IV7T-RK2U

IV7W-RK2U

2U Rack Mount Server PC
Intel® Core™i7-3520M Processor, 2.9 GHz ,up to 3.6GHz/4MB Cache /35W
VGA, Dual LAN, 4xUSB 3.0, 2xUSB 2.0, 2xPCI Slot
EC 61850-3, IEC60068-64, IEC 60068-2-2 Certificated
USER MANUAL Version 1.1

WinMate Communication INC.

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.

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.

Copyright Notice

Trademark Acknowledgement

Disclaimer

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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 1W07Axxxxxxxx means October of year 2007.

Customer Service

We provide service guide for any problem as follow steps： Please 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 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.

Revision History

Version	Date	Note	Author
1.0	2014.11.11	✓ Initial Draft	Henry Lee
1.1	2015.02.16	✓ Add Watch Dog function setting description.	Patrick Hsien

Contents

CHAPTER 1

Overview

This chapter includes IV7T-RK2U/IV7W-RK2U Embedded Server PC overview information.
Sections include:

- Introduction
- Feature
- Packing List
- Hardware Specification
- Chassis Dimensions

Chapter 1 Overview

1.1 Introduction

IV7T-RK2U/IV7W-RK2U is an embedded server PC that excels in wide array of substation automation roles. Featuring high performance Intel Core i7 Processor in a 2U Rack mount reliable fan-less design, IV7TRK2U/IV7W-RK2U provides the processing power to handle demanding industrial tasks without consuming a lot of power. The server PC operates on Windows Embedded Standard 7 – WS7E or Windows Server 2008 R2 for reliable field application. In addition, IV7T-RK2U /IV7W-RK2U offer a wide array of I/Os, including one VGA port, two Gigabit Ethernet ports, two RS232 serial ports, one RS232/422/485 serial port (jumper configurable), four USB 3.0 ports, and two USB 2.0 ports, providing connectivity for diverse applications.

IV7T-RK2U/IV7W-RK2U has been certificated with IEC 61850-3, which is the international hardware standard of communication network and system in power substations. This standard facilitates the management to large number of devices and enables the communications between the various devices. In addition, the server PC operates reliably in wide temperature range of -10°C to 60°C/ -40°C to 70°C, offering an optimal solution for applications subjected to harsh environmental requirements.

1.2 Features

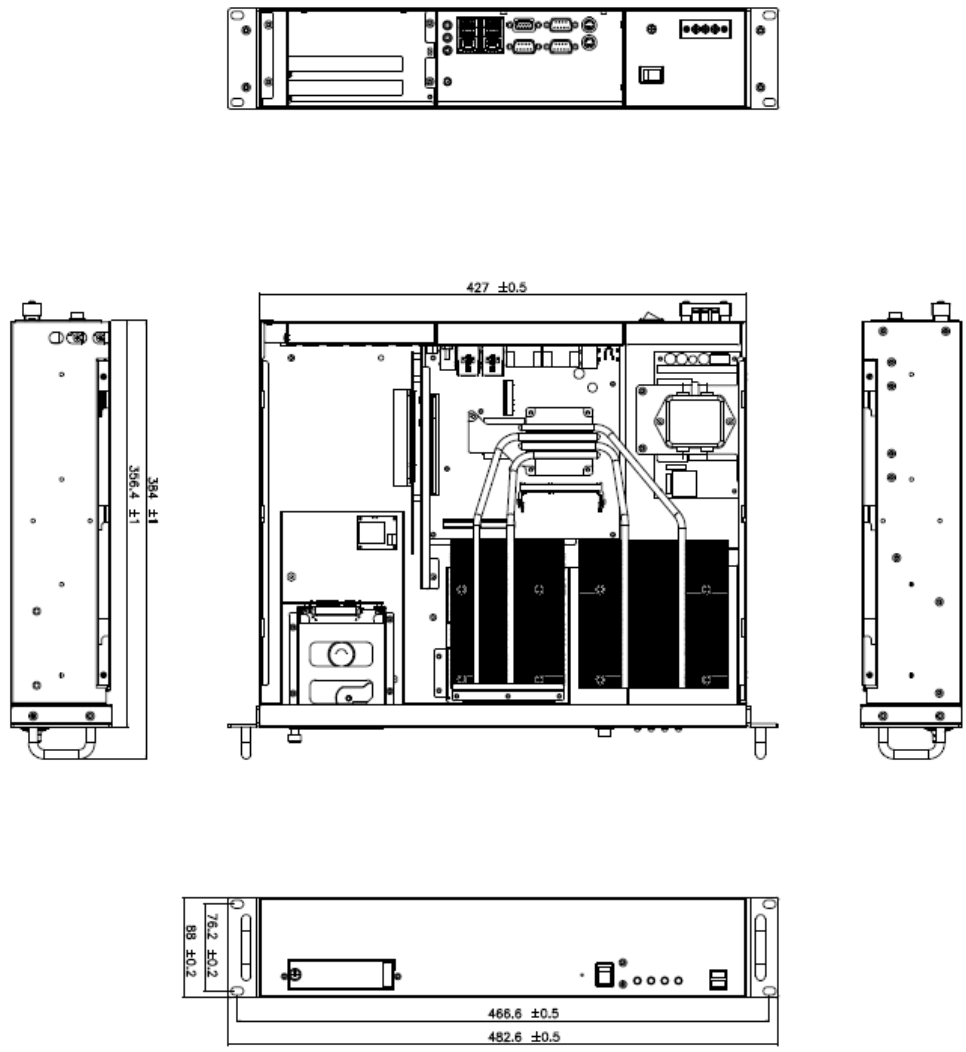
- IEC 61850-3, IEC60068-2-64, IEC 60068-2-2 certificated.
- Intel® Core™ i7-3520M Processor , 2.9 GHz up to 3.6GHz/4MB Cache/35W
- Max 16 GB DDR3 1333/1600(Depend on Operating System, Default 4GB)
- 3 x RS232 Serial Ports(1x RS422/485 by Jumper), Expansion PCI card with 4 x RS232 (Optional)
- 2x Giga LAN, 4x USB 3.0, 2x USB 2.0, Line in, Line out, Micro in, PS/2 for Keyboard & Mouse
- Fan-less, High efficiency thermal design w/ sealed construction
- Supports 2 x 2.5" HDD(1 x SATAII, 1 x SATAIII) or 2.5” SSD
- Support GPS function(Optional)
- Mounting in Standard 19"/2U Equipment Rack
- Operating Temperature: IV7T-RK2U(-10°C to 60°C)
  IV7W-RK2U(-40°C to 70°C)

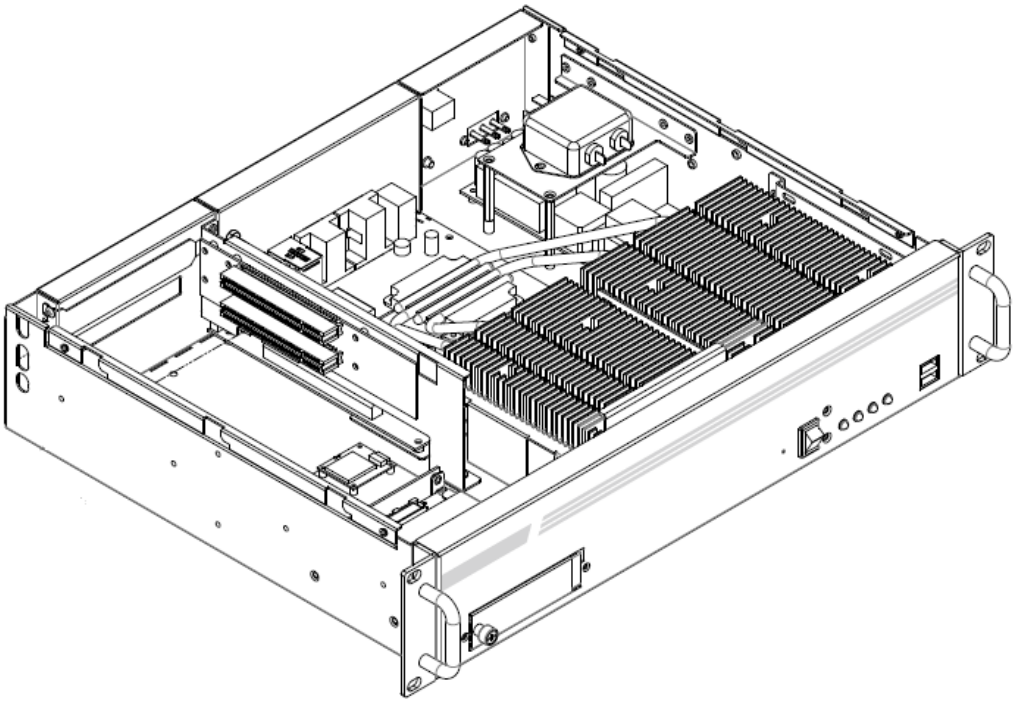
1.3 Hardware Specifications

System Specification	
Processor Socket	rPGA988B
Processor	Intel® Core™ i7-3520M Processor, 2.9 GHz up to 3.6GHz/4MB Cache/35W
BIOS	AMI System BIOS
System Chipset	Intel® 7 series Chipset HM76
System Memory	Two DDR3 1333/1600MHz SO-DIMM supported (system max. 16GB)
Ethernet Controller	Broadcom BCM57780 GbE controller
Serial	2 x RS-232 1 x RS-232/422/485(select by jumper)
SDD Interface	SATAIII mSATA SSD Max.512GB
GPS(Optional)	U-blox GPS module
I/O Connectors	
Front Side I/O	1 x Power On/Off 1 x Reset Button 2 x USB 2.0 1 x Front-accessible 2.5” Drive Bay (Support 2 x 2.5” HDD or SSD)
Back Side I/O	1 x 3 Pin Acrylic Protect Connector for AC/DC Input 2 x PS/2 for Keyboard & Mouse 3 x RS232(1x RS422/485 by Jumper) 2 x RJ-45 GigaLAN 4 x USB3.0 1 x GPS ANT SMA port (Optional) 1 x Mic in, Line out, Line in Jack
Mechanical and Environment	
Dimensions (L x W)	482.6mm x 88mm x 356mm
Construction	Electroplated steel
Power Input	AC/ DC 100V~240V
Environment Specification	
Operating Temperature	-10°C to 60°C(IV7T-RK2U) -40°C to 70°C(IV7W-RK2U)
Operating Humidity	10% to 95% (non condensing)
Certifications	IEC 61850-3, IEC60068-2-64, IEC 60068-2-2 ,CE,FCC

Mounting	2U Rack mount

Chassis Dimension





CHAPTER 2

Hardware Functions

This chapter includes IV7T-RK2U/IV7W-RK2U Embedded Server PC Hardware I/O Information.
Sections include:

- System Power/Reset Switches
- System LED Indicators
- System Power Input
- PS/2 Keyboard and PS/2 Mouse Connectors
- Serial COM Ports
- Ethernet Interface (LAN)
- USB Ports
- VGA Port
- Audio Jack (Pin-header)

Chapter 2 Hardware Functions

2.1 System Power/Reset Switches

The system power switch and the reset switch are both located on the front panel.

2.2 System LED Indicators

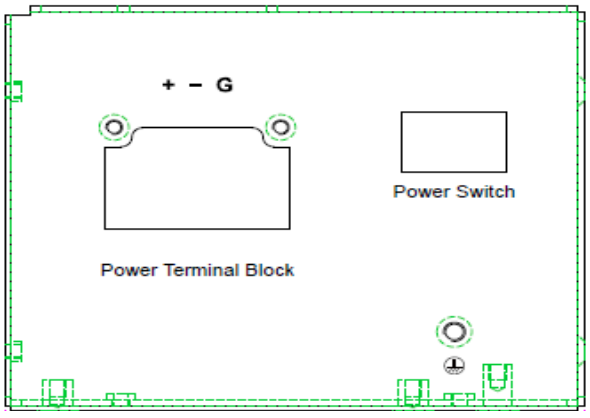
The system status are indicated on the front panel with the LED indicators:

Definition of System Indicator			
Item	**LED Identifier**	**Status**	**Description**
1	POWER	On	System Power is On
		Off	System Power is Off
2	HDD	On	Hard disk is being accessed
		Off	Hard disk is idling
3	LAN1	On	Network activity occurred on LAN1 Ethernet port
		Off	Network is idling on LAN1 Ethernet port
4	LAN2	On	Network activity occurred on LAN2Ethernet port
		Off	Network is idling on LAN2Ethernet port

2.3 System Power Input

The IV7T-RK2U/IV7W-RK2U support AC/ DC power input to fulfill the need of field site. The power input is located on the rear panel, and has the following specification:

Power Inout	Voltage Range	Power Rating	Connector Type
AC	100-240V	2A~1A, 47-63Hz	3Pin Screw Terminal
DC	100-240V	2A~1A	3Pin Screw Terminal



2.4 PS/2 Keyboard and PS/2 Mouse Connectors

The Motherboard provides two PS/2 interface. The PS/2 connector supports Keyboard and Mouse. In other cases, especially in embedded applications, a mouse is not used. Therefore, the BIOS standard setup menu allows you to select* “All, But Keyboard” under the “Halt On”. This allows no-keyboard operation in embedded system applications without the system halting under POST.

2.5 Serial COM Ports

There are two RS-232 connectors, and one COM port that can support RS-232/422/485 through jumper settings. See the motherboard COM port section for detail jumper settings.

2.6 Ethernet Interface (LAN)

Two Gigabit LAN ports reside in the rear of the device, and are fully compliant with the PCI 10/100/1000 Mbps, and are standard RJ-45 jacks.

2.7 USB Ports

There are four USB 3.0 ports in the rear side of the server PC, and two USB 2.0 ports in the front. The USB ports support hot plug-in.

2.8 VGA Port

The VGA connector is a standard 15-pin D-SUB connector, and can be connected to an external CRT/LCD monitor.

2.9 Audio Jack (Pin-header)

The audio jack supports Audio 5.1 channel, and digital audio output. The audio interface includes Mic-in, line-in, and line-out.

CHAPTER 3

Equipment Installation

This chapter includes IV7T-RK2U/IV7W-RK2U Embedded Server PC equipment installation information.
Sections include:

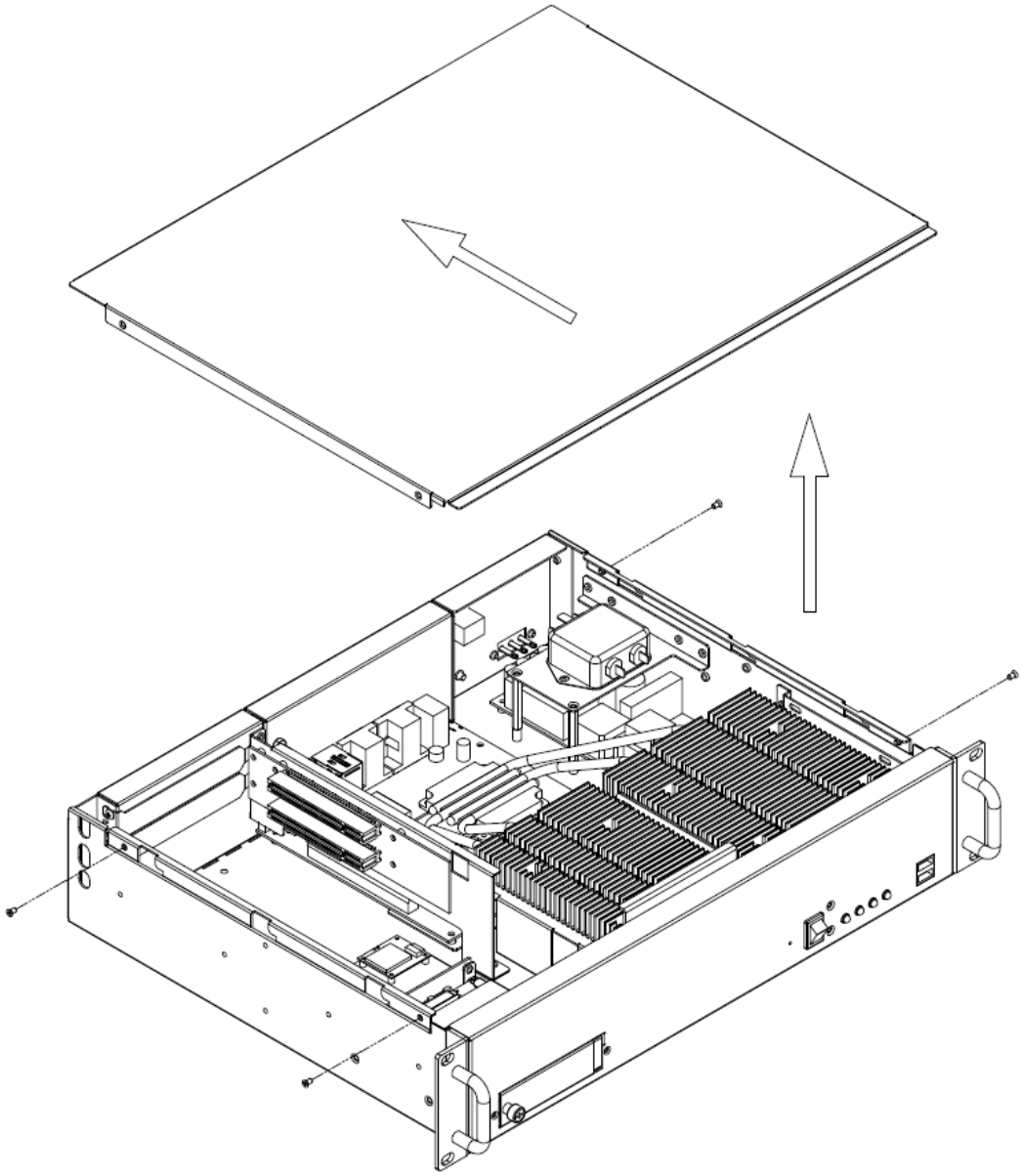
- PCI Card Installation
- Memory Module (SODIMM) Installation

Chapter 3 Equipment Installation

3.1 Opening System Chassis

Perform the following to open the equipment chassis for equipment installation

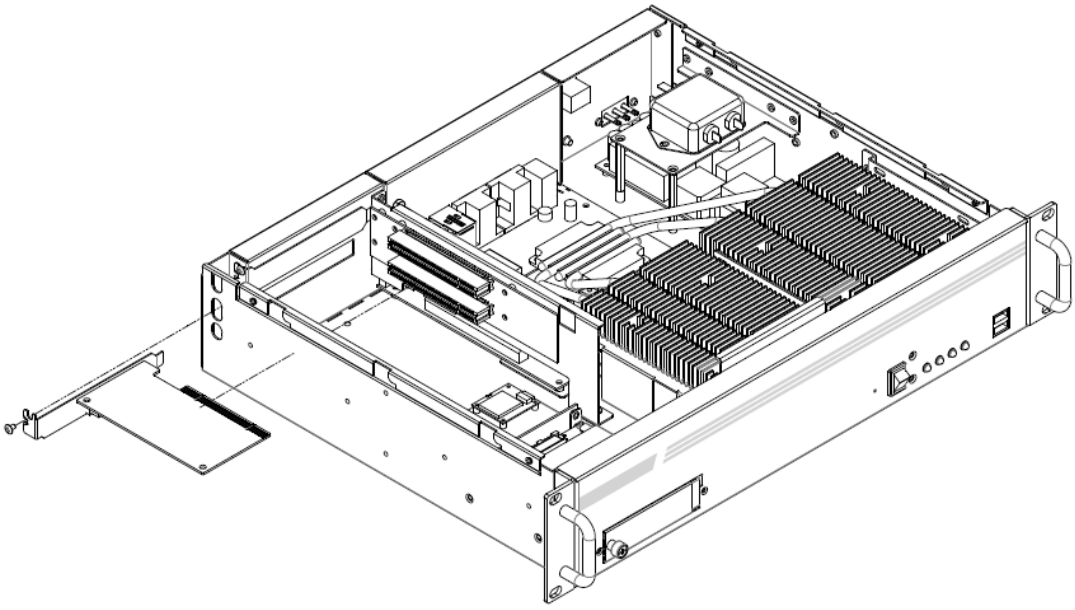
1. Remove all power and signal connections.
2. Place the unit with the top facing up.
3. Remove the screens shown on the diagram below.
4. Remove the cover as shown below.



3.2 PCI Card Installation

Perform the following to install PCI Card:

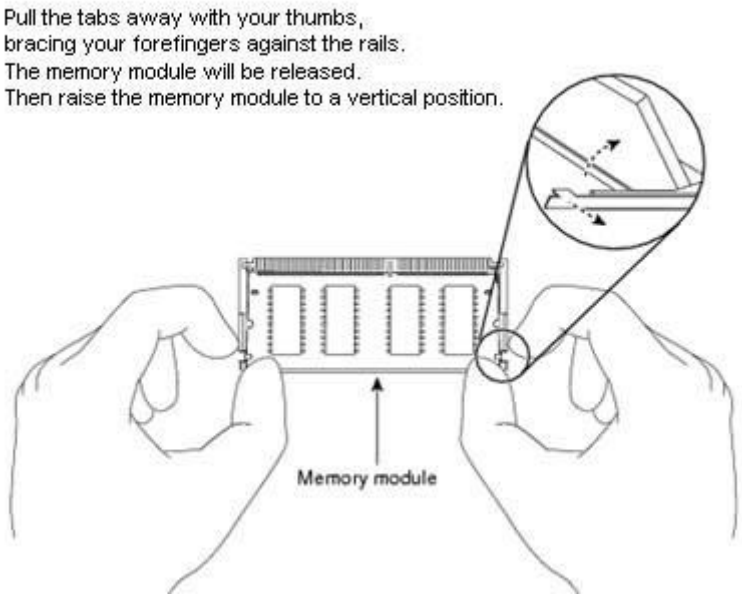
1. First follow the instruction to remove the top system cover.
2. Remove the PCI slot covers for the desired slot.
3. Insert the PCI card from the rear of the system through the opening, and push into the slot as shown below.



