Chapter 6

Software Specifications

Get to know more about the Eee PC 4G (701) Notebook with a detailed look at the software specifications.

The information contained in the chapter can be quite useful when you are troubleshooting the system's hardware. Each item has its individual usage for you to Understand the software side of the notebook's architecture.

1. General Description

The specification is a guideline for BIOS development on 701 platforms. Anyone who needed the system BIOS information can check this document for reference.

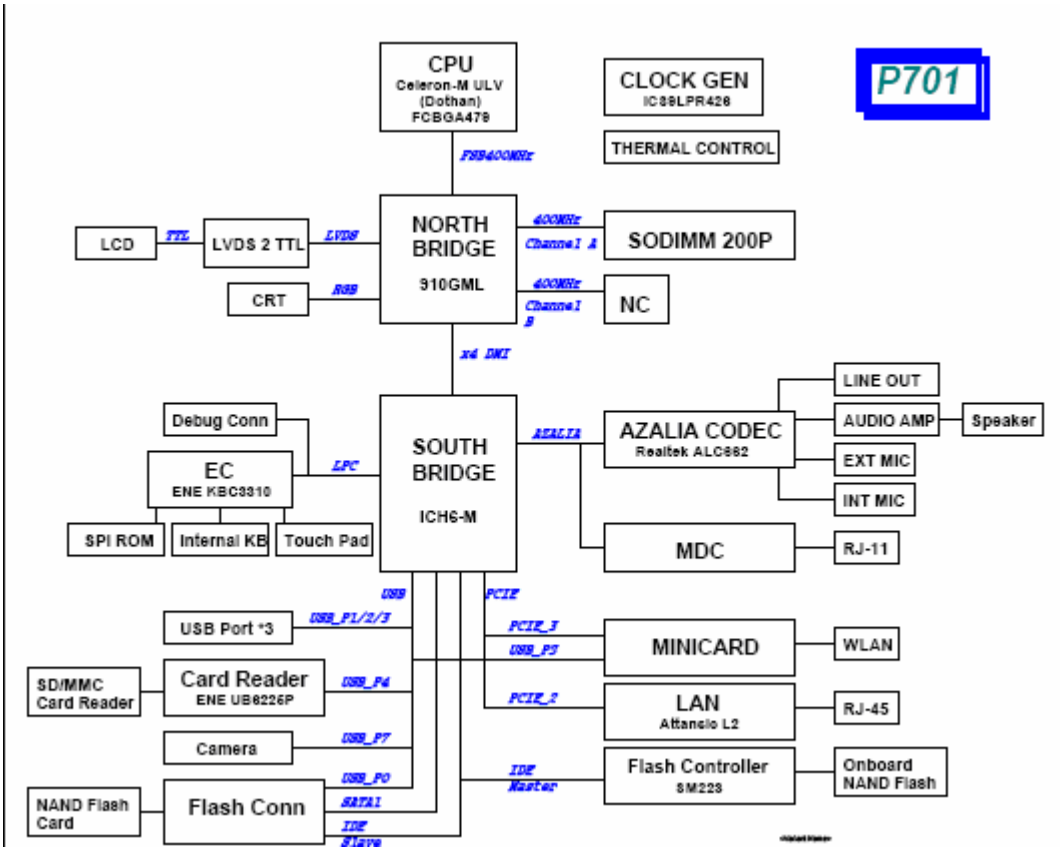
The general device specification, hardware block diagram, SMBUS, GPIO definition and so on are subjected to be depicted in this document. Hotkeys implementation and other BIOS features are also included in the document.

2. CPU, Chipsets & Main Devices

Item	Vendor	Specification	Part's Name	Revision
CPU	INTEL	Dothan	single core	
North Bridge	INTEL		910GML	
South Bridge	INTEL		ICH6M	
VGA		**Internal**		
HD Controller		Internal		
Audio Codec	REALTEK		ALC662	
USB	INTEL			
Lan	Athros		L2	
Flash memory			DDR2	
Clock Gen.	ICS		ICS9LR367	
Thermal				
EC	ENE		KB3310	
Wireless Lan	Atheros		AR5006X	
Camera	Azure Wave		AZWAVE	
CardReader	PANASONIC		ICS9LPR426AGLF-T	
modem	Askey		AFM6010NAM	

Table 2-1 Chipsets

Main component block diagram:



3. Device resources

3.1 Subsystem and Sub vendor ID of PCI Devices

Device	Bus/Dev/ Func	Function	Vendor ID	Device ID	Sub-Vendor ID	Sub-System ID
INTEL	0,0,0	Host Bridge	0x8086	0x2590	0x1043	0x1882
	0.2.0	VGA	0x8086	0x2592	0x1043	0x1882
	0.31.2	IDE controller	0x8086	0x2653	0x1043	0x8290
Realtek	0.27.0	Audio controller	0x8086	0x2668	0x1043	0x82A1
Athros	3.0.0	LAN	0x1969	0x2048	0x1969	0x2048

Table3-1

3.2 Devices I/O Base

Table3.2 IO Base Address

Devices	Base Address
ACPI Power Management	0x800

4. Specified Function Tables

The Specified Functions are controlled via General Purpose Pins of Chipsets, following tables are the definition of The Functions which controlled via the GPIO pins of South-Bridge (ICH6M).

