ID31 Motherboard

3.5” Fanless SBC with Intel ® Atom Dual Core N2600 1.6GHz Processor, VGA, LVDS, Dual Giga Ethernet, and Mini-PCIe Interface

User Manual / Engineering Spec.

Version 1.1

FCC Statement

This device complies with part 15 FCC rules. Operation is subject to the following two conditions：

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

Copyright Notice

Trademark Acknowledgement

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Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or masks work rights to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. Winmate Communication Inc. makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

Warranty

We warrant that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, We will, at its option, repair or replace the defective product at no charge to the customer, provided it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service.

If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W11Axxxxxxxx means October of year 2011.

Packing List

Before using this Motherboard, please make sure that all the items listed below are present in your package：

- ID31 Motherboard
- User Manual
- HDD SATA Cable
- User's Manual & Driver CD

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Customer Service

We provide service guide for any problem as follow steps： The first, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance. You may have the following information ready before you call：

- Product serial number
- Peripheral attachments
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

Safety Precautions

- **Warning!**

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronic personnel should open the PC chassis.

- **Caution!**

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety and Warranty

1. Please read these safety instructions carefully.
2. Please keep this user's manual for later reference.
3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
    A. The power cord or plug is damaged.
    B. Liquid has penetrated into the equipment.
    C. The equipment has been exposed to moisture.
    D. The equipment does not work well, or you cannot get it to work according to the user's manual.
    E. The equipment has been dropped and damaged.
    F. The equipment has obvious signs of breakage.
15. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20° C (-4°F) or above 60° C (140° F). It may damage the equipment.

Revision History

Version	Date	Note	Author
1.0	2012.07.23	Initial Draft	Henry Hsu
1.1	2015.05.08	Revise content	Tom Huang

Contents

CHAPTER 1

General Information

This chapter includes the ID31 Motherboard background information.
Sections include:

- Introduction
- Feature
- Motherboard Specification
- Function Block
- Board Dimensions

Chapter 1 General Information

1.1 Introduction

The ID31 SBC is integrated with Intel® NM10 express chipset, 17x17mm, and Atom N2600 Processor. Intel Atom Processor with 32nm low power design enables down to 50% less average power consumption and the chipset delivers up to 4x improvement in graphics performance and enables up to 50% higher data transfer bus speed rate.

In peripheral connectivity, ID31 SBC features with Mini-PCIe I/O ports, one Serial ATA connectors, five Serial Port (One Connector; Four Pin Header) and Six Hi-Speed USB 2.0 connectors(Two Connector ; Four Pin Header) .Additionally, ID31 SBC build-in a 12~24V DC-IN power adapter.

Thus, the ID31 SBC is designed to satisfy most of the applications in the industrial computer market, such as Gaming, POS, KIOSK, Industrial Automation, and Programmable Control System. It is a compact design to meet the demanding performance requirements of today's business and industrial applications.

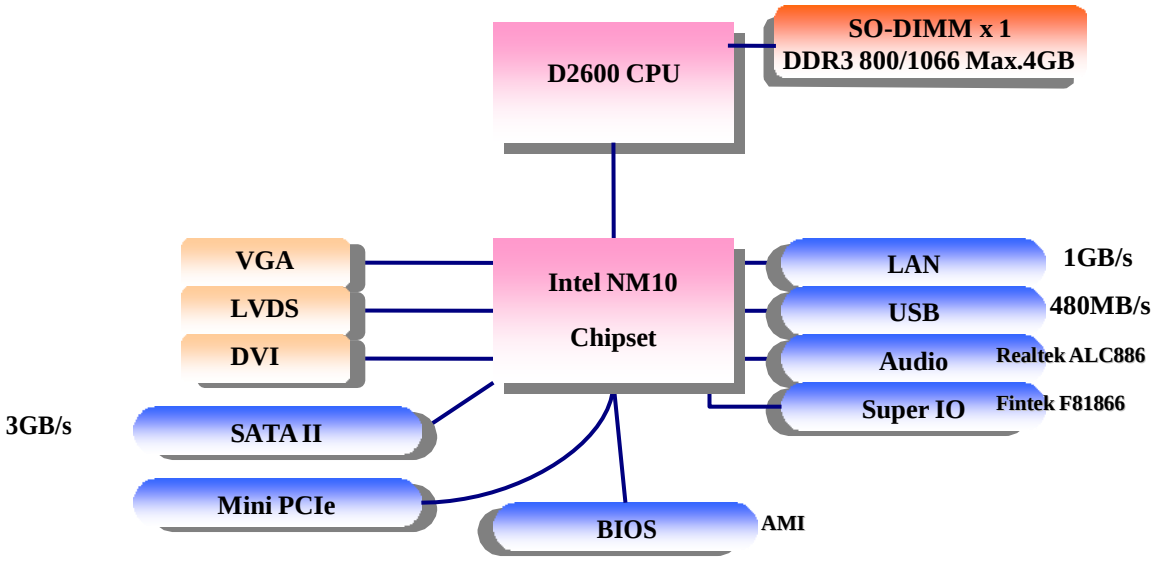
1.2 Feature

- 3.5-inch Form Factor (146mm x 102mm)
- Supports Intel® Atom N2600 1.6GHz processor
- System memory up to 4GB DDR3 800/1066, SO-DIMM
- Intel NM10 Chipset
- Intel® Graphic Accelerator 3600 Integrated Graphics Engine.
- Dual Broadcom BCM57780 GbE controller
- 2 x Mini PCIe(one for wireless, one for SATA SSD), 5 X COM, 6 x USB2.0, 1 x SATA, 8 x GPIO ports, 1 x DVI

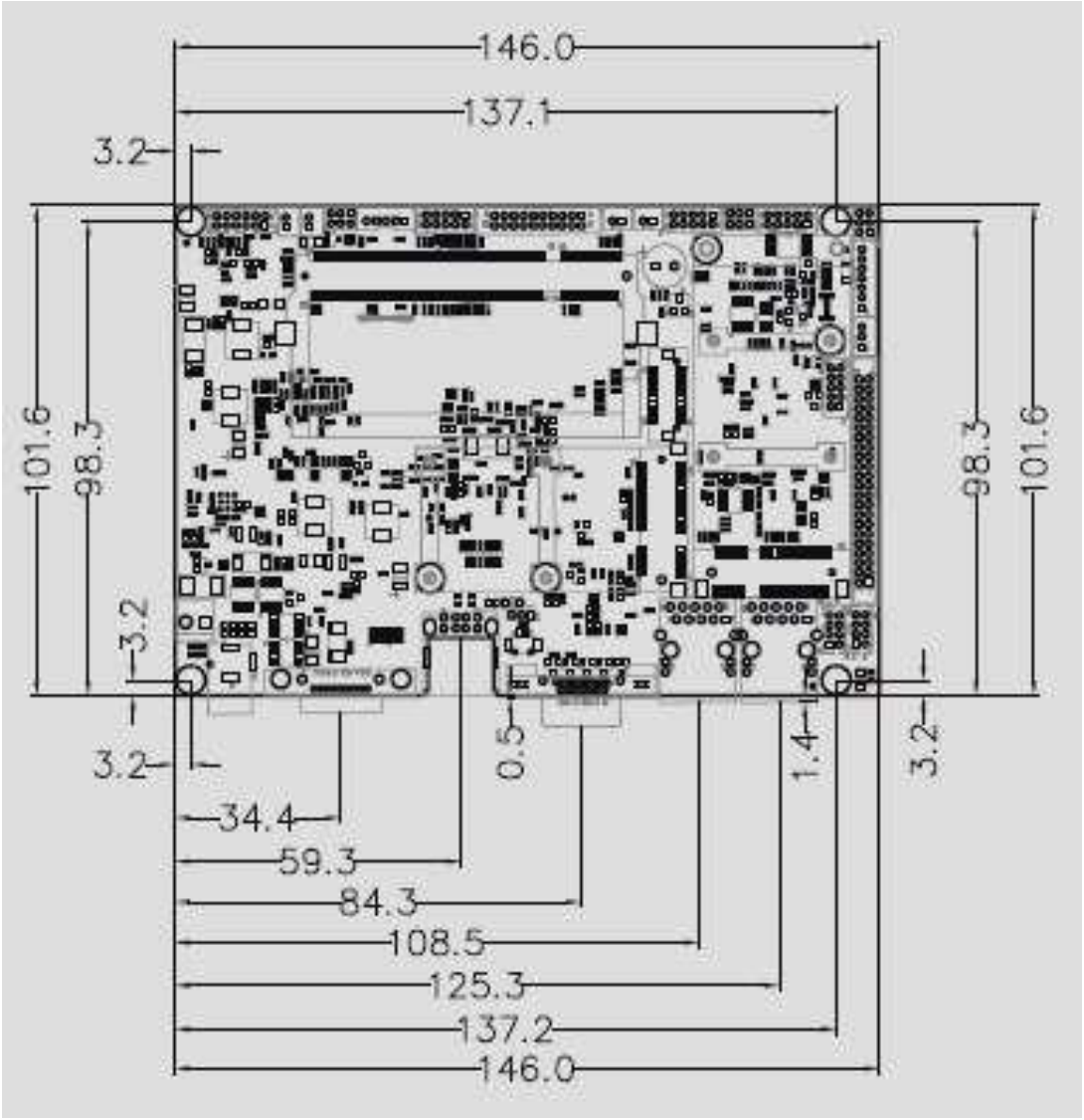
1.3 Motherboard Specifications

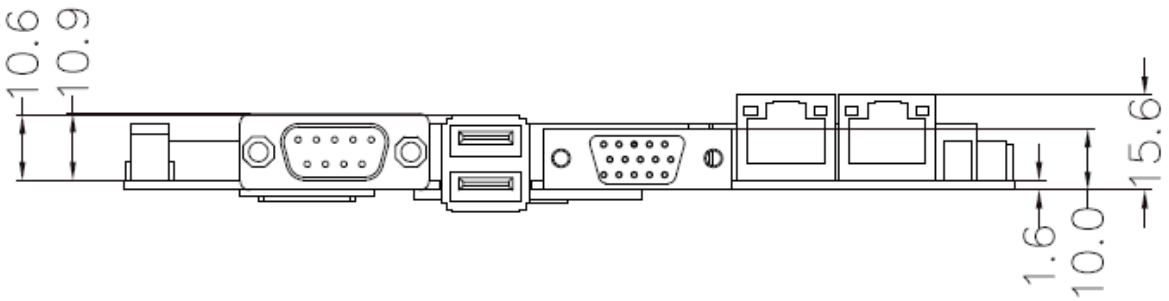
CPU Type	Intel Atom Dual Core N2600 Processor
CPU Speed	1.6GHz
Chipset	Intel NM10
BIOS	AMI 4Mbit Flash
Graphic	Intel® Graphic Accelerator 3600 support DX9, OGL3.0
LCD interface	Single-channel 24 bit LVDS Up to 1440 x 900 @ 60Hz
Resolution	VGA mode： Up to 1920 x 1200 @ 60Hz DVI： 1920 x 1200 @ 60Hz
LAN	2 x Giga LAN (Broadcom BCM57780 GbE controller)
Memory Type	1 x SO-DIMM socket, supports up to 4GB DDR3 800/1066
Super I/O	Fintek F81865
Sound	Realtek ALC886 HD Audio Codec
USB	6 ports, USB 2.0 (2 x USB Connector, 4 x USB pin-header)
Edge Connectors	1 x DC-IN Jack (+12~24V) 1 x VGA out connector 2 x Gigabit LAN RJ-45 1 x RS232/422/485 1 x Dual USB stack connector
On Board Pin-Header Connectors	1 x SATA connector for SATAI/II 3.0 Gb/s 1 x 10pins pin-header for Front Panel(2x5) 1 x 8pins pin-header for 5V/12V external power 1 x 3pins pin-header for CPU Fan 1 x 2pins pin-header for 5V external power 1 x 2pins pin-header for 12V external power 1 x 12pins pin-header for Front Audio(2x6) 2 x 8pins pin-header for USB (2X4) 1 x 10pins Digital I/O(2x5) 4 x 10pins pin-header for COM2/3/4/5 (2X5) 1 x 2-pin Power-input connector 1 x 20pins Connector for LVDS 1 x 20pins Connector for DVI 1 x 3pins digital panel backlight brightness controller 1 x 7pins digital panel inverter
Power Connector	Input: 2-pin Power-input connector
Expansion Slots	1 x Mini PCIe slot for wireless, 1 x Mini PCIe slot for SATA SSD
Form Factor	3.5 inch
Dimensions	146mm x 102mm
Mechanical & environmental	Operating temperature: 0 deg. C to 60 deg. C Operating Humidity: 10 ~ 90% Relative humidity, non-condensing Shock: Operating 15G, 11ms duration Vibration: Operating 5 Hz~500Hz / 1Grms / 3 Axis Certification: CE, FCC, RoHS

1.4 Function Block



1.5 Board dimensions





CHAPTER 2

Installations

This chapter provides information on how to use the jumps and connectors on the ID31 Motherboard. The Sections include:

- Memory Module Installation
- I / O Equipment Installation
- Setting the Jumpers
- Connectors on ID31 Motherboard

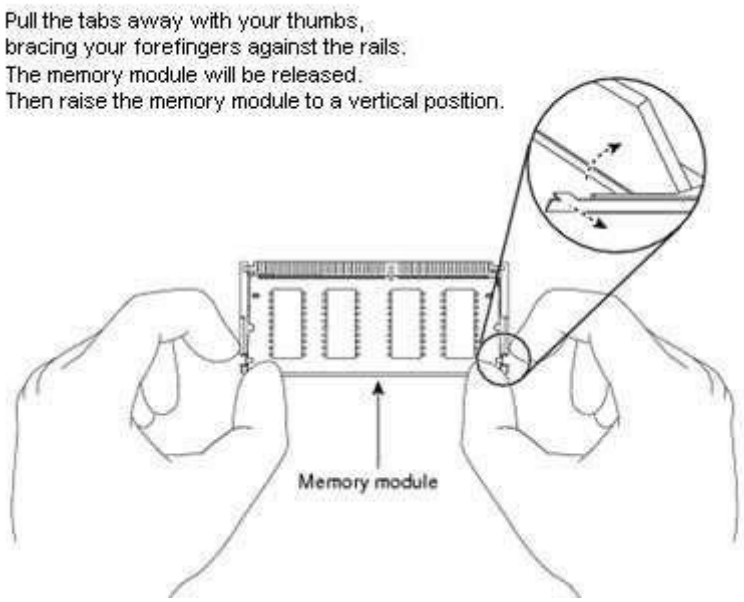
Chapter 2 Installations

2.1 Memory Module（SO-DIMM）Installation

The ID31 Motherboard provides one 204-pin SODIMM slot. The socket supports up to 4GB DDR3 1066 SDRAM. When installing the Memory device, please follow the steps below：

Step.1. Firmly insert the SO-DIMM at an angle into its slot. Align the SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.

Step.2. Press downwards on SO-DIMM until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.



- Caution!

The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the development board and the SO-DIMM if the SO-DIMM is forced into the slot at the incorrect orientation.

2.2 I/O Equipment Installation

2.2.1 12~24V DC-IN

The Motherboard allows plugging 12~24V DC-IN jack on the board without another power module converter under power consumption by Intel Atom N2600 1.6GHz Processor in NM10 chipset.

2.2.2 Serial COM ports

Two RS-232 connectors build in the rear I/O. One optional COM ports support RS-422/485. When an optional touch-screen is ordered with PPC, serial com port can connect to a serial or an optional touch-screen.

※Without power/reset OSD, you can short circuit pin5 & 6 of the onboard panel connector to boot up the motherboard.

2.2.3 External VGA

The Motherboard has one VGA port that can be connected to an external CRT/ LCD monitor. Use VGA cable to connect to an external CRT / LCD monitor, and connect the power cable to the outlet. The VGA connector is a standard 15-pin D-SUB connector.

2.2.4 Ethernet interface

The Motherboard is equipped with Broadcom BCM57780 chipset which is fully compliant with the PCI 10/100/1000 Mbps Ethernet protocol compatible. It is supported by major network operating systems. The Ethernet ports provide two standard RJ-45 jacks.

2.2.5 USB ports

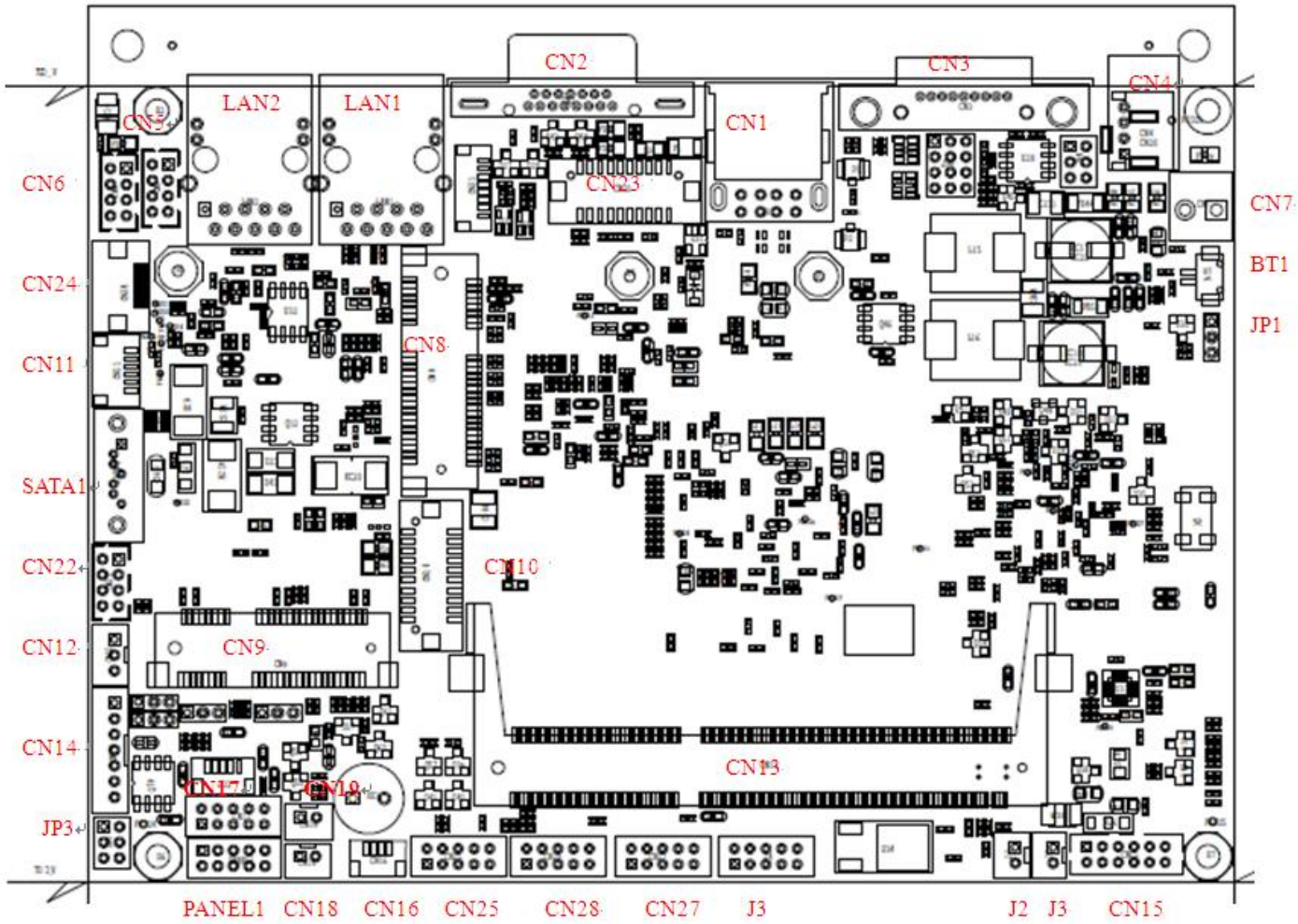
Four USB devices (Two with pin headers) may be connected to the system though an adapter cable. Various adapters may come with USB ports. USB usually connect the external system to the system. The USB ports support hot plug-in connection. Whatever, you should install the device driver before you use the device.