3.3 Memory Module (SODIMM) Installation

The IV70 Motherboard provides two 204-pin SODIMM slot. The socket supports up to 16GB DDR3 1333/1600 SDRAM. When installing the Memory device, please follow the steps below：

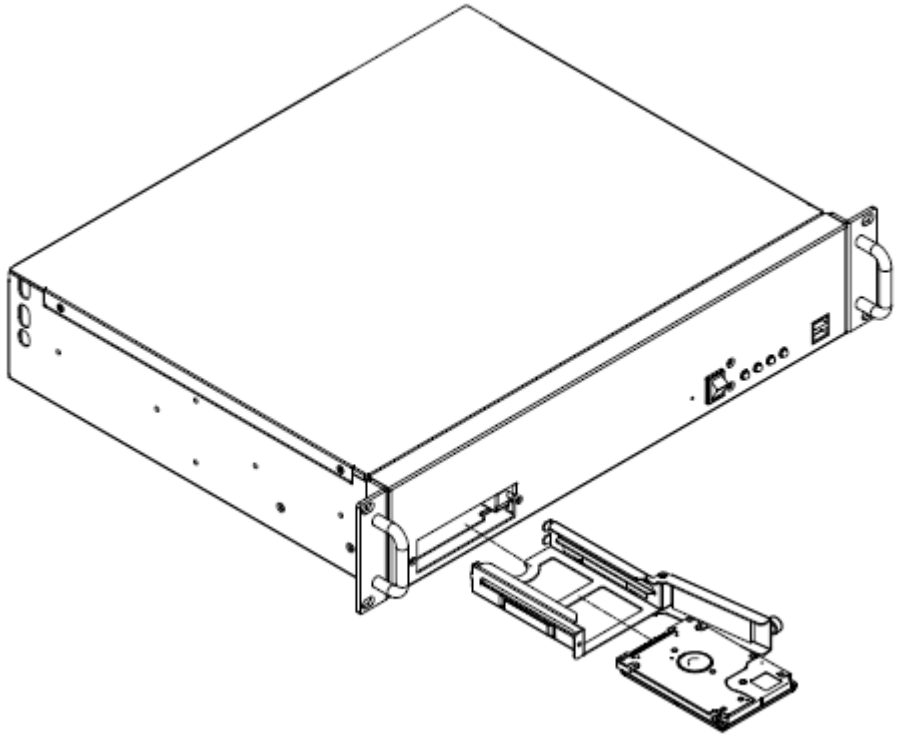
1. First follow the instruction to remove the top system cover
2. Locate the SODIMM slot on the motherboard.
3. Firmly insert the SODIMM at an angle into its slot. Align the SODIMM on the slot such that the notch on the SODIMM matches the break on the slot.
4. Press downwards on SODIMM until the retaining clips at both ends fully snap back in place and the SODIMM is properly seated.



3.4 Removing Harddrive

The IV7T-RK2U/ IV7W-RK2U with a replaceable hard drive bay. Perform the following to remove hard drive from the bay:

1. Remove all power and signal connections.
2. Locate the removable hard drive bay in the front of the system.
3. Pull the hard drive mounting bracket out.
4. Remove the screws on the hard drive mounting bracket.
5. Remove the hard drive by lifting it out of the mounting bracket.



CHAPTER 4

Motherboard Information

This chapter includes IV7T-RK2U/IV7W-RK2U Embedded Server PC motherboard information.
Sections include:

- Features
- Motherboard Specifications
- Function Block
- Board Dimensions

Chapter 4 Motherboard Information

4.1 Features

- Mini-ITX Form Factor (170mm x 170mm)
- 3rd Generation Intel® Core™ i7/i5 Processor
- System memory up to 16GB DDR3 1333/1600, 2 x SO-DIMM
- **Rich I/O connectivity:**1 x PCIEx16 slot, 2 x Mini-PCIE, 6 x COM, 4 x USB2.0, 4 x USB3.0, Dual GbE LAN
- **Wide selection of storage devices:** SATA HDD or SSD/SATAIII mSATA SSD, customers benefit from the flexibility of using the most suitable storage device for larger capacity
- **Optimized integrated graphic solution:** With Intel® Graphics Flexible, it supports versatile display options and 32-bit 3D graphics engine

4.2 Motherboard I/O

4.2.1 12V DC-IN

The Motherboard allows plugging 12V DC-IN jack on the board without another power module converter under power consumption by Intel Socket G2 processor in HM76 with Intel® 7 series chipset.

4.2.2 PS/2 Keyboard and PS/2 Mouse

The Motherboard provides two PS/2 interface. The PS/2 connector supports Keyboard and Mouse. In other cases, especially in embedded applications, a mouse is not used. Therefore, the BIOS standard setup menu allows you to select* “All, But Keyboard” under the “Halt On”. This allows no-keyboard operation in embedded system applications without the system halting under POST.

4.2.3 Serial COM ports

Three RS-232 connectors build in the rear I/O. Fourth optional COM ports support RS-232. When an optional touch-screen is ordered with PPC, serial com port can connect to a serial or an optional touch-screen. One optional COM port supports RS232/422/485 choice through jumper setting.

4.2.4 Internal 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.

4.2.5 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.

4.2.6 USB ports

Eight USB devices (four 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.

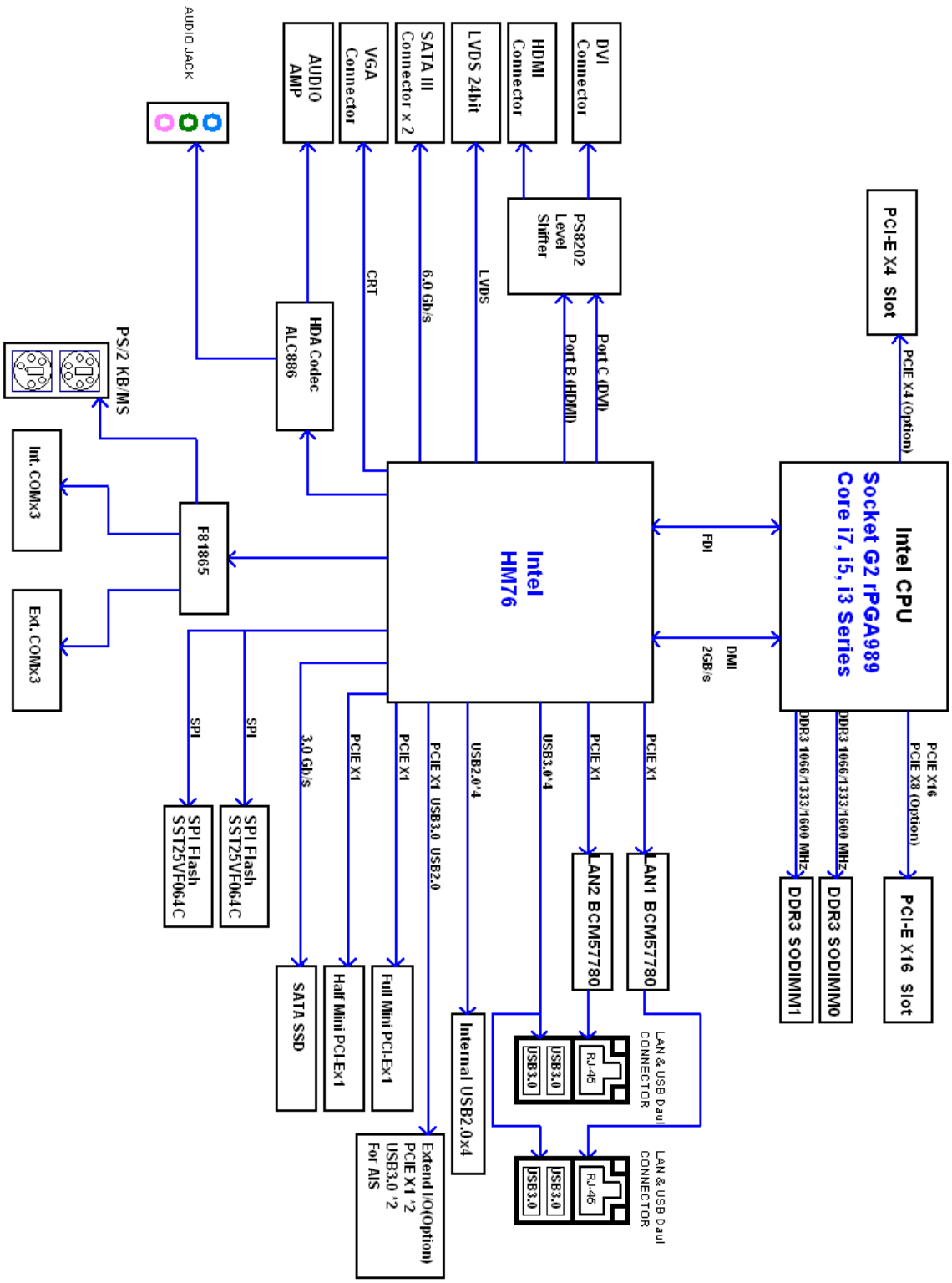
4.2.7 Audio Jack (Pin-header)

The Audio 5.1 channel capabilities are provided by a Realtek ALC886 chipset supporting digital audio outputs. The audio interface includes Mic-in,: line-in and line-out.

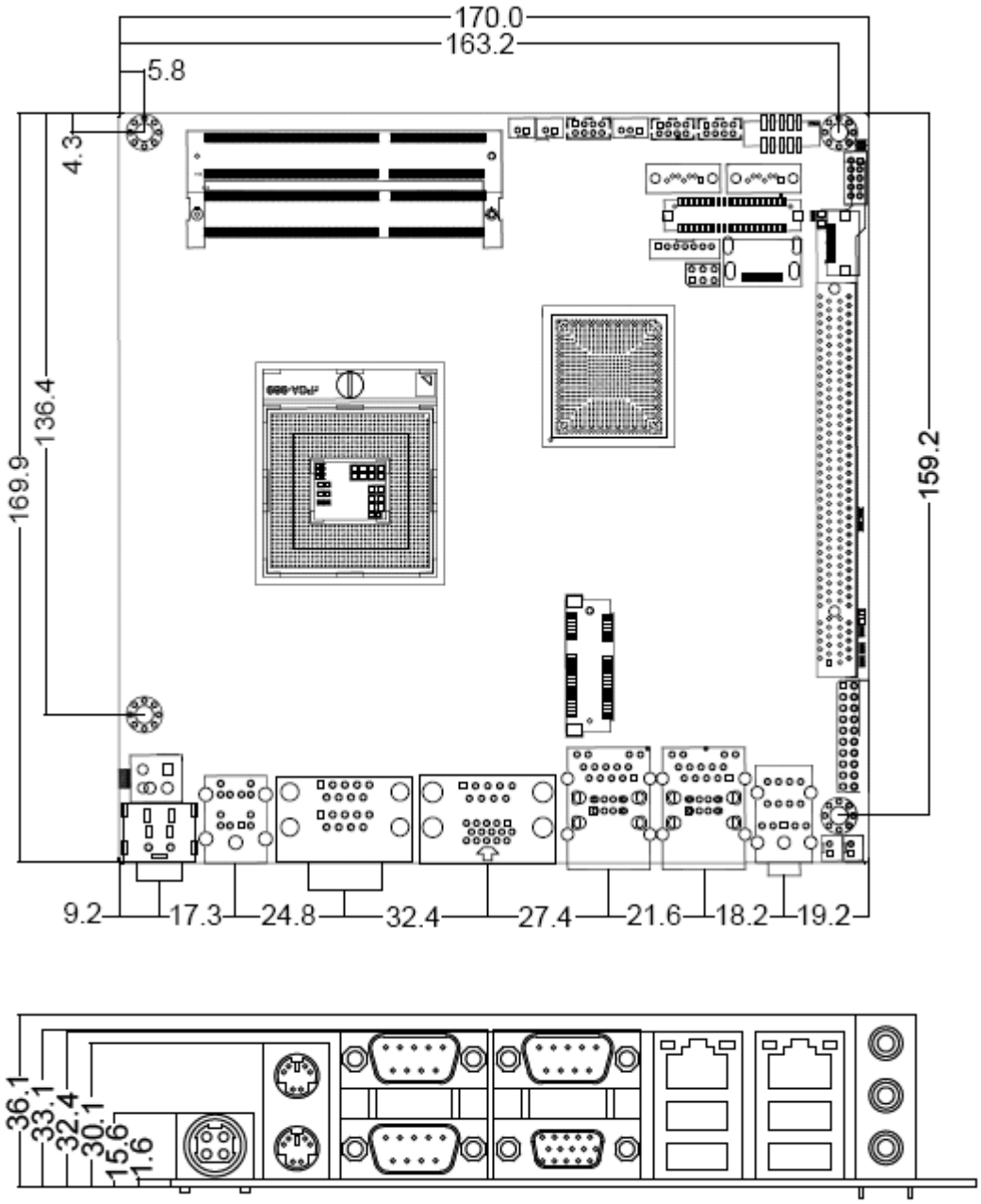
4.3 Motherboard Specifications

CPU Type	Intel® Core i7-3520M Processor, 2.9 GHz ,up to 3.6GHz/4MB Cache /35W
CPU Socket	Socket G2 (PGA988B)
Chipset	Intel® 7 series Chipset (HM76)
BIOS	AMI System BIOS
VGA	Analog monitor resolution up to 2048 x 1536 @75Hz
DVI/HDMI	HDMI/DVI interface, support max. resolution 2560 x 1600 @60Hz
LVDS	Dual-channel 18/24-bit LVDS, supports max resolution 1920 x 1200 @60Hz
LAN	Dual Broadcom BCM57780 PCIe GbE LAN controller
Memory Type	Two DDR3 1333/1600 MHz SO-DIMM supported (max. 16GB)
Super I/O	Fintek F81865
Keyboard/Mouse	2 x PS/2 Keyboard/Mouse connectors
Sound	Realtek ALC886 HD codec (Line-in, Line out, Mic-in)
USB	8 ports (4 x USB3.0 Connector, 4 x USB2.0 pin-header)
Edge Connectors	1 x +12V DC-IN Jack 2 x PS/2 connector for keyboard/mouse 2 x DB9 for COM3 & COM4 1 x VGA out connector + 1 x DB9 for COM1 2 x Gigabit LAN RJ-45 + 1 x dual USB stack connector 1 x Audio Jack for Audio (Line-in, Line-Out, Mic-in)
On Board Pin-Header Connectors	1 x 10pins pin-header for Front Panel(2x5) 1 x 3pins pin-header for CPU Fan 1 x 3pins pin-header for System FAN 1 x 8pins pin-header for 5V/12V external power(2x4) 2 x 2pins pin-header for 5V external power (Red) 1 x 2pins pin-header for 12V external power (Yellow) 1 x 4pins ATX 12V connector 2 x 2pins Speaker 2 x 8pins pin-header for USB 5/6, 7/8(2x4) 3 x 10pins pin-header for COM2、COM5、COM6 (RS232)(2x5) 1 x 40pins DF13 Connector for LVDS 1 x 3pins digital panel backlight brightness controller 1 x 7pins digital panel backlight controller 1 x 10pins pin-header for DIO(2x5) 2 x SATA connector(1xSATAIII, 1xSATAII) 1 x HDMI connecter by FFC 1 x DVI connecter by FFC
Power Connector	Input: 4-pin ATX 12V Power input
Expansion Slots	1 x PCIEx16, 1 x PCIEx4, 2 x Mini-PCIE, 1 x mSATA SSD
Form Factor	Mini-ITX
Dimensions	170mm x 170mm
Mechanical & environmental	Operating temperature: -10 deg. C to 60 deg. C (Standard), -40 deg. C to 70 deg. C (Optional) Operating Humidity: 30 ~ 90% Relative humidity, non-condensing Certification: CE, FCC, RoHS

4.4 Function Block



4.5 Board Dimensions



CHAPTER 5

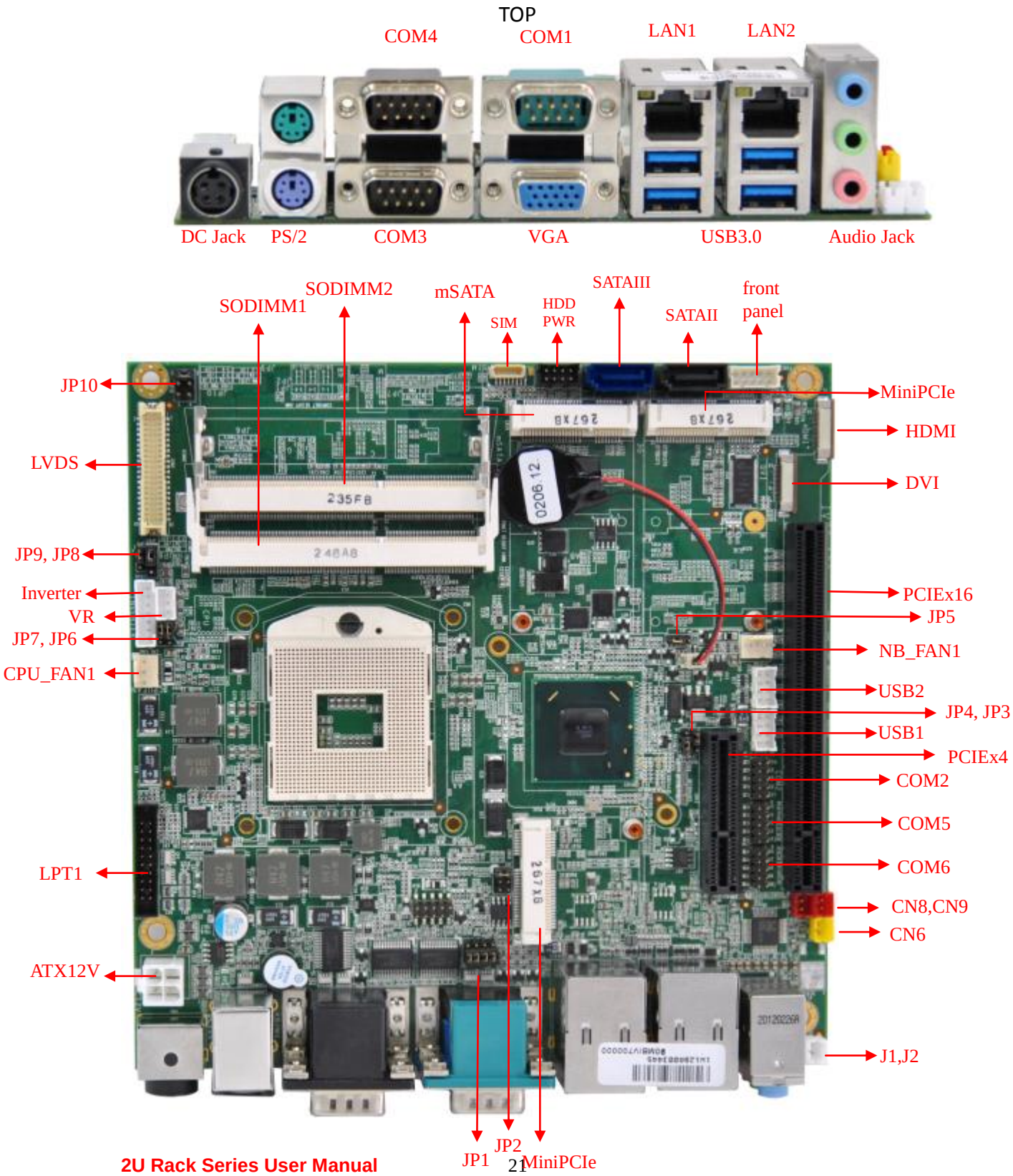
Motherboard Configuration

This chapter provides information on how to use the jumps and connectors on IV70 Motherboard.
The Sections include:

- Jumpers and Connectors
- Setting the Jumpers

Chapter 5 Motherboard Configuration

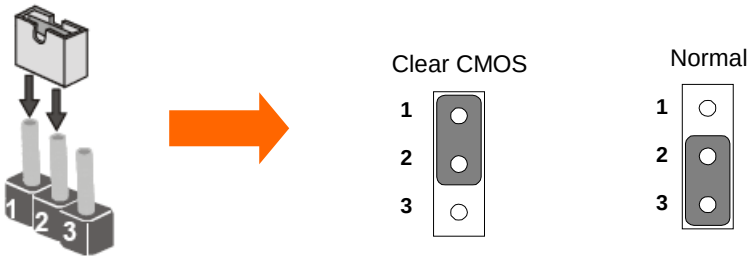
5.1 Jumpers and Connectors



5.2 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.

