MI801

Intel® Pineview-D +ICH8M

Mini-ITX Motherboard

USER'S MANUAL

Version 1.1

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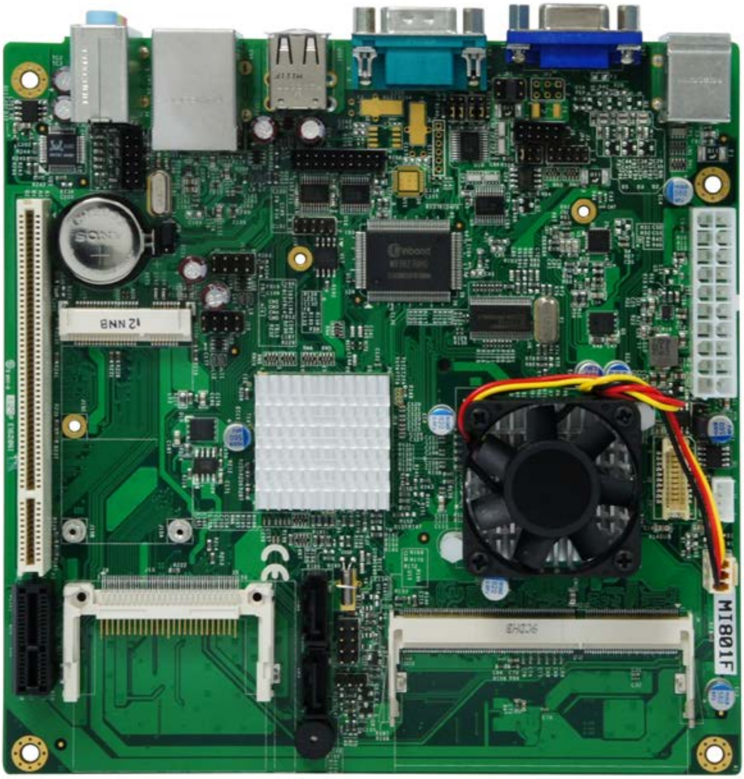
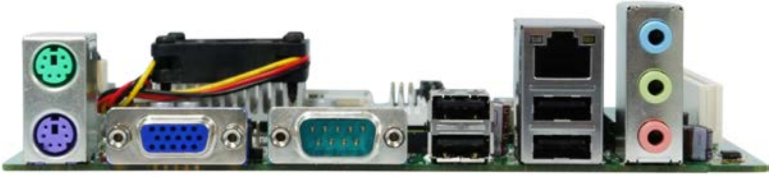
Introduction



MI801F Mini ITX Motherboard



MI801/MI801F Edge Connectors

Checklist

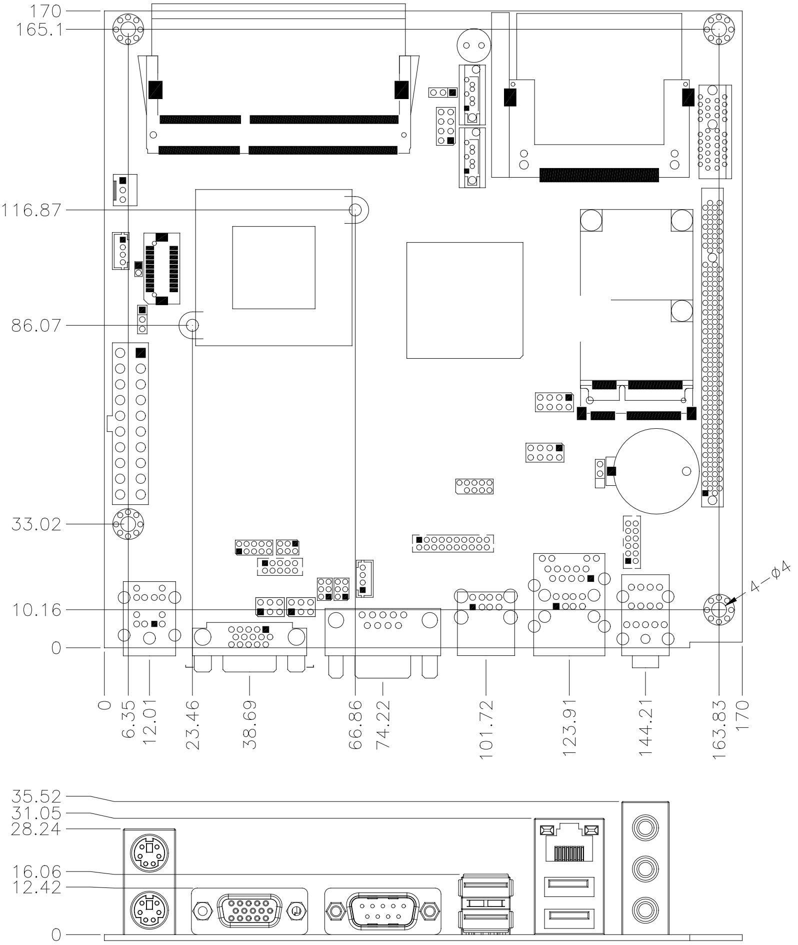
Your MI801 package should include the items listed below.

- The MI801 Mini-ITX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (USB, Serial port, Serial ATA)

MI801 Specifications

Form Factor	Mini-ITX
CPU Type	Intel® Atom D525 processor (45nm Technology) 22mm x 22mm, Micro-FCBGA8 (13W)
CPU Speed	**1.8GHz / 1MB L2 cache**
BIOS	**AMI** BIOS, support ACPI Function
Chipset	ICH8M: 31mm x 31mm, 676-pin T-PBGA (2.4W)
Memory	DDR3-800MHz SO-DIMM x 1 (w/o ECC), Max. 4GB , Single channel
VGA	Intel® Integrated Graphics Controller (GMA3150) Luna Pier Refresh supports DirectX 9 Graphic (400MHz) VGA x 1
LVDS	18-bit one channels LVDS interface w/DF13 socket x1 **[MI801F]**
LAN	Realtek 8111E x 1
USB	ICH8M built-in USB 2.0 host controller, support 8 ports
Serial ATA Ports	ICH8M built-in SATA controller, supports 2 ports
Parallel IDE	ICH8M built-in one channel Ultra DMA 33/66/100, for CF Type II [MI801F]
Audio	ICH8M built-in audio controller w/ Realtek ALC662 Codec Supports 5.1 CH audio (Line-out, Line-in & Microphone)
LPC I/O	Winbond W83627UHG-P: COM1(RS232/422/485) for **MI801F** / COM1(RS232 only) for **MI801** COM2 ~COM4 (RS232 only) Hardware monitor (2 thermal inputs, 4 voltage monitor inputs, VID0-4 & 1 x Fan Header)
Digital IO	4 in & 4 out
Keyboard/Mouse Connector	Yes
Expansion Slots	PCI slot x 1 PCI-Express (1x) slot x1[**MI801F**] Mini PCI-e x 1 [**MI801F**] ** Total 3 x mounting holes for full-sized(x2) & half-sized (x1)
Edge Connector [MI801 default]	PS/2 KB+MS stack connector x 1 DB15 connector x 1 for VGA DB9 connector x1 for COM#1 Dual USB stack connector x 1 for USB 1~ 2 Dual USB + RJ45 x1 for USB 3/4 + LAN Audio 3-port connector x 1 (Line-out, Line-in, MIC)
Onboard Header/Connector	2x4 pins header x 2 for 4 USB ports 2x6 pins header x1 for front audio DF11 type 10 pins box header x 1 for COM # 2 DF11 type 20 pins box header x 1 for COM #3 & COM #4 2x5 pins header x 1 for Digital I/O DF13 box header x 1 for LVDS [**MI801F**] CF type II connector x 1 @ component side [**MI801F**]
Watchdog Timer	Yes (256 segments, 0, 1, 2…255 sec/min)
Power Connector	ATX (20-pins)
Others	CPU cooler for D525 included
RoHS	Yes
Board Size	170mm x 170mm

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the MI801 in order to set up a workable system. The topics covered are:

Installing the Memory

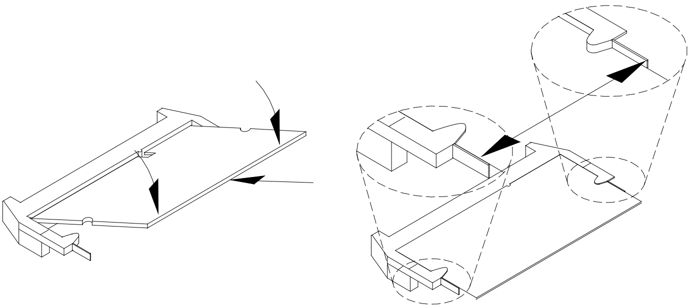
The MI801 board supports one DDR3-800 memory.

Remarks:
D525 supports SO-DIMM x 1 (w/o ECC), Max. 4GB, Single channel

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

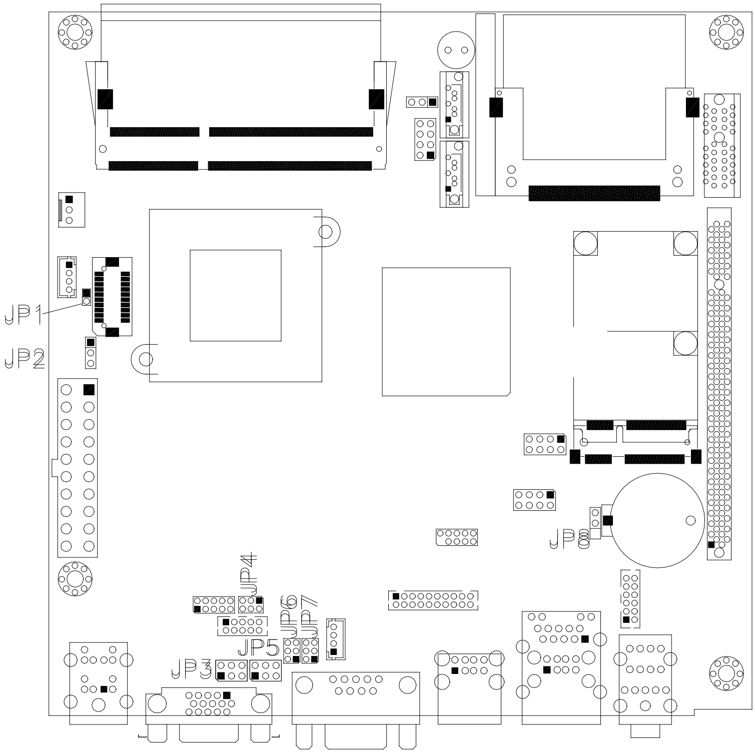
1. Hold the DDR3 module so that the key of the DDR3 module aligns with that on the memory slot. Insert the module into the socket at a slight angle (approximately 30 degrees). Note that the socket and module are both keyed, which means that the module can be installed only in one direction.
2. To seat the memory module into the socket, apply firm and even pressure to each end of the module until you feel it slip down into the socket.
3. With the module properly seated in the socket, rotate the module downward. Continue pressing downward until the clips at each end lock into position.
4. To remove the DDR3 module, press the clips with both hands.



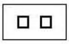
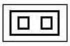
Setting the Jumpers

Jumpers are used on MI801 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on MI801 and their respective functions.