Table 4-1. SB ICH6M GPIO Definition

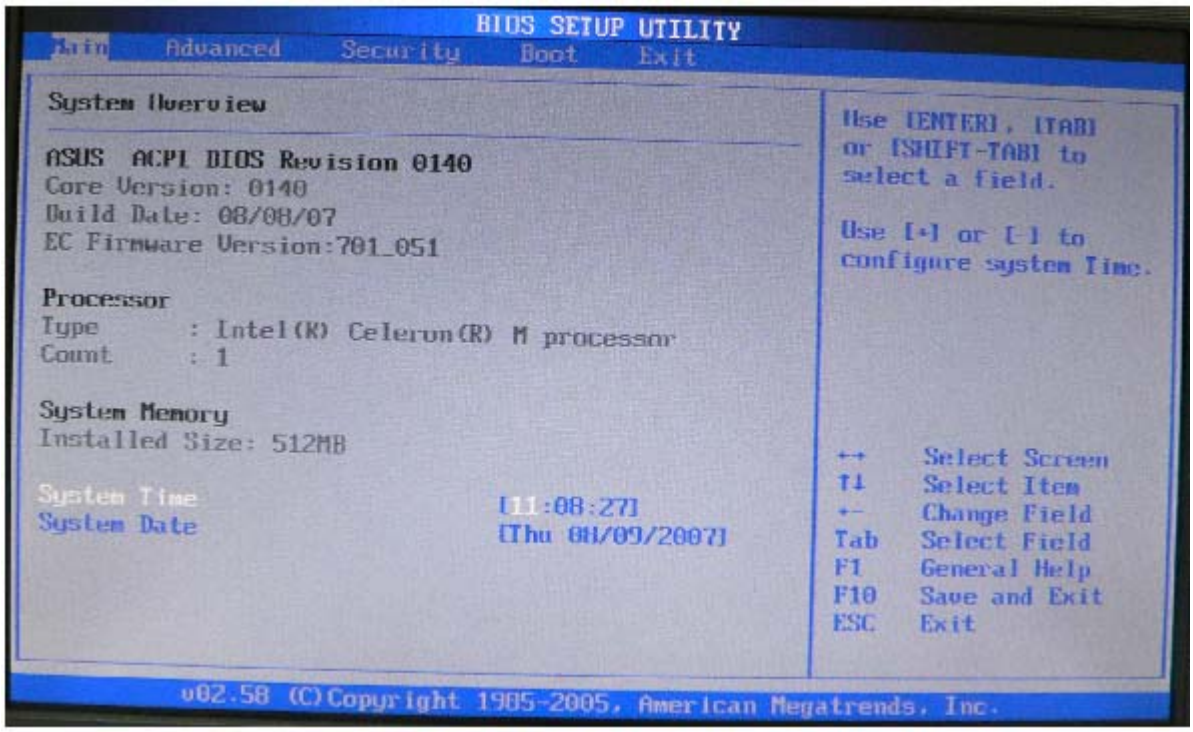
GPIO#	Definition	I/O	Active Polarity	Description
7	S_GPI7	Input		EC THRO_CPU
8	KBC_SCI#	Input	Low Level	SCI Event
12	S_GPI12	Input		Detect LID level
13	EXTSMI#	Input	Low Level	SMI event
19	WLAN_LED#	Output	High Level	Wireless Lan LED
21	CAMERA_EN#	Output	High Level	Camera Enable
23	SPEAKER_EN#	Output	Low Level	Speaker Enable
24	MINICARD_EN#	Output	Low Level	Minicard Enable
25	WLAN_ON#	Output	Low Level	Wireless Lan Enable
26	S_GPI26	Input		Detect PCB Version
27	CARD_READER_EN#	Output	Low Level	Card Read Enable
28	MODEM_EN#	Output	High Level	Modem Enable
29	PCBVER0	Input		Detect PCB Version
30	S_GPI30	Input		Detect PCB Version
31	PCBVER1	Input		Detect PCB Version

5. Setup Menu

701 system BIOS allows users to change some system hardware/function settings during POST (power on self test) stage, users may hit F2 key to enter SETUP mode in POST, the setup feature is categorized into 4 menus described as below.