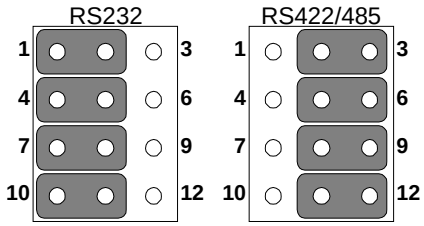


The following tables list the function of each of the board's jumpers.

Label	Function	Note
JP1	RS232 / RS422 / RS485 Selector	2x3 header , pitch 2.0mm
JP2	RS232 / RS422 / RS485 Selector	3x4 header , pitch 2.0mm
JP5	Clear CMOS	3x1 header , pitch 2.0mm
JP6	VR/Software	3x1 header , pitch 2.0mm
JP7	PWM/DA	3x1 header , pitch 2.0mm
JP8	Back Light PWR	3x1 header , pitch 2.5mm
JP9	PWM Level	3x1 header , pitch 2.0mm
JP10	LVDS PWR Selector	2x3 header , pitch 2.5mm

5.2.1 JP1: RS232 / RS422 / RS485 Selector

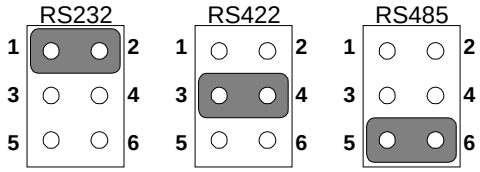
The jumper can be configured to operate COM1 in RS-232/422/485 mode. And the setting must be cooperated with JP2 settings.



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

5.2.2 JP2 : COM1 RS232 / RS422 / RS485 Function Selector

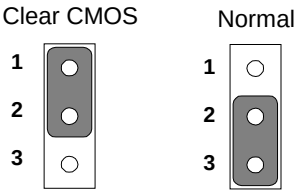
The jumper can be configured to operate COM1 in RS-232/422/485 mode. And the setting must be cooperated with the JP1 settings. Default 1 short 2.



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

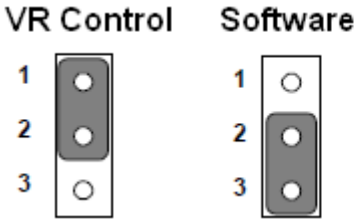
5.2.3 JP5: Clear CMOS

User must make sure the power supply to turn off the power supply before setting Clear CMOS. Users remember to setting jumper back to Normal before turning on the power supply. Default: 2 short 3.



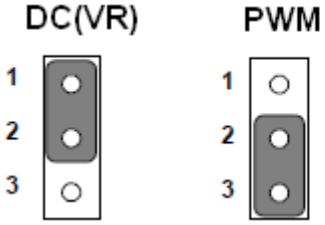
Pin No.	Functions
1 Short 2	Clear CMOS
2 Short 3	Normal

5.2.4 JP6 : Brightness Control(VR/Software)



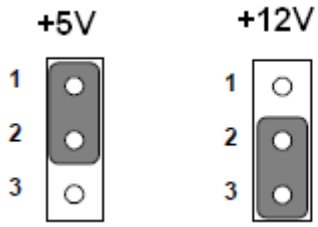
Pin No.	Functions
1 Short 2	VR Control
2 Short 3	Software

5.2.5 JP7 : Brightness Control(DC/PWM)



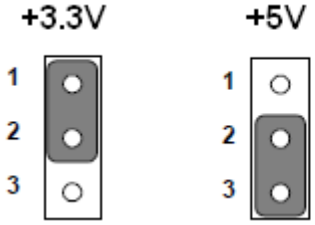
Pin No.	Functions
1 Short 2	DC(VR)
2 Short 3	PWM

5.2.6 JP8 : Back Light PWR



Pin No.	Functions
1 Short 2	+5V
2 Short 3	+12V

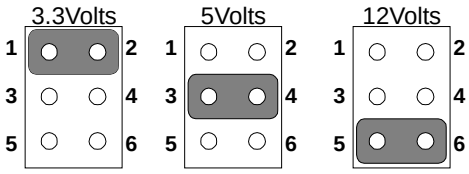
5.2.7 JP9 : PWM Level



Pin No.	Functions
1 Short 2	+3.3V
2 Short 3	+5V

5.2.8 JP10: LCD Panel Voltage Select

JP10 can be configured to operate in 3.3Volts / 5Volts / 12Volts mode.



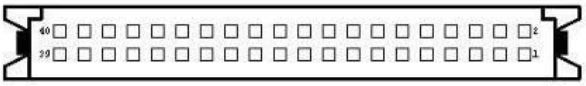
Pin No.	Functions
1 Short 2	3.3Volts Selected
3 Short 4	5Volts Selected
5 Short 6	12Volts Selected

5.3 Connectors and Pin Assignment

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

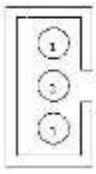
Label	Function	Note
CON1	LVDS LCD Output Connector	DF13-40DP-1.25V
VR	Digital Panel Backlight Brightness Control	3x1 header, pitch 2.54mm
INVERTER	Inverter Connecter	7x1 header, pitch 2.54mm
COM2/5/6	Serial port COM2/5/6	5x2 header, pitch 2.0mm
USB1/2	USB PIN HEADER	4x2 header, pitch2.0mm
CPUFAN	FAN CONNECTOR	3x1 Pin Header
NBFAN	FAN CONNECTOR	3x1 Pin Header
PANEL	System Function Connector	5x2 header ,pitch 2.0mm
J1	Front Audio (Left)	1x2 header ,pitch 2.54mm
J2	Front Audio (Right)	1x2 header ,pitch 2.54mm
12V (Yellow)	12V External Power	2x1 header, pitch 2.54mm
5V(Red)	5V External Power	2x1 header, pitch 2.54mm
HDD PWR	5V/12V External Power	4x2 header ,pitch 2.54mm
CN7/DIO	Digital I/O	10 pin Digital I/O function
CN10	Mini-PCIE	Half size
CN18	Mini-PCIE	Full size
SIM	SIM card connector	6 pin Header
J6	DVI FFC	18 pin FFC
J7	HDMI FFC	18 pin FFC
CN5	ATX12V DC Connector	2x2 Pin Connecter
LPT1	LPT Connector	10x2 header ,pitch 2.54mm

5.3.1 CON1: LVDS Connector



Pin No.	SYMBOL	Pin No.	SYMBOL
1	LCDVDD	2	LVDS_TXL0N
3	LCDVDD	4	LVDS_ TXL0P
5	LCDVDD	6	LVDS_ TXL1N
7	GND	8	LVDS_ TXL1P
9	GND	10	LVDS_ TXL2N
11	GND	12	LVDS_ TXL2P
13	GND	14	LVDS_TXLCKN
15	GND	16	LVDS_ TXLCKP
17	GND	18	LVDS_ TXL3N
19	GND	20	LVDS_ TXL3P
21	GND	22	LVDS_TXU0N
23	GND	24	LVDS_ TXU0P
25	GND	26	LVDS_ TXU1N
27	GND	28	LVDS_ TXU1P
29	GND	30	LVDS_ TXU2N
31	GND	32	LVDS_ TXU2P
33	GND	34	LVDS_TXUCKN
35	GND	36	LVDS_TXUCKP
37	GND	38	LVDS_TXU3N
39	GND	40	LVDS_TXU3P

5.3.2 CN17: Digital Panel Backlight Brightness Control

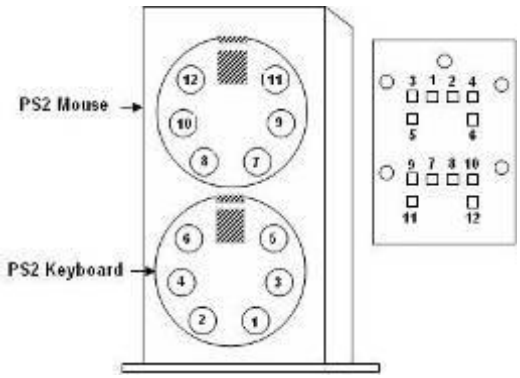


Pin No.	SYMBOL
1	VCC(5V)
2	Black Light Control
3	GND

5.3.3 CN16: Digital Panel Backlight Control

Pin No.	SYMBOL
1	+12V
2	+12V
3	+12V
4	GND
5	Black Light Control
6	GND
7	Black Light EN 5V

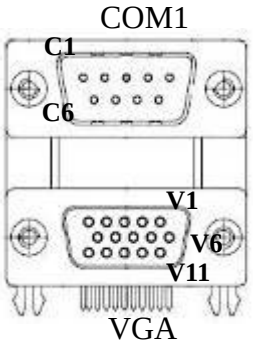
5.3.4 PSKBM1: PS2 Keyboard/Mouse Connector



PS/2 Keyboard		PS/2 Mouse	
Pin No.	SYMBOL	Pin No.	SYMBOL
1	KDATA	7	MDATA
2	NC1	8	NC3
3	Ground	9	Ground
4	VCC	10	VCC
5	KBCLK	15	MSCLK
6	NC2	16	NC4

5.3.5 D-SUB Dual Output

The serial port COM1, which is option for RS232 / RS422 / RS485, is the Winbond I/O serial port.



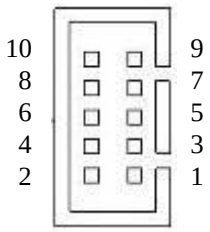
Up: 9(Male)

Down: 15(Female)

Pin No.	SYMBOL	Pin No.	SYMBOL
C1	DCD4/485TXRX-	V1	R
C2	SRD4/485TXRX+	V2	G
C3	STD4/422RX+	V3	B
C4	DTR4/422RX-	V4	NA
C5	GND	V5	GND
C6	NDSRA	V6	GND
C7	NRTSA	V7	GND
C8	NCTSA	V8	GND
C9	NRIA	V9	VCC
		V10	GND
		V11	NA
		V12	DDC_DATA
		V13	CRT_HS
		V14	CRT_VS
		V15	DDC_CLK

5.3.6 CN11/12/14: Serial port COM6/5/2

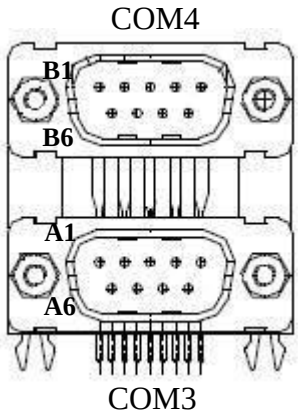
The serial ports, which are Winbond I/O support, is RS232 only.



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

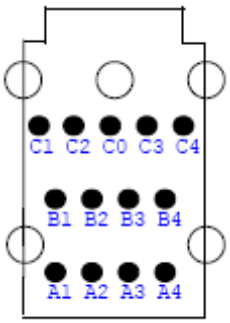
5.3.7 D-SUB Dual Serial Port

The serial port COM3/4, RS232 only, from A1 to A9 is COM3, and B1 to B9 is COM4, which is supported by Fintek.



Pin No.	SYMBOL	Pin No.	SYMBOL
A1	FK_NDCD1	B1	FK_NDCD2
A2	FK_NSIN1	B2	FK_NSIN2
A3	FK_NSOUT1	B3	FK_NSOUT2
A4	FK_NDTR1	B4	FK_NDTR2
A5	GND	B5	GND
A6	FK_NDSR1	B6	FK_NDSR2
A7	FK_NRTS1	B7	FK_NRTS2
A8	FK_NCTS1	B8	FK_NCTS2
A9	FK_NRI1	B9	FK_NRI2

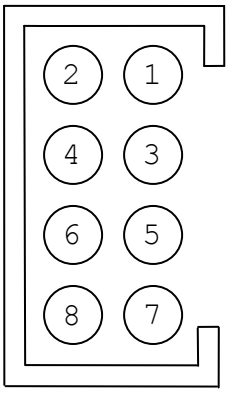
5.3.8 AUDIO401: Audio Jack (Pin-header)



Color	Signal
Blue	Line In
Green	Line Out
Pink	Microphone In
Pin-Header	
C0~C4	Mic in
B1~B4	Line out
A1~A4	Line in

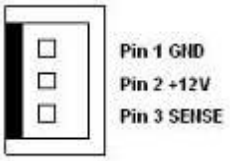
MIC (J3)		Line Out (J4)		Line In (J5)	
NO.	Description	NO.	Description	NO.	Description
C0	MIC1_L	B1	AZ_FOUT_L	A1	LINE1_L
C1	SW_B	B2	LINE2_JD	A2	SW_C
C2	AUGND	B3	AUGND	A3	AUGND
C3	AUGND	B4	AZ_FOUT_R	A4	LINE1_R
C4	MIC1_R				

5.3.9 USB: USB PIN HEADER

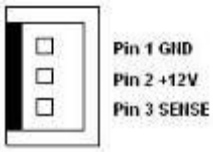


USB1/2			
Pin	SYMBOL	Pin	SYMBOL
2	USBVCC	1	USBVCC
4	USB_DATA1-	3	USB_DATA0-
6	USB_DATA1+	5	USB_DATA0+
8	GND	7	GND

5.3.10 FAN1_NB/FAN2_CPU: FAN CONNECTOR

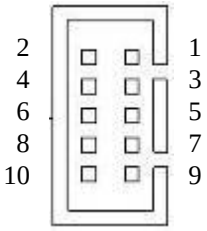


FAN1_NB



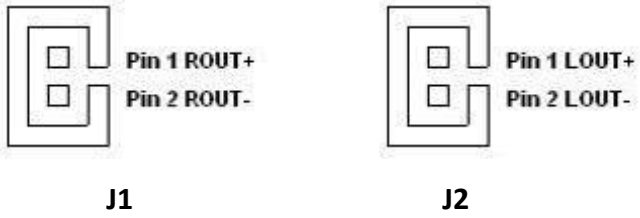
FAN2_CPU

5.3.11 PANEL: Front Panel System Function Connector



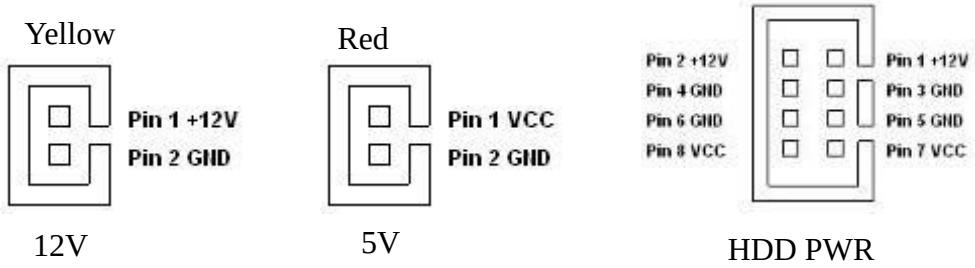
Pin	SYMBOL	Pin	SYMBOL
2	HD_LED+	1	PW_LED+
4	HD_LED-	3	PW_LED-
6	RT_BT1	5	PW_BT1
8	RT_BT2	7	PW_BT2
10	5VSB	9	RSEV

5.3.12 J1/J2: Front Audio



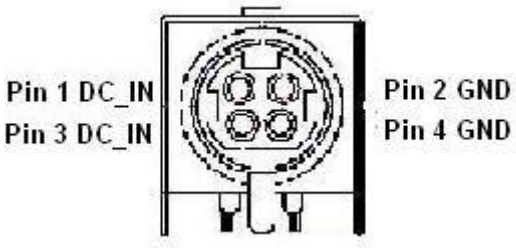
J1 J2

5.3.13 5V/12V/HDD PWR: External Power

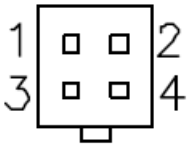


12V 5V HDD PWR

5.3.14 PWIN1: DC Jack (+12V) / Input

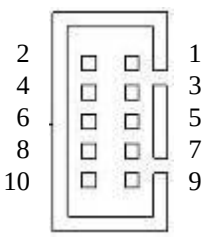


5.3.15 ATX_PWR / Input: 12V DC Connector



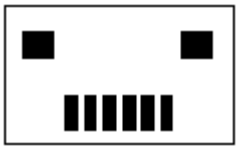
Pin	SYMBOL
1	Ground
2	Ground
3	+12V
4	+12V

5.3.16 : CN7: 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

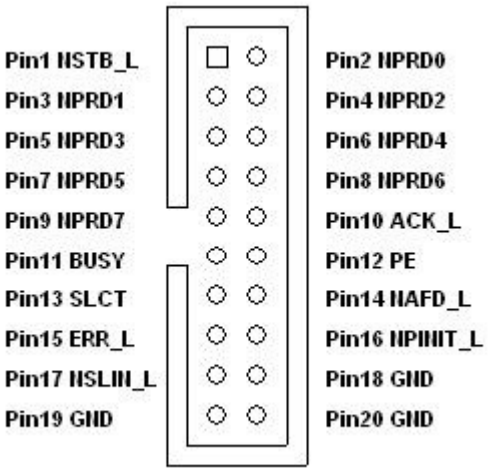
5.3.17 : CN22:SIM card connector



CN22

Pin Number	Signal Name
1	VREG_USIM
2	MSM_USIM_RESET
3	MSM_USIM_CLK
4	GND
5	MSM_USIM_VPP
6	MSM_USIM_DATA

5.3.18 : Parallel Port Box Header



LPT1

5.3.19 CN2: Half Size Mini-PCIE slot

Pin Number	Signal Name	Pin Number	Signal Name
2	VCC3_MINIPCIE1	1	PCIE_WAKE#
4	GND	3	NA
6	+V1.5S	5	NA
8	VREG_USIM	7	CLK_SLOT4_OE#
10	NA	9	GND
12	NA	11	CLK_PCIE_SLOT4_N
14	NA	13	CLK_PCIE_SLOT4_P
16	NA	15	GND
18	GND	17	NA
20	WLAN-RFON2	19	NA
22	BUF_PLT_RST2#	21	GND
24	+V3.3A	23	PCIE_RXN3_SLOT4
26	GND	25	PCIE_RXP3_SLOT4
28	+V1.5S	27	GND
30	SMB_CLK	29	GND
32	SMB_DATA	31	PCIE_TXN3_SLOT4
34	GND	33	PCIE_TXP3_SLOT4
36	USB_PN5	35	GND
38	USB_PP5	37	GND
40	GND	39	VCC3_MINIPCIE1
42	NA	41	VCC3_MINIPCIE1
44	NA	43	GND
46	NA	45	NA
48	NA	47	NA
50	GND	49	NA
52	VCC3_MINIPCIE1	51	NA
m2	GND	m1	GND

5.3.20 : CN3: Full Size 3.5G Module

Pin Number	Signal Name	Pin Number	Signal Name
2	VCC3_MINIPCIE1	1	PCIE_WAKE#
4	GND	3	NA
6	+V1.5S	5	NA
8	VREG_USIM	7	CLK_SLOT3_OE#
10	MSM_USIM_DATA	9	GND
12	MSM_USIM_CLK	11	CLK_PCIE_SLOT3_N
14	MSM_USIM_RESET	13	CLK_PCIE_SLOT3_P
16	MSM_USIM_VPP	15	GND
18	GND	17	NA
20	WLAN-RFON1	19	NA
22	BUF_PLT_RST2#	21	GND
24	+V3.3A	23	PCIE_RXN3_SLOT3
26	GND	25	PCIE_RXP3_SLOT3
28	+V1.5S	27	GND
30	SMB_CLK	29	GND
32	SMB_DATA	31	PCIE_TXN3_SLOT3
34	GND	33	PCIE_TXP3_SLOT3
36	USB_PN4	35	GND
38	USB_PP4	37	GND
40	GND	39	VCC3_MINIPCIE1
42	NA	41	VCC3_MINIPCIE1
44	NA	43	GND
46	NA	45	NA
48	NA	47	NA
50	GND	49	NA
52	VCC3_MINIPCIE1	51	NA
m2	GND	m1	GND

CHAPTER 6

Graphic Driver Installation

This chapter offers information on the chipset software Installation utility

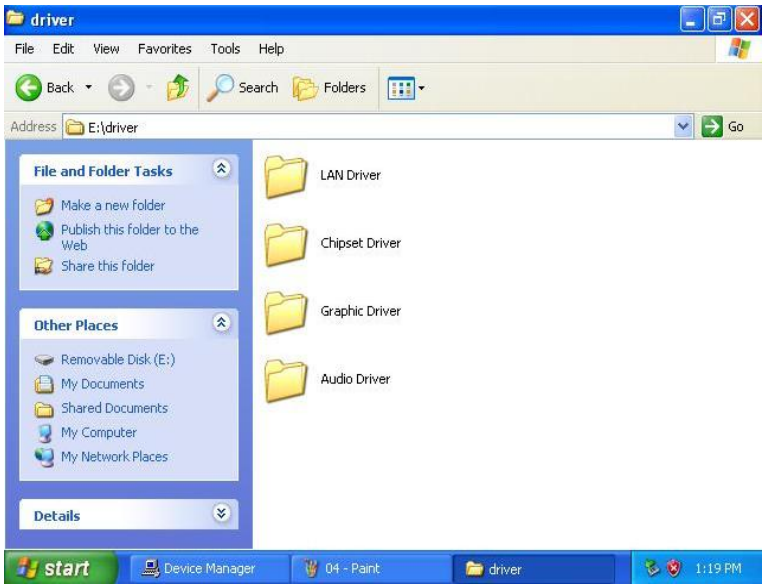
- Installation of Graphic Driver
- Panel Resolution Setting

Chapter 6 Graphic Driver Installation

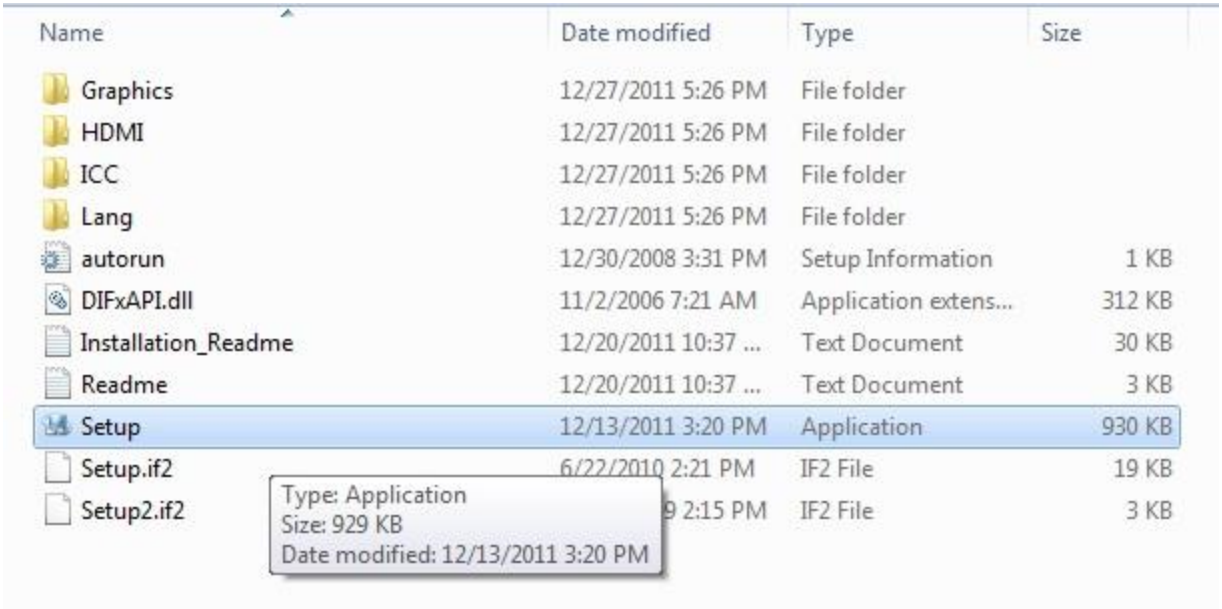
6.1 Standard CMOS Feature

ID30 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 “.