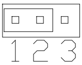
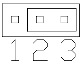
Jumper Locations on MI801



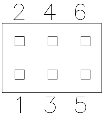
JP1: LCD Brightness Control Signal Level [MI801F]

JP1	Setting	Panel Voltage
	Open	3.3V level
	Close	5V level

JP2: LCD Panel Power Selection[MI801F]

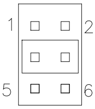
JP2	LCD Panel Power
	3.3V
	5V

JP4, JP6, JP7: RS232/422/485 (COM1) Selection [MI801F]

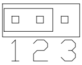
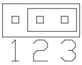


COM1 Function	RS-232	RS-422	RS-485
Jumper Setting (Pin closed)	JP4: 1-2 JP6: 3-5 & 4-6 JP7: 3-5 & 4-6	JP4: 3-4 JP6: 1-3 & 2-4 JP7: 1-3 & 2-4	JP4: 5-6 JP6: 1-3 & 2-4 JP7: 1-3 & 2-4

JP5: COM2 RS232 RI/+5V/+12V Power Setting

JP5	Setting	Function
	Pin 1-2 Short/Closed	+12V
	Pin 3-4 Short/Closed	RI
	Pin 5-6 Short/Closed	+5V

JP8: Clear CMOS Setting

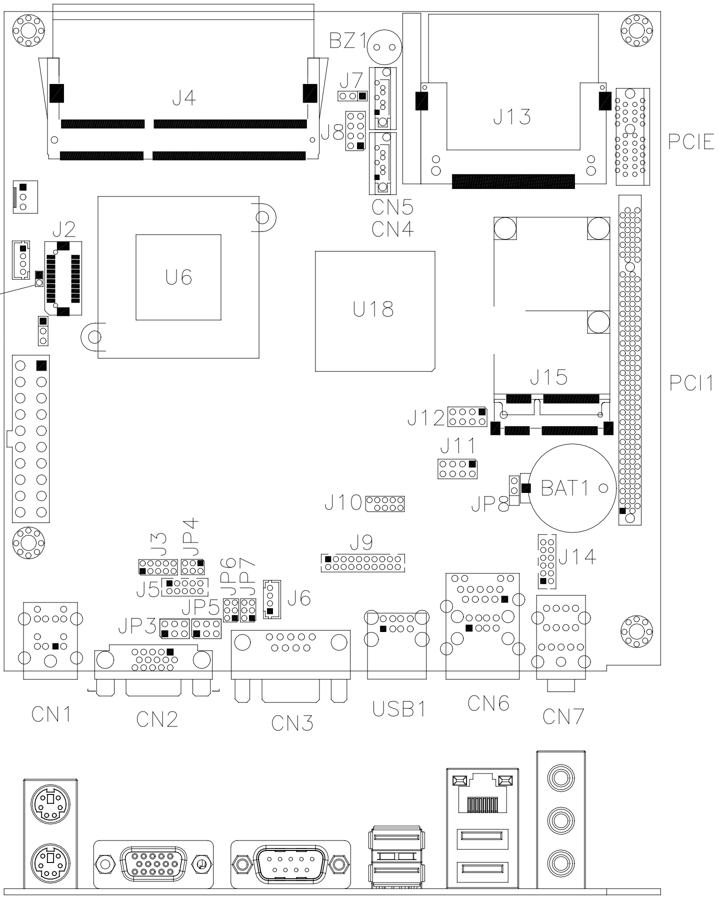
JP8	Setting
	Normal
	Clear CMOS

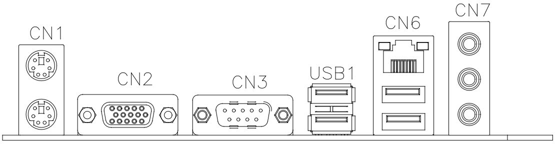
Connectors on MI801

The connectors on MI801 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on MI801 and their respective functions.

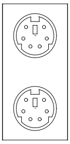
Remarks: The connectors which are indicated belong to MI801F will not in MI801.

Connector Locations on MI801



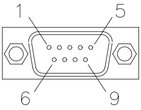


CN1: PS/2 Keyboard and PS/2 Mouse Connectors

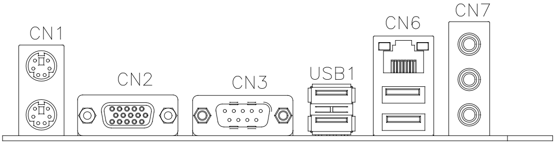


Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	GND
5V	4	4	5V
Keyboard clock	5	5	Mouse clock
N.C.	6	6	N.C.

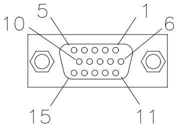
CN3: COM1 RS232/RS422/RS485
[MI801 only supports RS232]



Pin #	Signal Name		
	RS-232	**R2-422**	**RS-485**
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC



CN2: VGA Connector



VGA

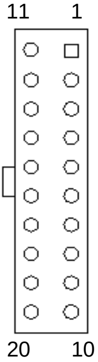
Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

USB1: USB1/2 Ports

CN6: 10/100/1000 RJ-45 and USB3/4 Ports

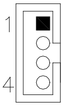
CN7: Line-in, Line-out & Microphone Connector

ATX1: ATX Power Supply Connector



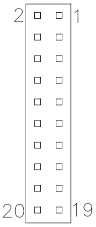
Signal Name	Pin #	Pin #	Signal Name
3.3V	11	1	3.3V
-12V	12	2	3.3V
Ground	13	3	Ground
PS-ON	14	4	+5V
Ground	15	5	Ground
Ground	16	6	+5V
Ground	17	7	Ground
-5V	18	8	Power good
+5V	19	9	5VSB
+5V	20	10	+12V

J1: LCD Backlight Connector[MI801F]



Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Brightness Control
4	Ground

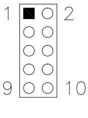
J2: LVDS (18bit) Connector[MI801F]



DF13-20

Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
NC	10	9	NC
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

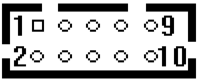
J3: Digital I/O



Signal Name	Pin	Pin	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

J4: DDR3 SO-DIMM

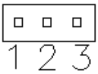
J5: COM2/RS232 Serial Port



Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	2	RXD, Receive data
TXD, Transmit data	3	4	DTR, Data terminal ready
GND, ground	5	6	DSR, Data set ready
RTS, Request to send	7	8	CTS, Clear to send
RI, Ring indicator	9	10	Not Used

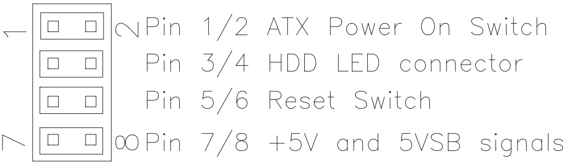
J7: Power LED

The power LED indicates the status of the main power switch.



Pin #	Signal Name
1	Power LED
2	No connect
3	Ground

J8: System Function Connector


1
2
7
8
Pin 1/2 ATX Power On Switch
Pin 3/4 HDD LED connector
Pin 5/6 Reset Switch
Pin 7/8 +5V and 5VSB signals

ATX Power ON Switch: Pins 1 and 2

This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

Hard Disk Drive LED Connector: Pins 3 and 4

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

Pin #	Signal Name
4	HDD Active
3	+3.3V

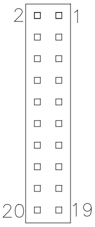
Reset Switch: Pins 5 and 6

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

+5V and 5VSB Signals: Pins 7 and 8

Pin #	Signal Name
7	+5V
8	+5VSB

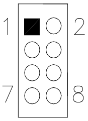
J9: COM3/RS232, COM4/RS232 Serial Port



Signal Name	Pin #	Pin #	Signal Name
DSR3	2	1	DCD3
RTS3	4	3	RXD3
CTS3	6	5	TXD3
RI3	8	7	DTR3
NA	10	9	Ground
DSR4	12	11	DCD4
RTS4	14	13	RXD4
CTS4	16	15	TXD4
RI4	18	17	DTR4
NA	20	19	Ground

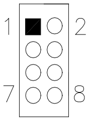
J10: SPI Flash Connector (factory use only)

J11: USB5/USB6 Connector



Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Ground
D-	3	4	D+
D+	5	6	D-
Ground	7	8	Vcc

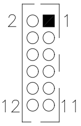
J12: USB7/USB8 Connector



Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Ground
D-	3	4	D+
D+	5	6	D-
Ground	7	8	Vcc

J13: Compact Flash Connector [MI801F]

J14: Audio Connector (DF11 Connector)



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	2	1	LINEOUT_L
Ground	4	3	JD_FRONT
LINEIN_R	6	5	LINEIN_L
Ground	8	7	JD_LINEIN
MIC_R	10	9	MIC_L
Ground	12	11	JD_MIC1

J15: Mini PCIE Connector [MI801F]

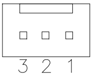
CN4, CN5: SATA Connectors

PCI1: PCI Slot (supports 2 Master)

PCIE1: PCIEX1 Slot [MI801F]

FAN1: CPU Fan Power Connector

This is a 3-pin header for system fans. The fan must be a 12V (500mA).



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

BIOS Setup

This chapter describes the different settings available in the AMI (American Megatrends, Inc.) BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system’s ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

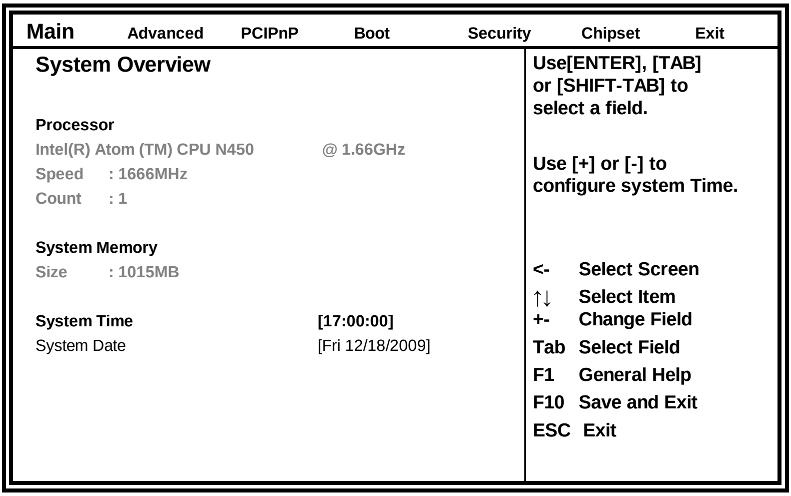
In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Main BIOS Setup

This setup allows you to record some basic hardware configurations in your computer system and set the system clock.