2.2.6 Audio function

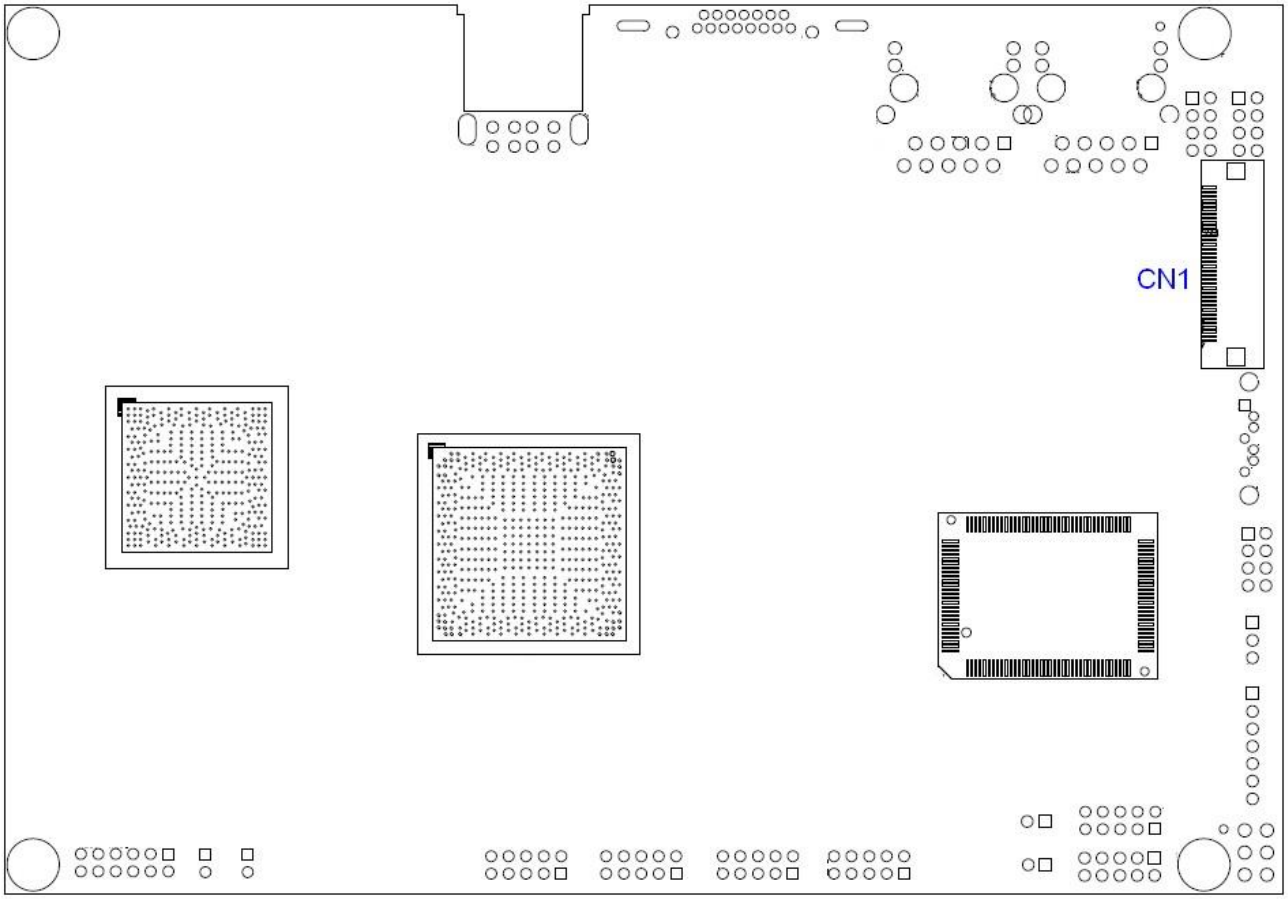
The Audio 7.1 channel capabilities are provided by a Realtek ALC886 chipset supporting digital audio outputs. The audio interface includes two jacks: line-in and line-out.

2.3 Jumpers and Connectors

TOP



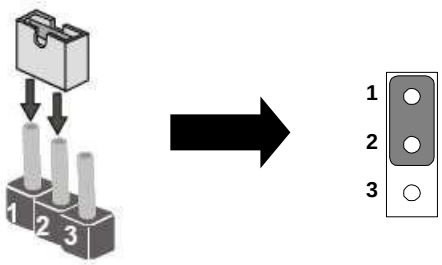
BOTTOM



2.4 Jumper Setting

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

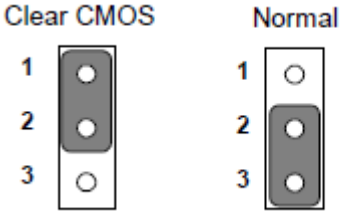
The jumper setting diagram is as below. If a jumper shorts pin 1 and pin 2, the setting diagram is shown as the right one.



The following tables list the function of each of the board's jumpers.

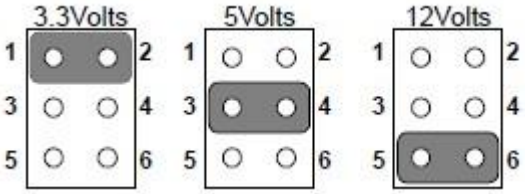
Label	Function	Note
JP1	Clear CMOS	3x1 header , pitch 2.0mm
JP3	LVDS VOLTAGE	2x3 header , pitch 2.0mm
JP4	RS232 / RS422 / RS485 Selector	2x3 header , pitch 2.0mm
JP5	PWM /DC Selector	3x1 header , pitch 2.0mm
JP8	RS232 / RS422 / RS485 Selector	3x4 header , pitch 2.0mm
JP9	Inverter Power Selector	3x1 header , pitch 2.0mm
JP10	Inverter PWM Level Selector	3x1 header , pitch 2.0mm
JP11	Brightness Mode Selector	3x1 header , pitch 2.0mm

2.4.1 JP1 : Clear CMOS



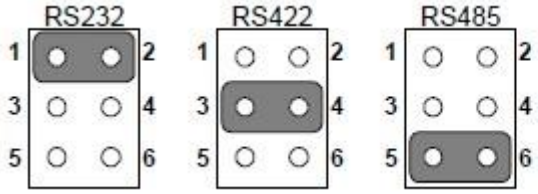
Pin No.	Functions
1 Short 2	Clear CMOS
2 Short 3	Normal

2.4.2 JP3 : LCD Panel Voltage Select



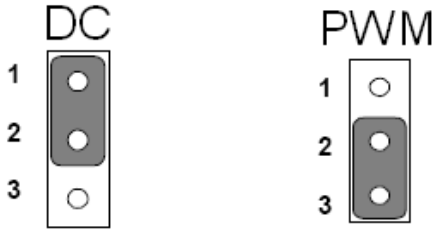
Pin No.	Functions
1 Short 2	3.3Volts Selected
2 Short 3	5Volts Selected
5 Short 6	12Volts Selected

2.4.3 JP4: RS232 / RS422 / RS485 Selector for CON port

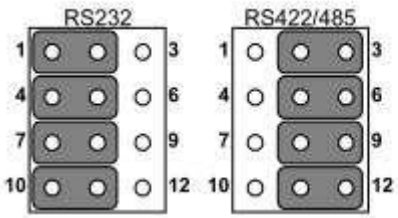


Pin No.	Functions
1 Short 2	RS232
3 Short 4	RS422
5 Short 6	RS485

2.4.4 JP5: PWM/DC Selector

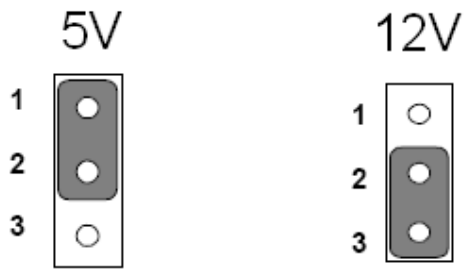


2.4.5 JP8 : RS232 / RS422 / RS485 Selector for CON port

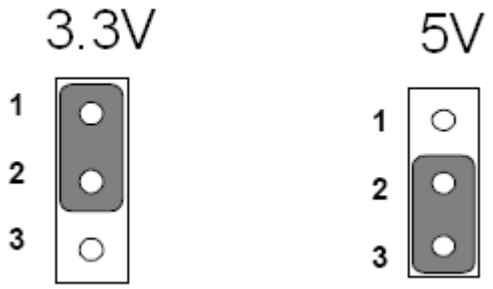


RS232	RS422/485
1-2	2-3
4-5	5-6
7-8	8-9
10-11	11-12

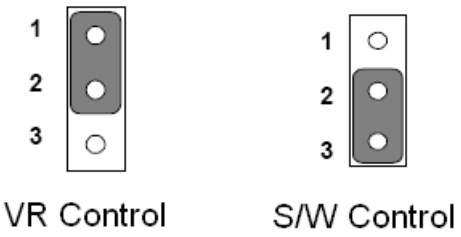
2.4.5 JP9 : Inverter Power Selector



2.4.6 JP10 : Inverter Power Selector



2.4.6 JP11 : Brightness Mode Selector



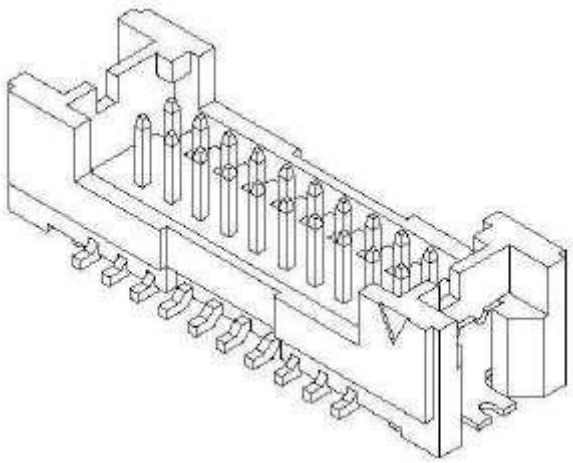
2.5 Connectors and Pin Assignment

The table below lists the function of each of the board's connectors.

Label	Function	Note
CN10	LVDS LCD Output Connector	2x10 Pin, 1.25mm
JP1	Digital Panel Backlight Brightness Control	3x1 header, pitch 2.54mm
CON3	Digital Panel Backlight Inverter Power	7x1 header, pitch 2.54mm
VGA	VGA Output	DB15
COM Port	COM1 for RS232/422/485	DB9
J4	COM2 for RS232	2x5 header
CN27	COM3 for RS232	2x5 header
CN28	COM4 for RS232	2x5 header
CN25	COM5 for RS232	2x5 header
CN15	Audio connector	2x6 header
CN16	SM Bus Connector	1x4 header, pitch 1.0mm
CN5	USB PIN HEADER	4x2 Pin Header
CN6	USB PIN HEADER	4x2 Pin Header
CPU_FAN	FAN CONNECTOR	3x1 Pin Header
PANEL1	System Function Connector	5x2 header ,pitch 2.0mm
CN11	UART Connector	1x6 header, pitch 1.0mm
CN12	VR Connector	3x1 Pin Header
CN14	Inverter Connector	7x1 header, pitch 2.0mm
CN18	12V External Power	2x1 header, pitch 2.0mm
CN19	5V External Power	2x1 header, pitch 2.0mm
CN22	12V/5V External Power	4x2 header ,pitch 2.54mm
CN7	12~24V DC Jack	2 Pin Jack
CN17	Digital I/O	2x5 Pin header
J2/J3	Amplifier	2 Pin header
CN23	DVI LCD Output Connector	20DP-1.25V
CN9	Mini PCIe slot for SSD	Mini PCIe slot
CN10	Mini PCIe slot for WLAN	Mini PCIe slot

* Not Default Connector

2.5.1 CN10: LVDS Connector

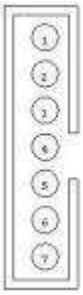


Pin No.	SYMBOL	Pin No.	SYMBOL
1	GND	2	LVDS_TX0_DN
3	GND	4	LVDS_TX0_DP
5	GND	6	LVDS_TX1_DN
7	GND	8	LVDS_TX1_DP
9	GND	10	LVDS_TX2_DN
11	N/C	12	LVDS_TX2_DP
13	LCDVDD	14	LVDS_CLK_DN
15	LCDVDD	16	LVDS_CLK_DP
17	LCDVDD	18	LVDS_TX3_DN
19	LCDVDD	20	LVDS_TX3_DP

2.5.2 CN12: Digital Panel Backlight Brightness Control

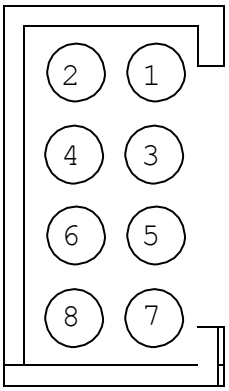
Pin No.	SYMBOL
1	5V
2	Black Light Control
3	GND

2.5.3 CN14: Inverter Power



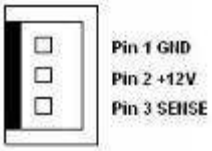
Pin No.	SYMBOL
1	Inverter Power
2	Inverter Power
3	Inverter Power
4	GND
5	Black Light Control
6	GND
7	Backlight ON/OFF

2.5.4 CN5/CN6: USB PIN HEADER



USB			
Pin	SYMBOL	Pin	SYMBOL
2	USB_5V	1	USB_5V
4	USB_P6-	3	USB_P7-
6	USB_P6+	5	USB_P7+
8	GND	7	GND

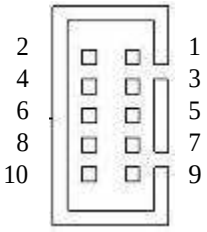
2.5.5 CPU_FAN: FAN CONNECTOR



CPU_FAN

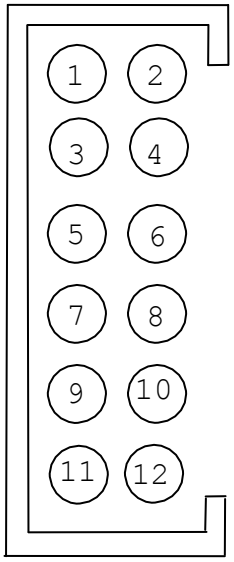
2.5.6 PANEL1: Front Panel System Function Connector

Without power/reset OSD, short circuit pin 5 and 6 together to boot up the motherboard.



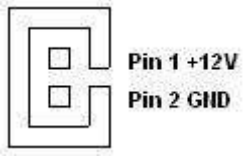
Pin	SYMBOL	Pin	SYMBOL
2	3.3V	1	PW_LED+
4	HD_LED-	3	GND
6	GND	5	PW_BT1
8	Reset#	7	GND
10	5VSB	9	WiFi LED#

2.5.7 AUDIO1: Audio Connector

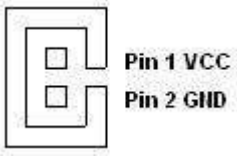


Pin	SYMBOL	Pin	SYMBOL
2	AZ_FOUT_L	1	AZ_FOUT_R
4	AUGND	3	+5VA
6	LINE1_L	5	LINE1_R
8	MIC1_L	7	MIC1_R
10	SW_D	9	AUGND
12	SW_C	11	SW_B

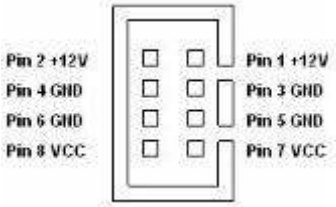
2.5.8 CN18/CN19/CN22: External Power



CN18

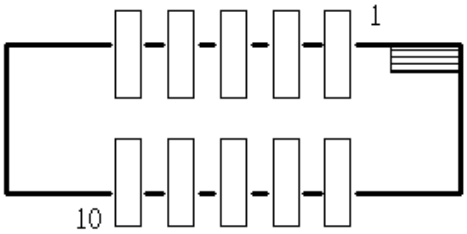


CN19



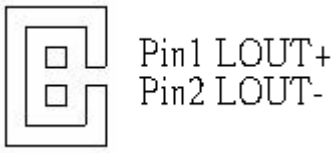
CN22

2.5.9 CN17: Digital I/O Connector

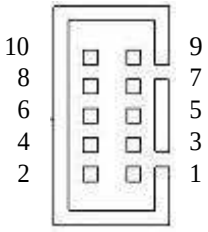


Pin	SYMBOL	Pin	SYMBOL
2	Vcc	1	GND
4	Out1	3	Out3
6	Out0	5	Out2
8	IN1	7	IN3
10	IN0	9	IN2

2.5.10 J2(Left)/J3(Right): Amplifier

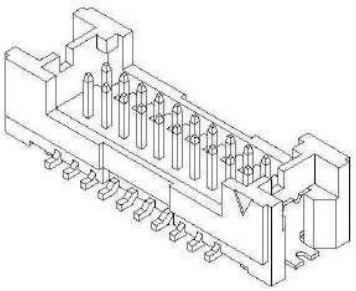


2.5.11 J4/CN27/CN28/CN25: Serial port COM2/COM3/COM4/COM5



Pin	SYMBOL	Pin	SYMBOL
10	+5V	9	GND
8	NRI1A	7	NDTR1A
6	NCTS1A	5	NTXD1A
4	NRTS1A	3	NRXD1A
2	NDSR1A	1	NDCD1A

2.5.12 CN23: DVI connector



Pin No.	SYMBOL	Pin No.	SYMBOL
1	GND	2	TMDSB_DATA0-
3	GND	4	TMDSB_DATA0+
5	DVIC_LVDS_DET	6	TMDSB_DATA1-
7	DVIC_BKLTEN	8	TMDSB_DATA1+
9	DVIC_VDDEN	10	TMDSB_DATA2-
11	DVI_HOT_DETECT	12	TMDSB_DATA2+
13	LCDVDD	14	TMDSB_BLK-
15	LCDVDD	16	TMDSB_BLK+
17	+V5S	18	DVI1_DDC_CLK_R
19	+V5S	20	DVI_DDC_DAT_R

2.5.13 CN16: SM Bus Connector

Pin No.	SYMBOL	Pin No.	SYMBOL
1	+3.3V	2	MS_DATA
3	MS_CLK	4	GND+

2.5.14 CN11: UART Connector

Pin No.	SYMBOL	Pin No.	SYMBOL
1	+3.3V(default)/5V	2	UART Tx
3	UART Rx	4	UART CTS
5	UART RTS	6	GND

2.5.15 CN9: Mini PCIe slot for SSD

Pin Number	Signal Name	Pin Number	Signal Name
1	NC	2	+V3.3DX_SSD
3	NC	4	GND
5	NC	6	+V1.5S_SSD
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC
23	SATA_RXP2	24	+V3.3DX_SSD
25	SATA_RXN2	26	GND
27	GND	28	+V1.5S_SSD
29	GND	30	NC
31	SATA_TXN2	32	NC
33	SATA_TXP2	34	GND
35	GND	36	NC
37	GND	38	NC
39	+V3.3DX_SSD	40	GND
41	+V3.3DX_SSD	42	NC
43	GND	44	SATA2_DEVSLP
45	NC	46	NC
47	NC	48	+V1.5S_SSD
49	SSD_LED#	50	GND
51	+V3.3DX_SSD	52	+V3.3DX_SSD
M1	GND	M1	GND
M2	GND	M2	GND

2.5.16 CN10: Mini PCIe slot for WLAN

Pin Number	Signal Name	Pin Number	Signal Name
1	NC	2	+V3.3DX_SSD
3	NC	4	GND
5	NC	6	+V1.5S_SSD
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC
23	SATA_RXP2	24	+V3.3DX_SSD
25	SATA_RXN2	26	GND
27	GND	28	+V1.5S_SSD
29	GND	30	NC
31	SATA_TXN2	32	NC
33	SATA_TXP2	34	GND
35	GND	36	NC
37	GND	38	NC
39	+V3.3DX_SSD	40	GND
41	+V3.3DX_SSD	42	NC
43	GND	44	SATA2_DEVSLP
45	NC	46	NC
47	NC	48	+V1.5S_SSD
49	SSD_LED#	50	GND
51	+V3.3DX_SSD	52	+V3.3DX_SSD
M1	GND	M1	GND
M2	GND	M2	GND

CHAPTER 3

Graphic Driver Installation

This chapter offers information on the chipset software Installation utility

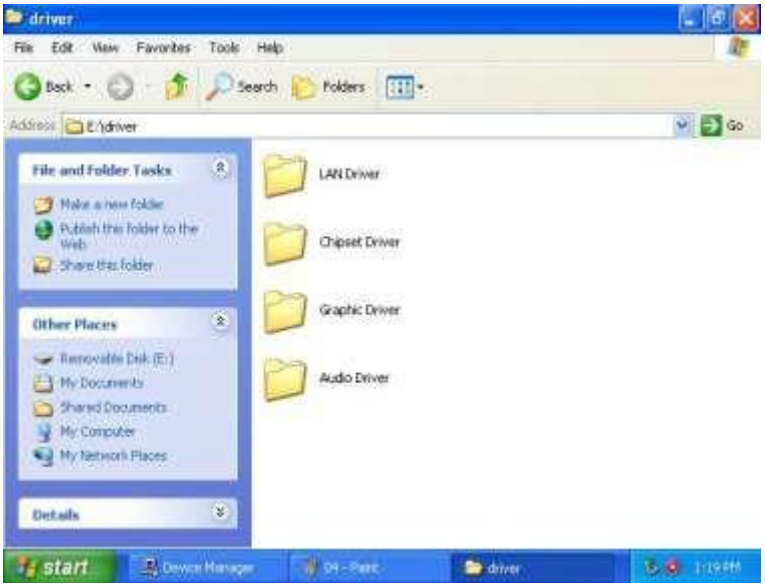
- Installation of Graphic Driver
- Panel Resolution Setting

Chapter 3 Graphic Driver Installation

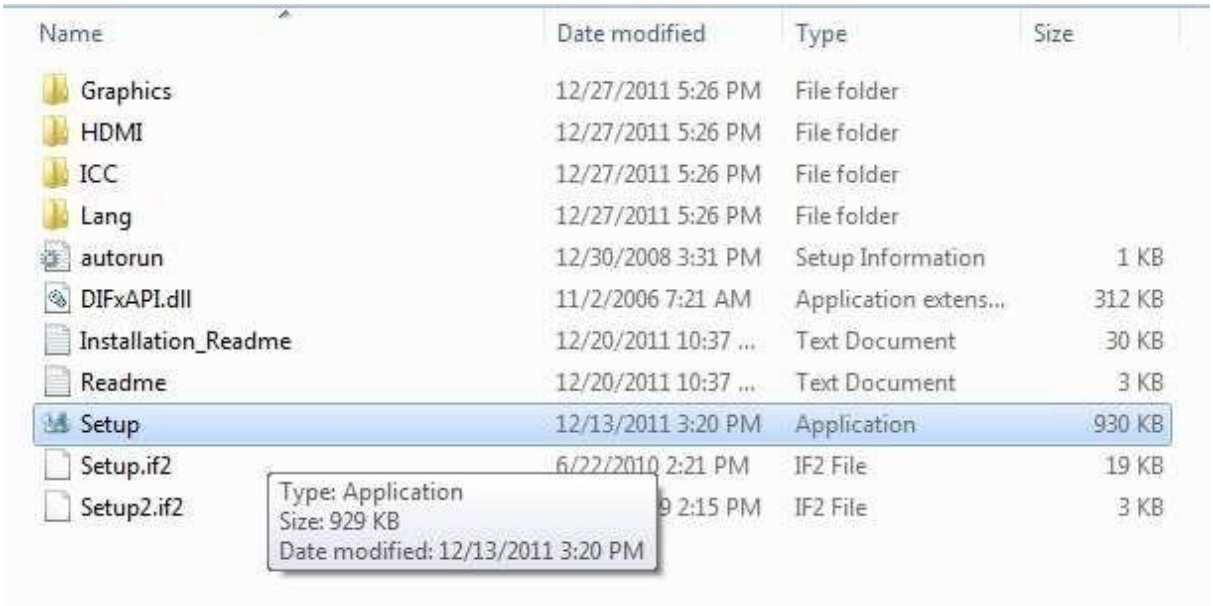
3.1 Standard CMOS Feature

ID31 Motherboard is equipped with Intel NM10 Companion Device. The Intel Graphic Drivers should be installed first, and it will enable “Video Controller (VGA compatible). Follow the instructions below to complete the installation. You will quickly complete the installation.