5.1 Main Menu

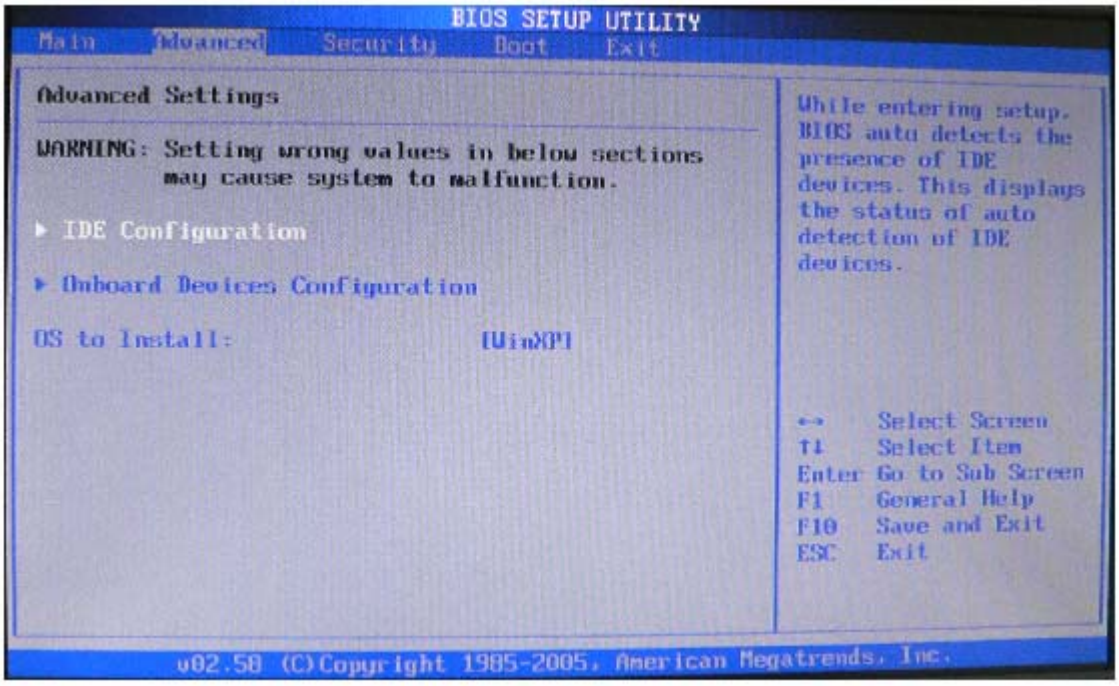
Main menu describes system overall information with some user changeable setting, it contains below items.



1. **System Firmware:** Current version for the system, EC and VGA BIOS.
2. **Type**: Show the installed CPU Brand String.
3. **Count:** Show the CPU core number.
4. **Installed Size:** Total system available memory.
5. **System Time:** Current time
6. **System Date:** Current date.