BIOS SETUP UTILITY



```
Main      Advanced    PCIPnP      Boot          Security       Chipset       Exit
 System Overview                                      Use[ENTER], [TAB]
                                                      or [SHIFT-TAB] to
                                                      select a field.
 Processor
 Intel(R) Atom (TM) CPU N450      @ 1.66GHz
 Speed     : 1666MHz                                  Use [+] or [-] to
 Count     : 1                                        configure system Time.

 System Memory
 Size      : 1015MB                                   <-    Select Screen
                                                      ↑↓    Select Item
 System Time                      [17:00:00]          +-    Change Field
 System Date                      [Fri 12/18/2009]    Tab   Select Field
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit
```

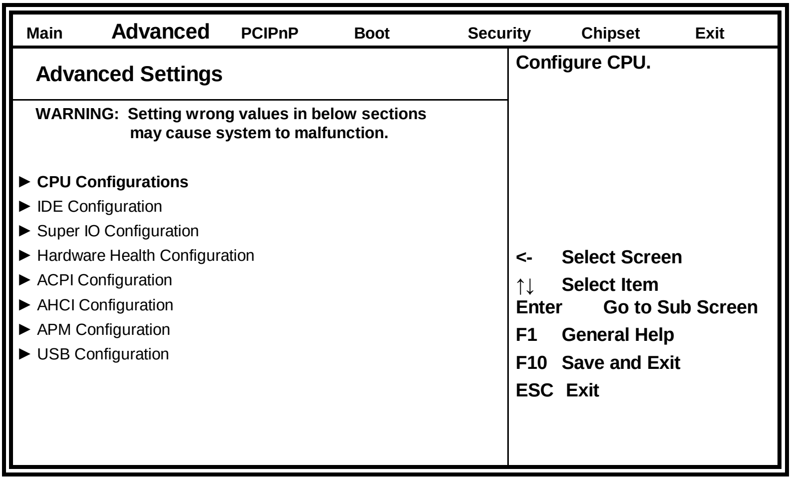
***Note**:* *If the system cannot boot after making and saving system changes with Setup, the AMI BIOS supports an override to the CMOS settings that resets your system to its default.*

Warning: *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

BIOS SETUP UTILITY

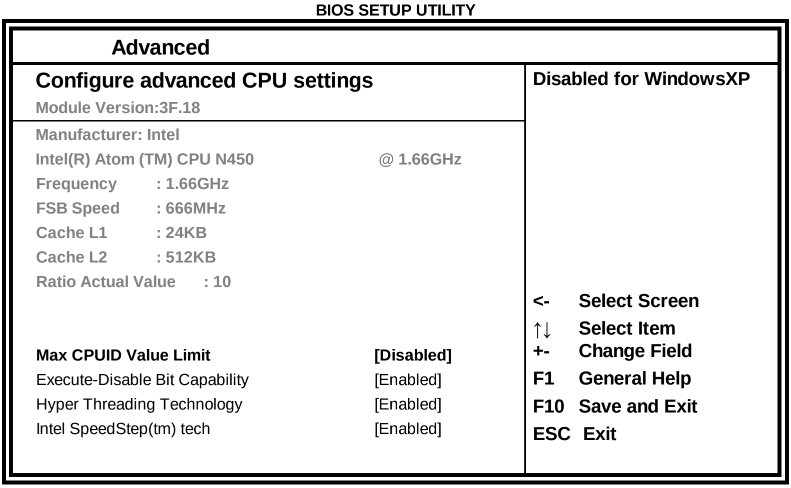


```
Main   Advanced   PCIPnP   Boot   Security   Chipset   Exit

  Advanced Settings                                  Configure CPU.

  WARNING:  Setting wrong values in below sections
            may cause system to malfunction.

► CPU Configurations
► IDE Configuration
► Super IO Configuration
► Hardware Health Configuration                      <-    Select Screen
► ACPI Configuration                                 ↑↓    Select Item
► AHCI Configuration                                 Enter    Go to Sub Screen
► APM Configuration                                  F1    General Help
► USB Configuration                                  F10   Save and Exit
                                                     ESC  Exit
```

The Advanced BIOS Settings contains the following sections:

► CPU Configurations
► IDE Configuration
► Super IO Configuration
► Hardware Health Configuration
► ACPI Configuration
► AHCI Configuration
► APM Configuration
► USB Configuration

The fields in each section are shown in the following pages, as seen in the computer screen. Please note that setting the wrong values may cause the system to malfunction. If unsure, please contact technical support of your supplier.



```
BIOS SETUP UTILITY
        Advanced
Configure advanced CPU settings                         Disabled for WindowsXP
Module Version:3F.18
Manufacturer: Intel
Intel(R) Atom (TM) CPU N450            @ 1.66GHz
Frequency      : 1.66GHz
FSB Speed      : 666MHz
Cache L1       : 24KB
Cache L2       : 512KB
Ratio Actual Value     : 10
                                                        <-    Select Screen
                                                        ↑↓    Select Item
Max CPUID Value Limit                  [Disabled]       +-    Change Field
Execute-Disable Bit Capability         [Enabled]        F1    General Help
Hyper Threading Technology             [Enabled]        F10   Save and Exit
Intel SpeedStep(tm) tech               [Enabled]        ESC  Exit
```

The CPU Configuration menu shows the following CPU details:
Manufacturer: the name of the CPU manufacturer
Brand String: the brand name of the CPU being used
Frequency: the CPU processing speed
FSB Speed: the FSB speed
Cache L1: the CPU L1 cache size
Cache L2: the CPU L2 cache

Max CPUID Value Limit

Disabled for Windows XP.

Execute-Disable Bit Capability

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS.

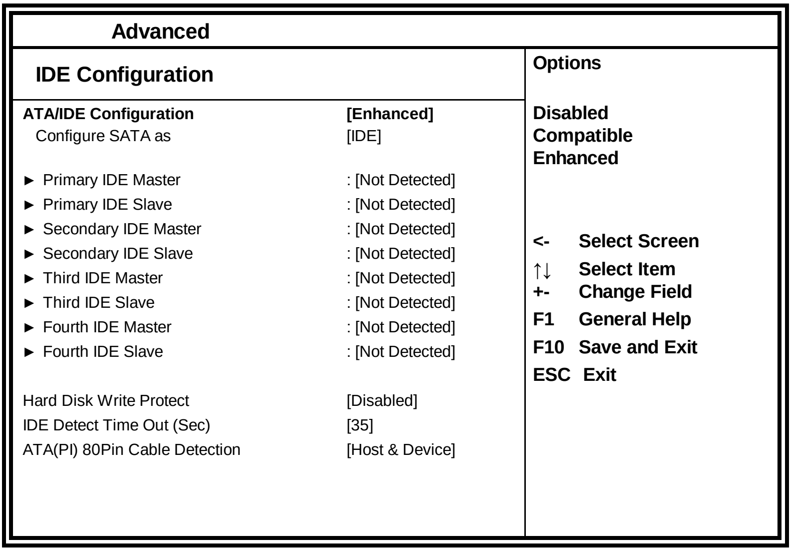
Hyper Threading Technology

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled, only one thread per enabled core is enabled.

Intel SpeedStep(tm) tech (Pineview-M)

Disabled: Disable GV3
Enabled: Enable GV3

BIOS SETUP UTILITY



```
        Advanced
 IDE Configuration                                  Options
ATA/IDE Configuration              [Enhanced]
  Configure SATA as                [IDE]            Disabled
                                                    Compatible
► Primary IDE Master               : [Not Detected] Enhanced
► Primary IDE Slave                : [Not Detected]
► Secondary IDE Master             : [Not Detected]
► Secondary IDE Slave              : [Not Detected] <-    Select Screen
► Third IDE Master                 : [Not Detected] ↑↓    Select Item
► Third IDE Slave                  : [Not Detected] +-    Change Field
► Fourth IDE Master                : [Not Detected] F1    General Help
► Fourth IDE Slave                 : [Not Detected] F10   Save and Exit
                                                    ESC  Exit
Hard Disk Write Protect            [Disabled]
IDE Detect Time Out (Sec)          [35]
ATA(PI) 80Pin Cable Detection      [Host & Device]
```

The IDE Configuration menu is used to change and/or set the configuration of the IDE devices installed in the system.

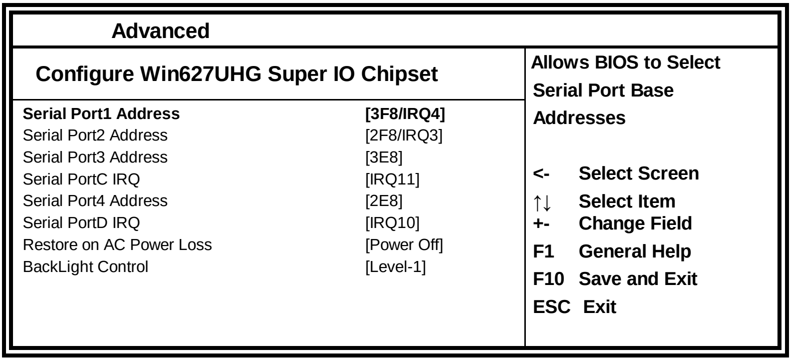
ATA/IDE Configuration

(1) Disabled.
(2) Compatible.
(3) Enhanced

Configure SATA as

(1) IDE Mode.
(2) AHCI Mode.

BIOS SETUP UTILITY



```
        Advanced
 Configure Win627UHG Super IO Chipset        Allows BIOS to Select
                                             Serial Port Base
Serial Port1 Address         [3F8/IRQ4]      Addresses
Serial Port2 Address         [2F8/IRQ3]
Serial Port3 Address         [3E8]
Serial PortC IRQ             [IRQ11]         <-    Select Screen
Serial Port4 Address         [2E8]           ↑↓    Select Item
Serial PortD IRQ             [IRQ10]         +-    Change Field
Restore on AC Power Loss     [Power Off]     F1    General Help
BackLight Control            [Level-1]       F10   Save and Exit
                                             ESC  Exit
```

Onboard Serial Port

The default values are:

Serial Port 1: 3F8/IRQ4
Serial Port 2: 2F8/IRQ3
Serial Port 3: 3E8/IRQ11
Serial Port 4: 2E8/IRQ10

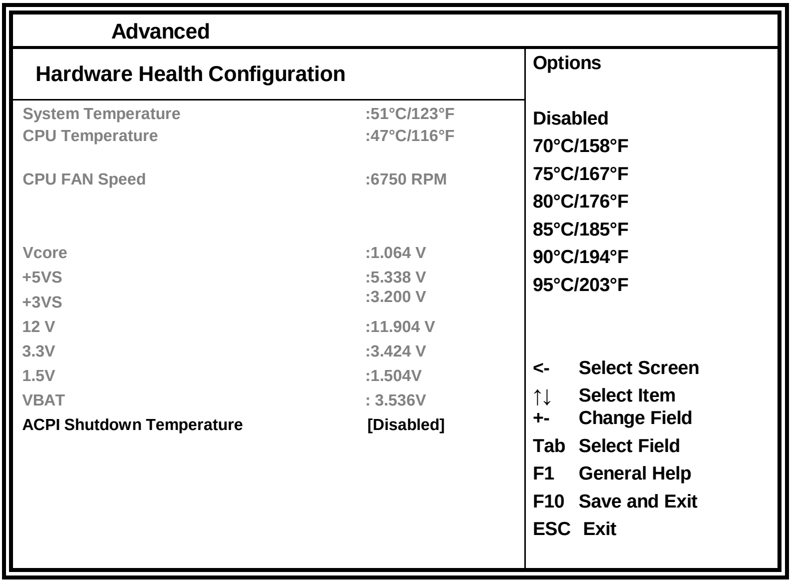
Restore on AC Power Loss

This field sets the system power status whether *Power On or Power Off* when power returns to the system from a power failure situation.

