.

Discard Changes
Select Discard Changes from the Exit menu and press <Enter>.

Load Optimal Defaults
Automatically sets all Setup options to a complete set of default settings when you select this option. Select Load Optimal Defaults from the Exit menu and press <Enter>.

Load Fail-Safe Defaults
Automatically sets all Setup options to a complete set of default settings when you select this option. The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Select the Fail-Safe Setup options if your computer is experiencing system configuration problems.
Select Load Fail-Safe Defaults from the Exit menu and press <Enter>.