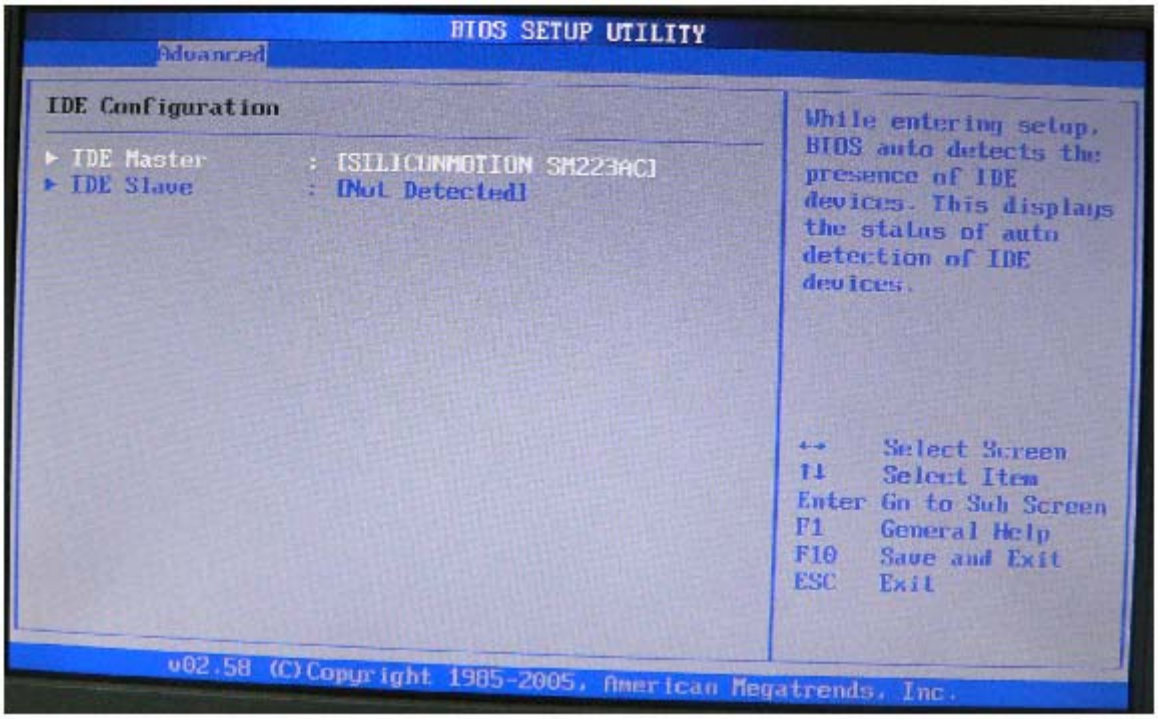
5.2 Advanced Menu

In advanced menu the users may configure IDE configuration, onboard devices and OS to install type settings may be changed as well. Detailed settings are described below.



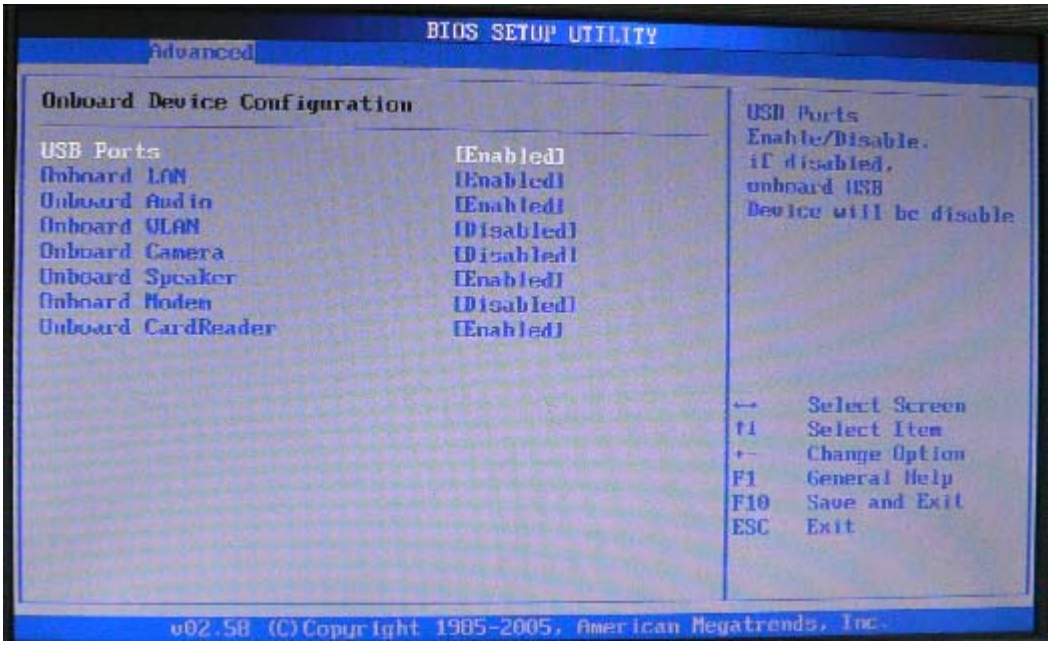
1. **IDE configuration:** See 5.2.1
2. **Onboard Devices Configuration:** See 5.2.2
3. **OS to Install:** select OS to Install Linux/WinXP/Normal