BackLight Control

Select the LFP Panel backlight leave: Leave1~Leave8

BIOS SETUP UTILITY



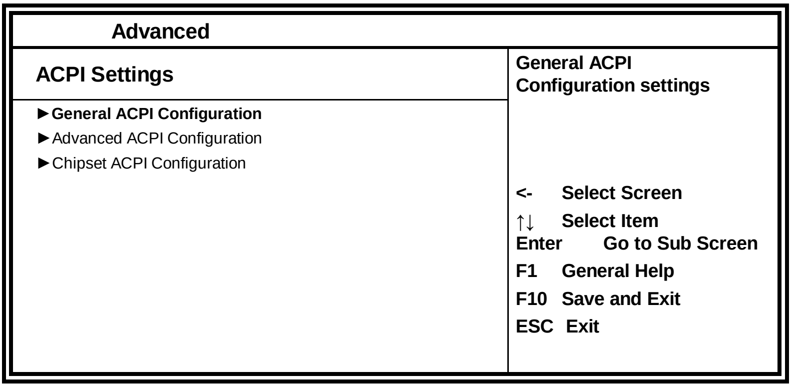
```
Advanced
 Hardware Health Configuration                          | Options
                                                        |
System Temperature                  :51°C/123°F         | Disabled
CPU Temperature                     :47°C/116°F         | 70°C/158°F
                                                        | 75°C/167°F
CPU FAN Speed                       :6750 RPM           | 80°C/176°F
                                                        | 85°C/185°F
Vcore                               :1.064 V            | 90°C/194°F
+5VS                                :5.338 V            | 95°C/203°F
+3VS                                :3.200 V            |
12 V                                :11.904 V           |
3.3V                                :3.424 V            | <-    Select Screen
1.5V                                :1.504V             | ↑↓    Select Item
VBAT                                : 3.536V            | +-    Change Field
ACPI Shutdown Temperature           [Disabled]          | Tab   Select Field
                                                        | F1    General Help
                                                        | F10   Save and Exit
                                                        | ESC   Exit
```

The Hardware Health Configuration menu is used to show the operating temperature, fan speeds and system voltages.

ACPI Shutdown Temperature

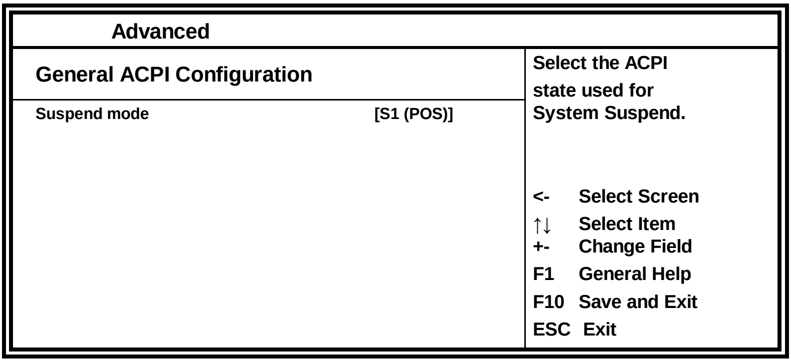
The system will shut down automatically under OS with ACPI mode, when the CPU temperature reaches the configured temperature.

BIOS SETUP UTILITY



```
         Advanced
 ACPI Settings                           | General ACPI
                                         | Configuration settings
 ►General ACPI Configuration             |
 ►Advanced ACPI Configuration            |
 ►Chipset ACPI Configuration             |
                                         | <-    Select Screen
                                         | ↑↓    Select Item
                                         | Enter      Go to Sub Screen
                                         | F1    General Help
                                         | F10   Save and Exit
                                         | ESC  Exit
```

BIOS SETUP UTILITY

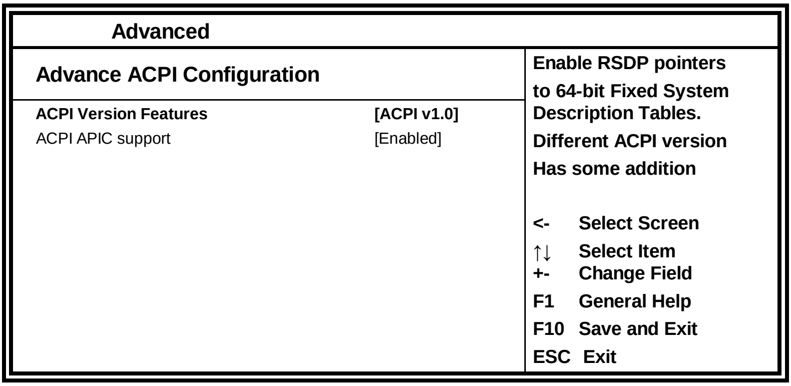


```
         Advanced
 General ACPI Configuration                 | Select the ACPI
                                            | state used for
 Suspend mode                  [S1 (POS)]   | System Suspend.
                                            |
                                            | <-    Select Screen
                                            | ↑↓    Select Item
                                            | +-    Change Field
                                            | F1    General Help
                                            | F10   Save and Exit
                                            | ESC  Exit
```

Suspend Mode

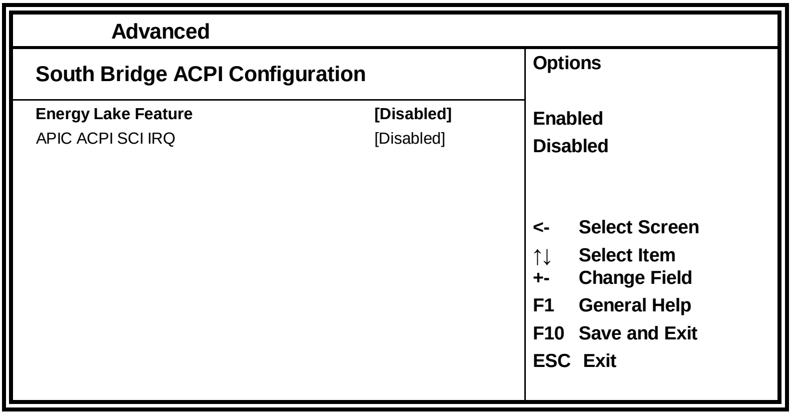
The options of this field are *S1*, *S3* and *Auto*.

BIOS SETUP UTILITY



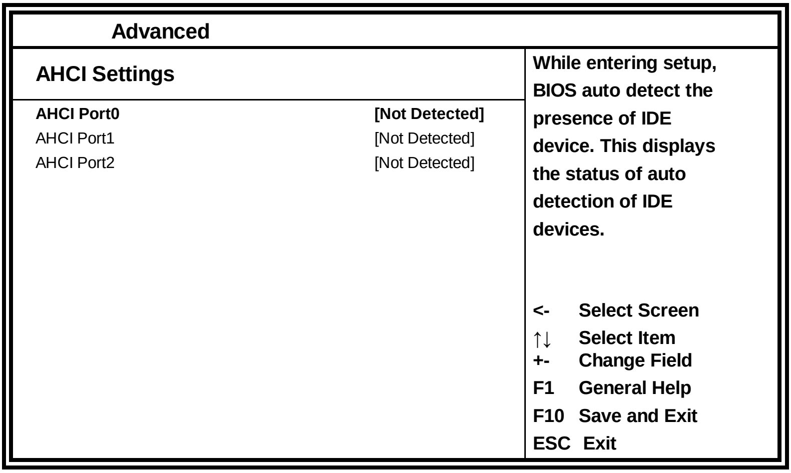
```
         Advanced
 Advance ACPI Configuration                 | Enable RSDP pointers
                                            | to 64-bit Fixed System
 ACPI Version Features         [ACPI v1.0]  | Description Tables.
 ACPI APIC support             [Enabled]    | Different ACPI version
                                            | Has some addition
                                            |
                                            | <-    Select Screen
                                            | ↑↓    Select Item
                                            | +-    Change Field
                                            | F1    General Help
                                            | F10   Save and Exit
                                            | ESC  Exit
```

BIOS SETUP UTILITY



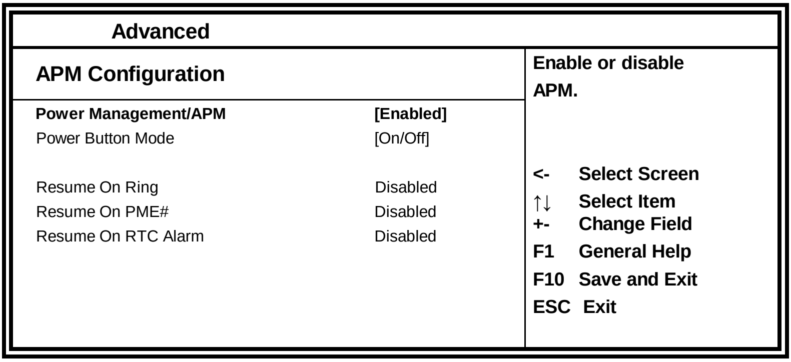
```
Advanced

South Bridge ACPI Configuration                            Options

Energy Lake Feature                    [Disabled]          Enabled
APIC ACPI SCI IRQ                      [Disabled]          Disabled

                                                           <-     Select Screen
                                                           ↑↓     Select Item
                                                           +-     Change Field
                                                           F1     General Help
                                                           F10    Save and Exit
                                                           ESC    Exit
```

BIOS SETUP UTILITY



```
Advanced

AHCI Settings                                              While entering setup,
                                                           BIOS auto detect the
AHCI Port0                             [Not Detected]      presence of IDE
AHCI Port1                             [Not Detected]      device. This displays
AHCI Port2                             [Not Detected]      the status of auto
                                                           detection of IDE
                                                           devices.

                                                           <-     Select Screen
                                                           ↑↓     Select Item
                                                           +-     Change Field
                                                           F1     General Help
                                                           F10    Save and Exit
                                                           ESC    Exit
```

BIOS SETUP UTILITY



```
        Advanced
 APM Configuration                                   Enable or disable
                                                     APM.
 Power Management/APM             [Enabled]
 Power Button Mode                [On/Off]
                                                     <-   Select Screen
 Resume On Ring                   Disabled           ↑↓   Select Item
 Resume On PME#                   Disabled           +-   Change Field
 Resume On RTC Alarm              Disabled           F1   General Help
                                                     F10  Save and Exit
                                                     ESC  Exit
```

Power Management/APM

By default, this field is set to *Enabled*.

Power Button Mode

Go into On/Off, or Suspend when power button is pressed.

Resume on Ring

This option is used to enable activity on the RI (ring in) modem line to wake up the system from a suspend or standby state. That is, the system will be awakened by an incoming call on a modem.

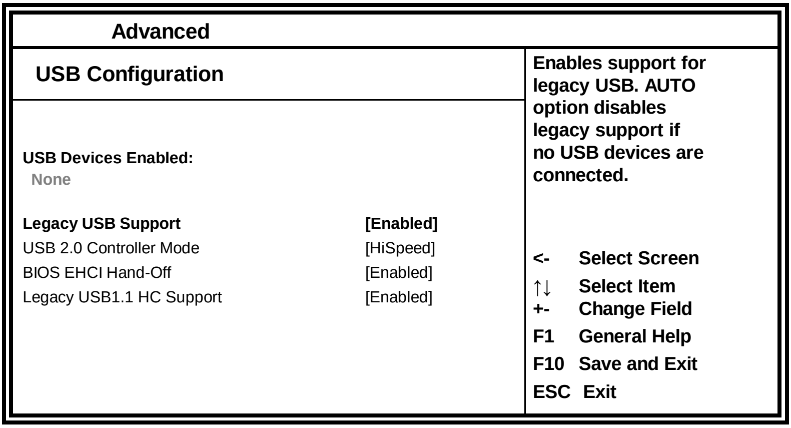
Resume on PME#

This option is used enable activity on the PCI PME (power management event) controller to wake up the system from a suspend or standby state

Resume On RTC Alarm

This option is used to specify the time the system should be awakened from a suspended state

BIOS SETUP UTILITY



```
Advanced
USB Configuration                                      Enables support for
                                                       legacy USB. AUTO
                                                       option disables
USB Devices Enabled:                                   legacy support if
  None                                                 no USB devices are
                                                       connected.
Legacy USB Support                 [Enabled]
USB 2.0 Controller Mode            [HiSpeed]           <-    Select Screen
BIOS EHCI Hand-Off                 [Enabled]           ↑↓    Select Item
Legacy USB1.1 HC Support           [Enabled]           +-    Change Field
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC   Exit
```

The USB Configuration menu is used to read USB configuration information and configure the USB settings.

Legacy USB Support

Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.