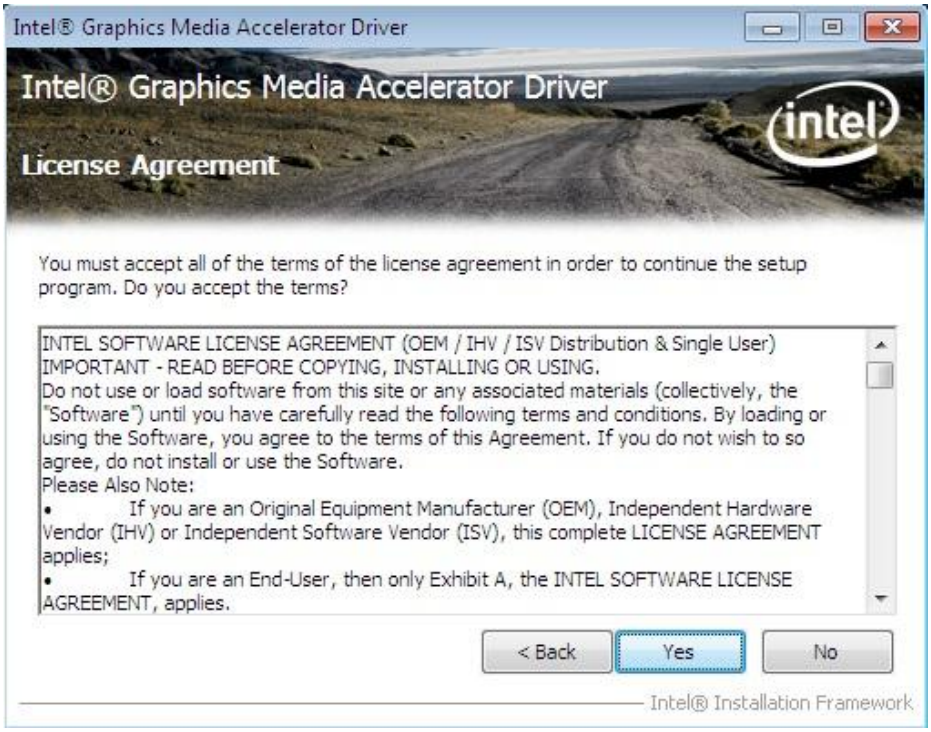


Step.2. Click on “setup” to execute the setup.



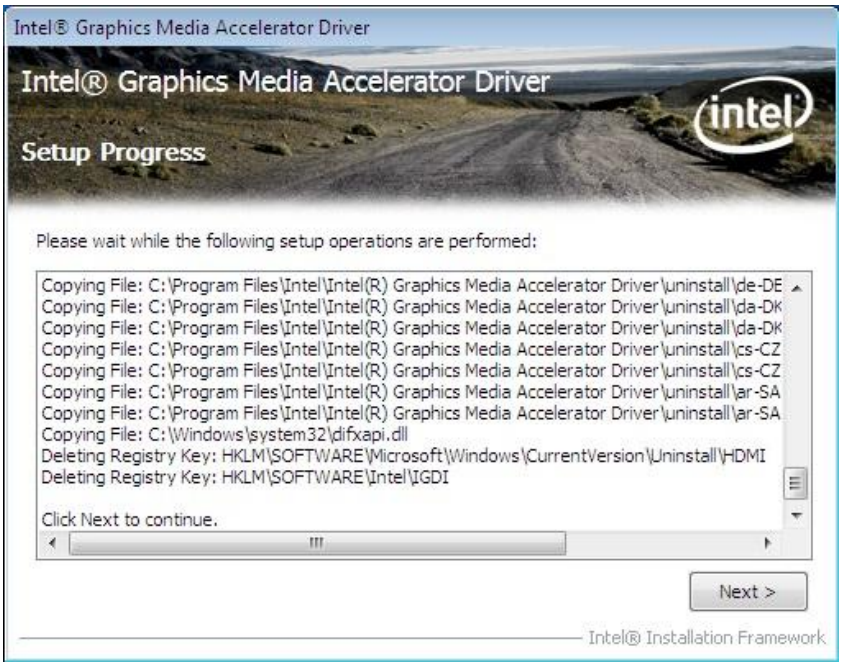
Step.3. Click on “Next “ to install Driver.

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



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

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

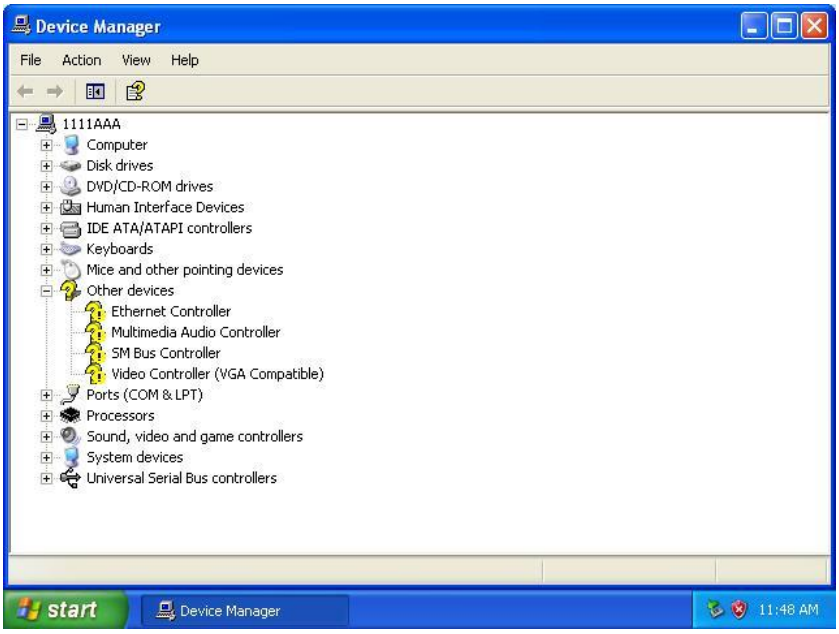


Step.7. Click on “Yes, I want to restart this computer now“ to go on.

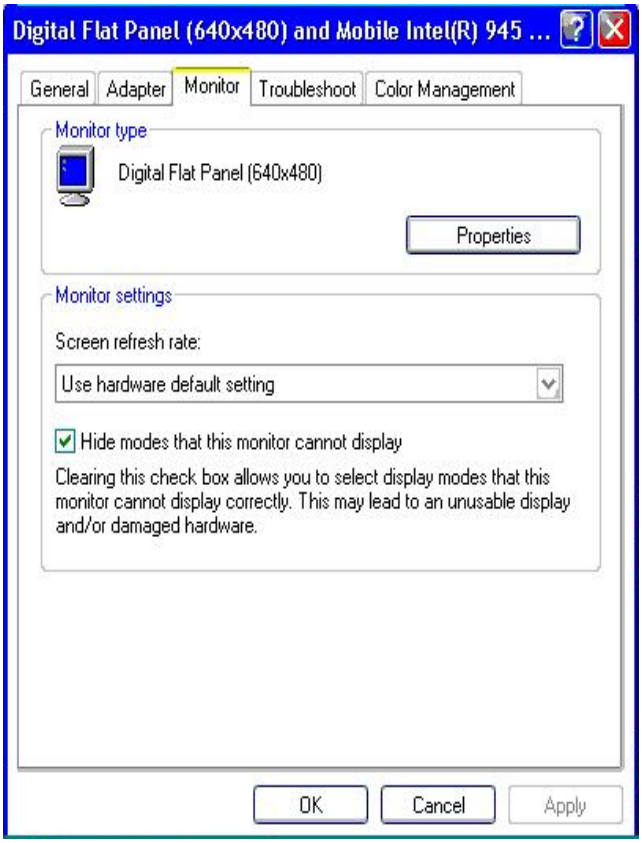
6.2 Panel Resolution Setting

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

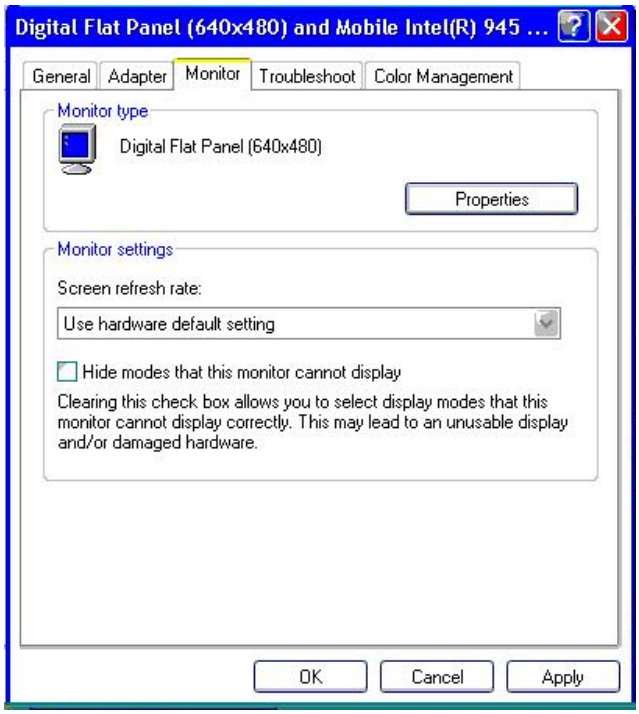
Step.2. In the Display Properties dialog box, click the Settings tab.



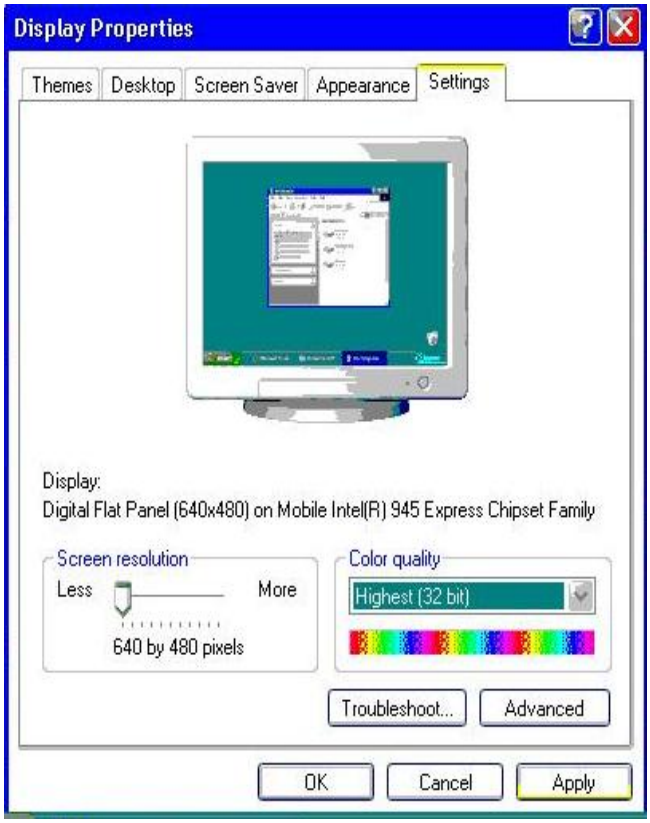
Step.3. Click on “Monitor”.



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 7

Chipset Driver Installation

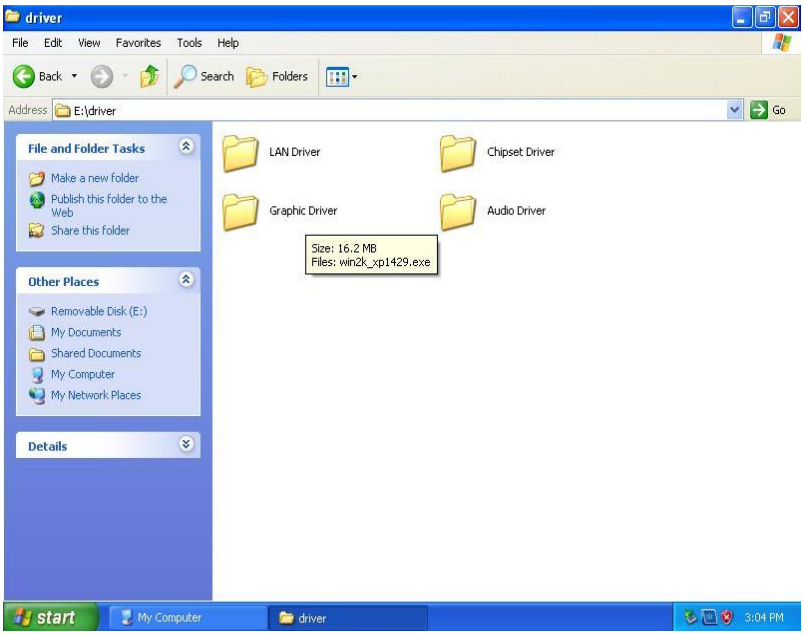
This chapter offers information on the chipset software Installation utility

- Installation of Chipset Driver
- Further information

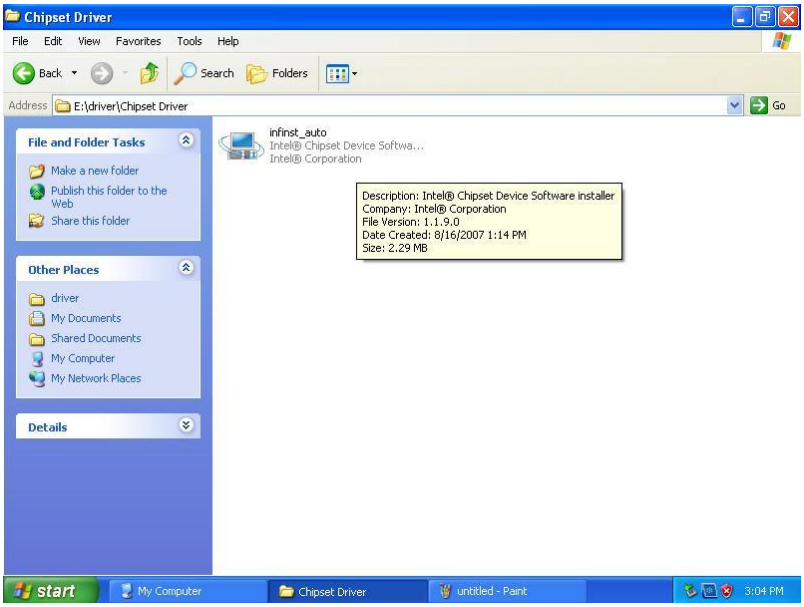
Chapter 7 Chipset Driver Installation

7.1 Standard CMOS Features

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

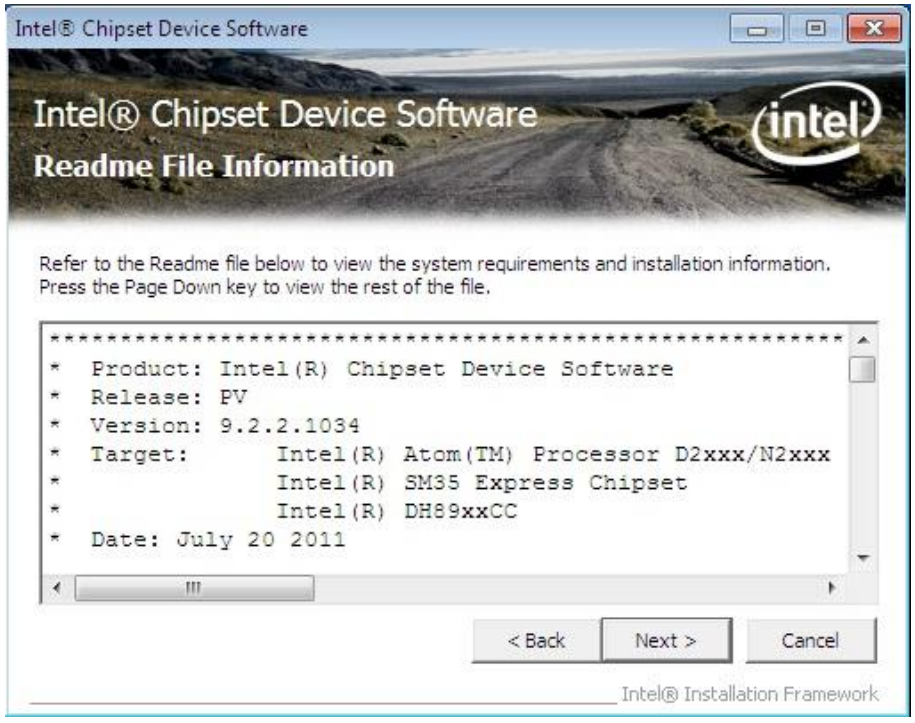


Setp.2. Click on “infinst_auto.exe“ to install driver.