Step.1. Insert the CD that comes with the Motherboard. Open the file document “Graphic Driver “.



Step.2. Click on “setup” to execute the setup.



Step.3. Click on “Next “ to install Driver.

Step.4. Click on “Yes “ to agree License.

Step.5. Click on “Next “ to install Driver.

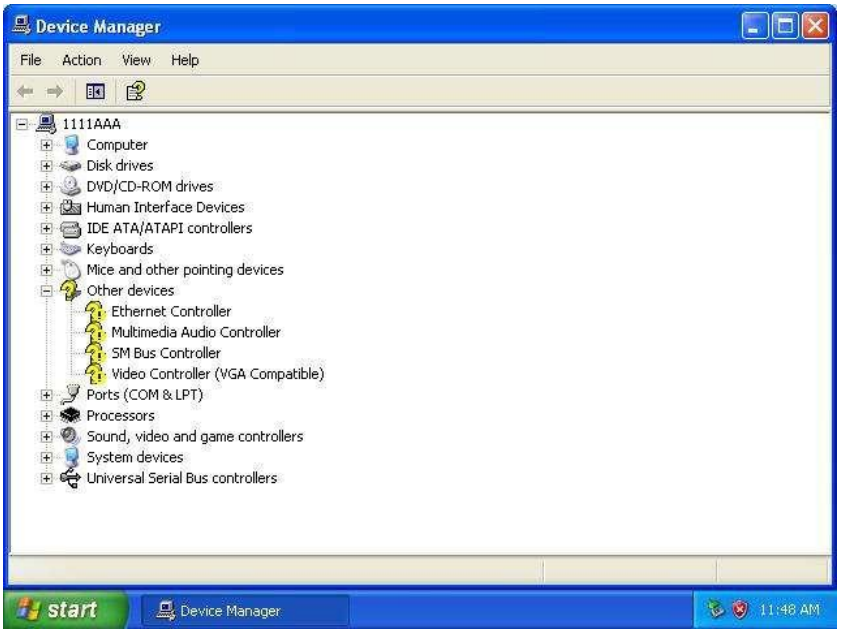
Step.6. Click on “Next “ to install Driver.

Step.7. Click on “Yes, I want to restart this computer now“ to go on.

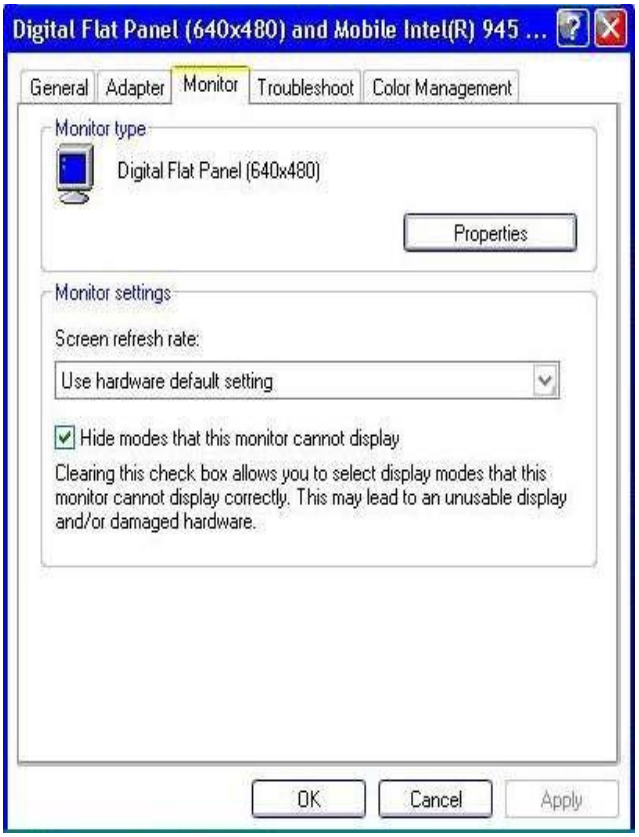
3.2 Panel Resolution Setting

Step.1. Right-click the desktop, and then click Properties.

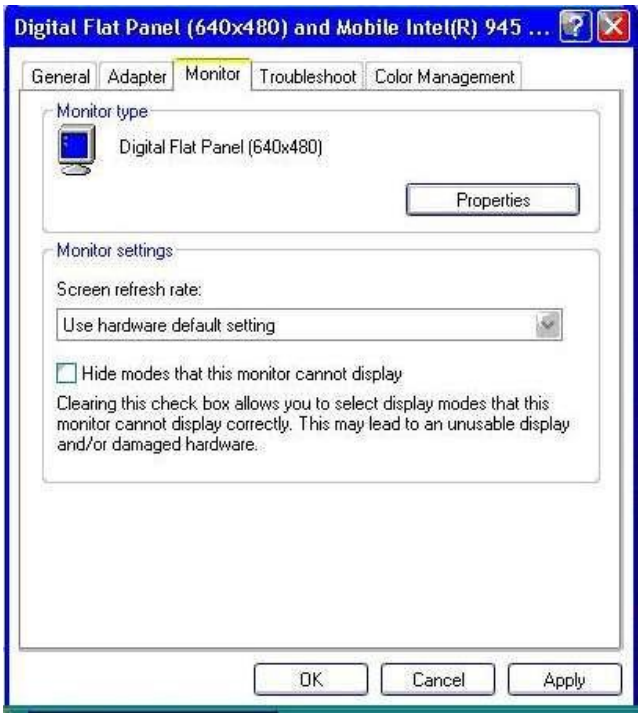
Step.2. In the Display Properties dialog box, click the Settings tab.



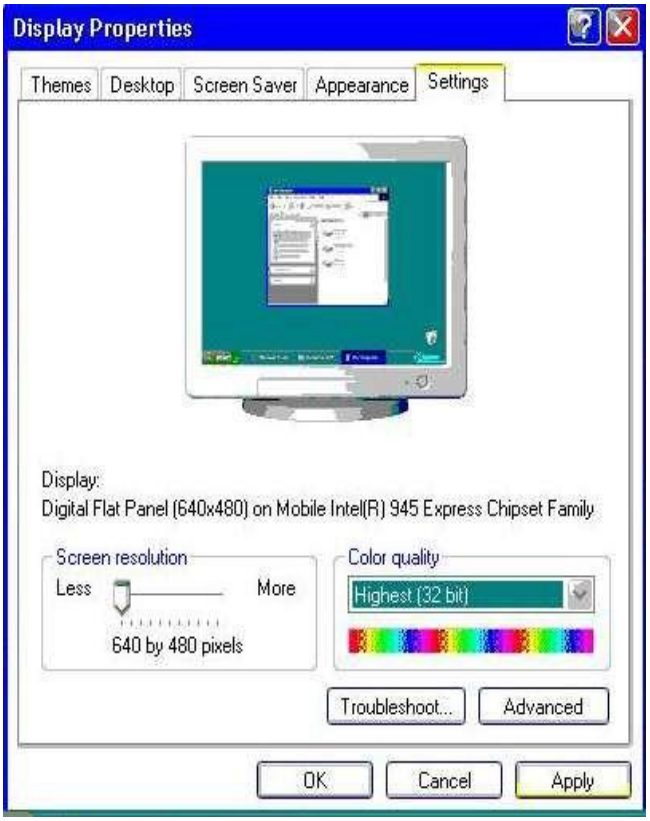
Step.3. Click on “Monitor”.



Step.4. Click on “Hide modes that this monitor cannot display” to remove this option.



Step.5. Click on “Setting”, then could choose 32bit color qualify.



CHAPTER 4

Chipset Driver Installation

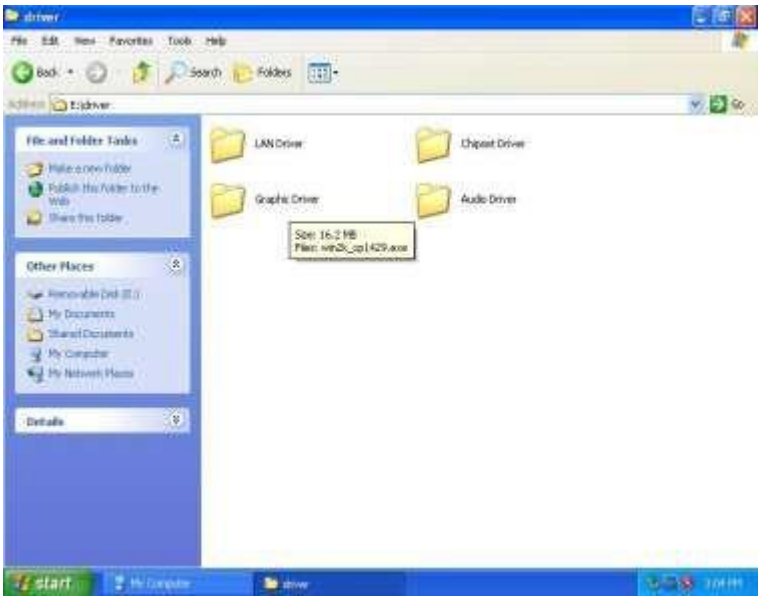
This chapter offers information on the chipset software Installation utility

- Installation of Chipset Driver
- Further information

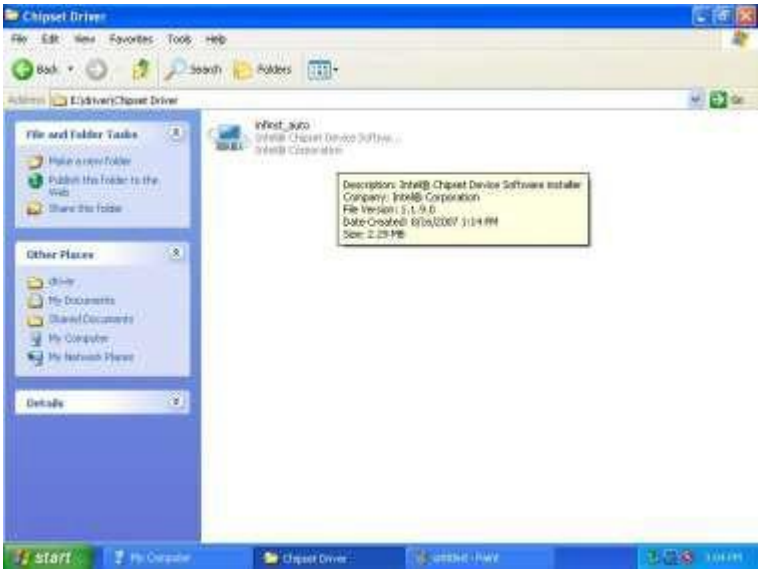
Chapter 4 Chipset Driver Installation

4.1 Standard CMOS Features

Setp.1. Insert the CD that comes with the motherboard. Open the file document “Chipset Driver”.

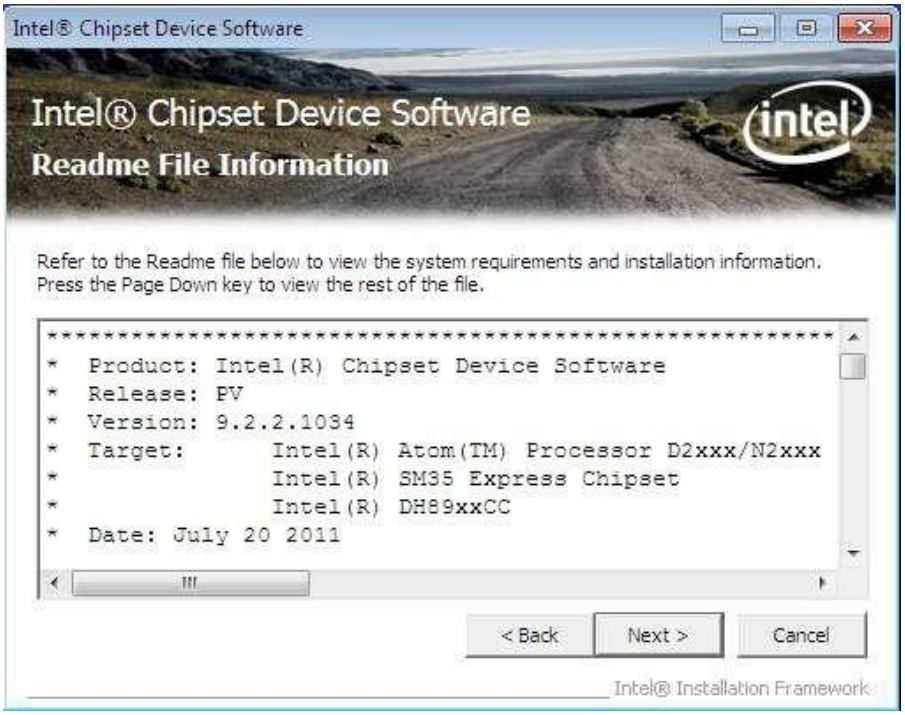


Setp.2. Click on “infinst_auto.exe“ to install driver.



Setp.3. Click on “Yes “ to agree License

Setp.4. Click on “Next“ to install driver.



Setp.5. Click on “Next“ to install driver.

Step.7. Click on “Yes, I want to restart this computer now“ to go on.

CHAPTER 5

Ethernet Driver Installation

This chapter offers information on the Ethernet software installation utility.
Sections include:

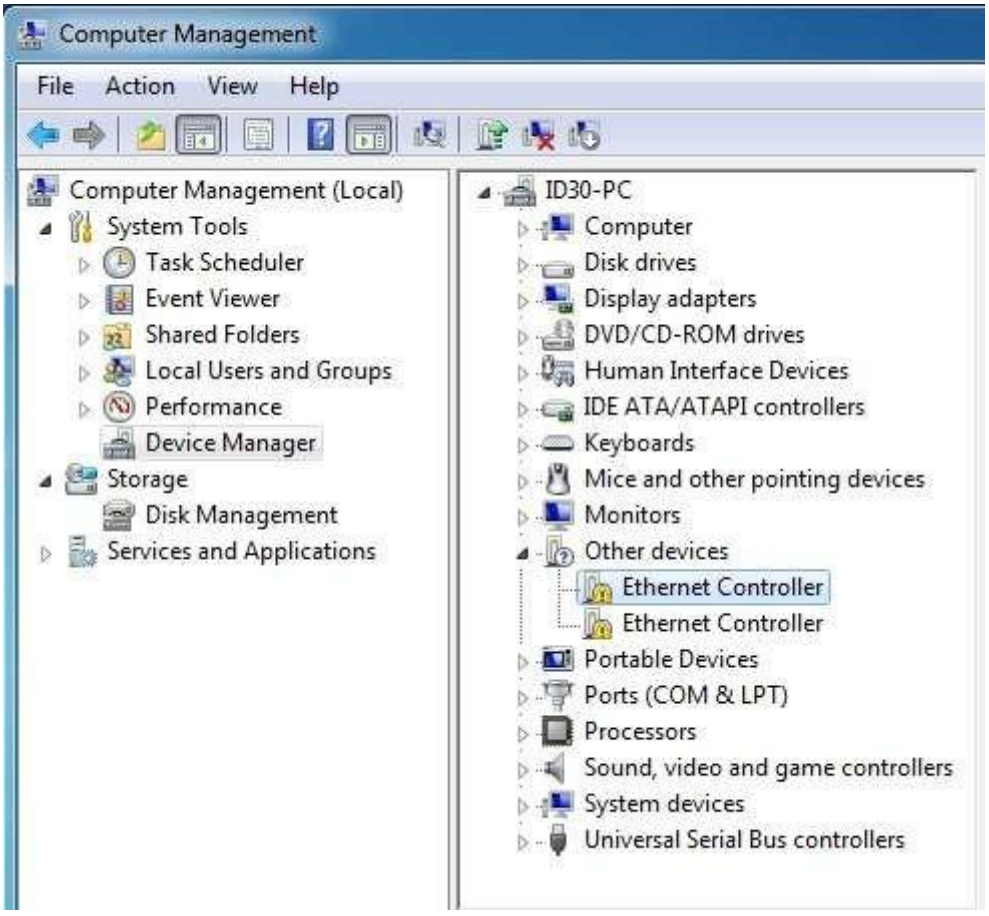
- Introduction
- Installation of Ethernet Driver

Chapter 5 Ethernet Driver Installation

Installation of Ethernet Driver

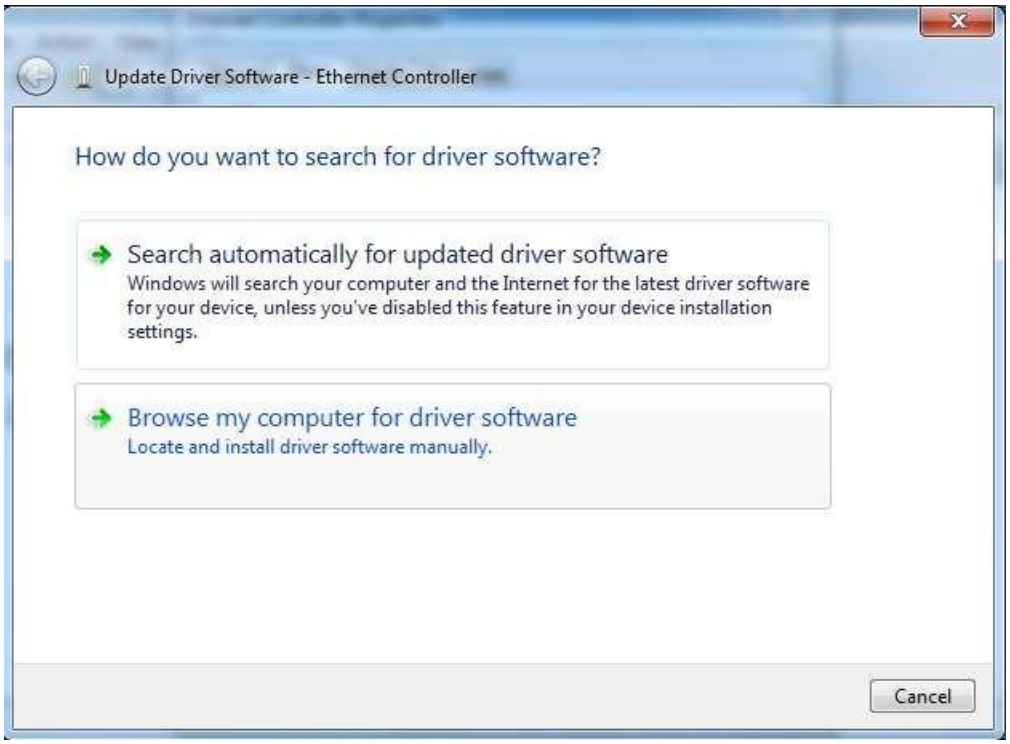
The Users must make sure which operating system you are using in the ID31 Motherboard before installing the Ethernet drivers. Follow the steps below to complete the installation of the Broadcom BCM57780 Gigabit Ethernet controller LAN drivers. You will quickly complete the installation.