USB 2.0 Controller Mode

Configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).This option is enabled by HiSpeed.

BIOS EHCI Hand-Off

Enabled/Disabled. This is a workaround for Oses without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

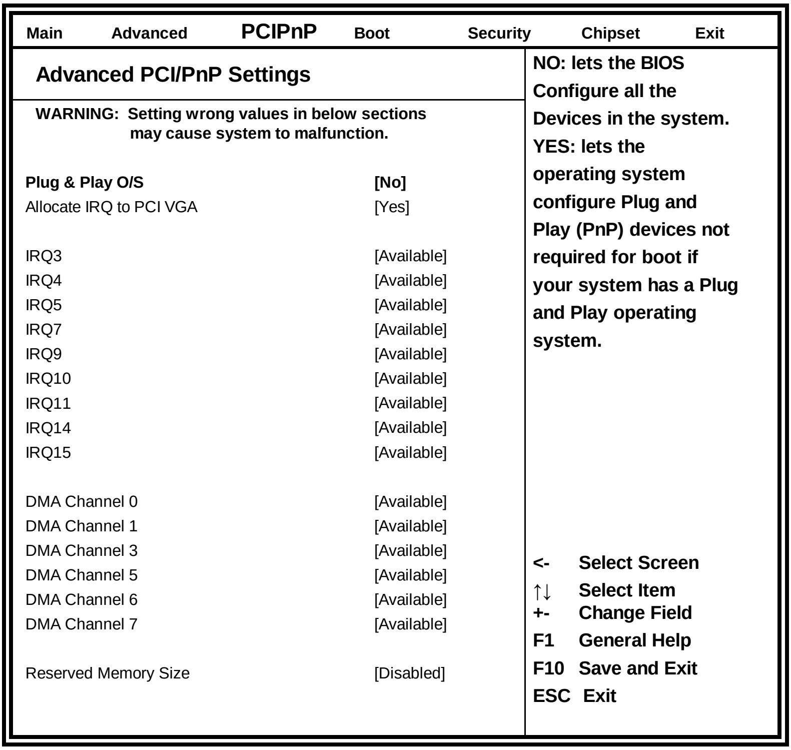
Legacy USB1.1 HC Support

Support USB1.1 HC.

PCIPnP Settings

This option configures the PCI/PnP settings.

BIOS SETUP UTILITY



```
Main      Advanced      PCIPnP      Boot          Security      Chipset      Exit

 Advanced PCI/PnP Settings                               NO: lets the BIOS
                                                         Configure all the
 WARNING:  Setting wrong values in below sections        Devices in the system.
           may cause system to malfunction.              YES: lets the
                                                         operating system
Plug & Play O/S                         [No]             configure Plug and
Allocate IRQ to PCI VGA                 [Yes]            Play (PnP) devices not
                                                         required for boot if
IRQ3                                    [Available]      your system has a Plug
IRQ4                                    [Available]      and Play operating
IRQ5                                    [Available]      system.
IRQ7                                    [Available]
IRQ9                                    [Available]
IRQ10                                   [Available]
IRQ11                                   [Available]
IRQ14                                   [Available]
IRQ15                                   [Available]

DMA Channel 0                           [Available]
DMA Channel 1                           [Available]
DMA Channel 3                           [Available]      <-    Select Screen
DMA Channel 5                           [Available]      ↑↓    Select Item
DMA Channel 6                           [Available]      +-    Change Field
DMA Channel 7                           [Available]      F1    General Help
                                                         F10   Save and Exit
Reserved Memory Size                    [Disabled]       ESC   Exit
```

Plug & Play O/S

This lets BIOS configure all devices in the system or lets the OS configure PnP devices not required for boot if your system has a Plug and Play OS.

Allocate IRQ to PCI VGA

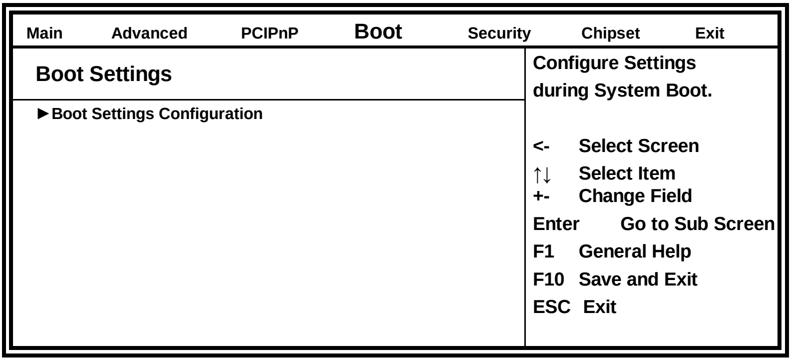
This assigns IRQ to PCI VGA card if card requests IRQ or doesn't assign IRQ to PCI VGA card even if card requests an IRQ.

IRQ#

Use the IRQ# address to specify what IRQs can be assigned to a particular peripheral device.

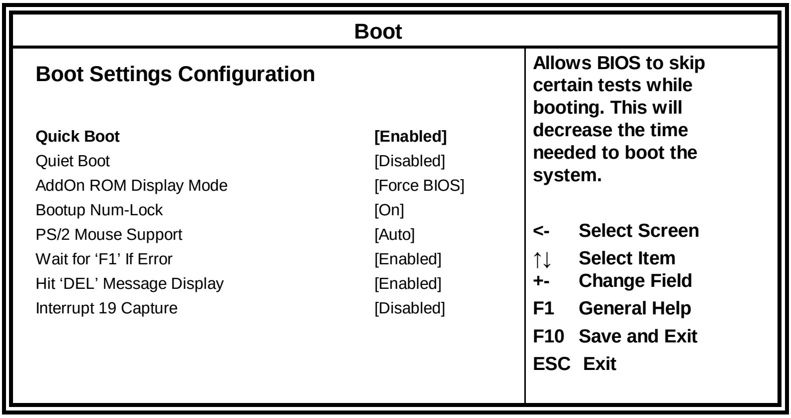
Boot Settings

BIOS SETUP UTILITY



```
Main     Advanced     PCIPnP     Boot     Security     Chipset     Exit

Boot Settings                          Configure Settings
                                       during System Boot.
►Boot Settings Configuration
                                       <-     Select Screen
                                       ↑↓     Select Item
                                       +-     Change Field
                                       Enter     Go to Sub Screen
                                       F1     General Help
                                       F10    Save and Exit
                                       ESC    Exit
```

BIOS SETUP UTILITY



```
                                Boot

Boot Settings Configuration                       Allows BIOS to skip
                                                  certain tests while
                                                  booting. This will
Quick Boot                    [Enabled]           decrease the time
Quiet Boot                    [Disabled]          needed to boot the
AddOn ROM Display Mode        [Force BIOS]        system.
Bootup Num-Lock               [On]
PS/2 Mouse Support            [Auto]              <-     Select Screen
Wait for ‘F1’ If Error        [Enabled]           ↑↓     Select Item
Hit ‘DEL’ Message Display     [Enabled]           +-     Change Field
Interrupt 19 Capture          [Disabled]          F1     General Help
                                                  F10    Save and Exit
                                                  ESC    Exit
```

Quick Boot

This allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quite Boot

When disabled, this displays normal POST messages. When enabled, this displays OEM Logo instead of POST messages.

AddOn ROM Display Mode

This allows user to force BIOS/Option ROM of add-on cards to be displayed during quiet boot.

Bootup Num-Lock

This select the power-on state for Numlock.

PS/2 Mouse Support

This select support for PS/w mouse.

Wait for ‘F1’ If Error

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. This allows option ROM to trap interrupt 19.

Hit <DEL> Message Display

This displays “Press <DEL> to run Setup” in POST.

Interrupt 19 Capture

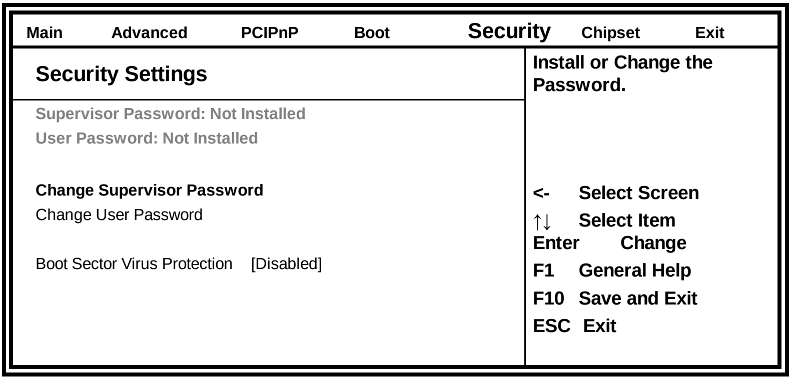
This allows option ROMs to trap interrupt 19.

Security Settings

This setting comes with two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

BIOS SETUP UTILITY



Main Advanced PCIPnP Boot **Security** Chipset Exit

Security Settings

Supervisor Password: Not Installed
User Password: Not Installed

Change Supervisor Password
Change User Password

Boot Sector Virus Protection [Disabled]

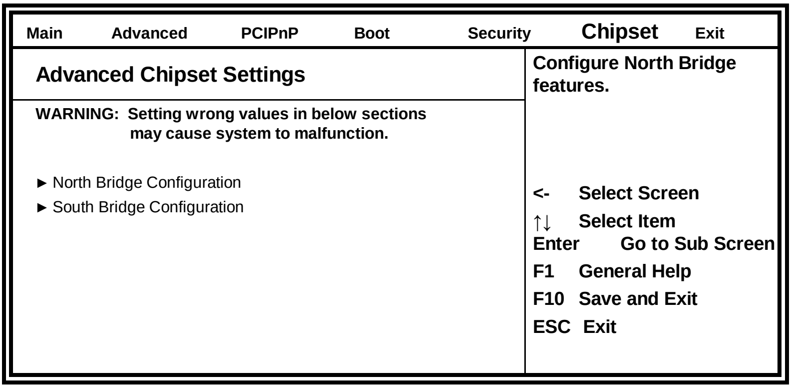
Install or Change the Password.

<- Select Screen
↑↓ Select Item
Enter Change
F1 General Help
F10 Save and Exit
ESC Exit

Advanced Chipset Settings

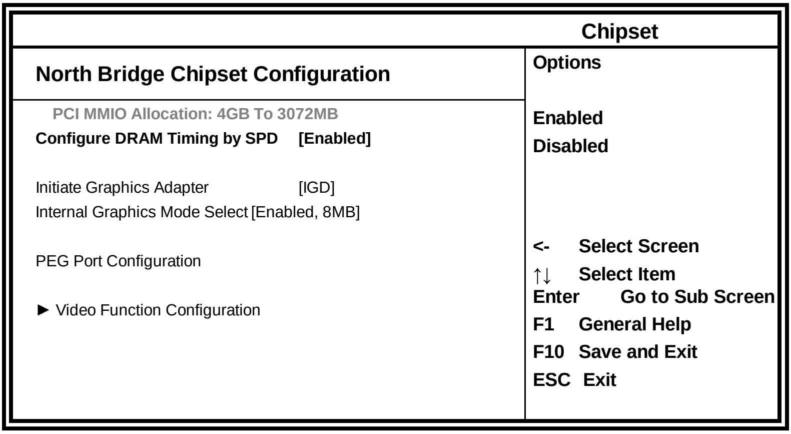
This setting configures the north bridge, south bridge and the ME subsystem. WARNING! Setting the wrong values may cause the system to malfunction.