5.2.1 IDE Configuration



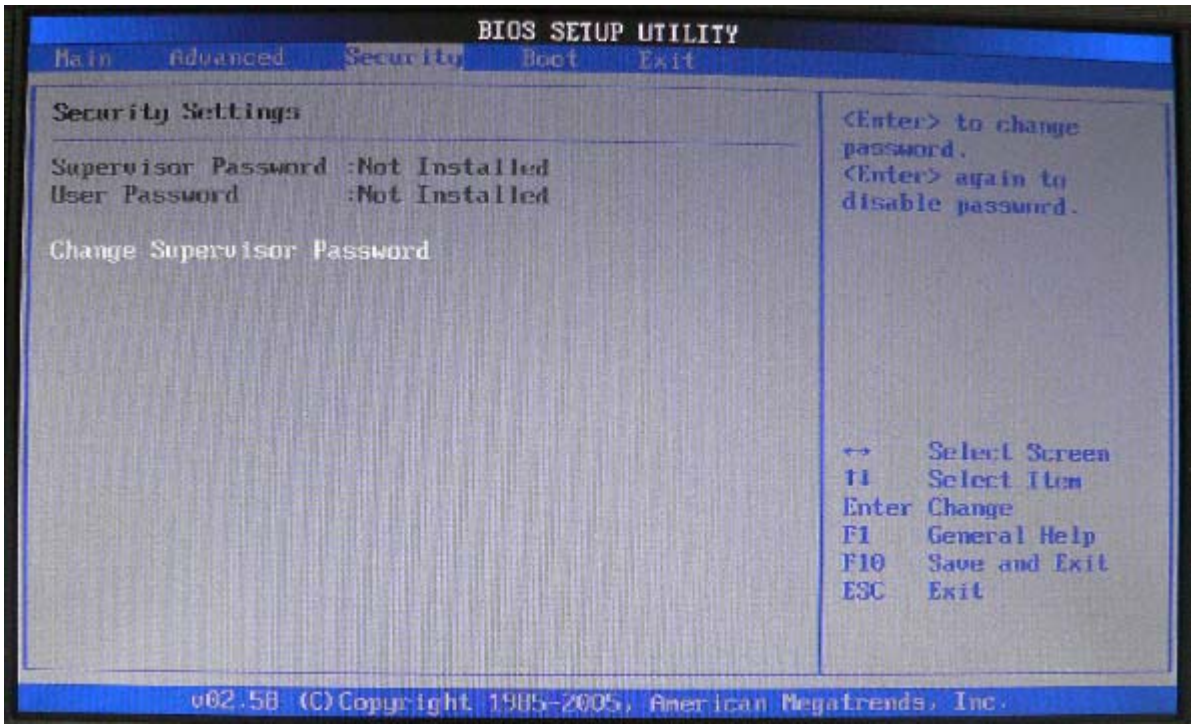
1. **IDE Master:** See details.
2. **IDE Slave:** See details.

5.2.2 Onboard Devices Configuration:



1. USB Ports: USB Ports enabled/disabled
2. Onboard LAN: Onboard LAN enabled/disabled
3. Onboard Audio: Onboard Audio enabled/disabled
4. Onboard Wlan: Onboard wireless LAN enabled/disabled
5. Onboard Camera: Onboard Camera enabled/disabled
6. Onboard Speaker: Onboard Speaker enabled/disabled
7. Onboard Modem: Onboard Modem enabled/disabled
8. Onboard Card Reader: Onboard Card Reader enabled/disabled

5.3 Security Menu



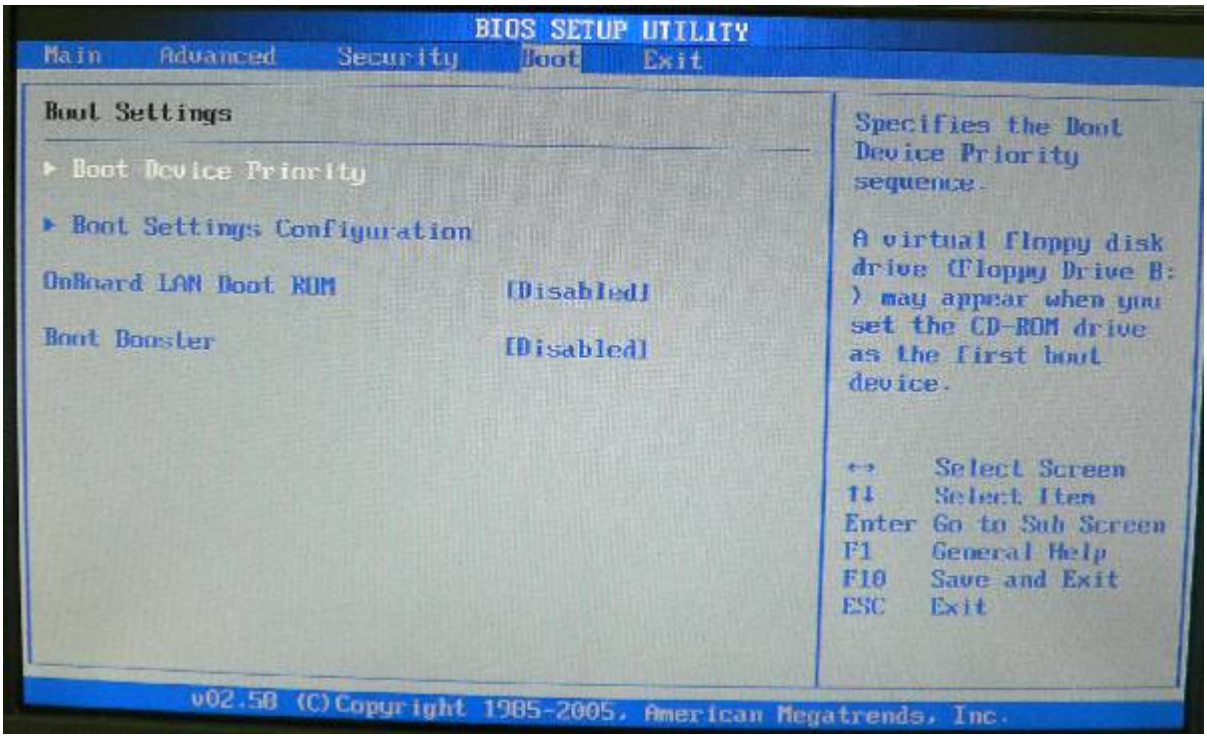
701 BIOS supports three kinds of password for security protection:

1. **Supervisor Password:** Users may set, change or erase system password, the password data is saved in non-volatile device (CMOS), system password check is done during POST(Power On Self Test). The BIOS will prompt a dialog message to ask user for password check when: The system has password stored, and “Password on boot” setting in BIOS SETUP is enabled. If password verification fails for 3 times, the system BIOS will halt the machine to inhibit users from operating.
   User can modify all setup item if user use Supervisor password to enter setup.

2. **User Password:** If your setting of BIOS have been modified by other, You can setting the function [Enable], and Key in your password and confirm, Don’t modify BIOS setting if no password.
   User is just able to modify some of setup item if user use user password to enter setup

5.4 Boot Menu

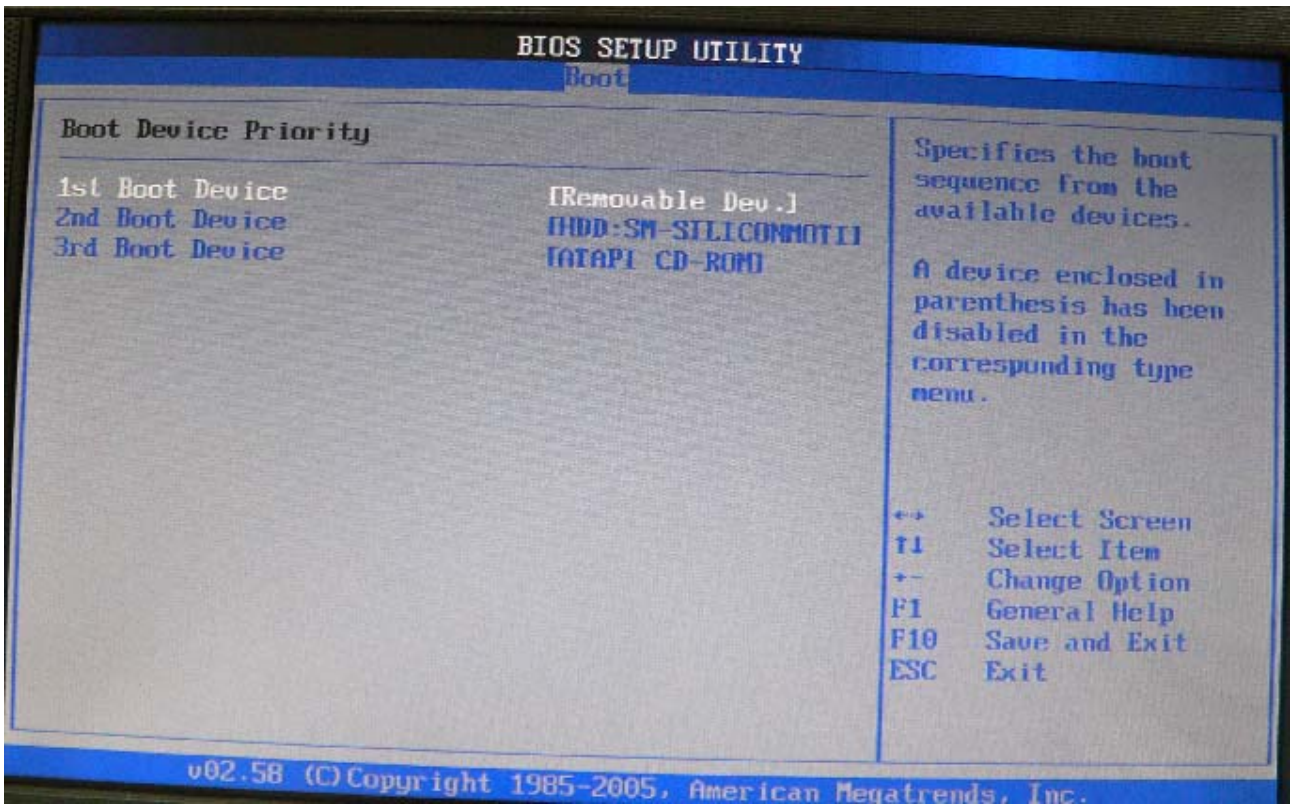
In this menu users can decide the boot sequence, as long as the device with highest boot priority exists, system BIOS will boot from it, device boot priority is adjusted by pressing "+","-" or space key on the selected (highlighted) item. 3 bootable devices fare listed in this menu (BIOS default boot sequence).