Step.1. Right-click the desktop, and then click Properties.
Step.2. In the Other device dialog box, click the Settings tab.



Step.2 Click on “Update Driver” to execute the setup.

Step.4. Click on “Browse my computer for driver software“ to install driver.



Step.5. Choose the path to install driver.

Setp.6. Click on “Close“ and go on.

CHAPTER 6

Audio Driver Installation

This chapter offers information on the Audio software installation utility.
Sections include:

- Introduction
- Installation of Audio Driver

Chapter 6 Audio Driver Installation

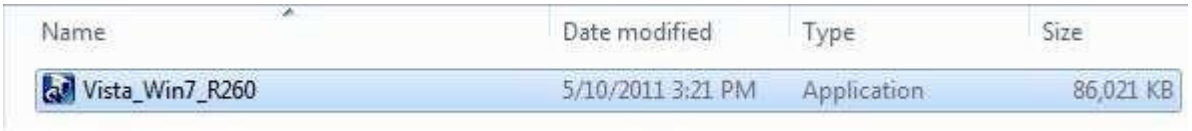
6.1 Introduction

The ALC888 series are high-performance 7.1+2 Channel High Definition Audio Codecs providing ten DAC channels that simultaneously support 7.1 sound playback, plus 2 channels of independent stereo sound output (multiple streaming) through the front panel stereo outputs. The series integrates two stereo ADCs that can support a stereo microphone, and feature Acoustic Echo Cancellation (AEC), Beam Forming (BF), and Noise Suppression (NS) technology.

6.2 Installation of Audio Driver

The users must make sure which operating system you are using in the IA30 Motherboard before installing the Audio drivers. Follow the steps below to complete the installation of the Realtek ALC655 Audio drivers. You will quickly complete the installation.

Step.1. Insert the CD that comes with the motherboard. Open the file document "alc655_driver" and click on "Vista_Win7_R260.exe" to execute the setup.



Step.2. Click on “Yes“ to install driver.

Step.3. Click on “Yes, I want to restart my computer now” to finish installation.

CHAPTER 7

Fintek COM Port Driver Installation

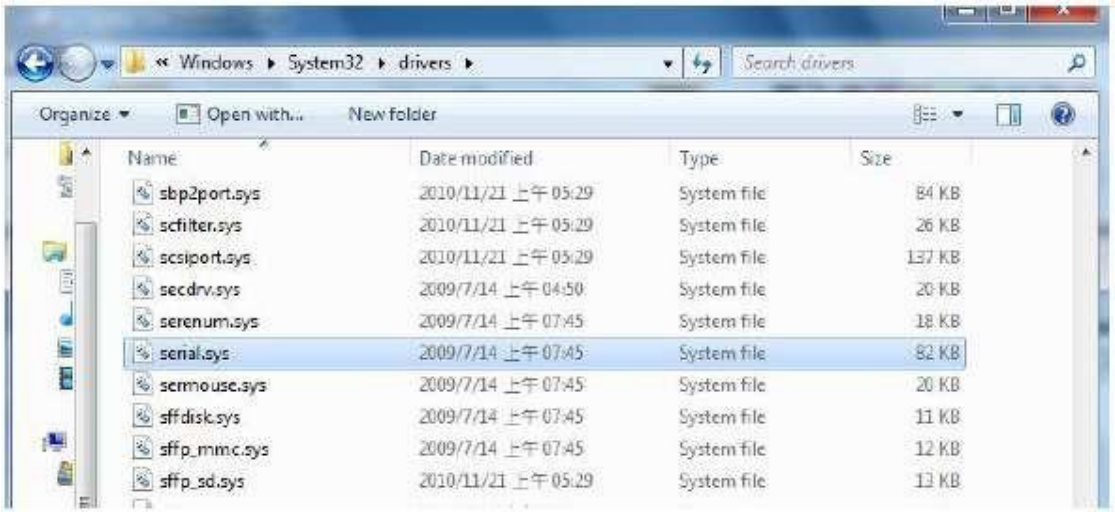
This chapter describes the step by step method to install the Fintek COM port driver.

STEP 1.If the system is WIN7 please first do close UAC.(Refer following “Disabling

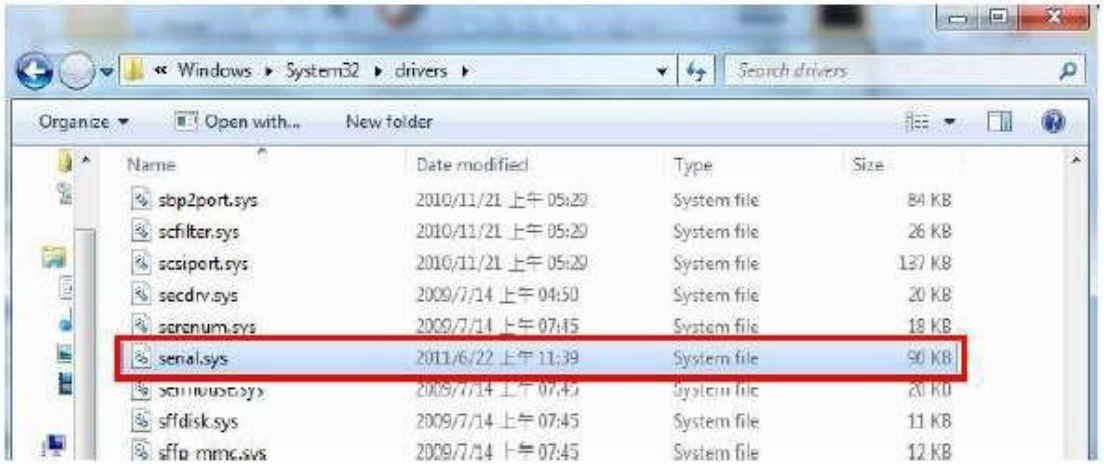
User Account

Control (UAC) in Windows 7”)

STEP 2.Extract the Patch_0408.zip to a folder.
STEP 3.Double-click batch file(patch.bat) will install driver.
STEP 4.Check driver install success.
Before the update or update fail.

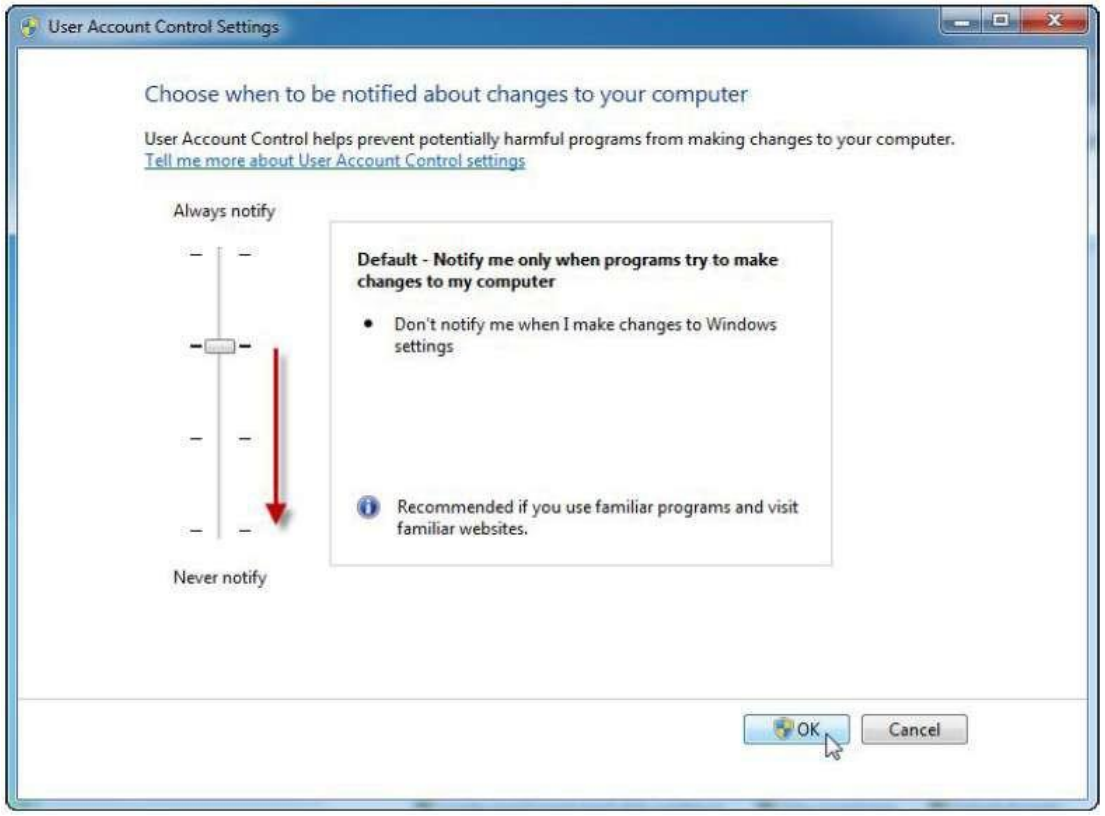


After the update and update success.



STEP 5.You will need to restart your computer for driver install success.
Type in this command from the Run menu:
C:\Windows\System32\UserAccountControlSettings.exe
or
uac

To turn off UAC, move the slider to the Never notify position, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.



To turn UAC back on, move the slider to choose when you want to be notified, and then click OK. If
you're prompted for an administrator password or confirmation, type the password or provide
confirmation.
You will need to restart your computer for UAC to be turned off.

CHAPTER 8

AMI BIOS Setup

This chapter describes how to set up the BIOS configuration

Chapter 7 AMI BIOS SETUP

Your computer comes with a hardware configuration program which called BIOS Setup that allows you to view and set up the system parameters.

The BIOS (Basic Input / Output System) is a layer of the software called 'firmware' which translates instructions from software (such as the operating system) into instructions that allow the computer hardware to understand the software programs. The BIOS settings also identify installed devices and establish many special features.

ENTERING BIOS SETUP

You can access the BIOS program just after you turn on your computer. Just press the "DEL" key when the following prompt appears:

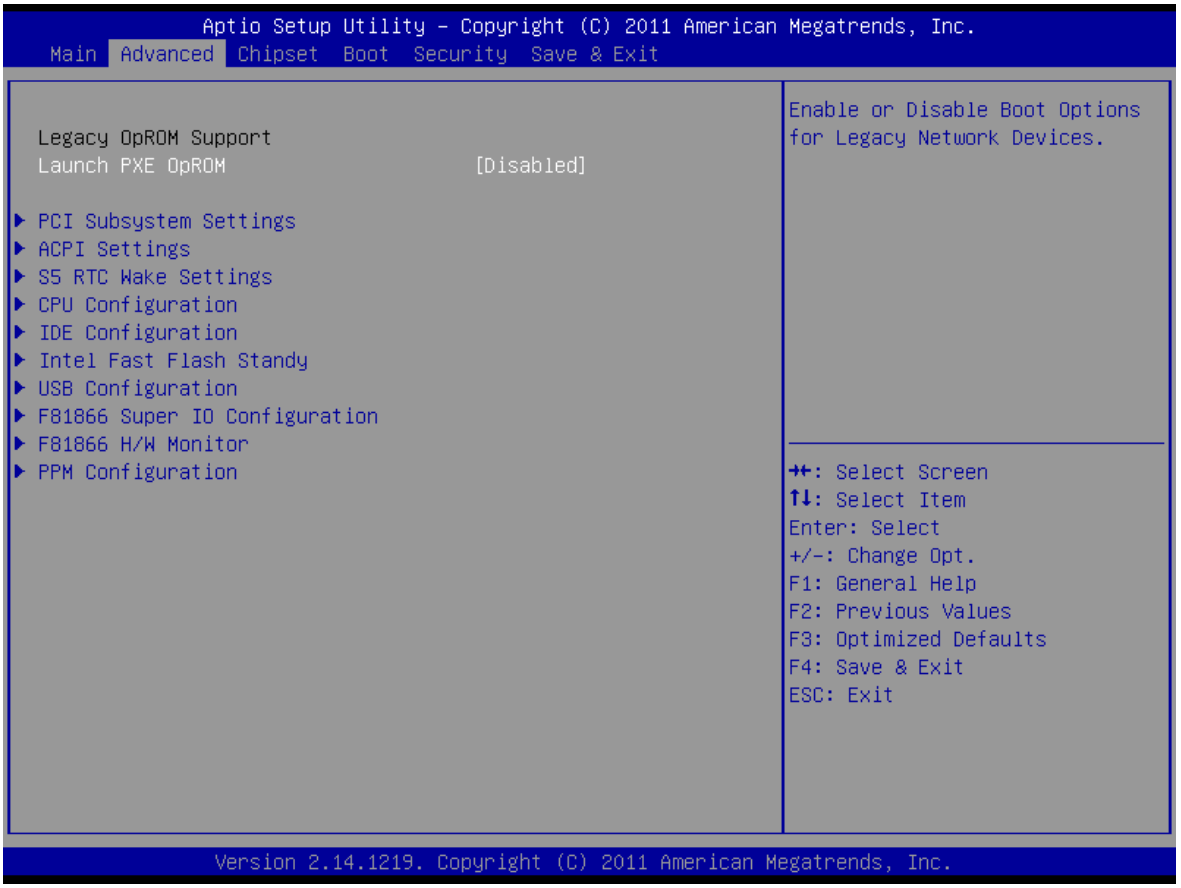
Press <DEL> to enter Setup.

When you press <DEL> to enter the BIOS Setup image, the system interrupts the Power-On Self-Test (POST).

When you first enter the BIOS Setup Utility, you will enter the Main setup image. You can always return to the Main setup image by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup image is shown as below.

The Main BIOS setup image has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. On the contrary, options in blue can be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

7.1 Advanced Setting



➢ Launch PXE OpROM

SETTING	DESCRIPTION
Disabled	Use this setting to ignore all PXE Option ROMs.
Enabled	Use this setting to load PXE Option ROMs. To limit the PXE support to particular devices, use the function Use device for PXE.

Default: Disabled

➢ Launch Storage OpROM

SETTING	DESCRIPTION
Disabled	Use this setting to ignore all Storage Option ROMs.
Enabled	Use this setting to load Storage Option ROMs. To limit the Storage support to particular devices, use the function Use device for Storage.

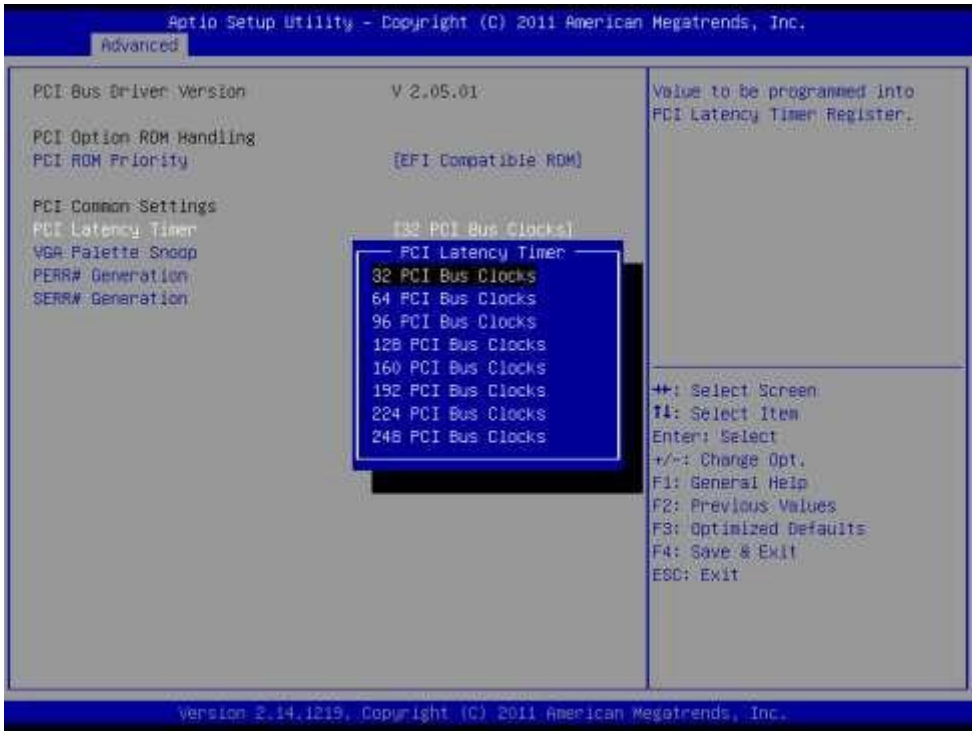
Default: Disabled

➢ PCI ROM Priority

Selects the PCI Option ROM to launch in case Multiple Option ROMs (**Legacy ROM** and **EFI Compatible ROM**) are present.

➢ PCI Latency Timer

Use this function to select the number of PCI bus clocks to be used for the PCI latency timer.

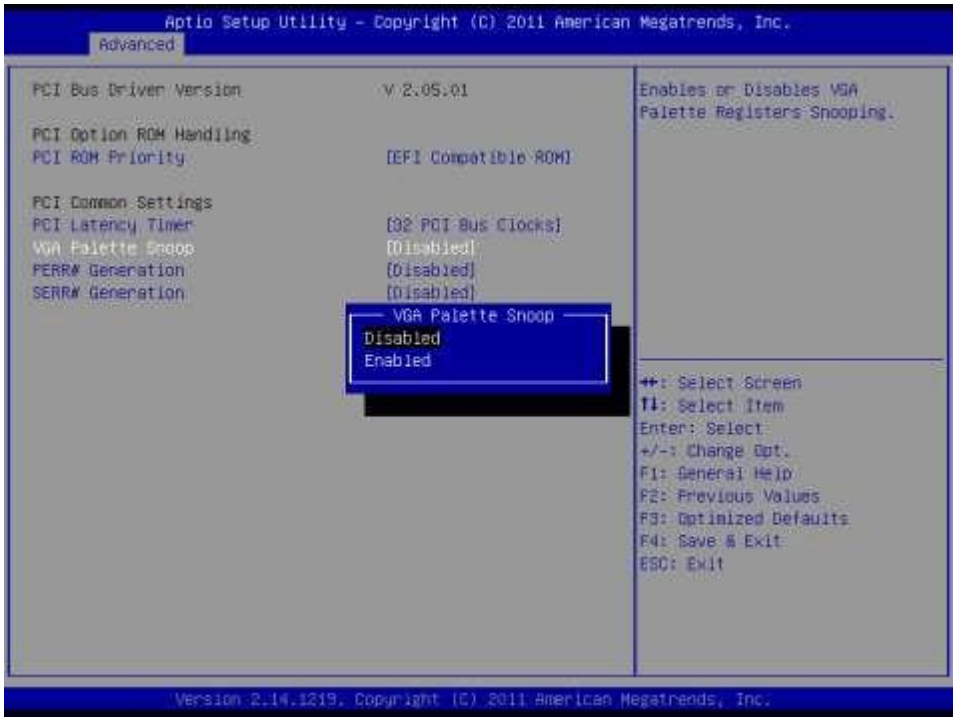


SETTING	DESCRIPTION
32 PCI Bus Clocks	Use this setting to program the PCI latency timer to 32 PCI bus clocks.
64 PCI Bus Clocks	Use this setting to program the PCI latency timer to 64 PCI bus clocks.
96 PCI Bus Clocks	Use this setting to program the PCI latency timer to 96 PCI bus clocks.
128 PCI Bus Clocks	Use this setting to program the PCI latency timer to 128 PCI bus clocks.
160 PCI Bus Clocks	Use this setting to program the PCI latency timer to 160 PCI bus clocks.
192 PCI Bus Clocks	Use this setting to program the PCI latency timer to 192 PCI bus clocks.
224 PCI Bus Clocks	Use this setting to program the PCI latency timer to 224 PCI bus clocks.
248 PCI Bus Clocks	Use this setting to program the PCI latency timer to 248 PCI bus clocks.

Default: 32 PCI Bus Clocks

- **VGA Palette Snoop**

This filed controls the ability of a primary PCI VGA controller to share a common palette (when a snoop write cycles) with an ISA video card.



Enables or Disables VGA Palette Registers Snooping.

Default: Disabled

- **PERR# Generation**

Enables or Disables PCI Device to Generate PERR#.