BIOS SETUP UTILITY



```
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

Advanced Chipset Settings                         Configure North Bridge
                                                  features.
WARNING:  Setting wrong values in below sections
          may cause system to malfunction.

► North Bridge Configuration                      <-     Select Screen
► South Bridge Configuration                      ↑↓     Select Item
                                                  Enter  Go to Sub Screen
                                                  F1     General Help
                                                  F10    Save and Exit
                                                  ESC    Exit
```

BIOS SETUP UTILITY



```
                                                  Chipset

North Bridge Chipset Configuration                Options

  PCI MMIO Allocation: 4GB To 3072MB              Enabled
Configure DRAM Timing by SPD    [Enabled]         Disabled

Initiate Graphics Adapter       [IGD]
Internal Graphics Mode Select [Enabled, 8MB]
                                                  <-     Select Screen
PEG Port Configuration                            ↑↓     Select Item
                                                  Enter  Go to Sub Screen
► Video Function Configuration                    F1     General Help
                                                  F10    Save and Exit
                                                  ESC    Exit
```

Configure DRAM Timing by SPD

When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items.

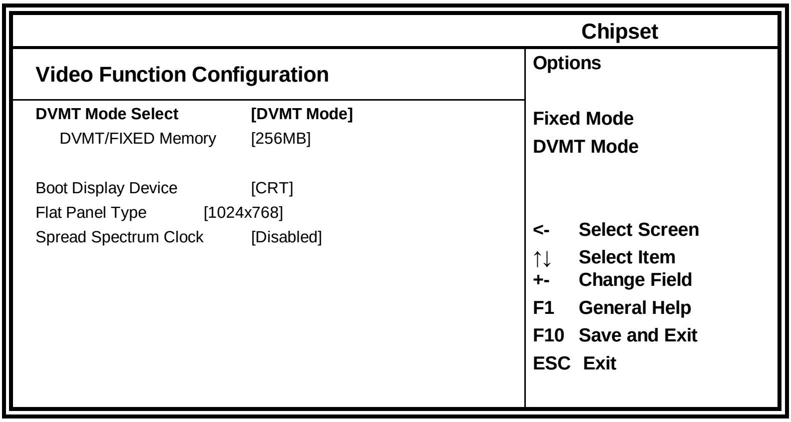
Initiate Graphic Adapter

Select which graphics controller to use as the primary boot device. This option, by default, is set to IGD.

Internal Graphics Mode Select

Use the feature to set the amount of system memory to be used by the Internal. graphics device. expansion cards that require a specified area of memory to work properly.

BIOS SETUP UTILITY



```
                                                     Chipset
 Video Function Configuration                Options

 DVMT Mode Select          [DVMT Mode]       Fixed Mode
    DVMT/FIXED Memory      [256MB]           DVMT Mode

 Boot Display Device       [CRT]
 Flat Panel Type       [1024x768]
 Spread Spectrum Clock     [Disabled]        <-    Select Screen
                                             ↑↓    Select Item
                                             +-    Change Field
                                             F1    General Help
                                             F10   Save and Exit
                                             ESC  Exit
```

DVMT Mode Select

Select the control mode of memory built-in graphics capabilities. This option, by default, is set to DVMT Mode.

DVMT/FIXED Memory

Sets the maximum memory size assigned to the integrated graphics capabilities. This option, by default, is set to 256MB.

Boot Display Device

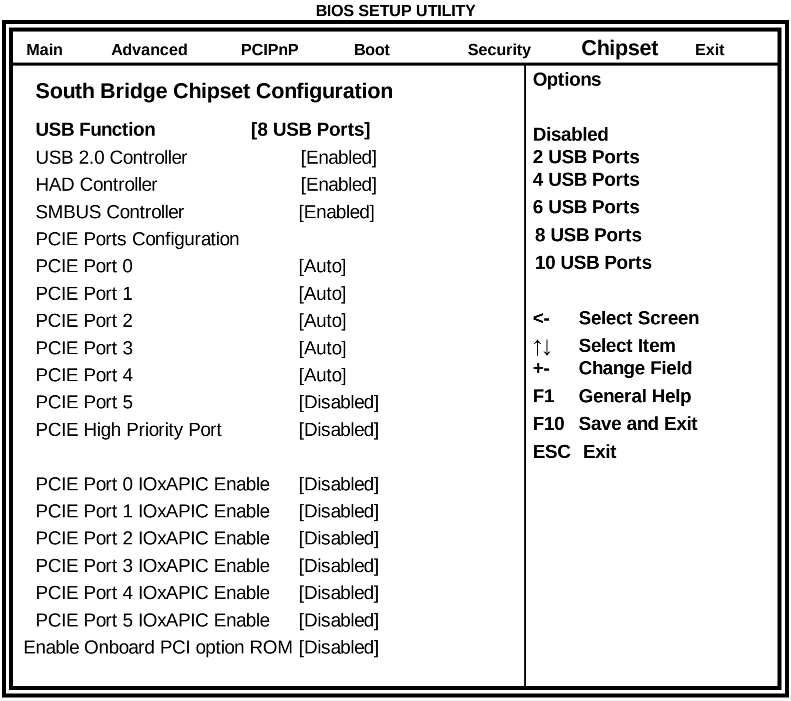
This option is used to select the display device used by the system when it boots.

Flat Panel Type

This option is used to select the type of flat panel connected to the system. Options include: 640x480 / 800x600 / 1024x768 / 800x480 / 1024x600 1280x768 / 1280x800 / 1280x600.

Spread Spectrum Clock

By default, this field is set to *Disabled*.



```
                              BIOS SETUP UTILITY
 Main    Advanced    PCIPnP    Boot       Security    Chipset    Exit
  South Bridge Chipset Configuration              Options

  USB Function              [8 USB Ports]         Disabled
  USB 2.0 Controller            [Enabled]         2 USB Ports
  HAD Controller                [Enabled]         4 USB Ports
  SMBUS Controller              [Enabled]         6 USB Ports
  PCIE Ports Configuration                         8 USB Ports
  PCIE Port 0                   [Auto]             10 USB Ports
  PCIE Port 1                   [Auto]
  PCIE Port 2                   [Auto]            <-    Select Screen
  PCIE Port 3                   [Auto]            ↑↓    Select Item
  PCIE Port 4                   [Auto]            +-    Change Field
  PCIE Port 5                   [Disabled]        F1    General Help
  PCIE High Priority Port       [Disabled]        F10   Save and Exit
                                                  ESC  Exit
  PCIE Port 0 IOxAPIC Enable    [Disabled]
  PCIE Port 1 IOxAPIC Enable    [Disabled]
  PCIE Port 2 IOxAPIC Enable    [Disabled]
  PCIE Port 3 IOxAPIC Enable    [Disabled]
  PCIE Port 4 IOxAPIC Enable    [Disabled]
  PCIE Port 5 IOxAPIC Enable    [Disabled]
 Enable Onboard PCI option ROM [Disabled]
```

USB Function

This option enables the number of USB ports desired or disables the USB function.

USB 2.0 Controller

This option is disabled by default.

HDA Controller

This option is used to enable the Southbridge high definition audio controller.

SMBUS Controller

This option is enabled by default.

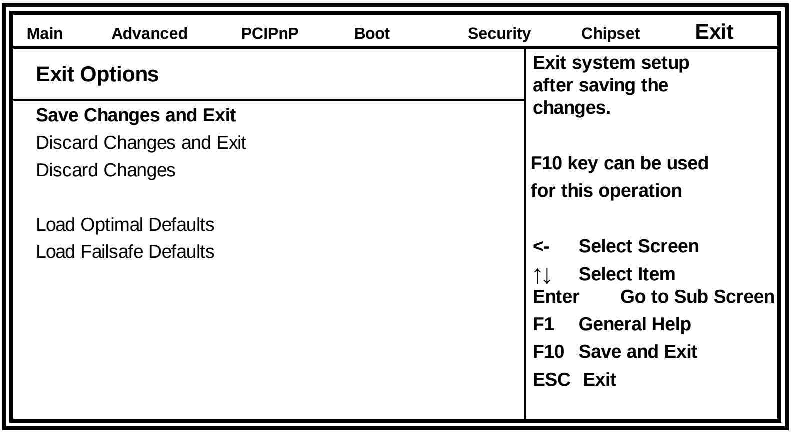
Enable Onboard PCI option ROM

This option is disabled by default.

Exit Setup

The exit setup has the following settings which are:

BIOS SETUP UTILITY



Main Advanced PCIPnP Boot Security Chipset **Exit**

Exit Options

Save Changes and Exit
Discard Changes and Exit
Discard Changes

Load Optimal Defaults
Load Failsafe Defaults

Exit system setup after saving the changes.

F10 key can be used for this operation

<- Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit

Save Changes and Exit

This option allows you to determine whether or not to accept the modifications and save all changes into the CMOS memory before exit.

Discard Changes and Exit

This option allows you to exit the Setup utility without saving the changes you have made in this session.

Discard Changes

This option allows you to discard all the changes that you have made in this session.

Load Optimal Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Load Failsafe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

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Drivers Installation

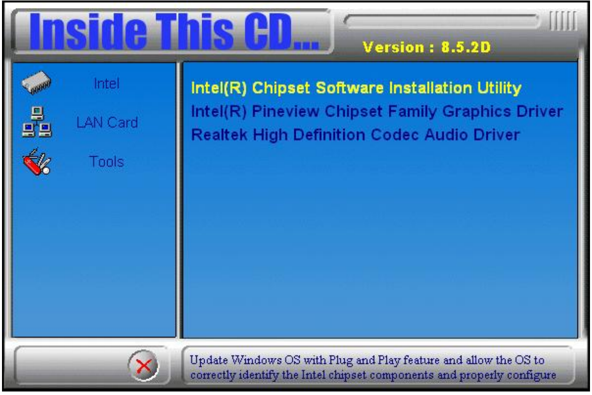
This section describes the installation procedures for software and drivers under the Windows XP, Windows Vista and Windows 7. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

IMPORTANT NOTE:
After installing your Windows operating system (Windows XP/ Vista/ 7), you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

Intel Chipset Software Installation Utility

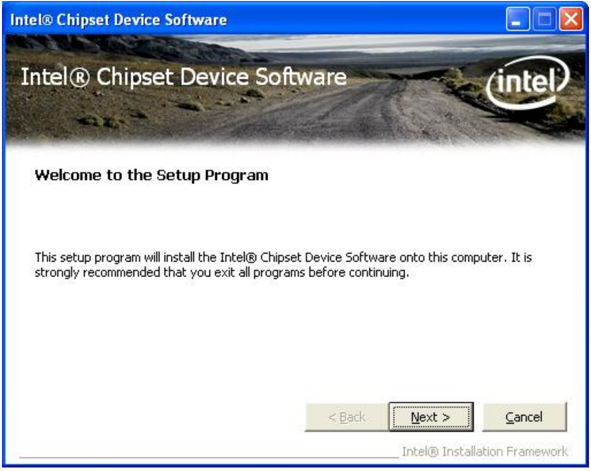
The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation under Windows XP/Vista/7.

1. Insert the drivers DVD into the DVD drive. Click ***Intel*** and then ***Intel(R) Pineview Chipset Drivers***. Click ***Intel(R) Chipset Software Installation Utility***.