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 8

Ethernet Driver Installation

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

- Introduction
- Installation of Ethernet Driver

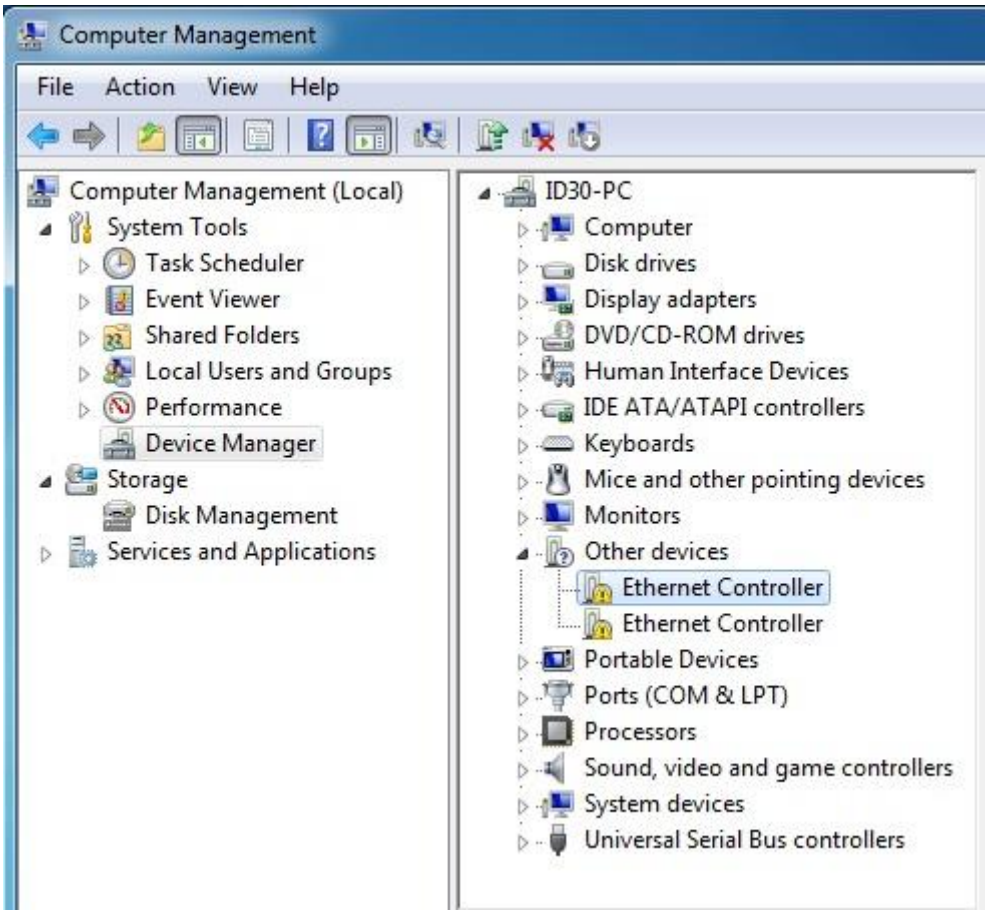
Chapter 8 Ethernet Driver Installation

8.1 Installation of Ethernet Driver

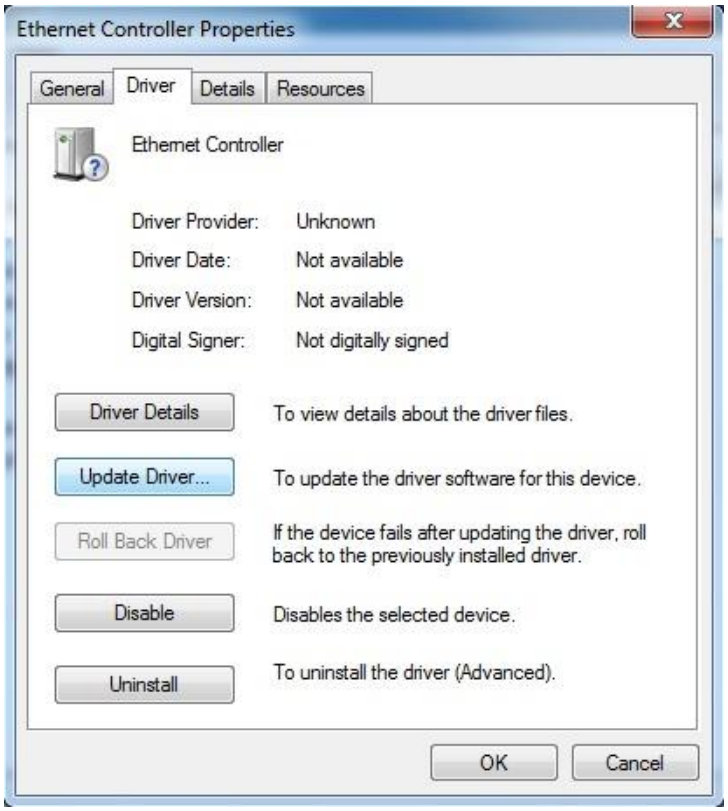
The Users must make sure which operating system you are using in the ID30 Motherboard before installing the Ethernet drivers. Follow the steps below to complete the installation of the Broadcom BCM57780 Gigabit Ethernet controller LAN drivers. You will quickly complete the installation.

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

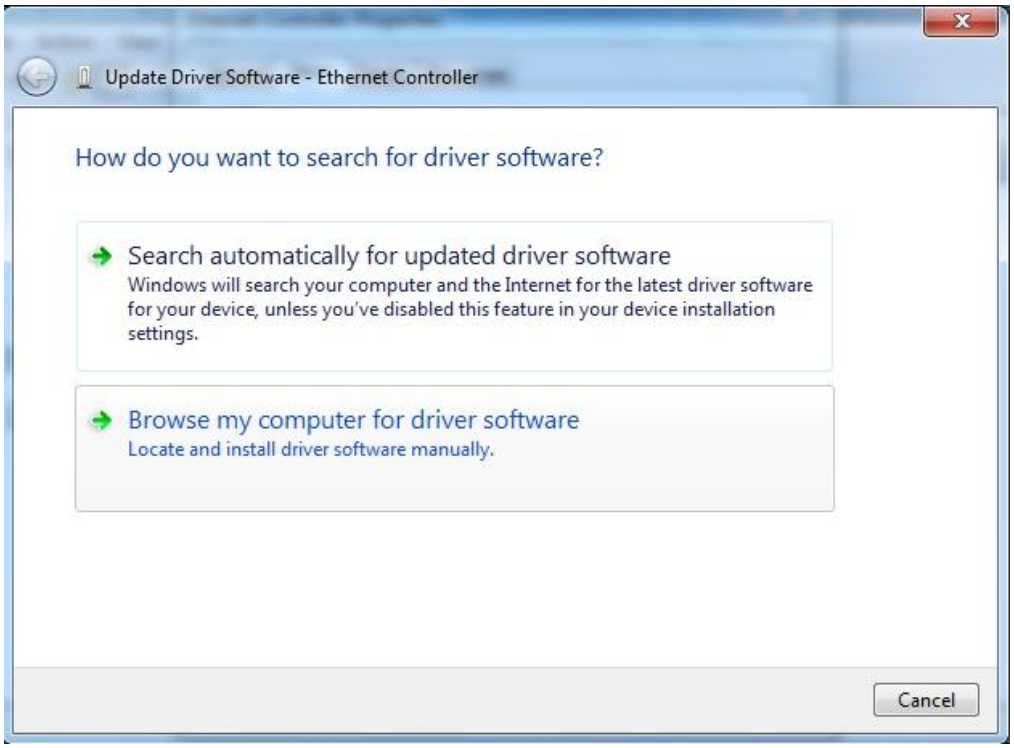
Step.2. In the Other device dialog box, click the Settings tab.



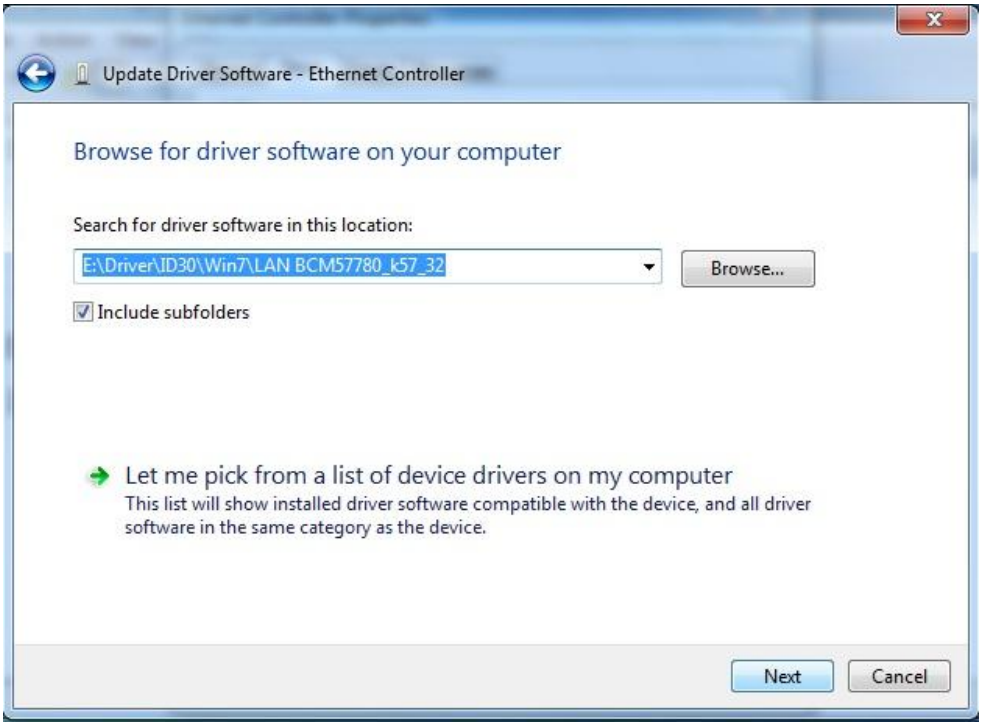
Step.3 Click on “Update Driver” to execute the setup.



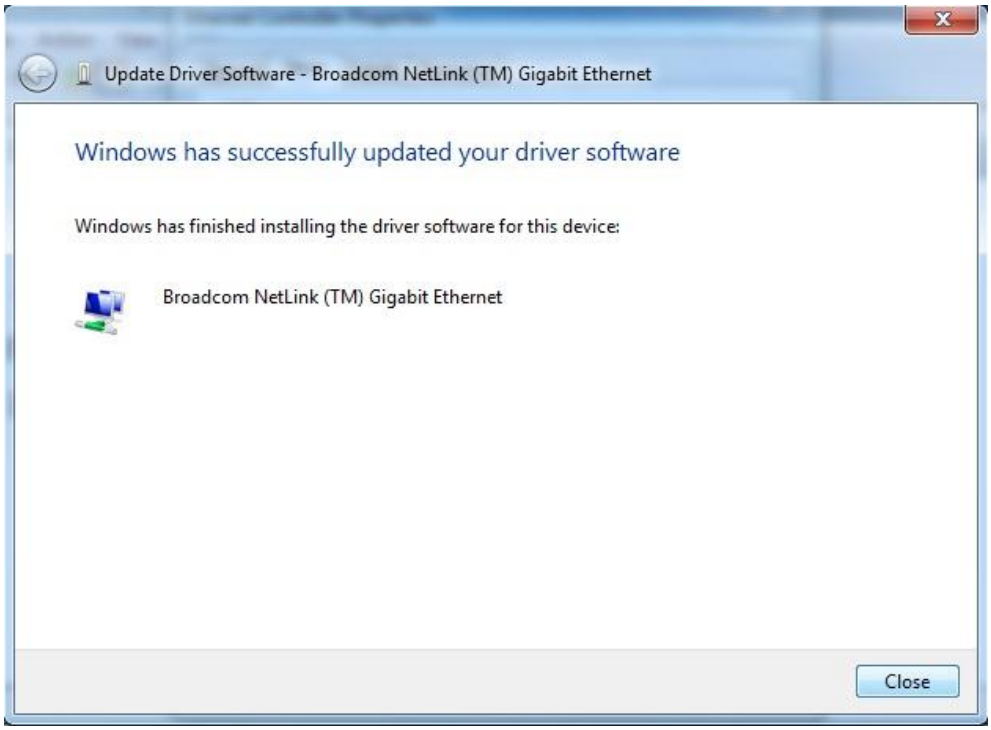
Step.4. Click on “Browse my computer for driver software“ to install driver.



Step.5. Choose the path to install driver.



Setp.6. Click on “Close“ and go on.



CHAPTER 9

Audio Driver Installation

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

- Introduction
- Installation of Audio Driver

Chapter 9 Audio Driver Installation

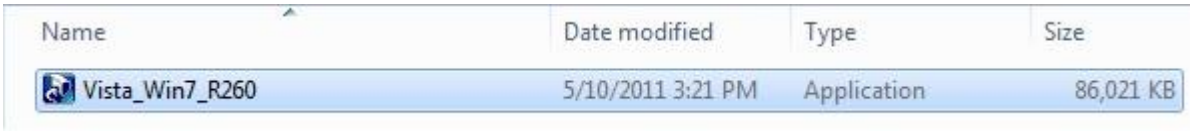
9.1 Introduction

The ALC886 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.

9.2 Installation of Audio Driver

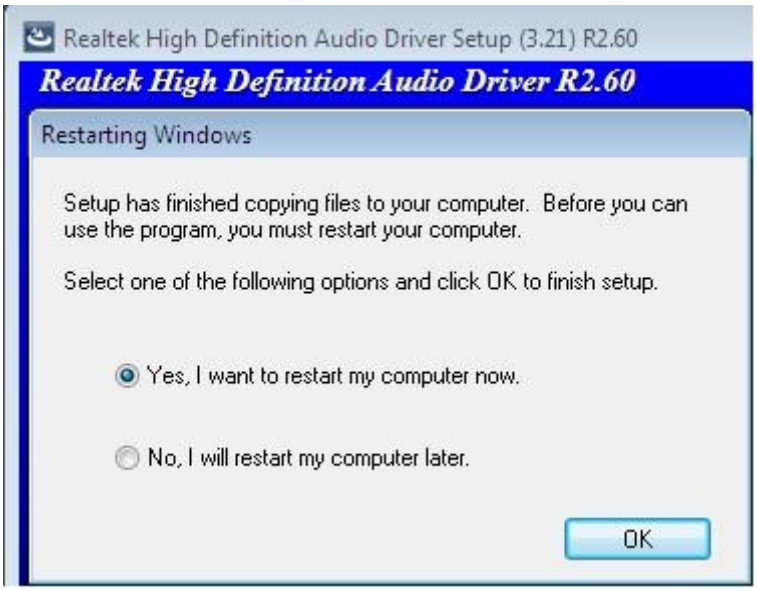
The users must make sure which operating system you are using in the IV70 Motherboard before installing the Audio drivers. Follow the steps below to complete the installation of the Realtek ALC886 Audio drivers. You will quickly complete the installation.

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 10

Fintek COM Port Driver Installation

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

Chapter 10 COM Port Driver Installation

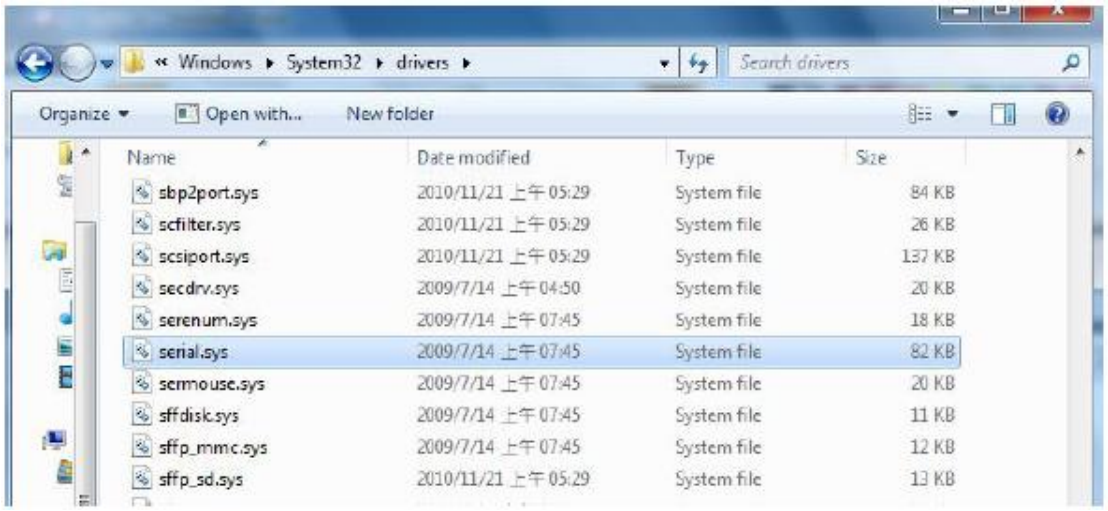
STEP 1.If the system is WIN7 please first do close UAC.(Refer following “Disabling User Account
Control (UAC) in Windows 7”)

STEP 2.Extract the Patch_0408.zip to a folder.

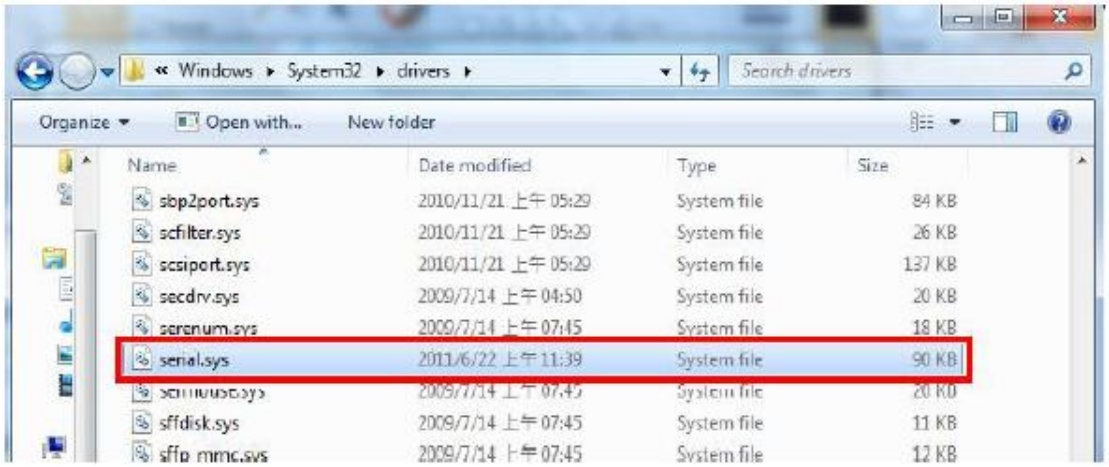
STEP 3.Double-click batch file(patch.bat) will install driver.

STEP 4.Check driver install success.

Before the update or update fail.



After the update and update success.

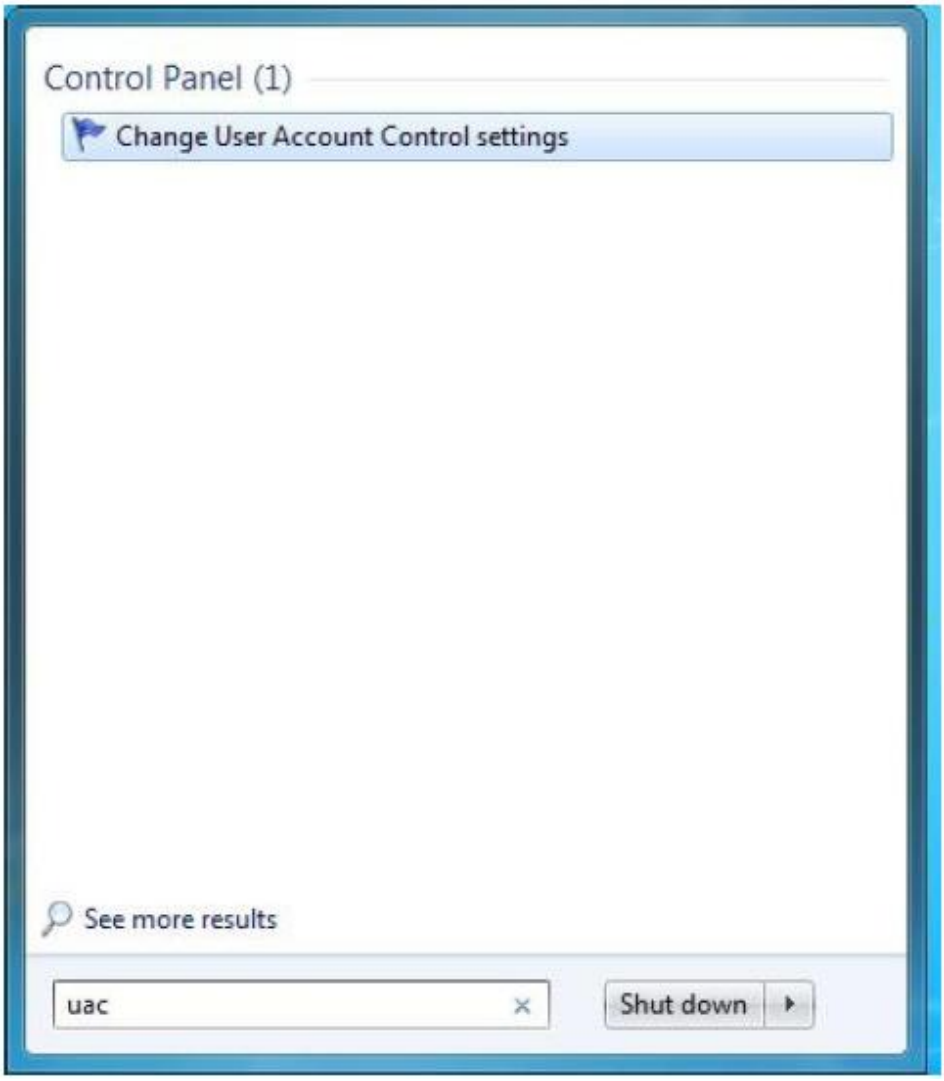


STEP 5.You will need to restart your computer for driver install success.