Default: Disabled

- **SERR# Generation**

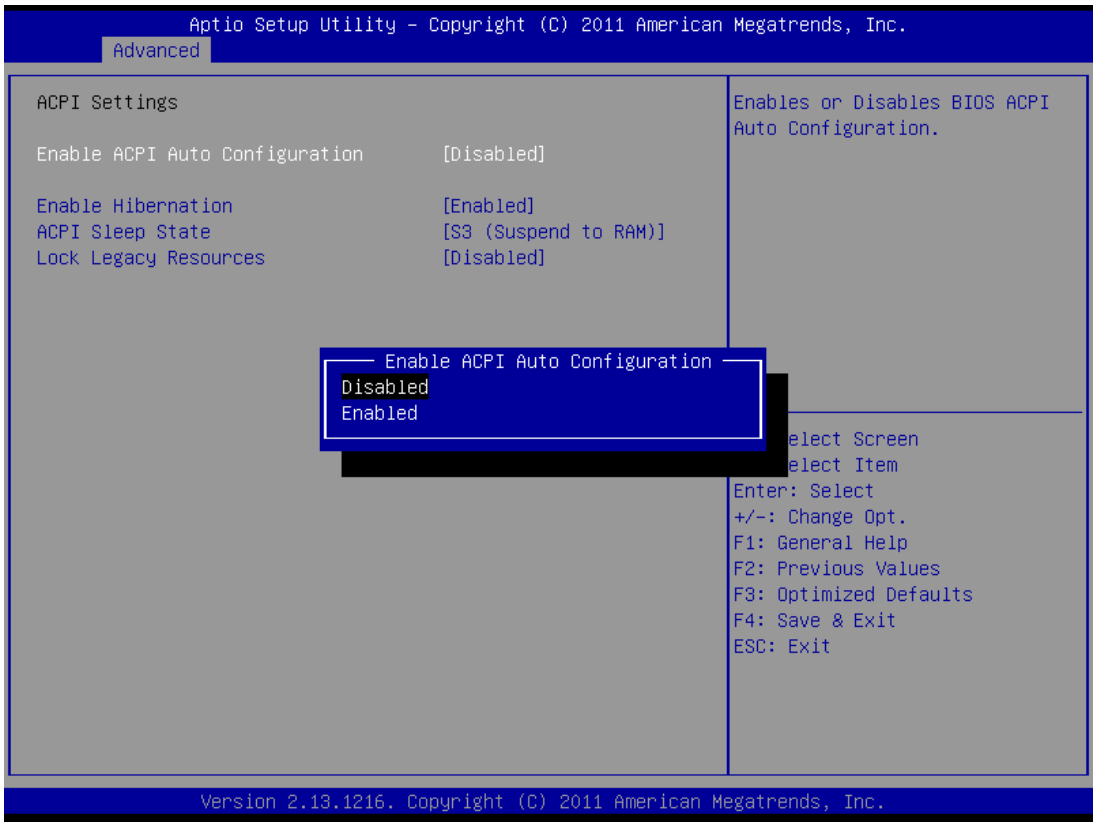
Enables or Disables PCI Device to Generate SERR#.

Default: Disabled

ACPI Settings

➢ Enable ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration



Default: Disabled

➢ Enable Hibernation

Enables or Disables System ability to Hibernate. This option may be not effective with some OS.

➢ ACPI Sleep State

SETTING	DESCRIPTION
Suspend Disable	System ability to Hibernate (OS/S3 Sleep State)
S1	CPU Stop Clock
S3	Suspend to RAM

Default: S3 (Suspend to RAM)

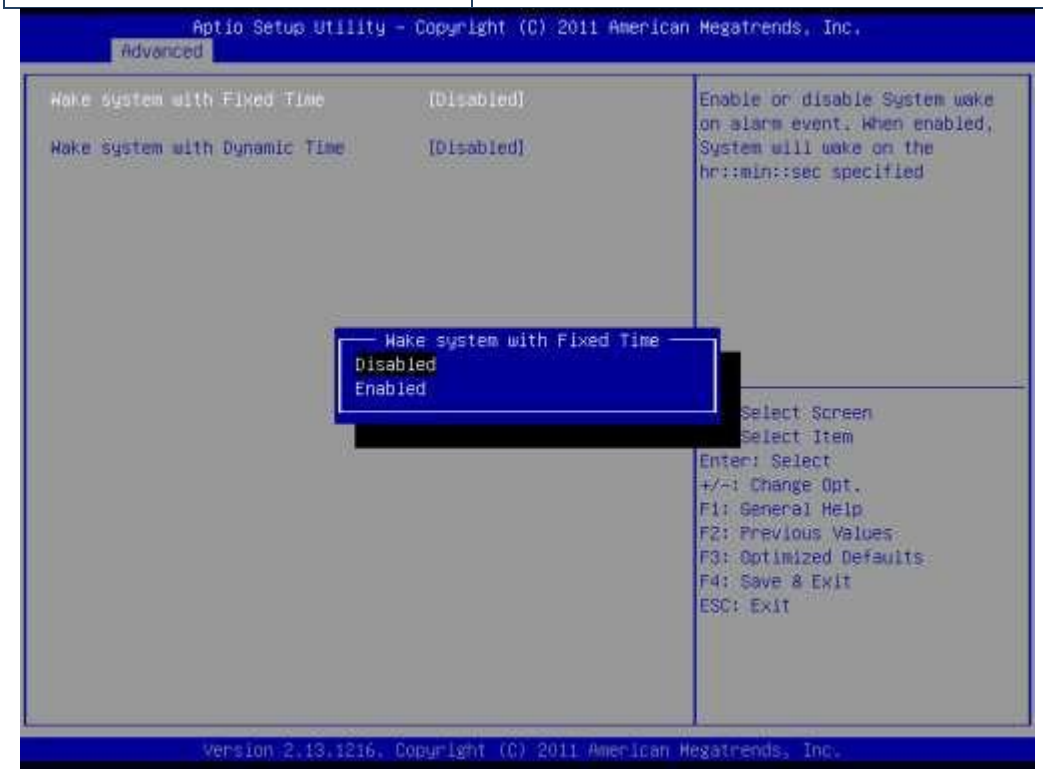
➢ Lock Legacy Resources

Enables or Disable Lock of Legacy Resource.

Default: Disable

S5 RTC Wake Settings

SETTING	DESCRIPTION
Wake system with Fixed Time	System wake on alarm event. When enabled, System will wake on the hr: min:: sec specified.
Wake system with Dynamic Time	Options: Enabled, Disabled



CPU Configuration

- **Hyper-threading**

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.

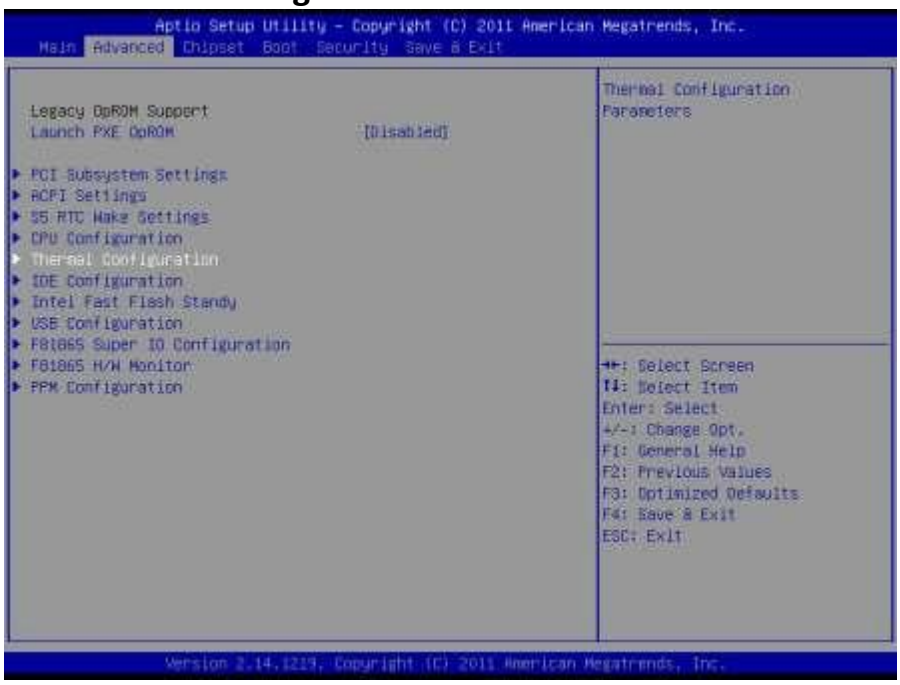
- **Execute Disable Bit**

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)

- **Limit CPUID Maximum**

Disabled for Windows XP

Thermal Configuration

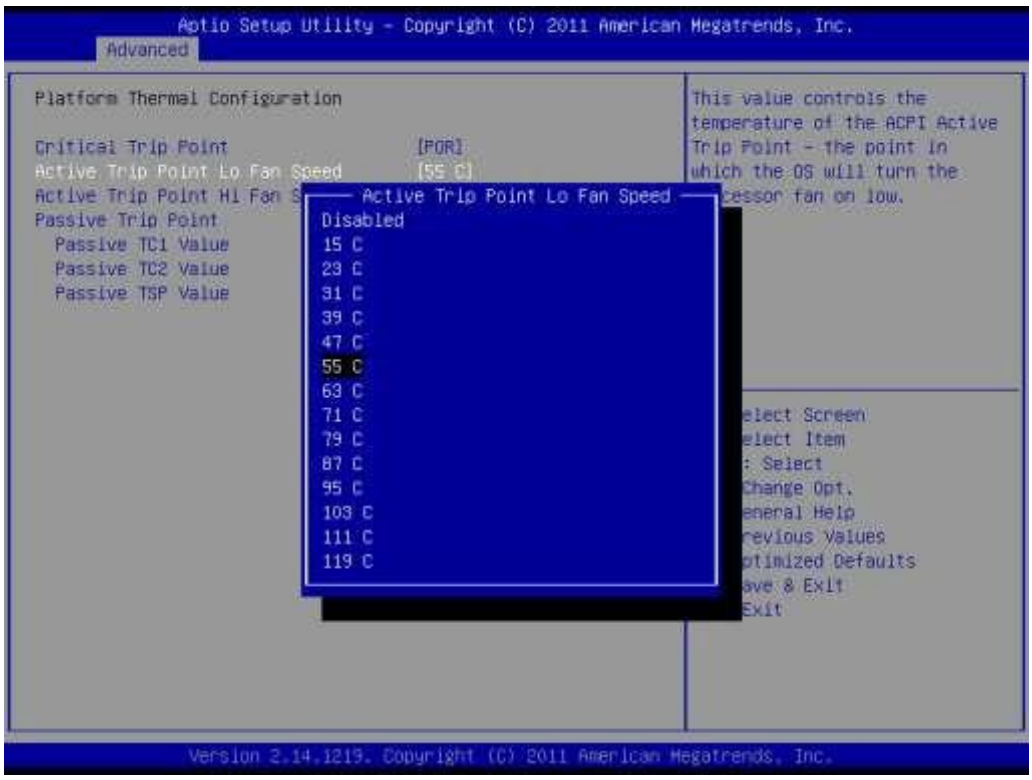


➢ **CPU Thermal Configuration > DTS SMM**

SETTING	DESCRIPTION
Disabled	Uses EC reported temperature values
Enabled	Uses DTS SMM mechanism to obtain CPU temperature value
Critical Temp Reporting(Out of spec)	Uses EC reported temperature values and DTS SMM to handle out of spec

- **Critical Trip Point**

This value controls the temperature of the ACPI critical Trip point—the point in which the OS will shut the system off.

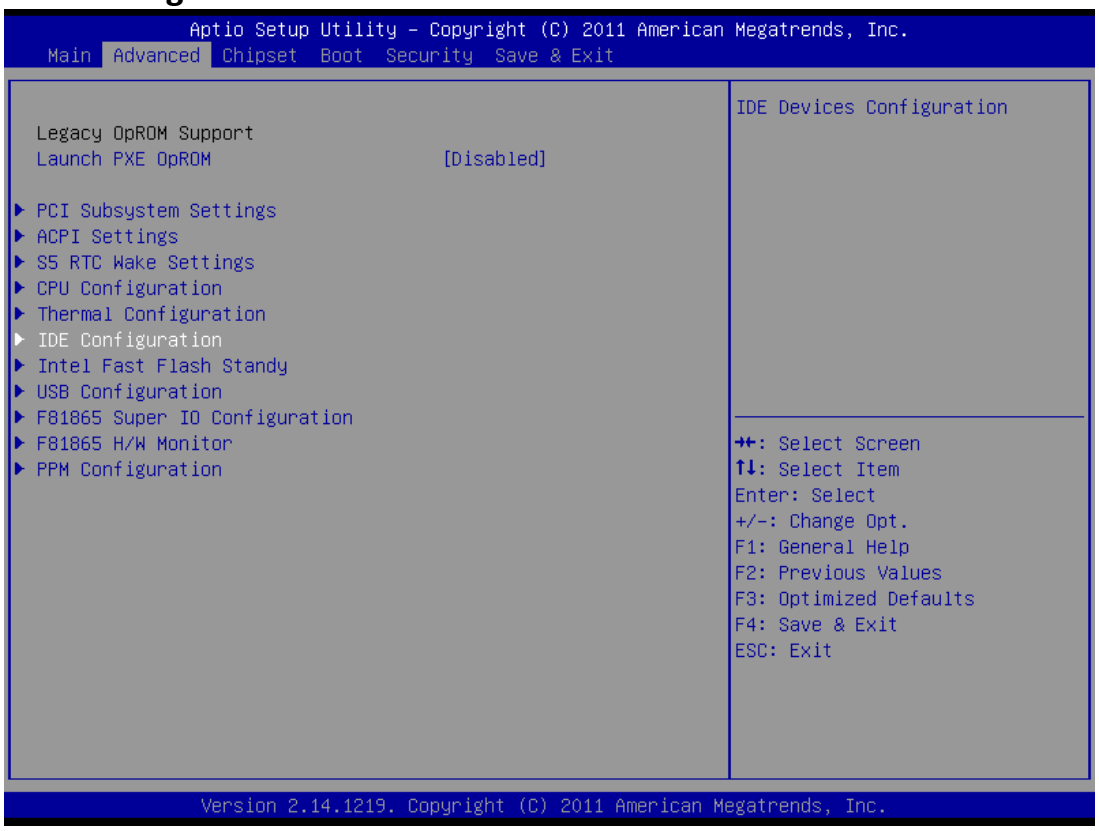


- **Active Trip Point Lo Fan Speed**
- **Active Trip Point Hi Fan Speed**

This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

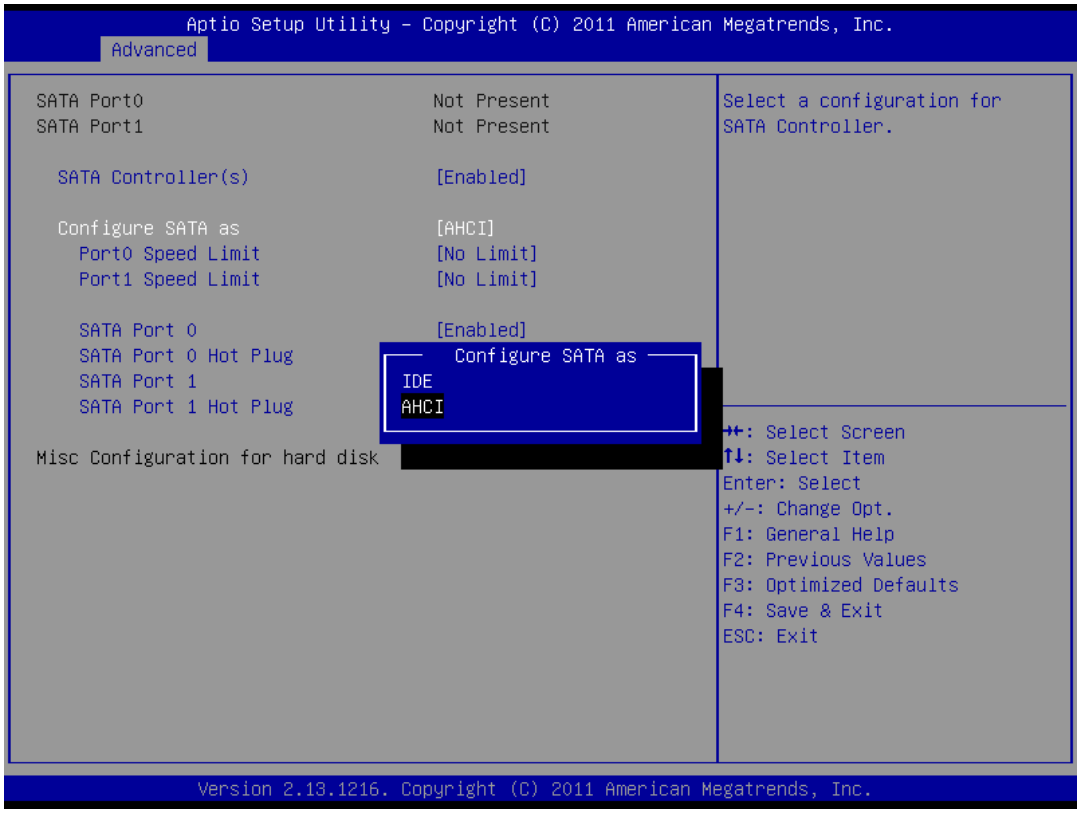
- **Passive TC1 Value**
- **Passive TC2 Value**
- **Passive TSP Value**

IDE Configuration



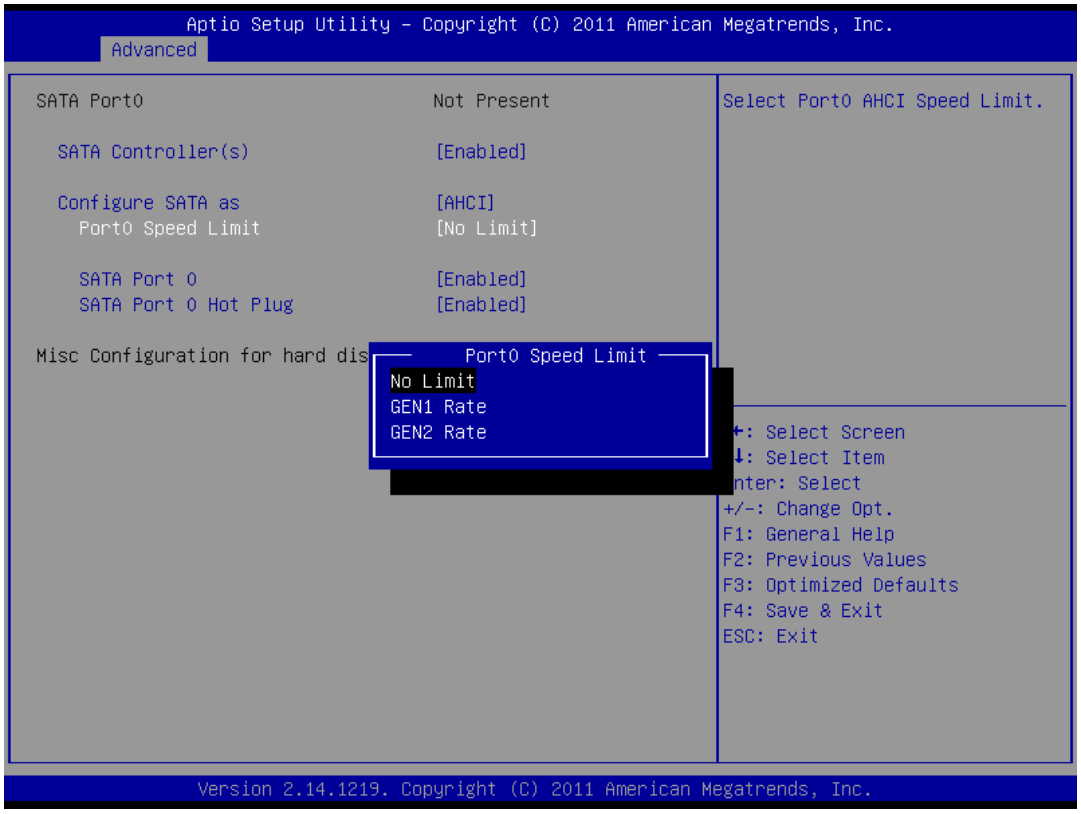
➢ Configure SATA as

Determines how SATA controllers(s) operate. The options are IDE and AHCI.



➢ Port0 Speed Limit

Select Port0 AHCI Speed Limit. The options are No Limit, GEN1 Rate and GEN2 Rate.