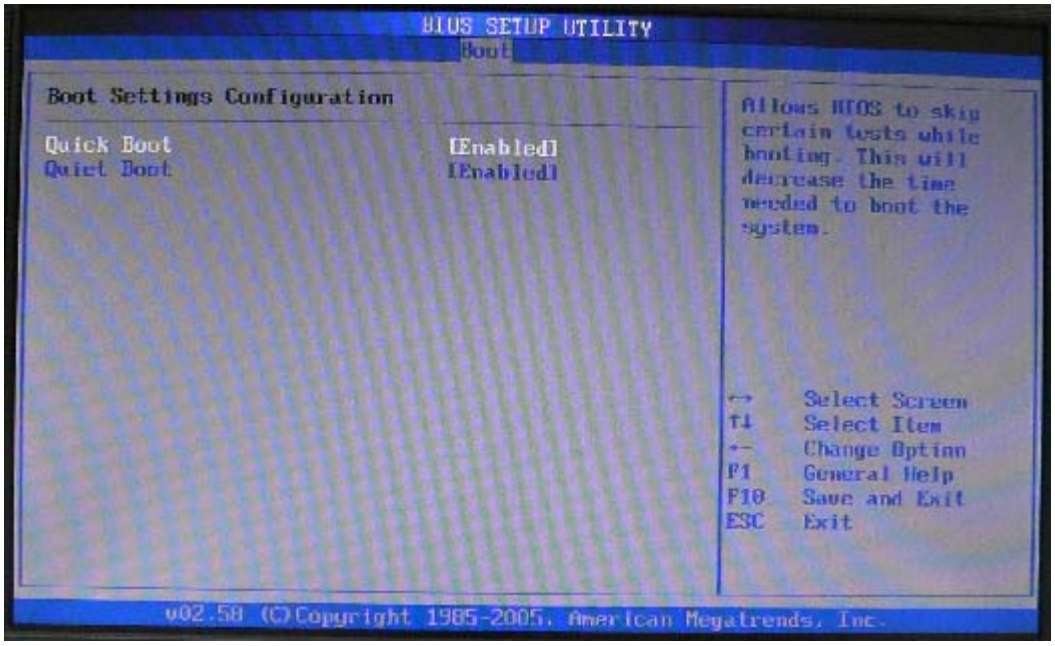
1. **Boot Device Priority:** See 5.6.1
2. **Boot Settings Configuration:** See 5.6.2
3. **Onboard LAN Boot ROM:** Boot from LAN

5.4.1 Boot Device Priority

In this menu specifies the boot sequence from the available devices. User can change boot devices priority.