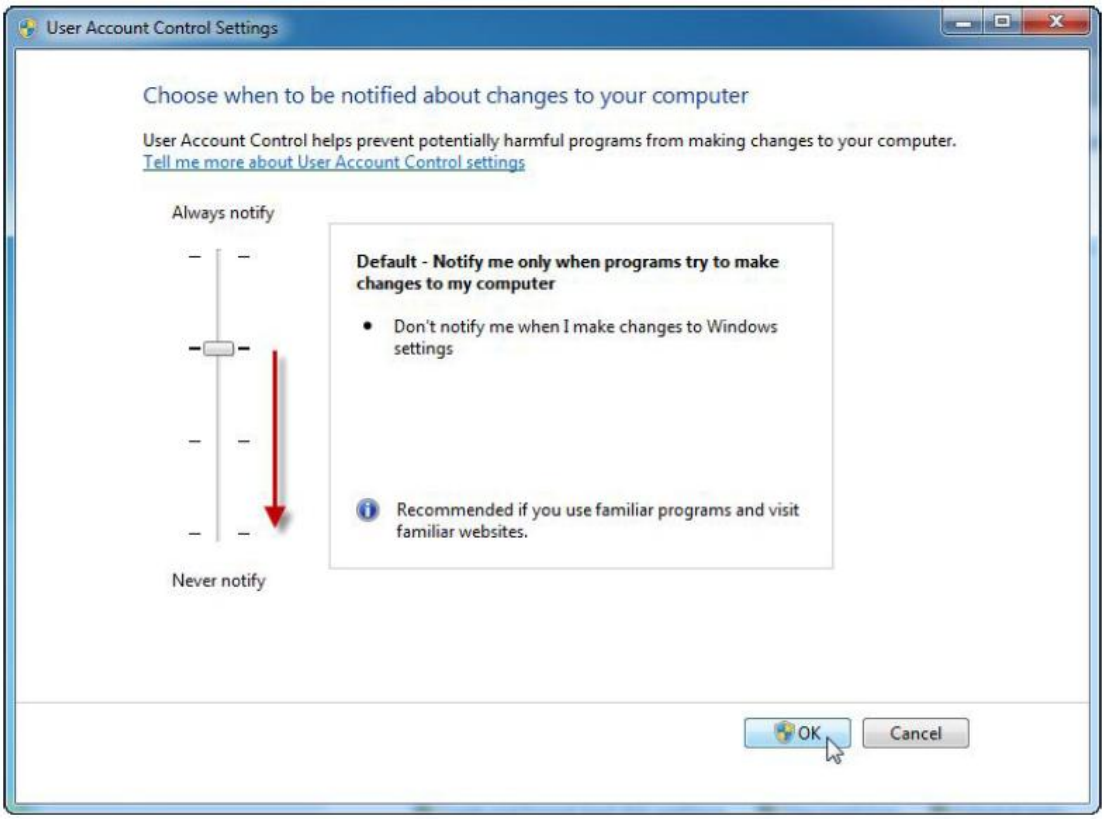
Type in this command from the Run menu:

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 11

AMI BIOS Installation

This chapter describes the different settings available in the AMI BIOS that comes with the board. This chapter offers information on the Award BIOS installation utility.
Sections include:

- BIOS Introduction
- BIOS Setup
- Standard CMOS Setup
- Advanced BIOS Features
- Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PC Health Status
- Load Fail-Safe Defaults
- Load Optimized Defaults
- Set Supervisor/User Password
- Save & Exit Setup
- Exit Without Saving

Chapter 11 AMI BIOS SETUP

11.1 Starting Setup

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

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

➢ **ENTERING BIOS SETUP**

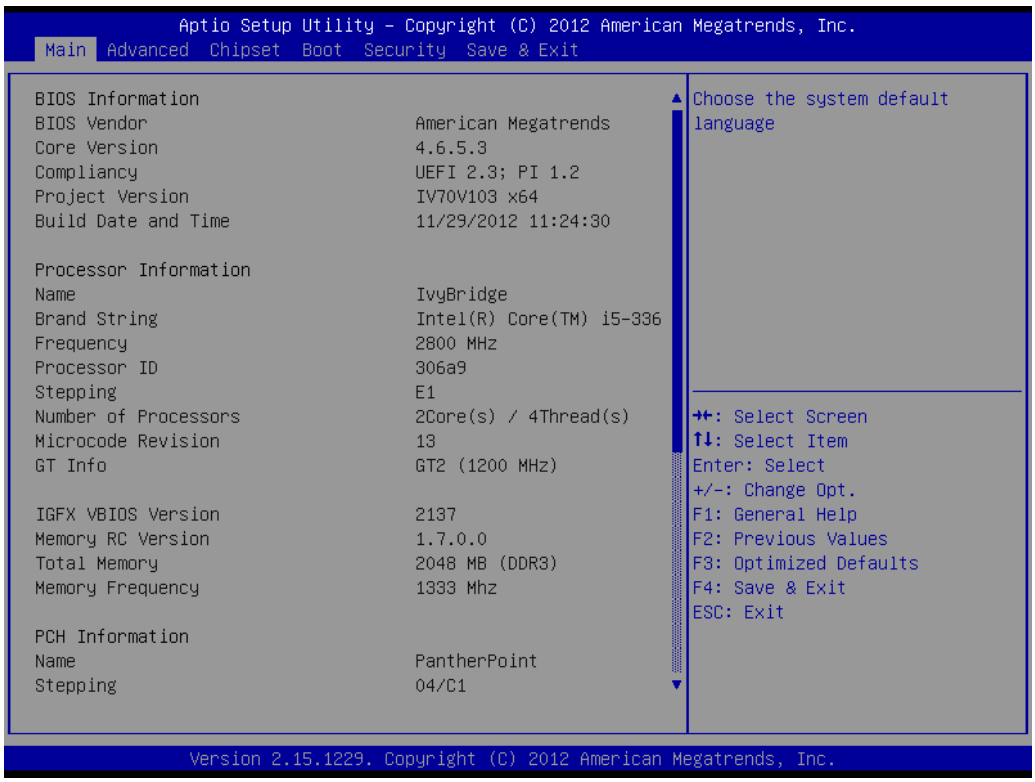
You can access the BIOS program just after you turn on your computer. Just press the DEL key when the following prompt appears:

Press <DEL> to enter Setup.

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

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

Control Keys	
< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Setup Defaults
<F10>	Save all CMOS changes

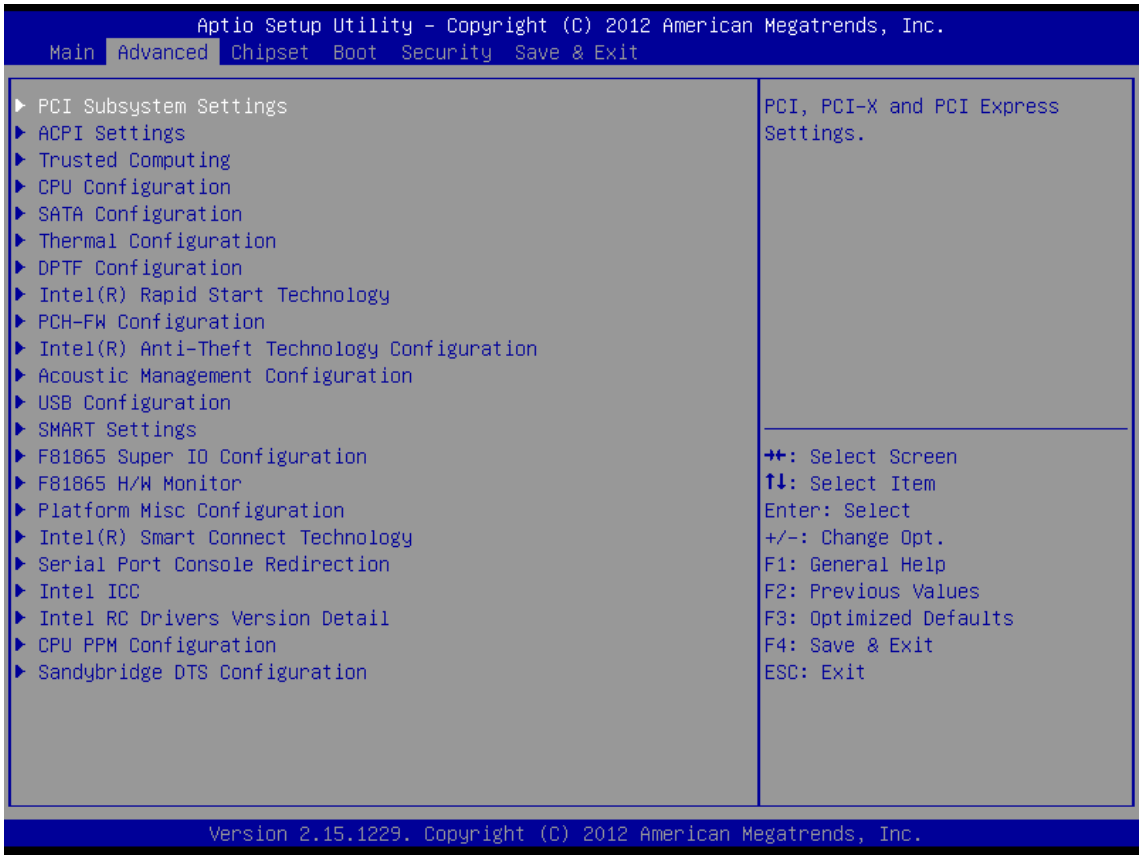


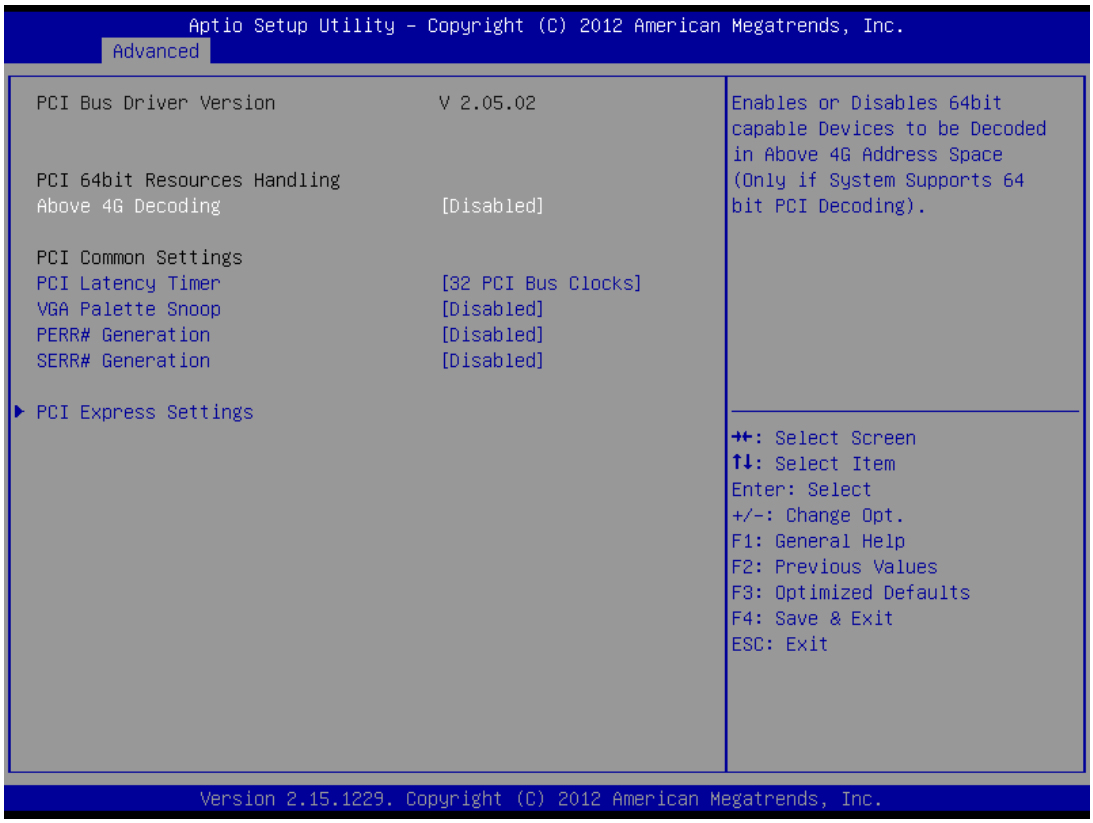
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key leg- end.

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.

11.2 Advanced Setting

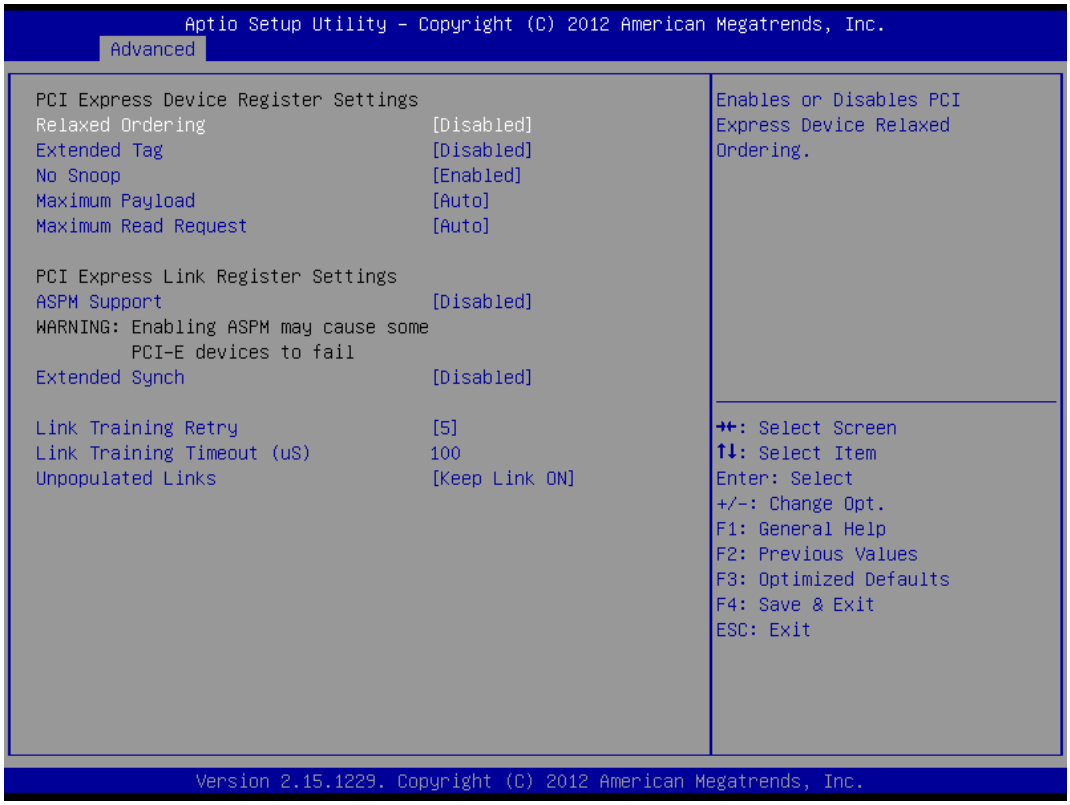
PCI Subsystem Settings





SETTING	DESCRIPTION
Above 4G Decoding	Enables or Disables 64 bit capable devices to be decoded in above 4G address space
PCI Latency Timer	Value to be programmed into PCI Latency Timer Register.(32~248)
VGA Palette Snoop	Enables or Disables VGA palette registers snooping
PERR# Generation	Enables or Disables PCI device to generate PERR#
SERR# Generation	Enables or Disables PCI device to generate SERR#

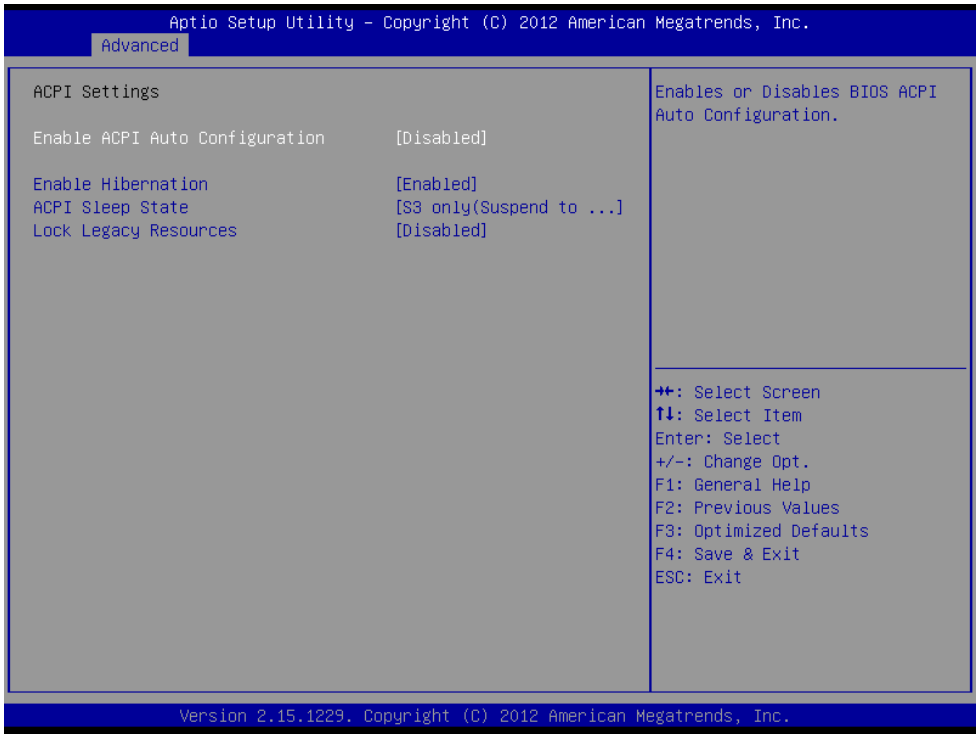
PCI Express Settings



SETTIN	DESCRIPTION
Relaxed Ordering	Enables or Disables PCI Express Device Relaxed Ordering
Extended Tag	If Enabled allows device to use 8-bit tag field as a requester
No Snoop	Enables or Disables PCI Express Device No Snoop option
Maximum Payload	Set maximum payload of PCI express device or allow system BIOS to select the value(128~4096 bytes)
Maximum Read Request	Set maximum Read Request size of PCI express device or allow system BIOS to select the value(128~4096 bytes)
ASPM Support	Set the ASPM Level: Force L0S-Force all links to L0s State: Auto- BIOS auto configure: Disabled- disables ASPM
Extended Synch	If Enabled allows generation of extended Synchronization patterns
Link Training Retry	Defines number of retry attempts software will take to retrain the link if previous training attempt was unsuccessful
Link Training Timeout	Defines number of microseconds software will wait before polling ‘Link Training” bit in link status register. Value range from 10 to 1000 uS
Unpopulated Links	In order to save power, software will disable unpopulated

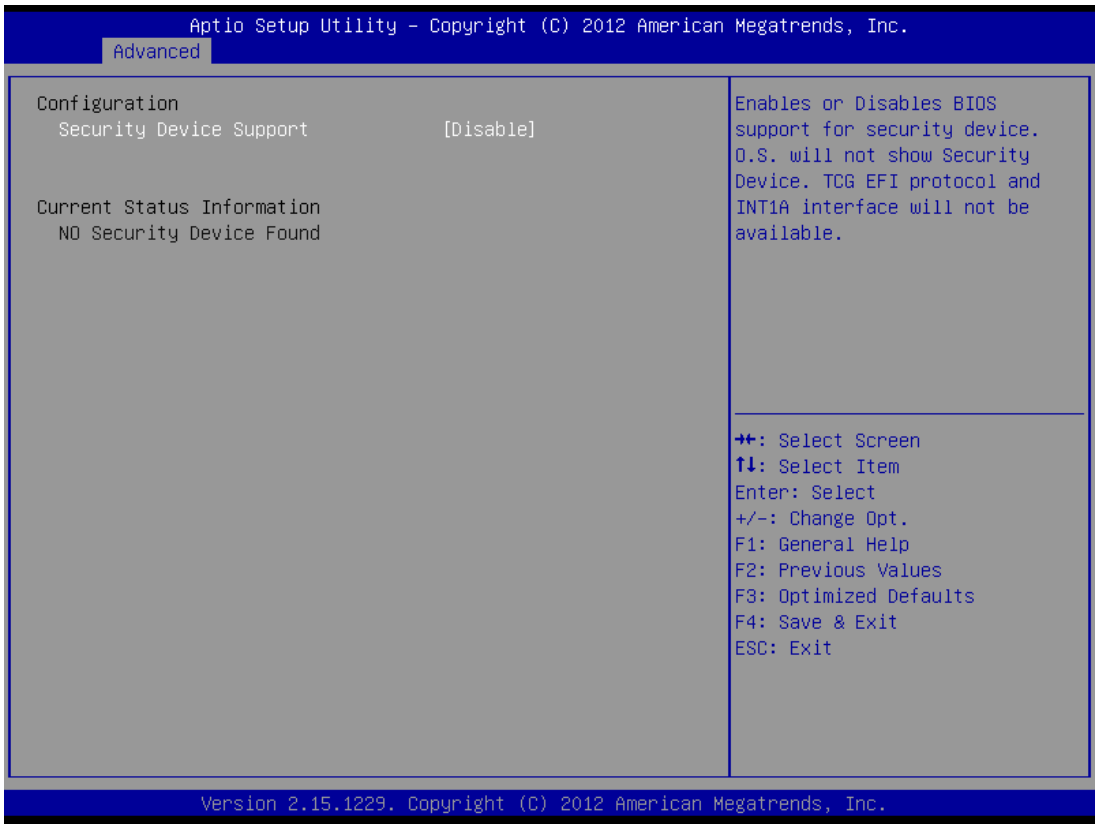
	PCI express links, if this option set to ‘Disabled’

➢ ACPI Settings



SETTING	DESCRIPTION
Enabled ACPI Auto Configuration	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the ACPI sleep state the system will enter, when the SUSPEND button is pressed.
Lock Legacy Resources	Enables or Disables lock of legacy resources.