➢ SATA Port 0/1

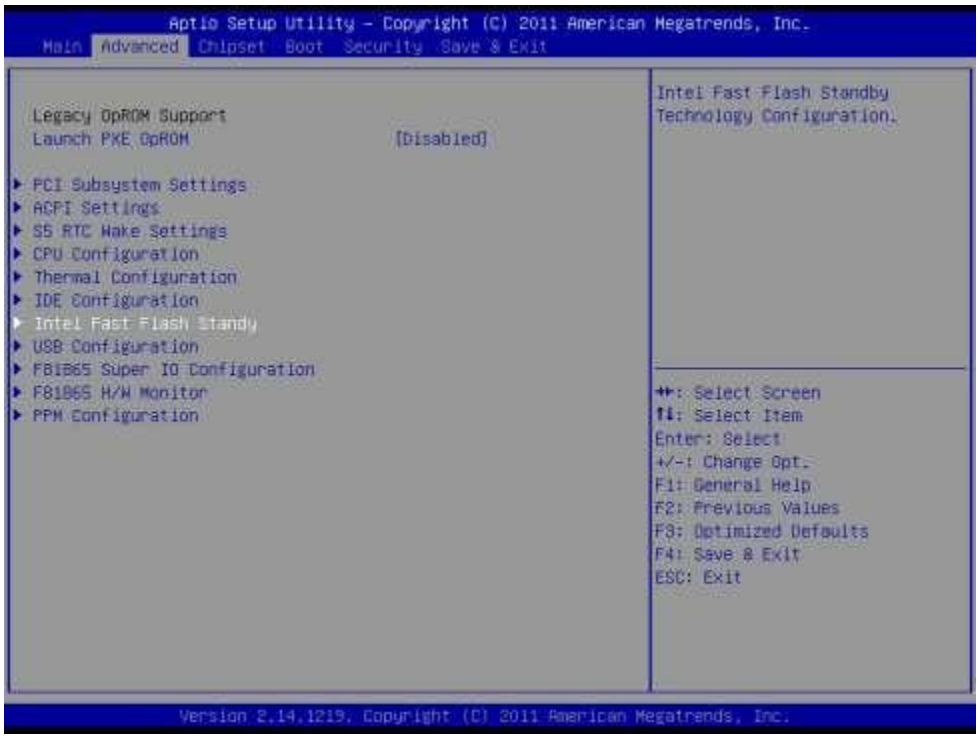
Enable or disable SATA Port.

➢ SATA Port 0/1 Hot Plug

Designates this port as Hot Pluggable

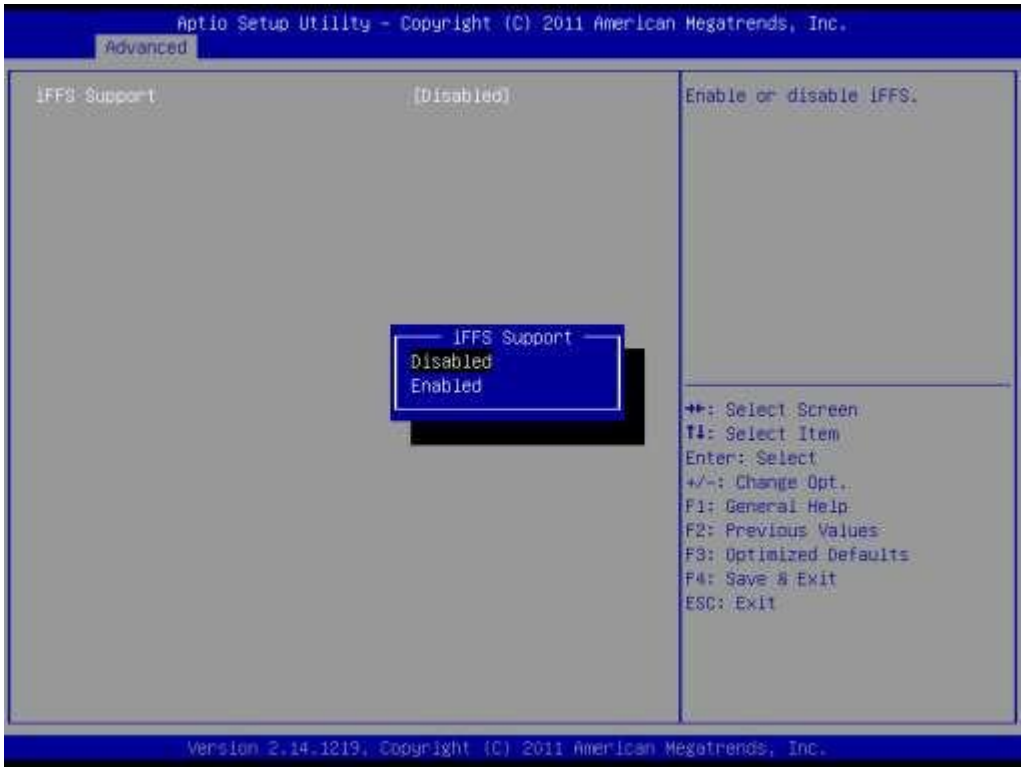
.

Intel Fast Flash Standy

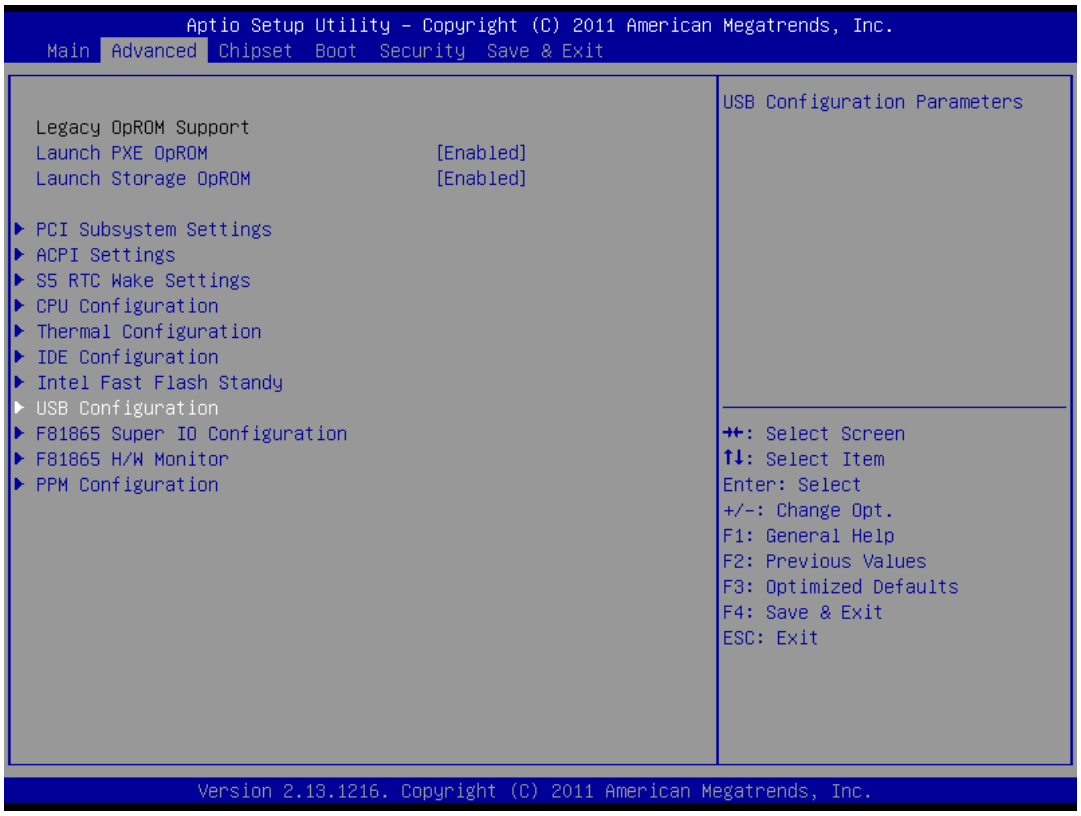


- **iFFS Support**

Enable or disable



USB Configuration



- **Legacy USB support**

Enables Legacy USB support. AUTO option disable legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

- **ECHI Hand-off**

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

Default: Disabled

- **USB transfer time-out**

The time-out value for control, bulk, and Interrupt transfers.

Default: 20 sec

- **Device reset time-out**

The USB mass storage device Start Unit command time-out.

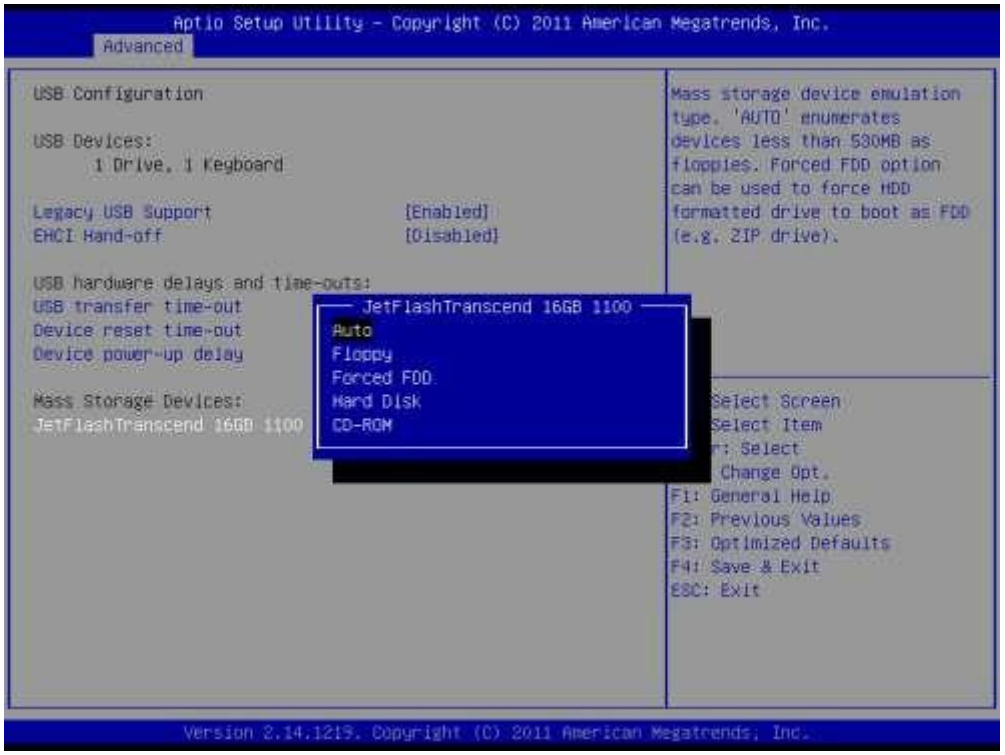
Default: 20 sec

- **Device power-up delay**

Maximun time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

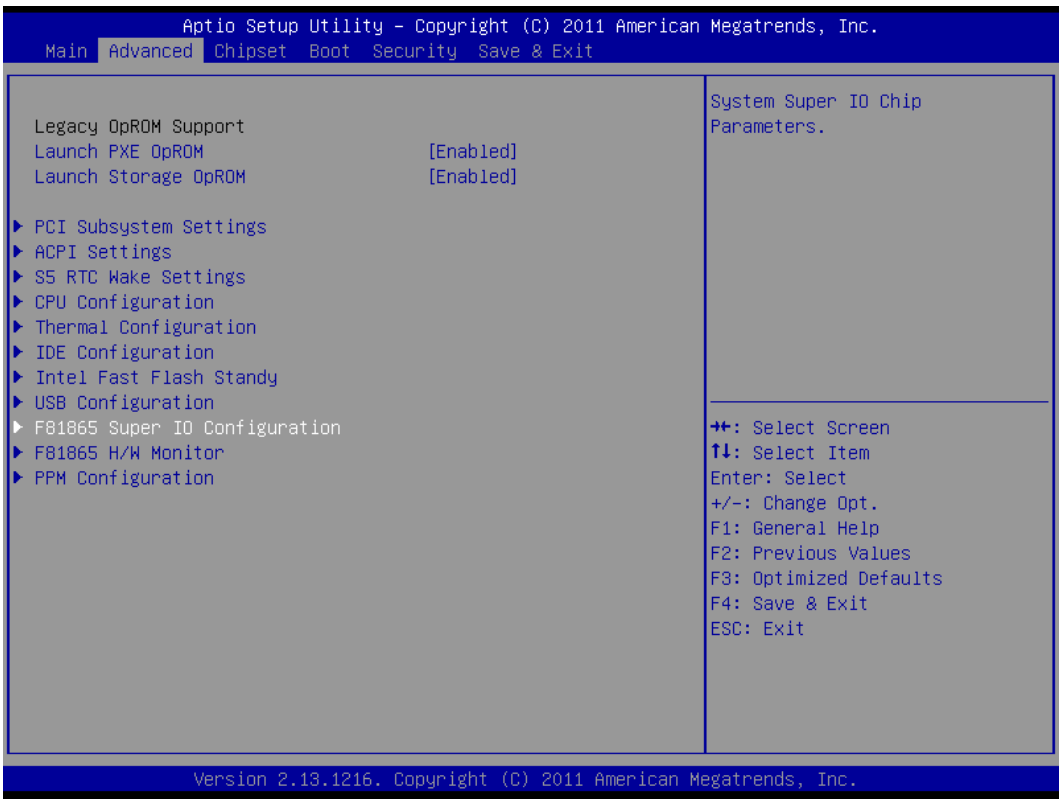
➢ Mass Storage Device:

Mass storage device emulation type. ‘AUTO’ enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD.

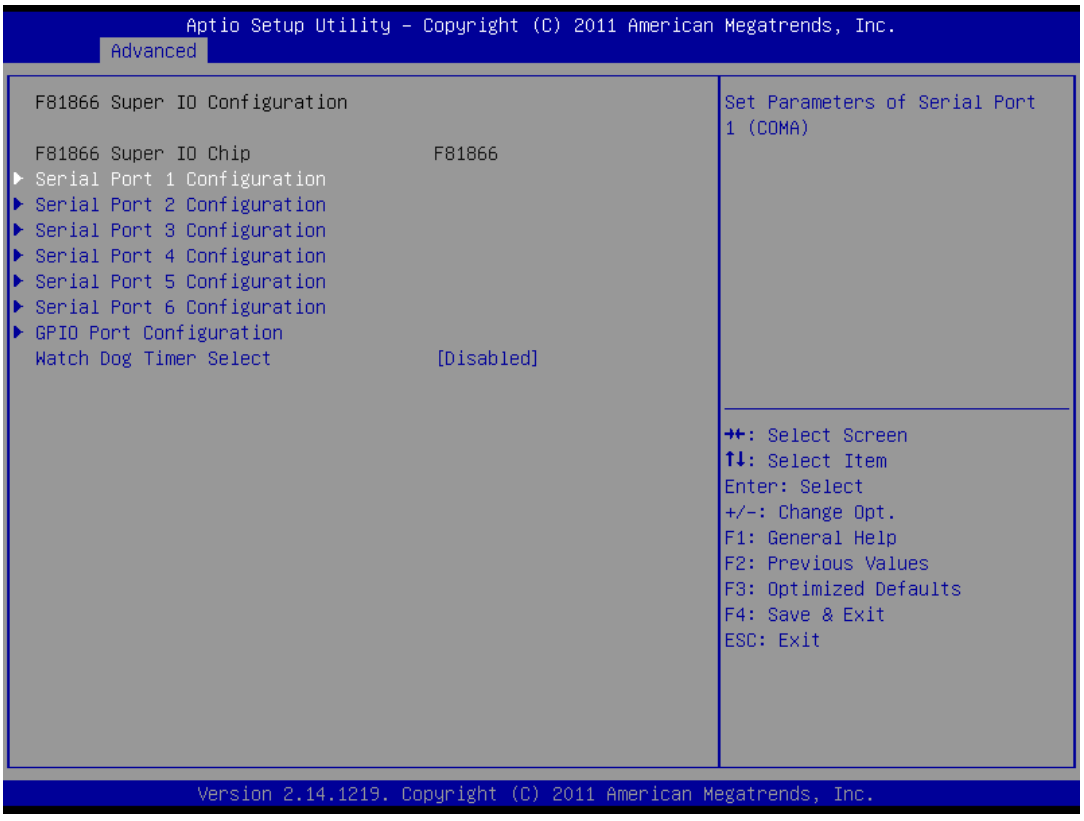


F81865 Super IO Configuration

System Super IO Chip Parameters.

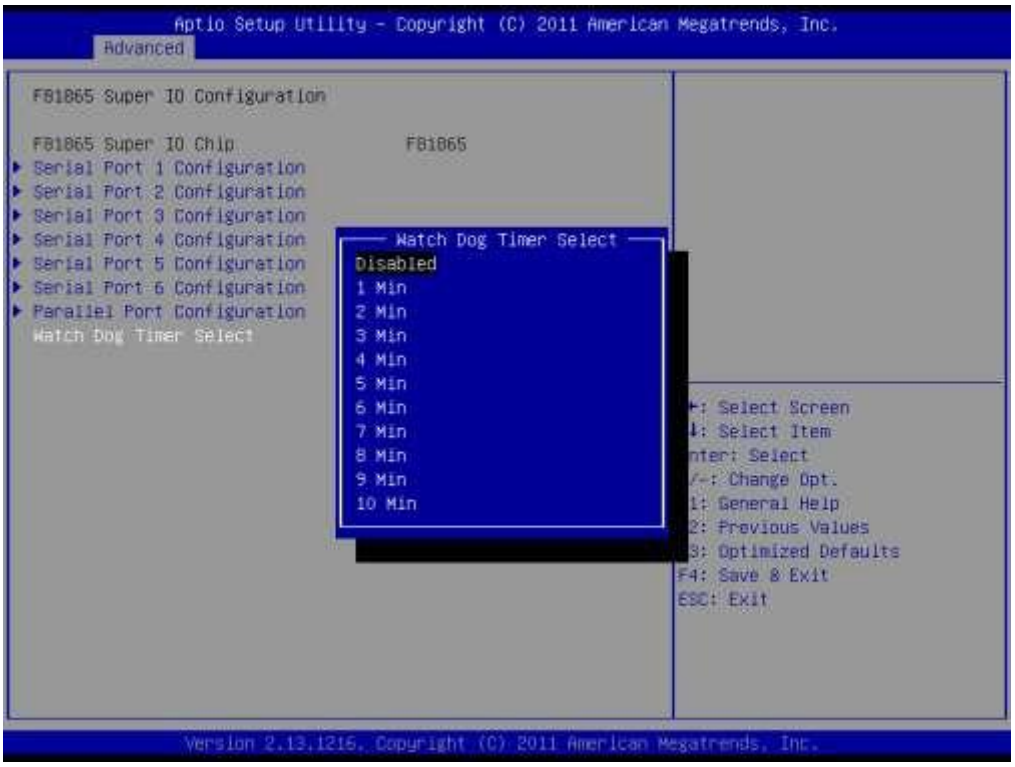


➢ Serial Port 1、2、3 、4、5、6 Configuration



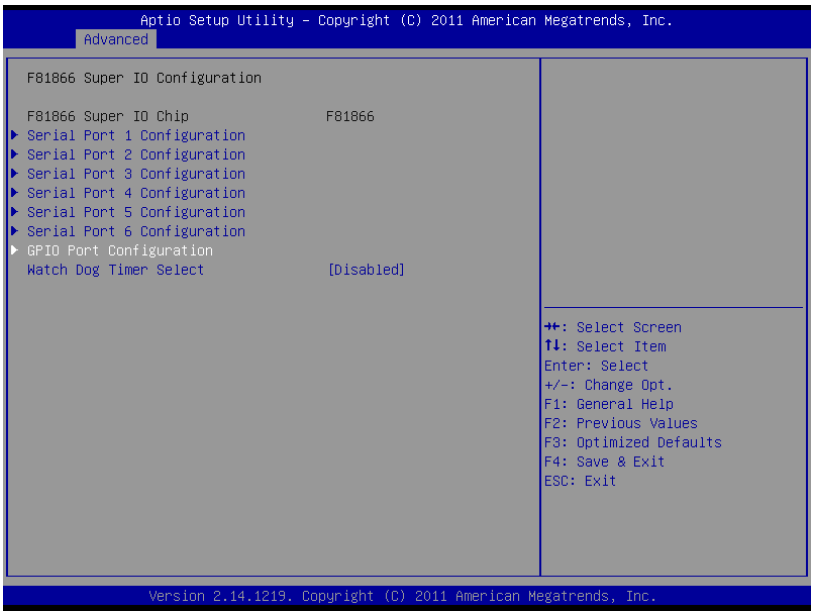
Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device. Enable or Disable Serial Port (COM)