Inside This CD...
Version : 8.5.2D
Intel
LAN Card
Tools
Intel(R) Chipset Software Installation Utility
Intel(R) Pineview Chipset Family Graphics Driver
Realtek High Definition Codec Audio Driver

Update Windows OS with Plug and Play feature and allow the OS to correctly identify the Intel chipset components and properly configure

2. When the welcome screen to the Intel(R) Chipset Software Installation Utility appears, click ***Next*** to continue.

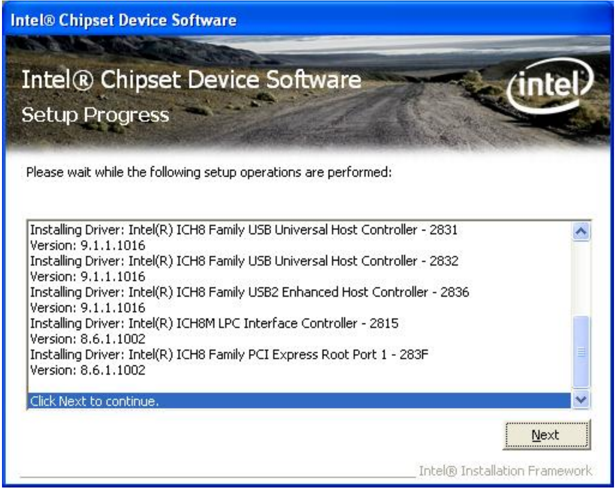

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
< Back
Next >
Cancel
Intel® Installation Framework

Welcome to the Setup Program

This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.

3. Click ***Yes*** to accept the software license agreement and proceed with the installation process.

4. On the Readme Information screen, click ***Next*** to continue.When the Setup Progress screen appears, click ***Next*** to continue.



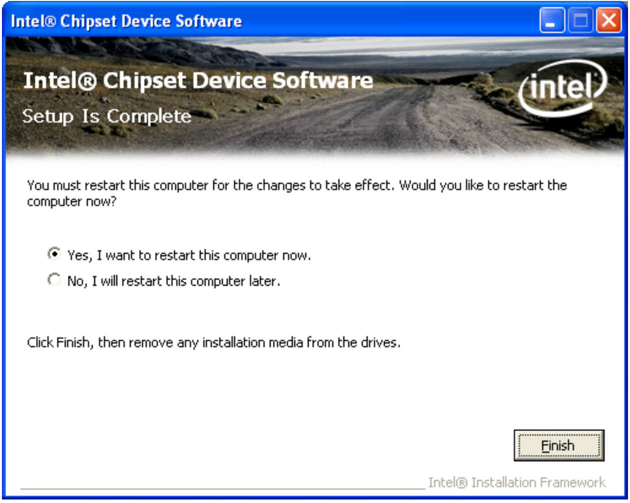
Intel® Chipset Device Software

Intel® Chipset Device Software
Setup Progress

Please wait while the following setup operations are performed:

```
Installing Driver: Intel(R) ICH8 Family USB Universal Host Controller - 2831
Version: 9.1.1.1016
Installing Driver: Intel(R) ICH8 Family USB Universal Host Controller - 2832
Version: 9.1.1.1016
Installing Driver: Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
Version: 9.1.1.1016
Installing Driver: Intel(R) ICH8M LPC Interface Controller - 2815
Version: 8.6.1.1002
Installing Driver: Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
Version: 8.6.1.1002
Click Next to continue.
```

5. The Setup process is now complete. Click ***Finish*** to restart the computer and for changes to take effect.



Intel® Chipset Device Software

Intel® Chipset Device Software
Setup Is Complete

You must restart this computer for the changes to take effect. Would you like to restart the computer now?

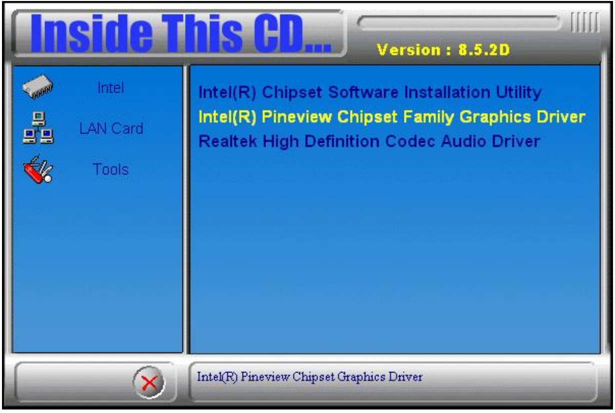
● Yes, I want to restart this computer now.
○ No, I will restart this computer later.

Click Finish, then remove any installation media from the drives.

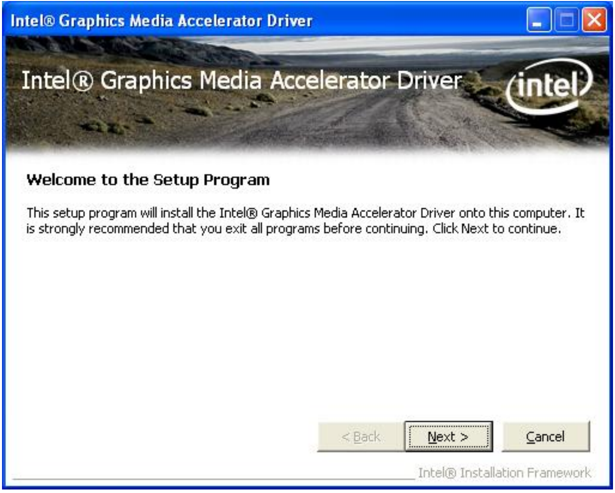
Intel Pineview Chipset Family Graphics Driver Installation

To install the VGA drivers, follow the steps below to proceed with the installation.

1. Insert the drivers DVD into the DVD drive. Click ***Intel*** and then ***Intel(R) Pineview Chipset Drivers***. Click ***Intel(R) Pineview Chipset Family Graphics Driver***.


Inside This CD...
Version : 8.5.2D
Intel
LAN Card
Tools
Intel(R) Chipset Software Installation Utility
Intel(R) Pineview Chipset Family Graphics Driver
Realtek High Definition Codec Audio Driver
Intel(R) Pineview Chipset Graphics Driver

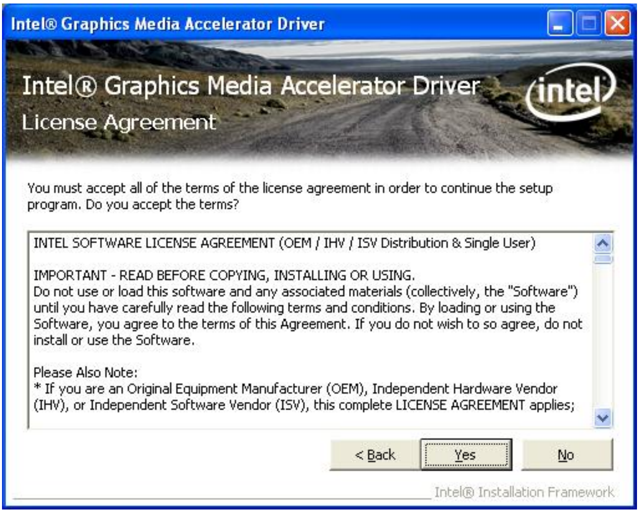
2. When the welcome screen of the Intel(R) Graphics Media Accelerator Driver appears, click ***Next*** to continue.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel
< Back
Next >
Cancel
Intel® Installation Framework

Welcome to the Setup Program

This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.

3. Click ***Yes*** to to agree with the license agreement and continue the installation.



Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
intel

You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?

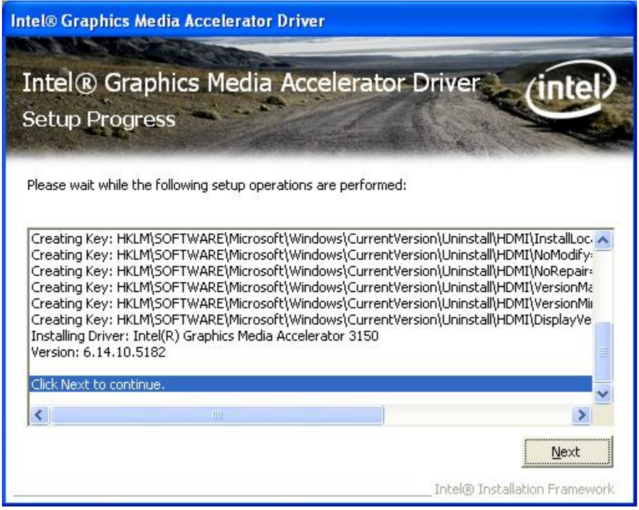
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.

Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;

4. Click ***Next*** in the Readme File Information window.

5. Click ***Next*** in the Setup Progress window.



Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Progress
intel

Please wait while the following setup operations are performed:

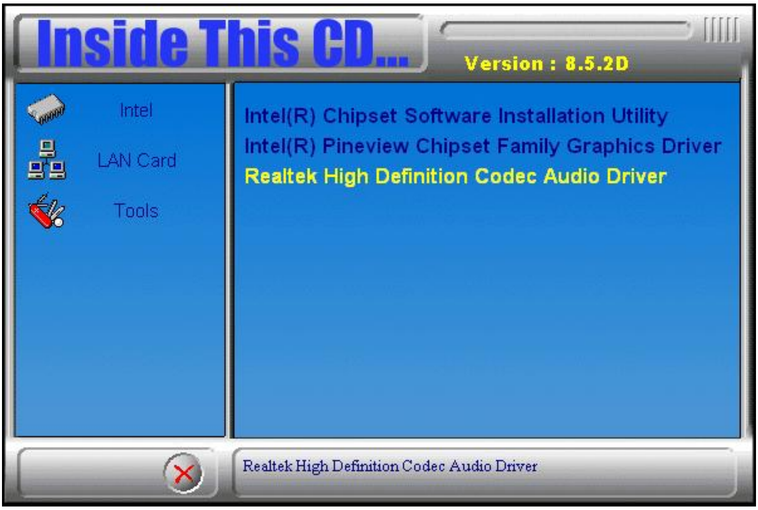
```
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\InstallLoc
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoModify
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoRepair
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\VersionMa
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\VersionMi
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\DisplayVe
Installing Driver: Intel(R) Graphics Media Accelerator 3150
Version: 6.14.10.5182

Click Next to continue.
```

6. Setup is now complete. Click ***Finish*** to restart the computer and for changes to take effect.

Realtek High Definition Codec Audio Driver Installation

Follow the steps below to install the Realtek HD Codec Audio Drivers.

1. Insert the drivers DVD into the DVD drive. Click ***Intel*** and then ***Intel(R) Pineview Chipset Drivers***. Click ***Realtek High Definition Codec Audio Driver.***


Inside This CD...
Version : 8.5.2D
Intel
LAN Card
Tools
Intel(R) Chipset Software Installation Utility
Intel(R) Pineview Chipset Family Graphics Driver
Realtek High Definition Codec Audio Driver
Realtek High Definition Codec Audio Driver

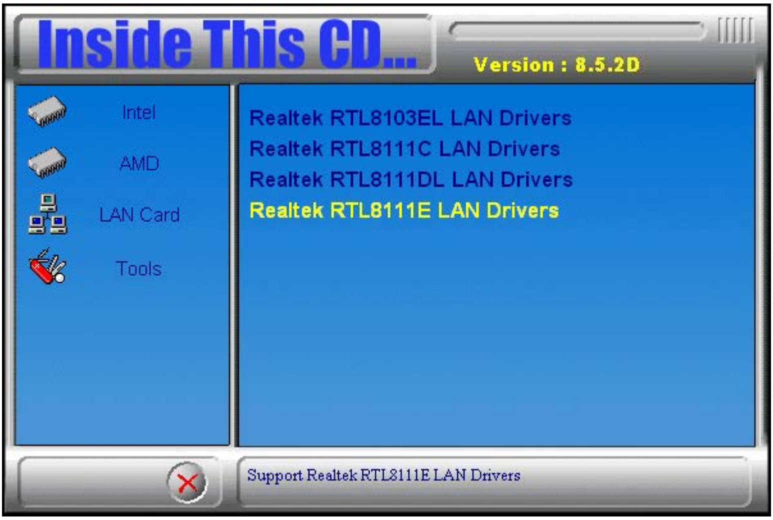
2.When the welcome screen to InstallShield Wizard for ***Realtek High Definition Audio Driver*** appears, click ***Next*** to start the installation.