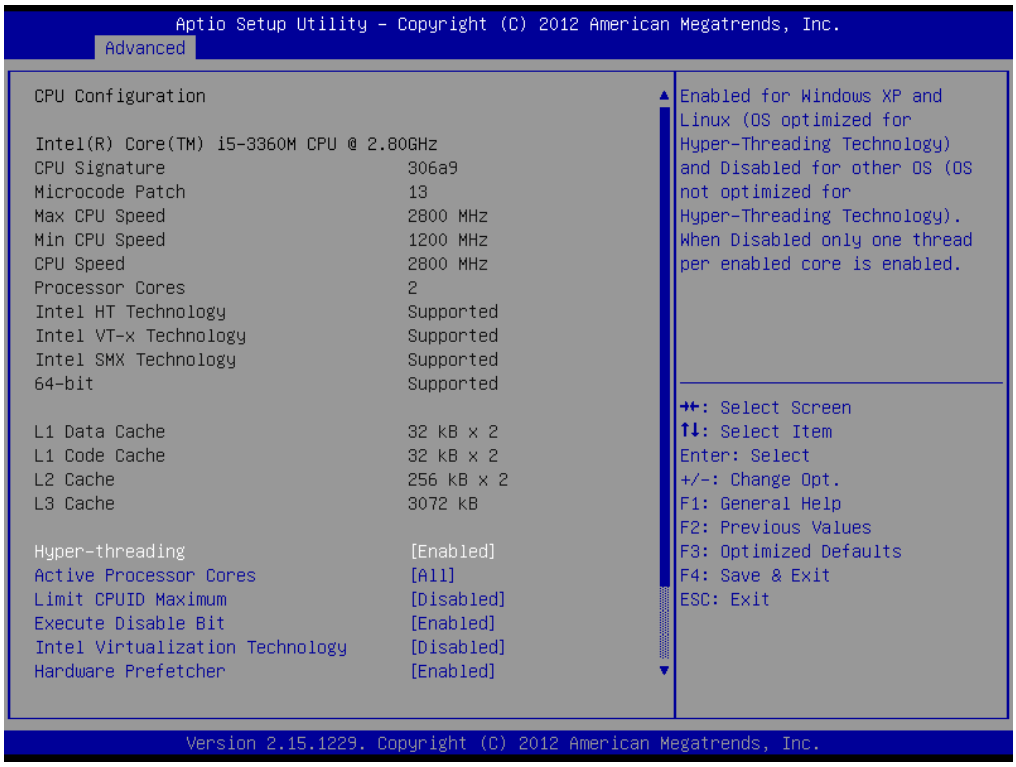
➢ Trusted Computing



Security Device Support Enable or disable BIOS support for security device.

➢ CPU Configuration

This section shows the CPU configuration parameters.



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.

Active Processor Cores

This field is used to enter the number of cores to enable in each processor package.

Limit CPUID Maximum

Disabled for Windows XP.

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.)

Hardware Prefetcher

Turns on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

To turn on/off prefetching of adjacent cache lines.

TCC Activation offset

Offset from the factory TCC activation temperature.

Primary Plane Current value

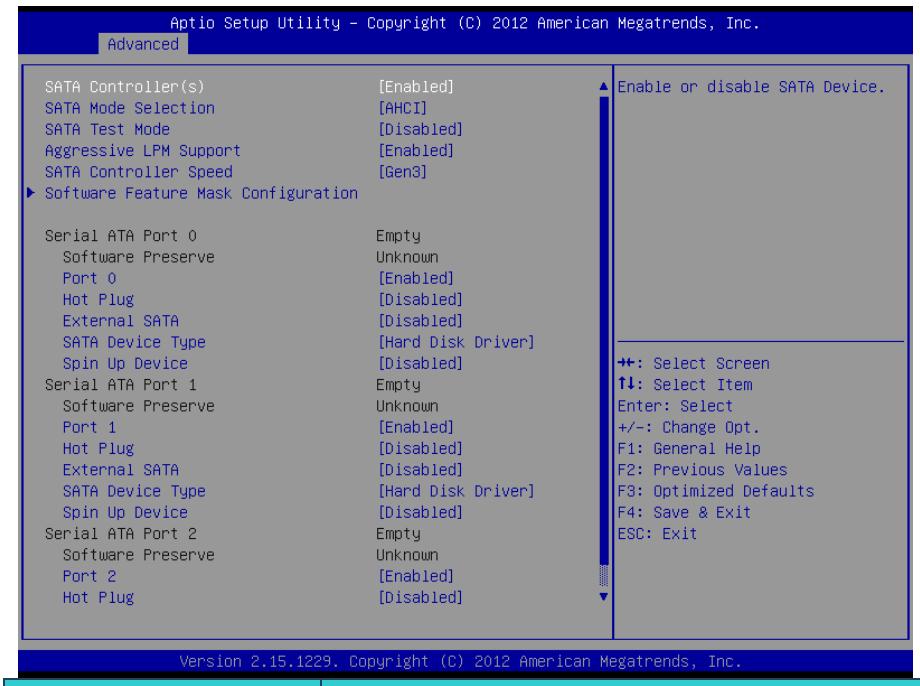
The maximum instantaneous current allow for Primary plane.

Secondary Plane Current value

The maximum instantaneous current allow for Second plane.

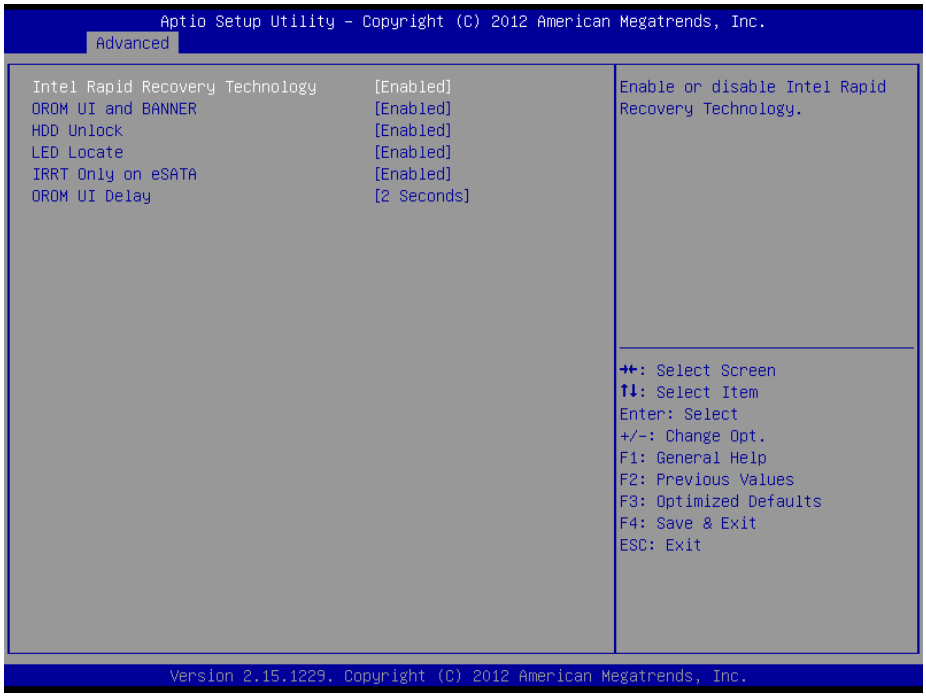
➢ SATA Configuration

SATA Devices Configuration.

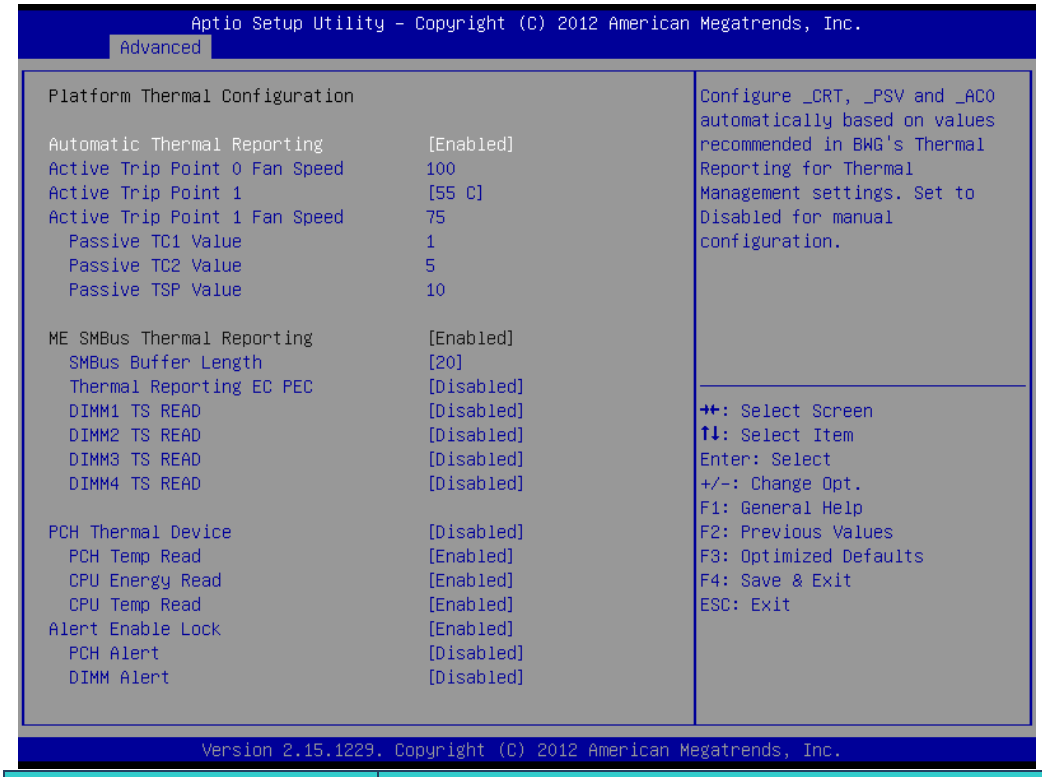


SETTING	DESCRIPTION
SATA Controller(s)	This item allows users to enable or disable the SATA controller(s).
SATA Mode Selection	This item allows users to select mode of SATA controller(s).
SATA Test Mode	This item allows users to enable or disable the Test mode.
Aggressive LPM Support	Enable PCH to aggressively enter link power state.

Software Feature Mask Configuration

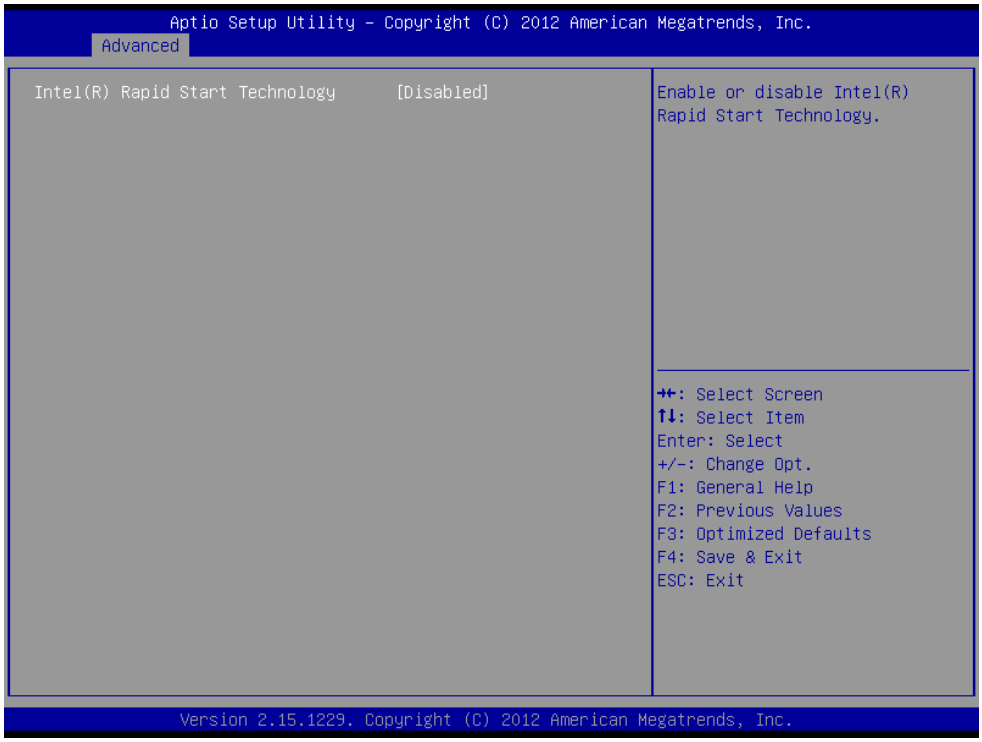


➢ Thermal Configuration



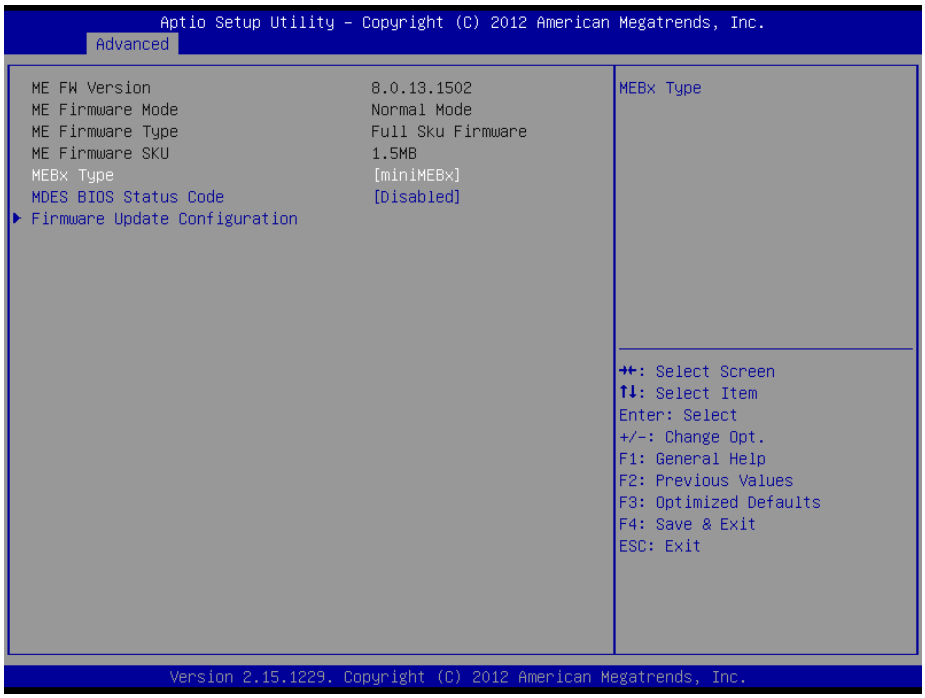
SETTING	DESCRIPTION
Automatic thermal reporting	Configure _CRT,_PSV and _ACO automatically based on values recommended in BWG's thermal reporting for thermal management settings. Set to disabled for manual configuration.
Active trip point 0 fan speed	Active trip point 0 fan speed in percentage.
Active trip point 1	This value controls the temperature of the ACPI active trip point 1- the point in which the OS will turn the processor fan on active trip point1 fan speed.
Active trip point 1 fan speed	Active trip point 1 fan speed in percentage.
Passive TC1 value	This value sets the TC1 value for the ACPI passive cooling formula.
Passive TC2 value	This value sets the TC2 value for the ACPI passive cooling formula.
Passive TSP value	This value sets the TSP value for the ACPI passive cooling formula.

➢ Intel® Rapid start technology



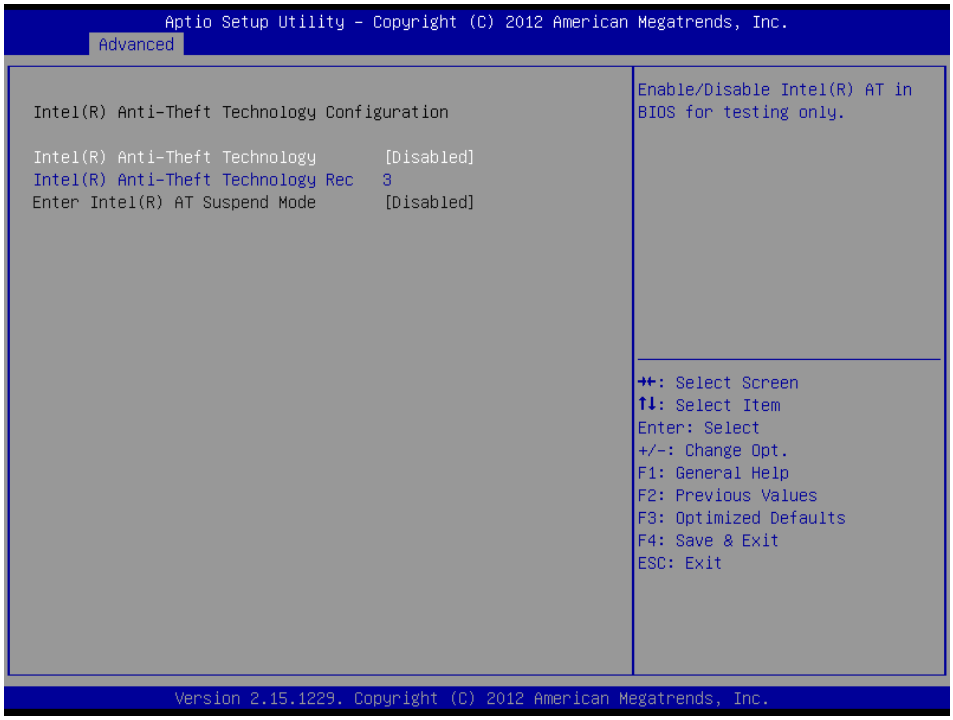
This item allows users to enable or disable Intel rapid start technology.

➢ PCH-FW Configuration



This item allows users to enable or disable Me FW image re-flash function.

➢ Intel Anti-Theft Technology Configuration



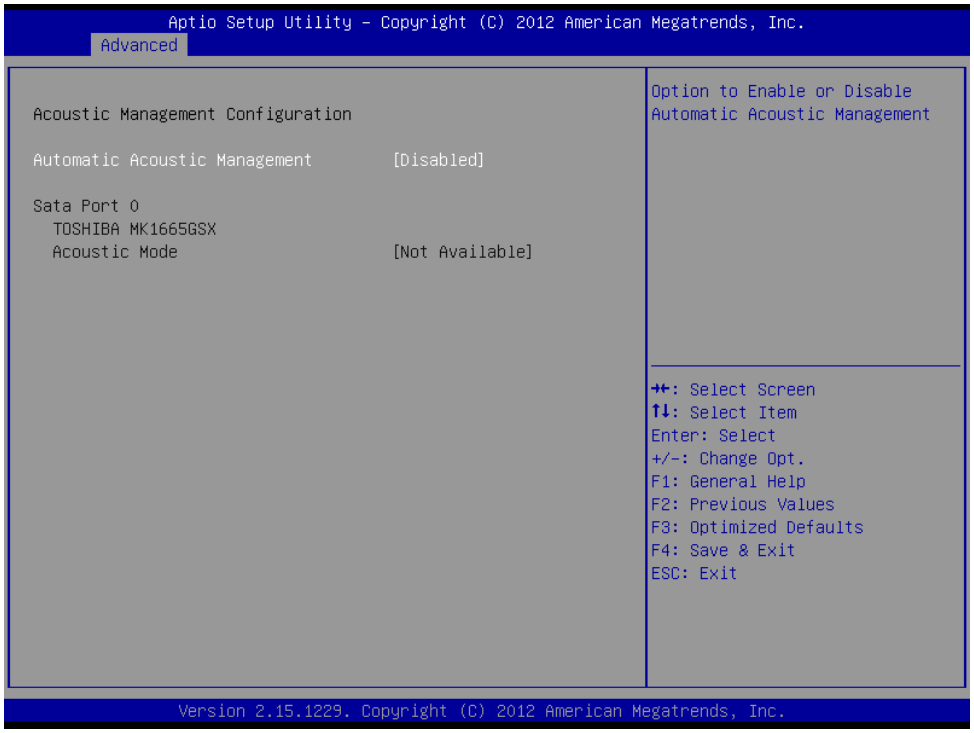
Intel® Anti-theft Technology

This item allows users to enable or disable Intel AT in bios for testing only.