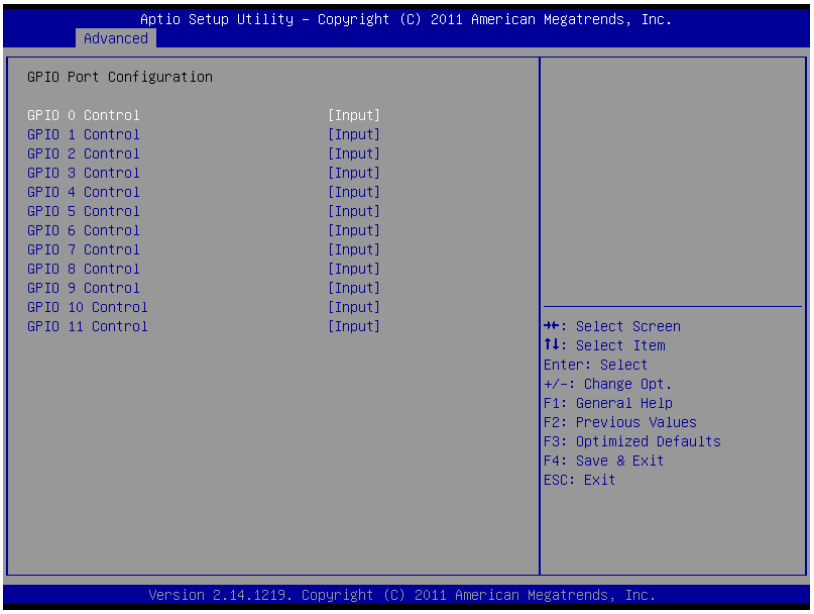
Default: Enable

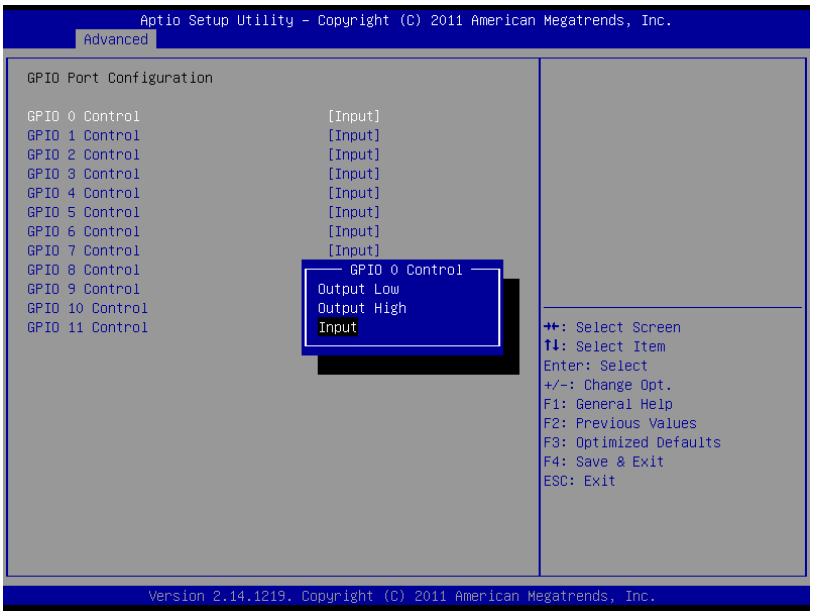


The watchdog timer circuit has to be triggered within a specified time by the application software. If the watchdog is not triggered because proper software execution fails or a hardware malfunction occurs, it will reset the system

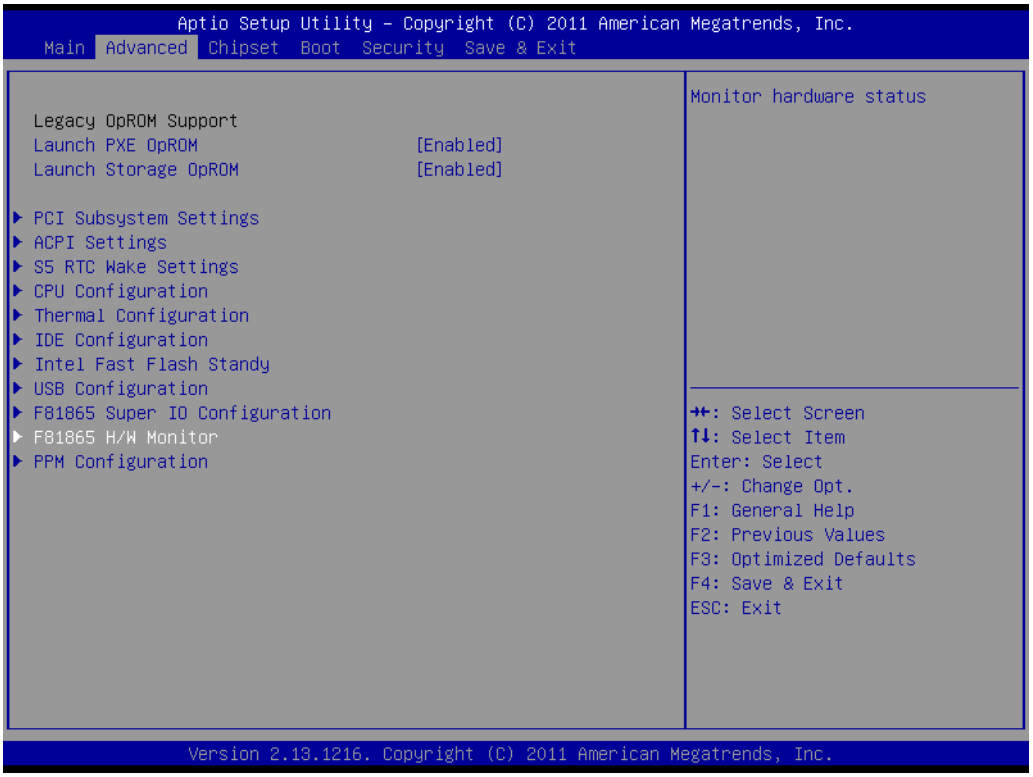
➢ GPIO

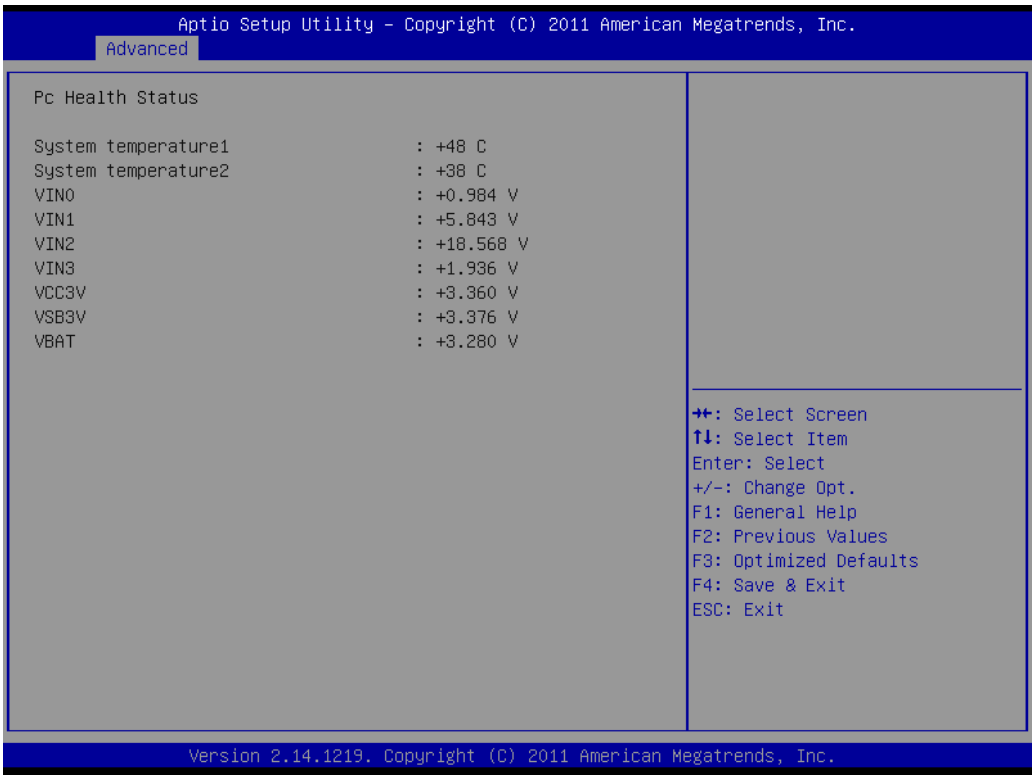

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
F81866 Super IO Configuration
F81866 Super IO Chip F81866
Serial Port 1 Configuration
Serial Port 2 Configuration
Serial Port 3 Configuration
Serial Port 4 Configuration
Serial Port 5 Configuration
Serial Port 6 Configuration
GPIO Port Configuration
Watch Dog Timer Select [Disabled]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
GPIO Port Configuration
GPIO 0 Control [Input]
GPIO 1 Control [Input]
GPIO 2 Control [Input]
GPIO 3 Control [Input]
GPIO 4 Control [Input]
GPIO 5 Control [Input]
GPIO 6 Control [Input]
GPIO 7 Control [Input]
GPIO 8 Control [Input]
GPIO 9 Control [Input]
GPIO 10 Control [Input]
GPIO 11 Control [Input]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

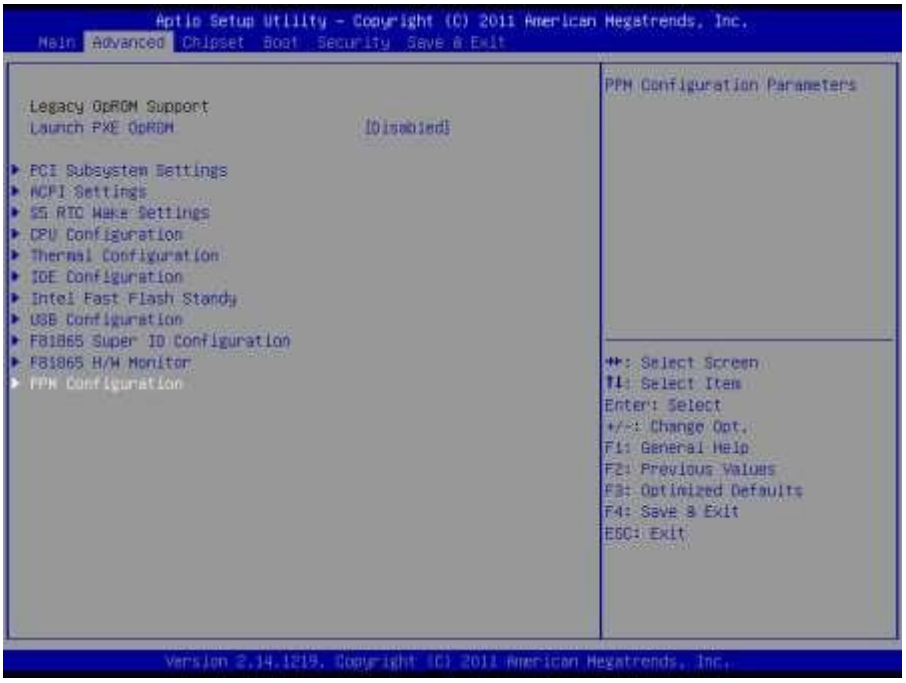

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
GPIO Port Configuration
GPIO 0 Control [Input]
GPIO 1 Control [Input]
GPIO 2 Control [Input]
GPIO 3 Control [Input]
GPIO 4 Control [Input]
GPIO 5 Control [Input]
GPIO 6 Control [Input]
GPIO 7 Control [Input]
GPIO 8 Control
GPIO 9 Control
GPIO 10 Control
GPIO 11 Control
GPIO 0 Control
Output Low
Output High
Input
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

➢ F81865 H/W Monitor





PPM Configuration



➢ EIST

Enable/Disable Intel SpeedStep.

➢ CPU C state Report

Enable/Disable CPU C state report to OS.

➢ C4 Exit Timing

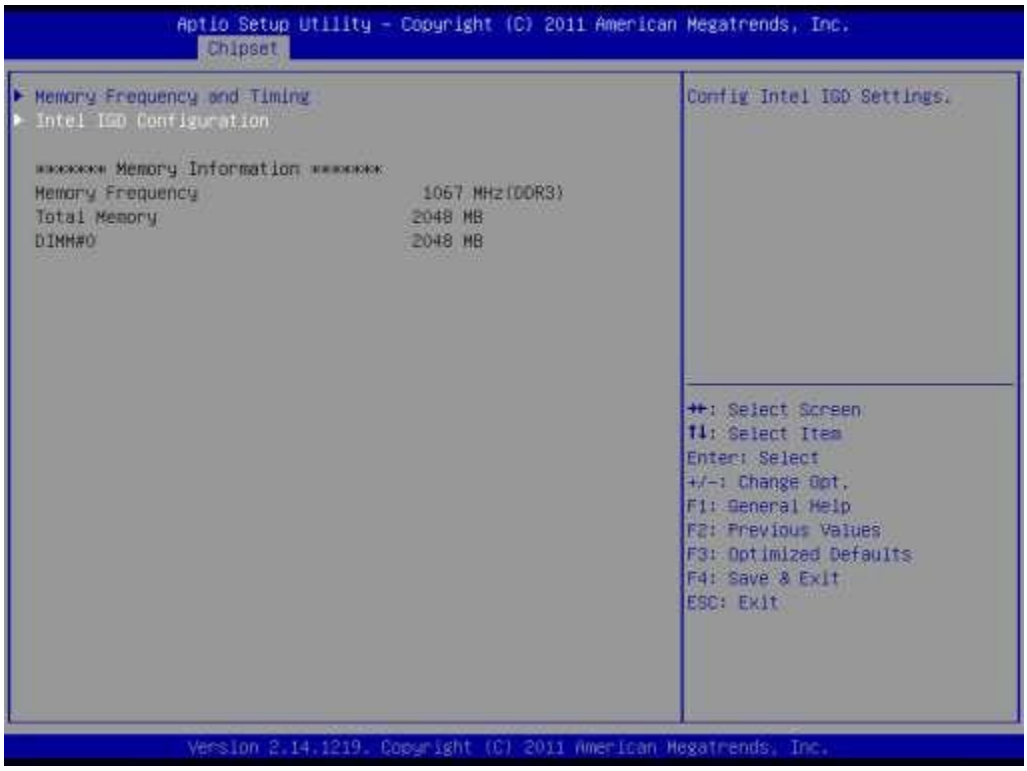
This option controls a programmable time for the CPU voltage to stabilize when exiting from a C4 state.

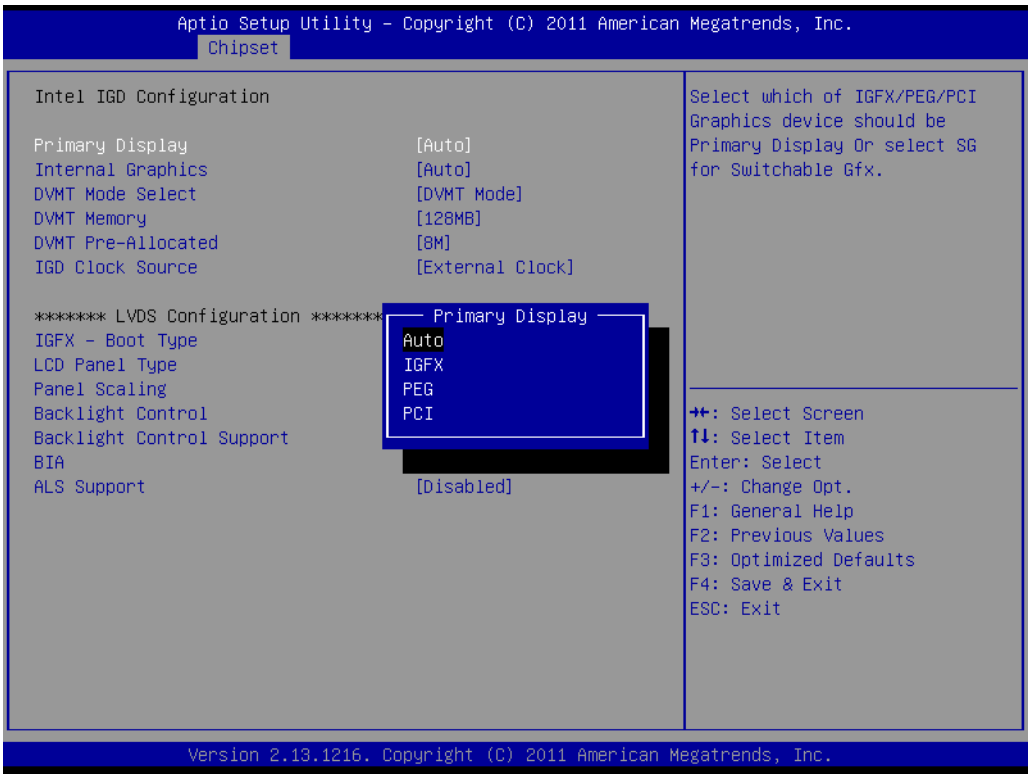
Chipset

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

➢ Memory Frequency and Timing

➢ Intel IGD Configuration



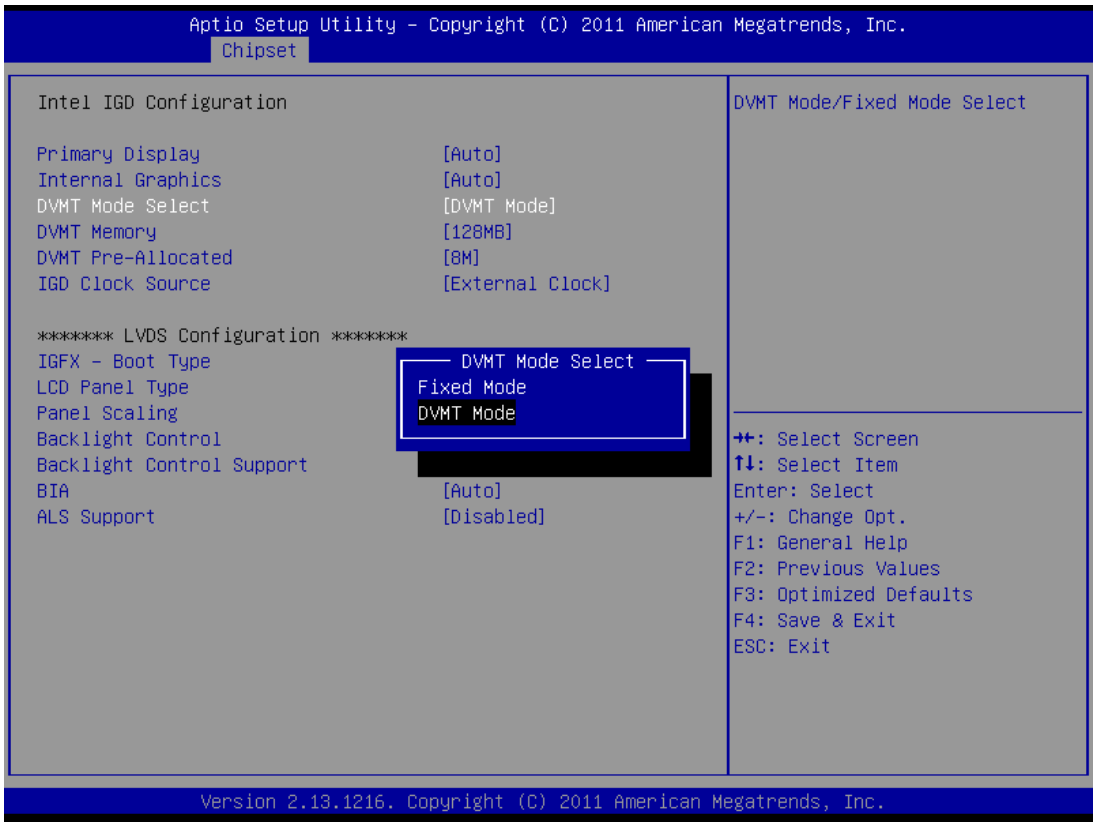


➢ Primary Display

Select which of IGFX/PEG/PCI Graphics device should be Primary display.

➢ Internal Graphics

Keep IGD enabled based on the setup options.



➢ DVMT

Intel's Dynamic Video Memory Technology (DVMT) takes that concept further by allowing the system to dynamically allocate memory resources according to the demands of the system at any point in time. The key idea in DVMT is to improve the efficiency of the memory allocated to either system or graphics processor.

➢ IGD Clock Source

IGD clock selection.

➢ LCD Panel Type

Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

➢ Panel Scaling

Select the LCD panel scaling option used by the Internal Graphics Device.

➢ Backlight Control

IGD clock selection.

➢ Backlight Control Support

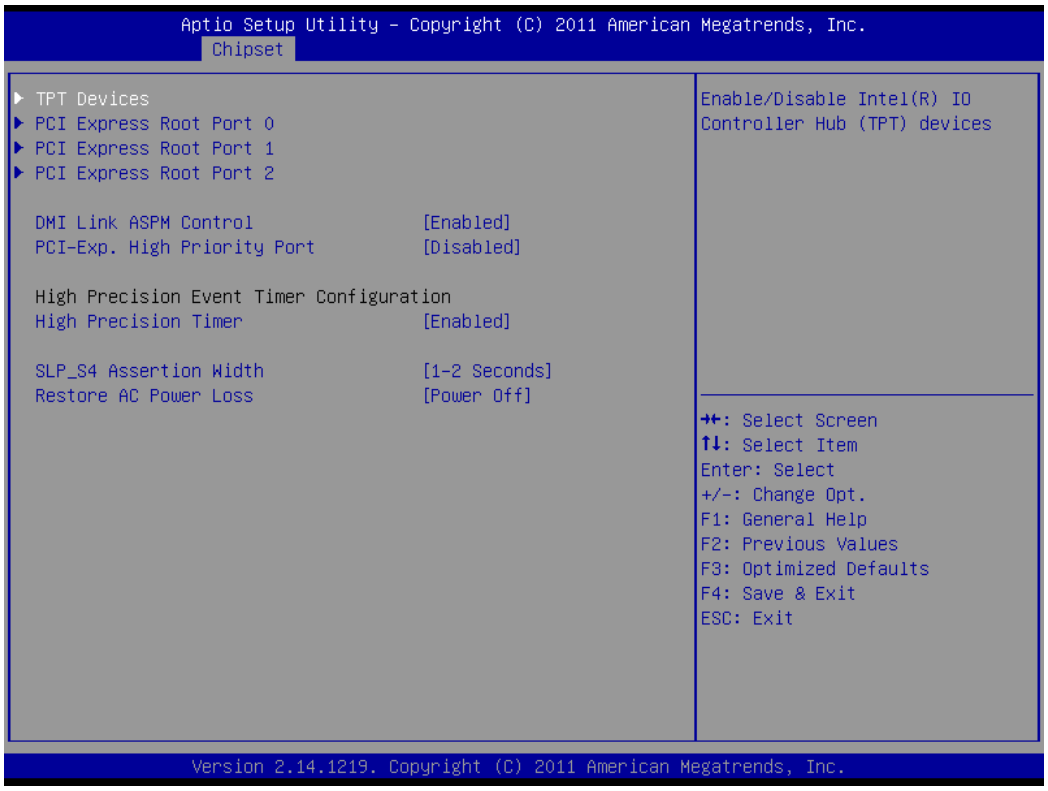
Back Light Control Setting.