3.When InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Codec Audio Audio Driver, click ***Finish*** to restart the computer.

Realtek RTL8111E LAN Drivers Installation

Follow the steps below to install Realtek RTL8111E LAN Drivers.

1. Insert the drivers DVD into the DVD drive. Click ***LAN Card*** and then ***Realtek LAN Controller Drivers***. Click ***Realtek RTL8111E LAN Drivers***.



Realtek RTL8103EL LAN Drivers
Realtek RTL8111C LAN Drivers
Realtek RTL8111DL LAN Drivers
Realtek RTL8111E LAN Drivers

Support Realtek RTL8111E LAN Drivers

2. In the welcome screen of the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver, click ***Next***.

3. In the InstallShield Wizard screen, click ***Install*** to begin the installation.

4. InstallShield Wizard is completed. Click ***Finish*** to exit the Wizard.

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Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses that also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2B0h - 2DFh	Graphics adapter Controller
2E8h - 2EFh	Serial Port #4(COM4)
2F8h - 2FFh	Serial Port #2(COM2)
360h - 36Fh	Network Ports
3B0h - 3BFh	Monochrome & Printer adapter
3C0h - 3CFh	EGA adapter
3D0h - 3DFh	CGA adapter
3E8h - 3EFh	Serial Port #3(COM3)
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	**Function**
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Serial Port #4
IRQ11	Serial Port #3
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

File of the W627UHG.CPP

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "W627UHG.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int W627UHG_BASE;
void Unlock_W627UHG (void);
void Lock_W627UHG (void);
//---------------------------------------------------------------------------
unsigned int Init_W627UHG(void)
{
        unsigned int result;
        unsigned char ucDid;

        W627UHG_BASE = 0x4E;
        result = W627UHG_BASE;

        ucDid = Get_W627UHG_Reg(0x20);
        if (ucDid == 0xA2)                                      //W83627UHG??
        {       goto Init_Finish;    }

        W627UHG_BASE = 0x2E;
        result = W627UHG_BASE;

        ucDid = Get_W627UHG_Reg(0x20);
        if (ucDid == 0xA2)                                      //W83627UHG??
        {       goto Init_Finish;    }

        W627UHG_BASE = 0x00;
        result = W627UHG_BASE;

Init_Finish:
        return (result);
}
//---------------------------------------------------------------------------
void Unlock_W627UHG (void)
```

```
{
        outportb(W627UHG_INDEX_PORT, W627UHG_UNLOCK);
        outportb(W627UHG_INDEX_PORT, W627UHG_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_W627UHG (void)
{
        outportb(W627UHG_INDEX_PORT, W627UHG_LOCK);
}
//---------------------------------------------------------------------------
void Set_W627UHG_LD( unsigned char LD)
{
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, W627UHG_REG_LD);
        outportb(W627UHG_DATA_PORT, LD);
        Lock_W627UHG();
}
//---------------------------------------------------------------------------
void Set_W627UHG_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, REG);
        outportb(W627UHG_DATA_PORT, DATA);
        Lock_W627UHG();
}
//---------------------------------------------------------------------------
unsigned char Get_W627UHG_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, REG);
        Result = inportb(W627UHG_DATA_PORT);
        Lock_W627UHG();
        return Result;
}
//---------------------------------------------------------------------------
```

File of the W627UHG.H

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#ifndef __W627UHG_H
#define __W627UHG_H                 1
//---------------------------------------------------------------------------
#define     W627UHG_INDEX_PORT          (W627UHG_BASE)
#define     W627UHG_DATA_PORT           (W627UHG_BASE+1)
//---------------------------------------------------------------------------
#define     W627UHG_REG_LD              0x07
//---------------------------------------------------------------------------
#define W627UHG_UNLOCK              0x87
#define     W627UHG_LOCK                0xAA
//---------------------------------------------------------------------------
unsigned int Init_W627UHG(void);
void Set_W627UHG_LD( unsigned char);
void Set_W627UHG_Reg( unsigned char, unsigned char);
unsigned char Get_W627UHG_Reg( unsigned char);
//---------------------------------------------------------------------------
#endif      //__W627UHG_H
```

File of the MAIN.CPP

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "W627UHG.H"
//---------------------------------------------------------------------------
int main (void);

void WDTInitial(void);
void WDTEnable(unsigned char);
void WDTDisable(void);

//---------------------------------------------------------------------------
int main (void)
{
        char SIO;

        SIO = Init_W627UHG();
        if (SIO == 0)
        {
        .............................................printf("Can not detect Winbond 83627UHG, program abort.\n");
        ..................................................................................................................... return(1);
        }

        WDTInitial();

        WDTEnable(10);

        WDTDisable();

        return 0;
}
//---------------------------------------------------------------------------
void WDTInitial(void)
{
        unsigned char bBuf;
        Set_W627UHG_LD(0x08);................................................................ //switch to logic device 8
        bBuf = Get_W627UHG_Reg(0x30);
        bBuf &= (~0x01);
        Set_W627UHG_Reg(0x30, bBuf);.................................................................. //Enable WDTO
}
//---------------------------------------------------------------------------
void WDTEnable(unsigned char NewInterval)
{
        unsigned char bBuf;

        Set_W627UHG_LD(0x08);.........................................................................................
        Set_W627UHG_Reg(0x30, 0x01);...................................................................... //enable timer
        bBuf = Get_W627UHG_Reg(0xF5);
        bBuf &= (~0x08);
        Set_W627UHG_Reg(0xF5, bBuf);........................................................//count mode is second

        Set_W627UHG_Reg(0xF6, NewInterval); ..................................................................//set timer
}
//---------------------------------------------------------------------------
void WDTDisable(void)
{
        Set_W627UHG_LD(0x08);.........................................................................................................
        Set_W627UHG_Reg(0xF6, 0x00);..........................................................//clear watchdog timer
        Set_W627UHG_Reg(0x30, 0x00);.............................................................................................
}
//---------------------------------------------------------------------------
```

D. Digital I/O Sample Code

File of the W627UHG.H

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#ifndef __W627UHG_H
#define __W627UHG_H                 1
//---------------------------------------------------------------------------
#define     W627UHG_INDEX_PORT          (W627UHG_BASE)
#define     W627UHG_DATA_PORT           (W627UHG_BASE+1)
//---------------------------------------------------------------------------
#define     W627UHG_REG_LD              0x07
//---------------------------------------------------------------------------
#define W627UHG_UNLOCK                  0x87
#define     W627UHG_LOCK                0xAA
//---------------------------------------------------------------------------
unsigned int Init_W627UHG(void);
void Set_W627UHG_LD( unsigned char);
void Set_W627UHG_Reg( unsigned char, unsigned char);
unsigned char Get_W627UHG_Reg( unsigned char);
//---------------------------------------------------------------------------
#endif      //__W627UHG_H
```

File of the W627UHG.CPP

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "W627UHG.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int W627UHG_BASE;
void Unlock_W627UHG (void);
void Lock_W627UHG (void);
//---------------------------------------------------------------------------
unsigned int Init_W627UHG(void)
{
        unsigned int result;
        unsigned char ucDid;

        W627UHG_BASE = 0x4E;
        result = W627UHG_BASE;

        ucDid = Get_W627UHG_Reg(0x20);
        if (ucDid == 0xA2)                                      //W83627UHG??
        {       goto Init_Finish;   }

        W627UHG_BASE = 0x2E;
        result = W627UHG_BASE;

        ucDid = Get_W627UHG_Reg(0x20);
        if (ucDid == 0xA2)                                      //W83627UHG??
        {       goto Init_Finish;   }

        W627UHG_BASE = 0x00;
        result = W627UHG_BASE;

Init_Finish:
        return (result);
}
//---------------------------------------------------------------------------
void Unlock_W627UHG (void)
{
        outportb(W627UHG_INDEX_PORT, W627UHG_UNLOCK);
        outportb(W627UHG_INDEX_PORT, W627UHG_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_W627UHG (void)
{
        outportb(W627UHG_INDEX_PORT, W627UHG_LOCK);
}
//---------------------------------------------------------------------------
void Set_W627UHG_LD( unsigned char LD)
```

```
{
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, W627UHG_REG_LD);
        outportb(W627UHG_DATA_PORT, LD);
        Lock_W627UHG();
}
//---------------------------------------------------------------------------
void Set_W627UHG_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, REG);
        outportb(W627UHG_DATA_PORT, DATA);
        Lock_W627UHG();
}
//---------------------------------------------------------------------------
unsigned char Get_W627UHG_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W627UHG();
        outportb(W627UHG_INDEX_PORT, REG);
        Result = inportb(W627UHG_DATA_PORT);
        Lock_W627UHG();
        return Result;
}
//---------------------------------------------------------------------------
```

File of the MAIN.CPP

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "W627UHG.H"
//---------------------------------------------------------------------------
int main (void);

void Dio5Initial(void);
void Dio5SetOutput(unsigned char);
unsigned char Dio5GetInput(void);
void Dio5SetDirection(unsigned char);
unsigned char Dio5GetDirection(void);
//---------------------------------------------------------------------------
int main (void)
{
        char SIO;

        SIO = Init_W627UHG();
        if (SIO == 0)
        {
                printf("Can not detect Winbond 83627UHG, program abort.\n");
                return(1);
        }

        Dio5Initial();

        //for GPIO50..57
        Dio5SetDirection(0x0F); //GP50..53 = input, GP54..57=output
        printf("Current DIO direction = 0x%X\n", Dio5GetDirection());

        printf("Current DIO status = 0x%X\n", Dio5GetInput());

        printf("Set DIO output to high\n");
        Dio5SetOutput(0x0F);

        printf("Set DIO output to low\n");
        Dio5SetOutput(0x00);

        return 0;
}
//-----------------------------------------------------------------------------
void Dio5Initial(void)
{
        unsigned char ucBuf;

        Set_W627UHG_LD(0x08);                                  //switch to logic device 8
        //enable the GP5 group
        ucBuf = Get_W627UHG_Reg(0x30);
        ucBuf |= 0x02;
        Set_W627UHG_Reg(0x30, ucBuf);
}
//-----------------------------------------------------------------------------
void Dio5SetOutput(unsigned char NewData)
{
        Set_W627UHG_LD(0x08);                             //switch to logic device 8
        Set_W627UHG_Reg(0xE1, NewData);
}
//-----------------------------------------------------------------------------
unsigned char Dio5GetInput(void)
{
        unsigned char result;

        Set_W627UHG_LD(0x08);                             //switch to logic device 8
        result = Get_W627UHG_Reg(0xE1);
        return (result);
}
//-----------------------------------------------------------------------------
void Dio5SetDirection(unsigned char NewData)
{
        //NewData : 1 for input, 0 for output
        Set_W627UHG_LD(0x08);                             //switch to logic device 8
        Set_W627UHG_Reg(0xE0, NewData);
}
//-----------------------------------------------------------------------------
unsigned char Dio5GetDirection(void)
{
        unsigned char result;

        Set_W627UHG_LD(0x08);                             //switch to logic device 8
        result = Get_W627UHG_Reg(0xE0);
        return (result);
}
//-----------------------------------------------------------------------------
```