5.4.2 Boot Settings Configuration



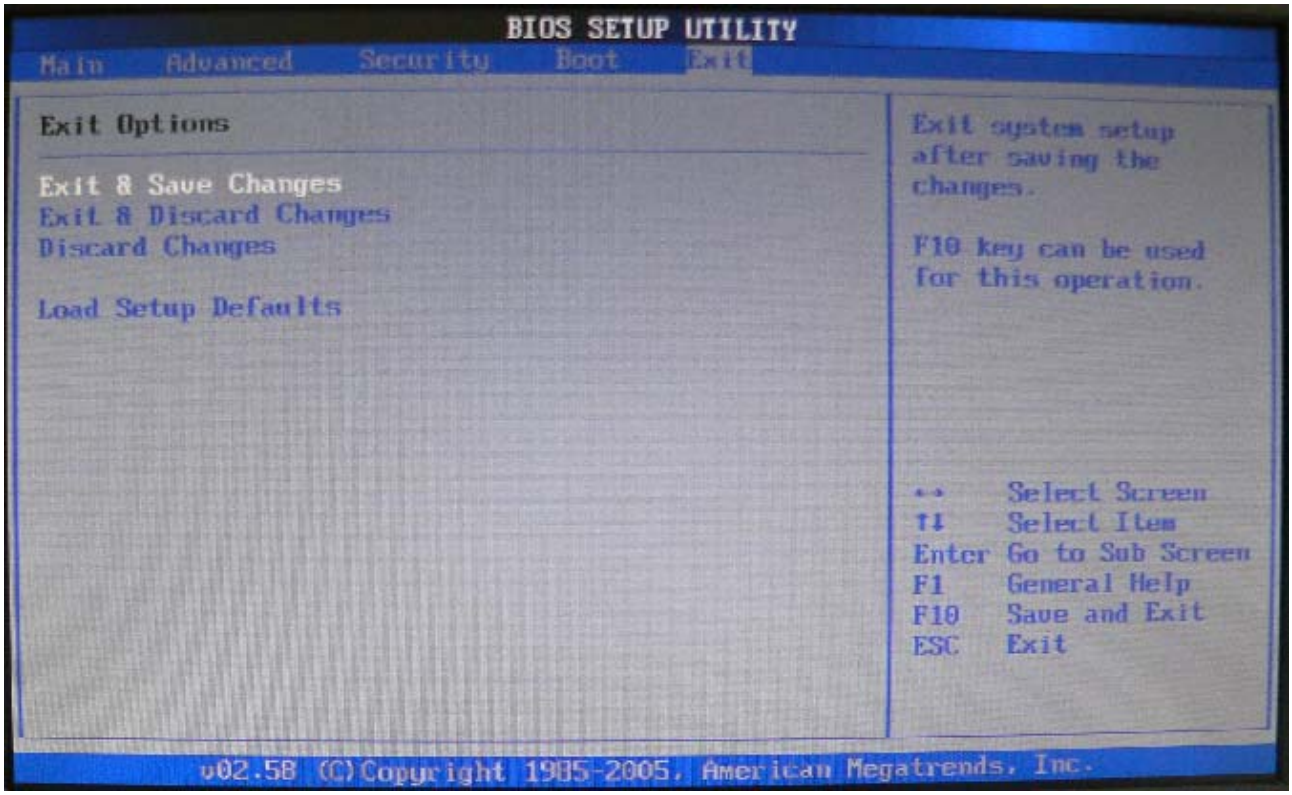
1. Quick Boot: [Enabled] decrease time when boot.

2**. Quiet Boot:** [Disable]: Display normal POST messages.

[Enable]: Displays OEM Logo instead of POST messages.

5.5 Exit Menu

In Exit BIOS setup, users may make final decision if they want to save the change just made or load BIOS default setting.



1 **Exit & Save Changes:** Exit system setup after saving the changes.
2 **Exit & Discard Changes:** Exit system setup without saving any changes.
3 **Discard Changes:** Discards changes done so far to any of the setup questions.
4 **Load setup Defaults:** Load Optimal Default values for all the setup questions.

6. Device resources

701 uses ICH6M chipset as its power management core logic, the chipset supports most features the ACPI 2.0 interface specifies, for ACPI 2.0 compliant OS. The BIOS has below features implemented:

(1). System sleep states:

The system supports:

(a). S0 state: The CPU and all devices are working.

(b). S3 state: system is in low power state, with all setting saved into RAM. Most of the devices are power off

(c). S4 state: The system is powered off, with all settings saved into hard disk.

(d). S5 states. Mechanical off.

6.1 Wake Up Event

PWM mode / Wake up Events	APM/ Non ACPI	ACPI			
	S1	**S1**	**S3**	**S4**	**S5**
Power Button	V		V	V	V
LID switch					
PME# (Lan)			V	V	
Any key			V		
RTC			V	V	
USB					

7 Embedded Controller (EC)

7.1 Hot Key

Table 8.1.0 Fn Hot-Key definition

Fn key	Description	Available
Fn+F1	Suspend switch	**ACPI+**ASUS010
Fn+F2	Wireless lan On/Off	**ACPI+** ASUS010
Fn+F3	Brightness Down	**ACPI+** ASUS010
Fn+F4	Brightness Up	**ACPI+** ASUS010
Fn+F5	Display Devices Switch	**ACPI+** ASUS010
Fn+F6	Task Manager	**ACPI+** ASUS010
Fn+F7	Volume On/Off (Mute)	**ACPI+** ASUS010
Fn+F8	Volume Down	**ACPI+** ASUS010
Fn+F9	Volume Up	**ACPI+** ASUS010
Fn+F11	Number lock on/off	**ACPI+** ASUS010
Fn+F12	Scroll lock on/off	**ACPI+** ASUS010

Note:

9. The applications/actions would be invoked only while ASUS01**0** driver was installed in O/S.

7.2 Battery Interface

Battery Type: ASUS

Battery Command Bus interface: ASUS

8. Thermal Policy

There is only one CPU fan in this project. The controlling method is to plan several step thermal ranges then every range mapping to different fan speed. The following table is thermal policy table and Fan Curve.