➢ BIA

Auto:GMCH Use VBT Default; Level n: Enabled with Selected Aggressiveness Level, .

➢ ALS Support

Valid only for ACPI.



➢ TPT Devices

Enable/Disable Intel IO controller hub device

➢ PCI Express Root Port 0/1/2/

PCI Express root port settings

➢ DMI Link ASPM Control

The Desktop Management Interface (DMI) generates a standard framework for managing and tracking components in a desktop, notebook or server computer, by abstracting these components from the software that manages them.

➢ PCI-Exp. High Priority Port

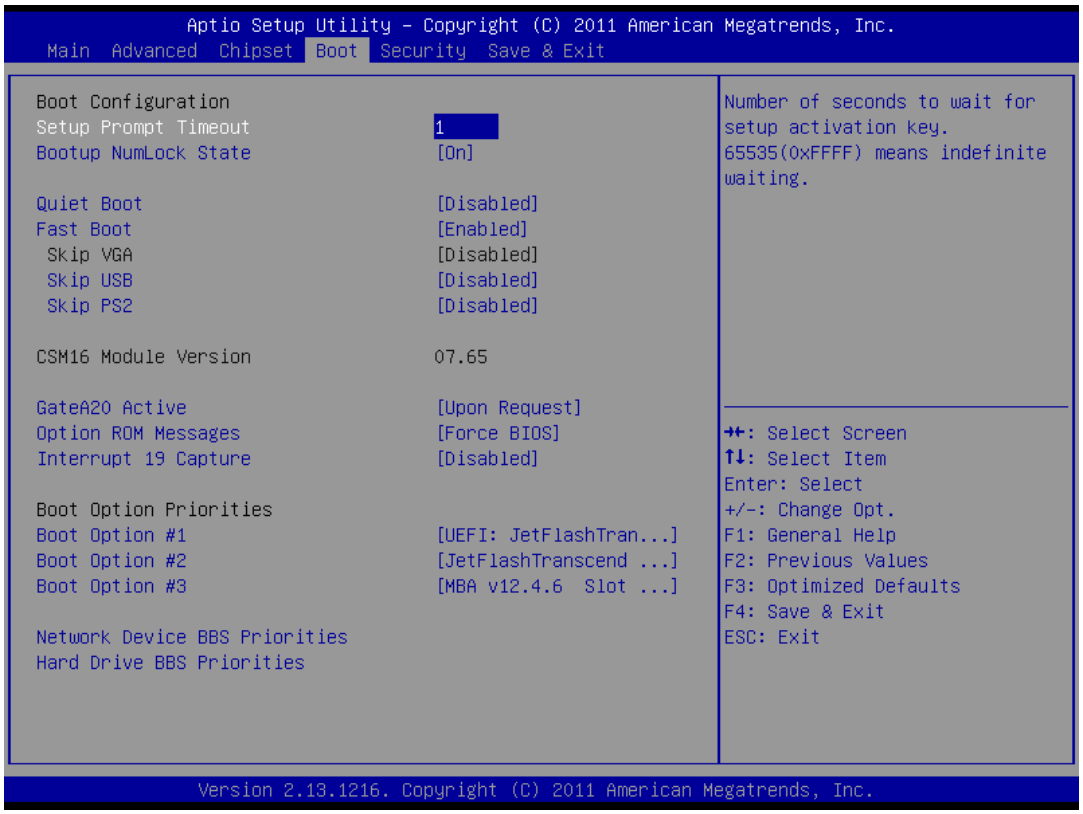
Select a PCI Express High Priority Port.

5.3 Boot

➢ Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Default: 1



➢ Bootup NumLock State

Select the keyboard NumLock State

Default: On

➢ Quiet Boot

Enable or Disable Quiet Boot Option.

Default: Disable

➢ GateA20 Active

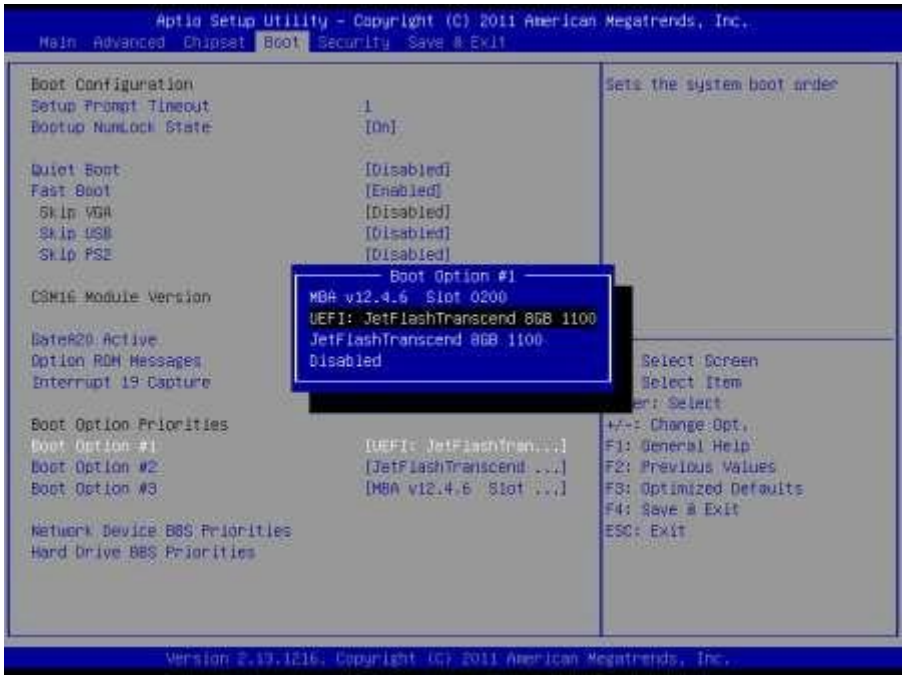
UPON REQUEST – GA20 can be disabled using BIOS services. Always – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

➢ Option ROM Messages

Set display mode for Option ROM. Options are Force BIOS and Keep Current.

➢ Interrupt 19 Canture

Enable: Allows Option ROMs to trap Int 19.



➢ Boot Option

This option shows the priorities of the boot options. User can change the priorities by selecting the particular boot option. The boot option selected in Boot option #1 will be the first priority, followed by second, third and so on.

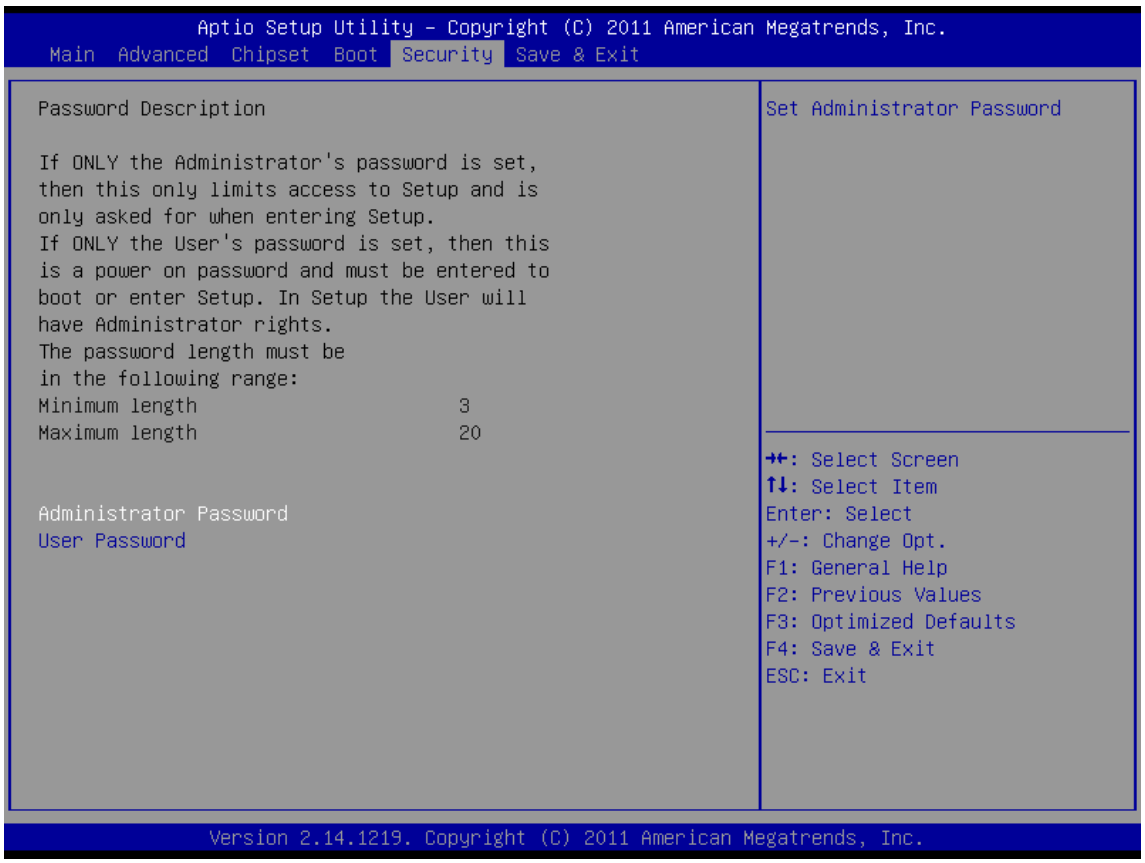
➢ Network/Hard Device BBS Priorities

It will list all the Boot options that are configured as Network/Hard Drive. User can change the priority as similar to the main boot option priorities. The first boot option will be having top boot priority and will appear at the boot option priorities and boot order.

5.4 Security

➢ Administrator Password

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



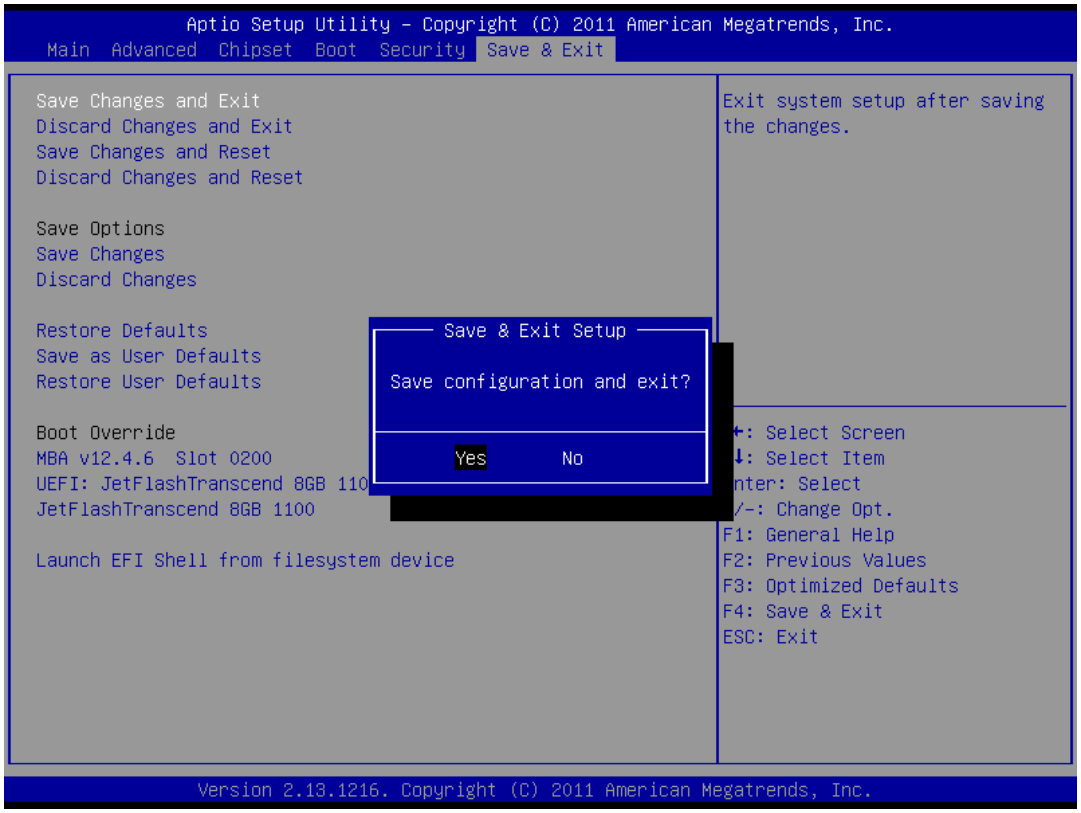
➢ Administrator Password

Set Setup Administrator Password.

➢ User Password

Set User Password.

5.5 Save & Exit



- **Save Changes and Exit**

Exit system setup after saving the changes.

- **Disacard Changes and Exit**

Exit system setup without saving any changes.

- **Save Changes and Reset**

Reset the system after saving the changes.

- **Discard Changes and Reset**

Reset system setup without saving any changes.

- **Save Changes**

Save Changes done so far to any of the setup options.

- **Discard Changes**

Discard Changes done so far to any of the setup options.

- **Restore Defaults**

Restore/Load Defaults values for all the setup options.

- **Save as User Defaults**

Save the changes done so far as User Defaults.

- **Restore User Defaults**

Restore the User Defaults to all the setup options.

- **Launch EFI Shell from filesystem devices**

Attempts to launch EFI shell application from one of the available filesystem devices.

Note1: Digital I/O Sample Code

```
//File of the Main.cpp
//=============================================================
//This code is for test IA30 Super I/O.
//=============================================================
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>

//=============================================================
#define W83627EHG_INDEX_PORT 0x2E
#define W83627EHG_DATA_PORT 0x2F
//=============================================================
#define W83627EHG_REG_LD 0x07
//=============================================================
#define W83627EHG_UNLOCK 0x87
#define W83627EHG_LOCK 0xAA

//=============================================================
void ClrKbBuf(void);
void Unlock_W83627EHG(void);
void Lock_W83627EHG(void);
void Set_W83627EHG_Reg(unsigned char,unsigned char);
unsigned char Get_W83627EHG_Reg(unsigned char);
int main ();
//=============================================================
int main ()
{
      unsigned char ucDO = 0; //data for digital output
      unsigned char ucDI; //data for digital input
      unsigned char ucBuf;
      Set_W83627EHG_Reg(0x07,0x07);//switch to logic device 7

//    PIN 121~128 function select
//    Bit0 = 0 -> Game Port.
//         = 1 -> GPIO1.
```

```
        ucBuf = Get_W83627EHG_Reg(0x29);
        Set_W83627EHG_Reg(0x29,ucBuf|0x01);

//    Bit0 = 0 -> GPIO1 is inactive.
//     Bit1 = 1 -> Activate GPIO1.
        ucBuf = Get_W83627EHG_Reg(0x30);
        Set_W83627EHG_Reg(0x30,ucBuf|0x01);//Activate GPIO1

        Set_W83627EHG_Reg(0xF0,0x0F);//switch GPIO Input(1)/Output(0) port

        Set_W83627EHG_Reg(0xF1, 0x00); //clear
        ucDI = Get_W83627EHG_Reg(0xF1) & 0x0F;
        ClrKbBuf();
        while(1)
        {
                ucDO++;
                Set_W83627EHG_Reg(0xF1, ((ucDO & 0x0F) << 4));
                ucBuf = Get_W83627EHG_Reg(0xF1) & 0x0F;
                if (ucBuf != ucDI)
                {
                        ucDI = ucBuf;
                        printf("Digital I/O Input Changed. Current Data is 0x%X\n",ucDI);
                }
                if (kbhit())
                {
                        getch();
                        break;
                }
                delay(500);
        }
        return 0;
}
//============================================================
void ClrKbBuf(void)
{
        while(kbhit())
        { getch(); }
}
```

```
//---------------------------------------------------------------------

void Unlock_W83627EHG (void)
{
    outportb(W83627EHG_INDEX_PORT, W83627EHG_UNLOCK);
    outportb(W83627EHG_INDEX_PORT, W83627EHG_UNLOCK);
}
//=====================================================================
void Lock_W83627EHG (void)
{
    outportb(W83627EHG_INDEX_PORT, W83627EHG_LOCK);
}
//=====================================================================
void Set_W83627EHG_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W83627EHG();
    outportb(W83627EHG_INDEX_PORT, REG);
    outportb(W83627EHG_DATA_PORT, DATA);
    Lock_W83627EHG();
}
//=====================================================================
unsigned char Get_W83627EHG_Reg( unsigned char REG)
{
    unsigned char Result;
    Unlock_W83627EHG();
    outportb(W83627EHG_INDEX_PORT, REG);
    Result = inportb(W83627EHG_DATA_PORT);
    Lock_W83627EHG();
    return Result;
}
//=====================================================================
```

Note2: Watchdog Sample Code

```
//File of the Watchdog.cpp
//============================================================
//This Sample code is for Watchdog timer configuration
//============================================================
//============================================================
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>

//============================================================
#define W83627_INDEX_PORT 0x2E
#define W83627_DATA_PORT 0x2F
#define W83627_UNLOCK 0x87
#define W83627_LOCK 0xAA
//#define Watchdog_timeout 10

//============================================================
void Unlock_W83627(void);
void Lock_W83627(void);
void Set_W83627_Reg(unsigned char,unsigned char);
unsigned char Get_W83627_Reg(unsigned char);
//============================================================

int main ()
{

      int Watchdog_timeout = 10;
      printf("Input Watchdog Timer time-out value [0-255] : ");
      scanf("%d",&Watchdog_timeout);
      if(Watchdog_timeout <= 0 || Watchdog_timeout > 255)
      {
            printf("Time-out value out of range!!\n\n");
            printf("Input Watchdog Timer time-out value [0-255] : ");
            scanf("%d",&Watchdog_timeout);
```

```
    }
    Set_W83627_Reg(0x07,0x08);//switch to logic device 8

    Set_W83627_Reg(0x30,0x01);//Activate watchdog

    Set_W83627_Reg(0xF5,0x06);//Select WDTO# count mode.Second Mode.

    Set_W83627_Reg(0xF6,Watchdog_timeout); //Set Watch Dog Timer Time-out
value

    //Set_W83627_Reg(0xF7,0xC0); //Clear Watchdog timer event

    int i = Watchdog_timeout;
    while(1)
    {
        if (kbhit())
        {
            if(getch()==0x1B)  //Esc
                break;
            else{
                i=Watchdog_timeout;     //Reset Watchdog timer
                Set_W83627_Reg(0xF6,Watchdog_timeout); //Set Watch Dog
Timer Time-out value
            }
        }
        clrscr();
        if(i>0){
            i--;
            printf("After %2d sec reset computer!\n",i);
            printf("Press any key to reset watchdog timer!\n");
            printf("Press [Esc] to exit!\n");

        }
        else
            printf("Watchdog timer fail!");
        delay(1000);
    }
```

```
	Set_W83627_Reg(0xF6,0);    //Disable Watchdog timer

	return 0;
}


//---------------------------------------------------------------------

void Unlock_W83627 (void)
{
	outportb(W83627_INDEX_PORT, W83627_UNLOCK);
	outportb(W83627_INDEX_PORT, W83627_UNLOCK);
}
//=============================================================
void Lock_W83627 (void)
{
	outportb(W83627_INDEX_PORT, W83627_LOCK);
}
//=============================================================
void Set_W83627_Reg( unsigned char REG, unsigned char DATA)
{
	Unlock_W83627();
	outportb(W83627_INDEX_PORT, REG);
	outportb(W83627_DATA_PORT, DATA);
	Lock_W83627();
}
//=============================================================
unsigned char Get_W83627_Reg( unsigned char REG)
{
	unsigned char Result;
	Unlock_W83627();
	outportb(W83627_INDEX_PORT, REG);
	Result = inportb(W83627_DATA_PORT);
	Lock_W83627();
	return Result;
}
//=============================================================
```