Intel® Anti-theft Technology Rec

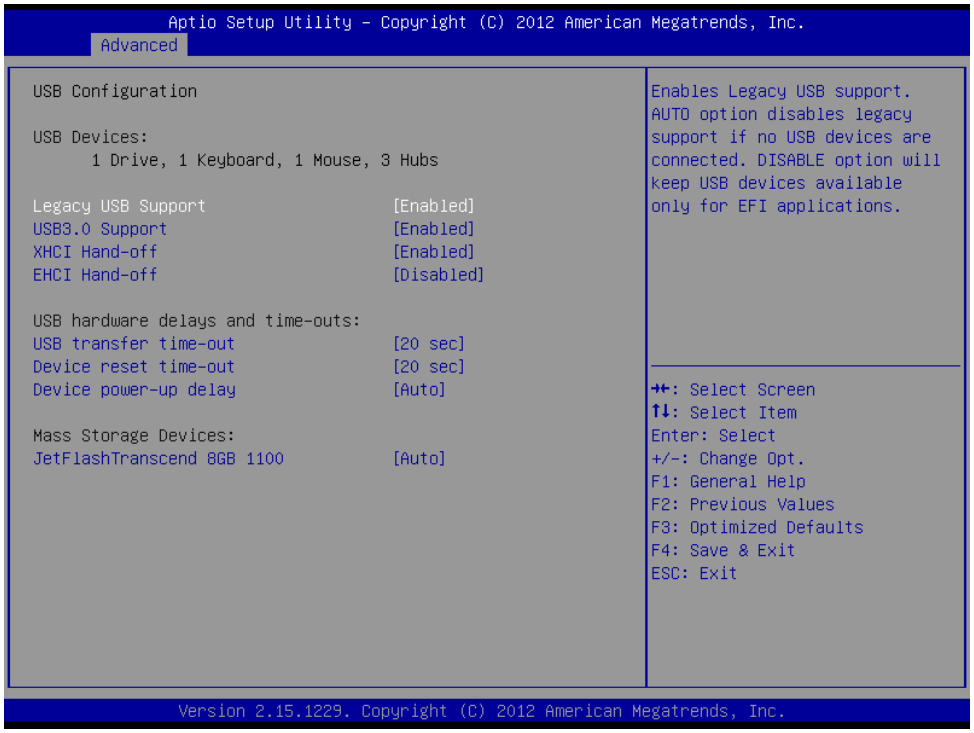
Set the number of times recovery attemped will be allowed.

➢ Acoustic Management Configuration



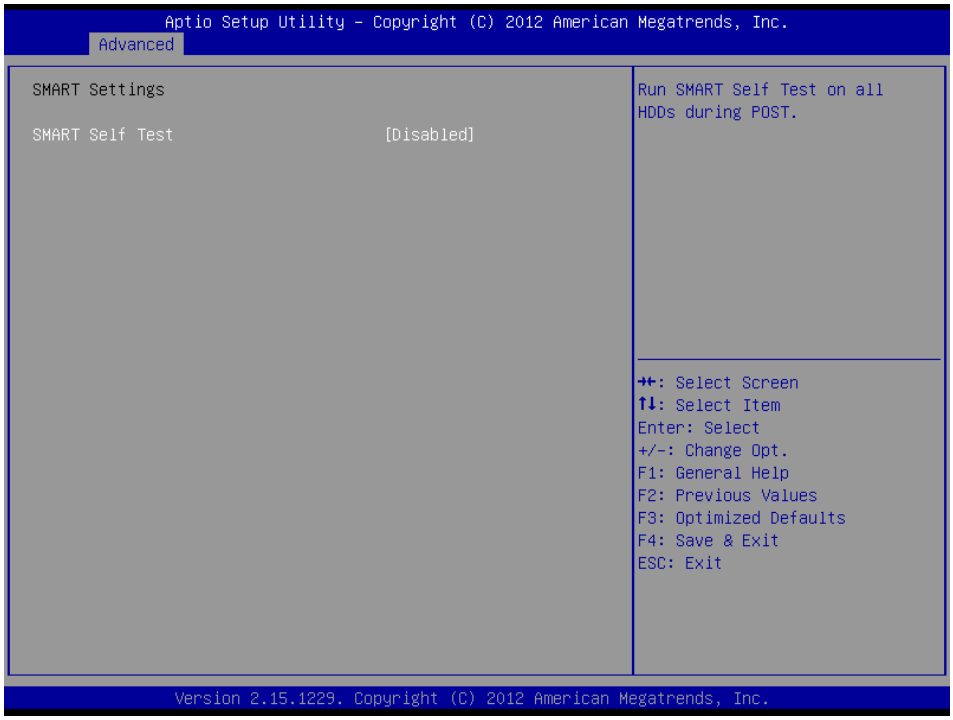
Option to enable or disable automatic acoustic management.

➢ USB Configuration



SETTING	DESCRIPTION
Legacy USB Support	Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.
USB3.0 support	This item allows user to enable or disable USB3.0 function.
XHCI Hand-off	This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should claim by XHCI driver.
EHCI Hand-off	This is a workaround for OS without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.
USB transfer time-out	Time-out value for control, bulk, and interrupt transfers.
Device reset time-out	USB mass storage device starts unit command time-out.
Device power-up delay	Maximum time the device will take before it properly report itself to the host controller.

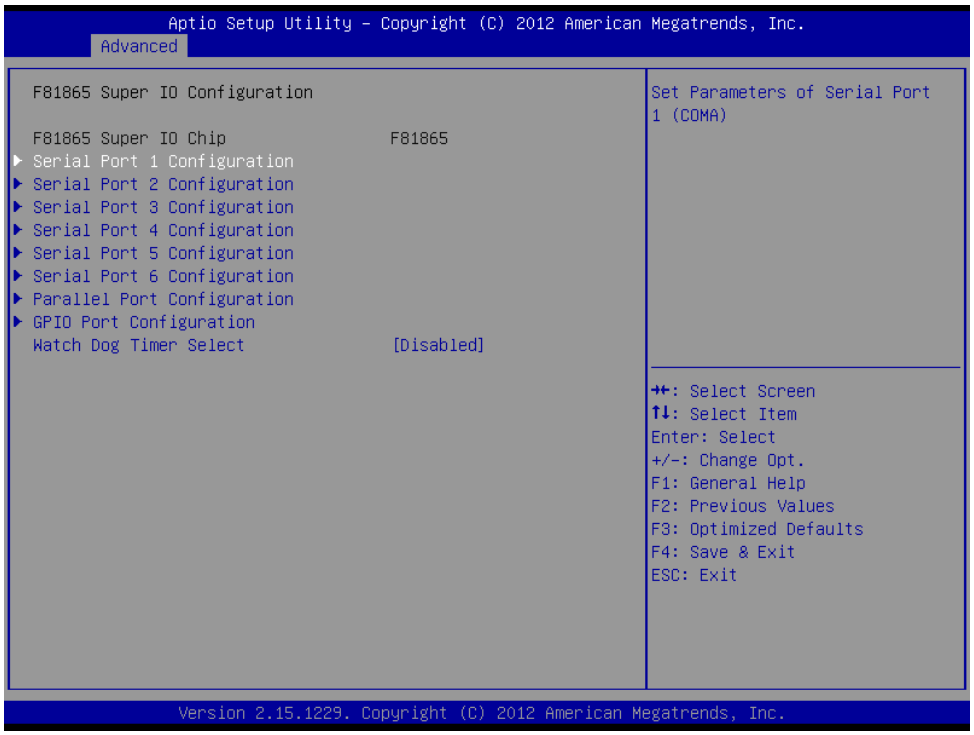
➢ SMART Settings



Smart Self Test

Enable or disable Run SMART Self test on all HDDs during Post

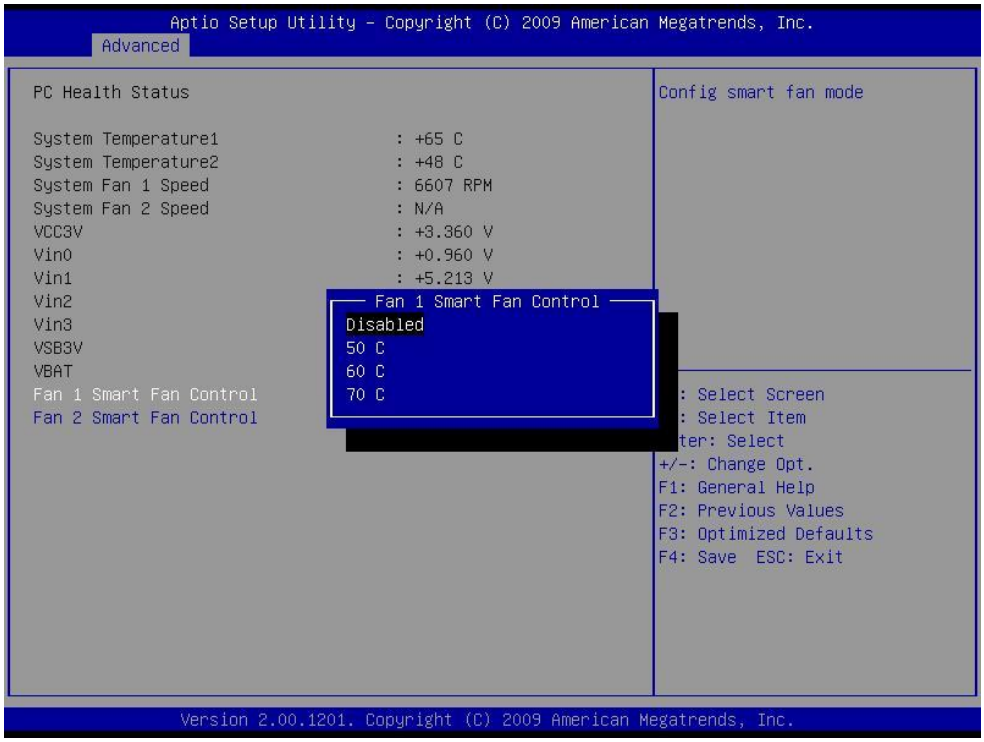
➢ F81865 Super IO Configuration



Serial Port Configuration

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

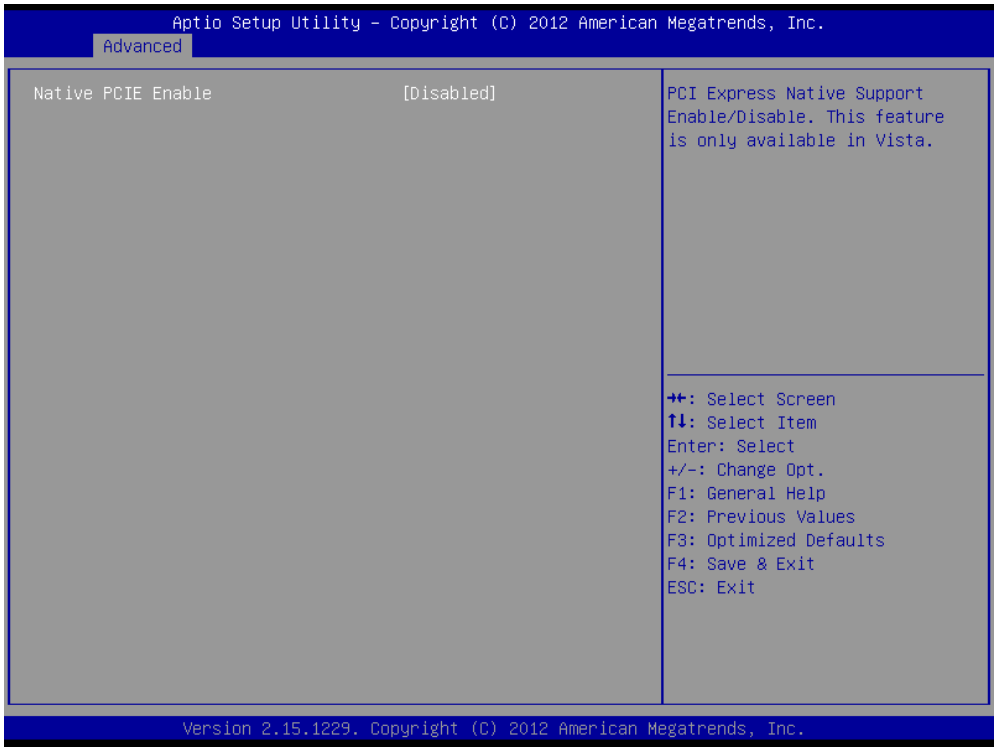
➢ F81865 H/W Monitor



Fan1/Fan2 Smart Fan Control

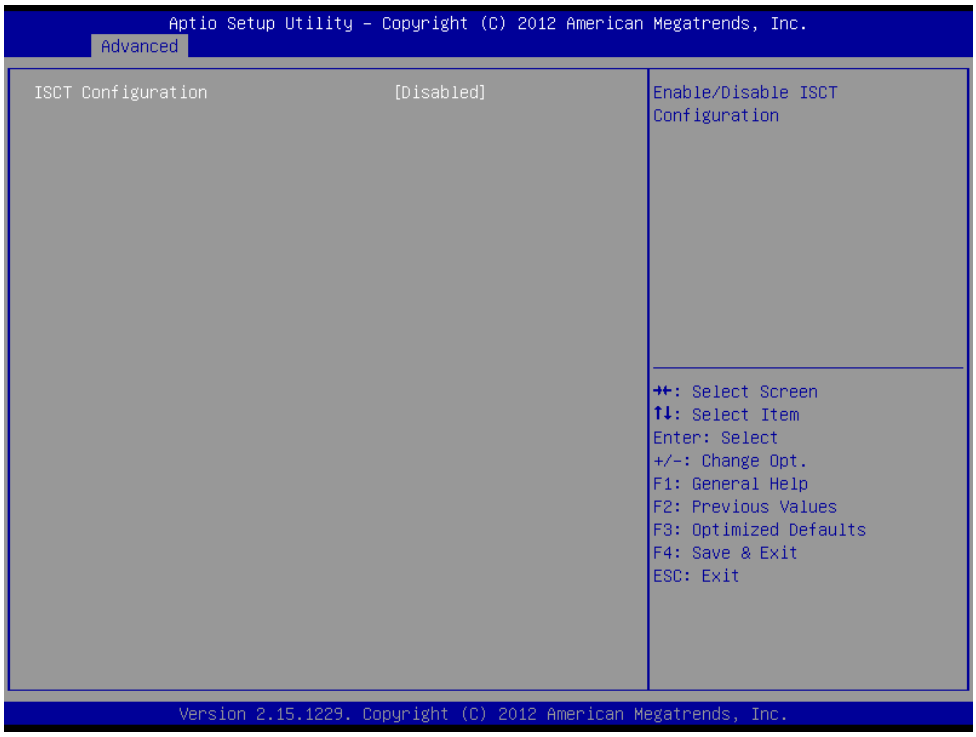
This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

➢ Platform Misc Configuration



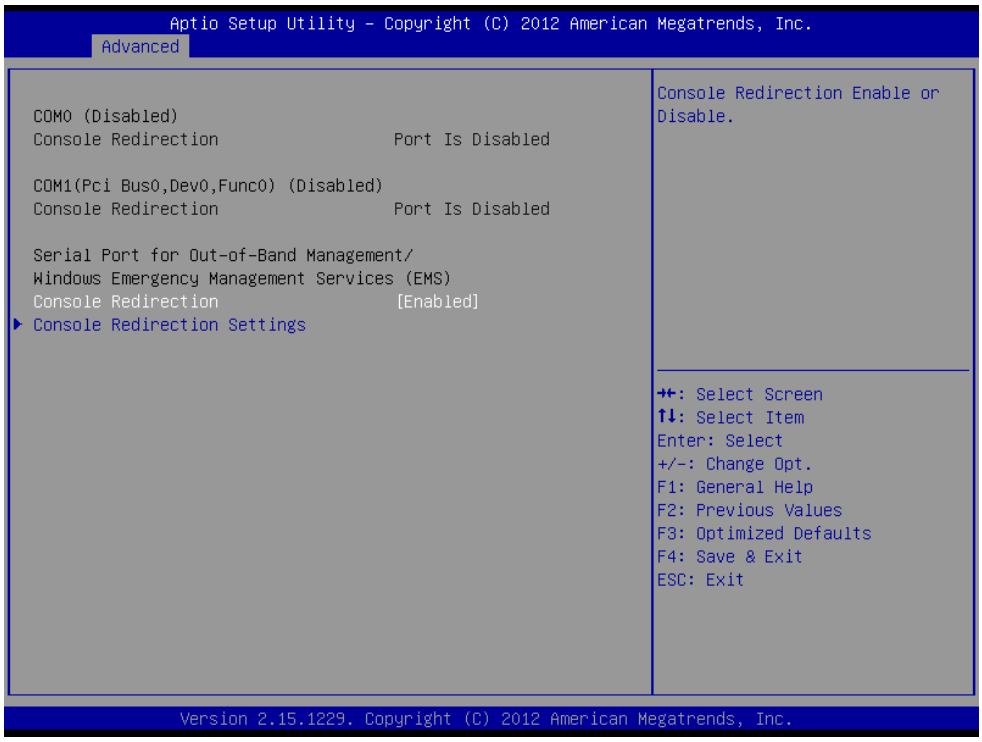
PCI Express Native Support Enable/Disable. This feature is only available in vista.

➢ Intel Smart Connect Technology



Enable/Disable ISCT configuration.

➢ Serial Port Console Redirection



Console Redirection

This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).

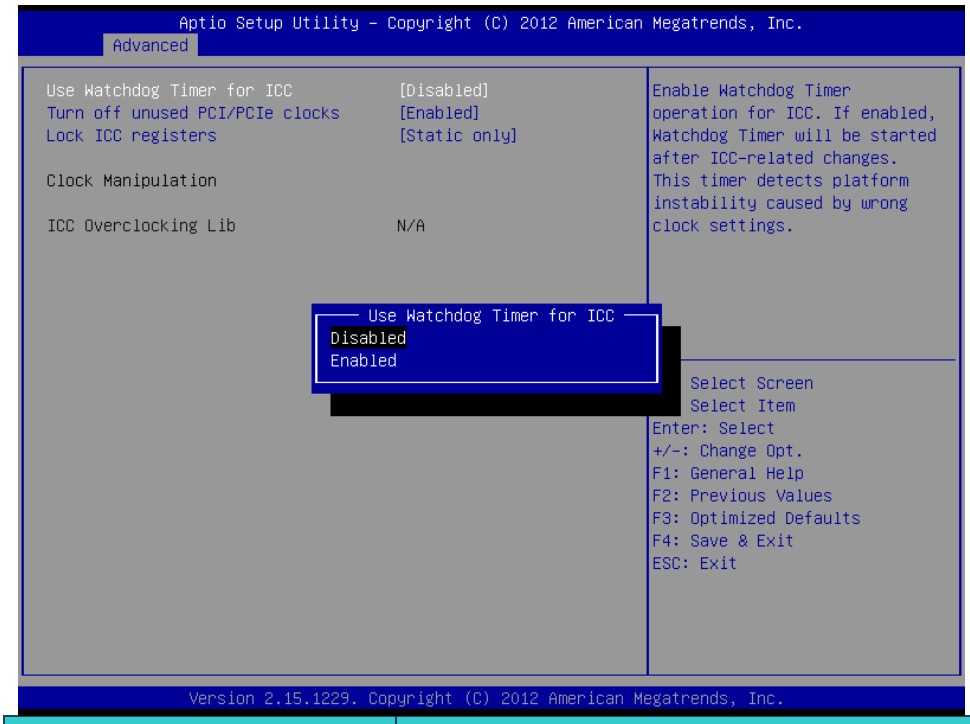
Out-of-Band Mgmt Port

Select the port for Microsoft Windows Emergency Management Services (EMS) to allow for remote management of a Windows Server OS.

Terminal Type

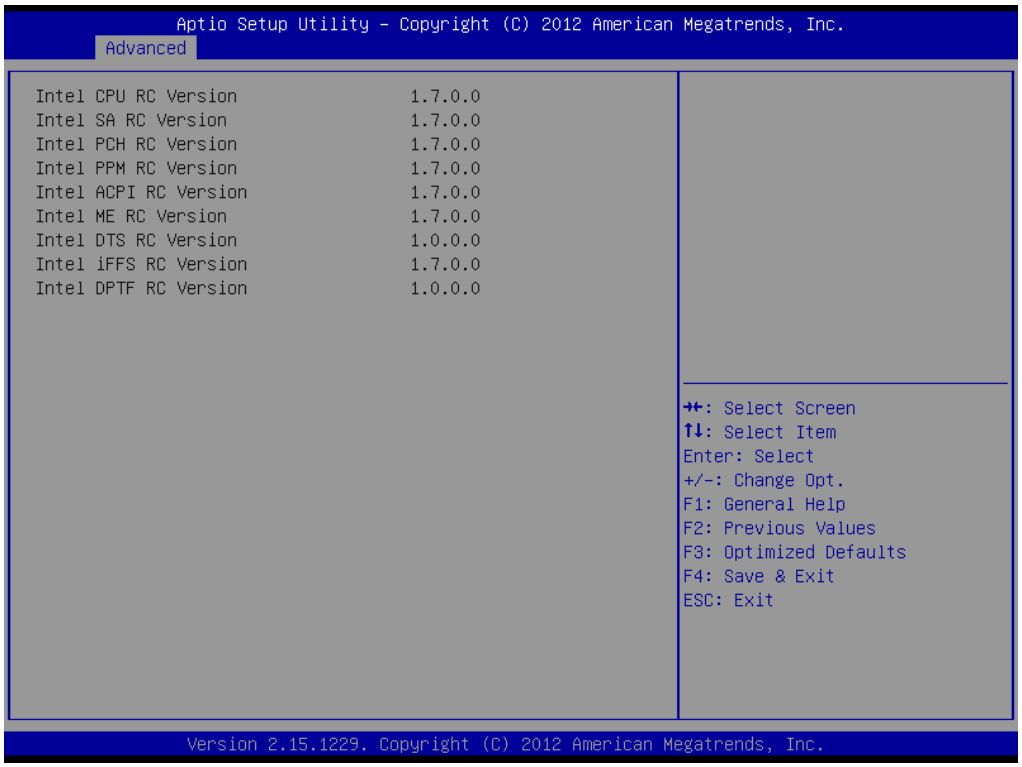
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

➢ Intel ICC

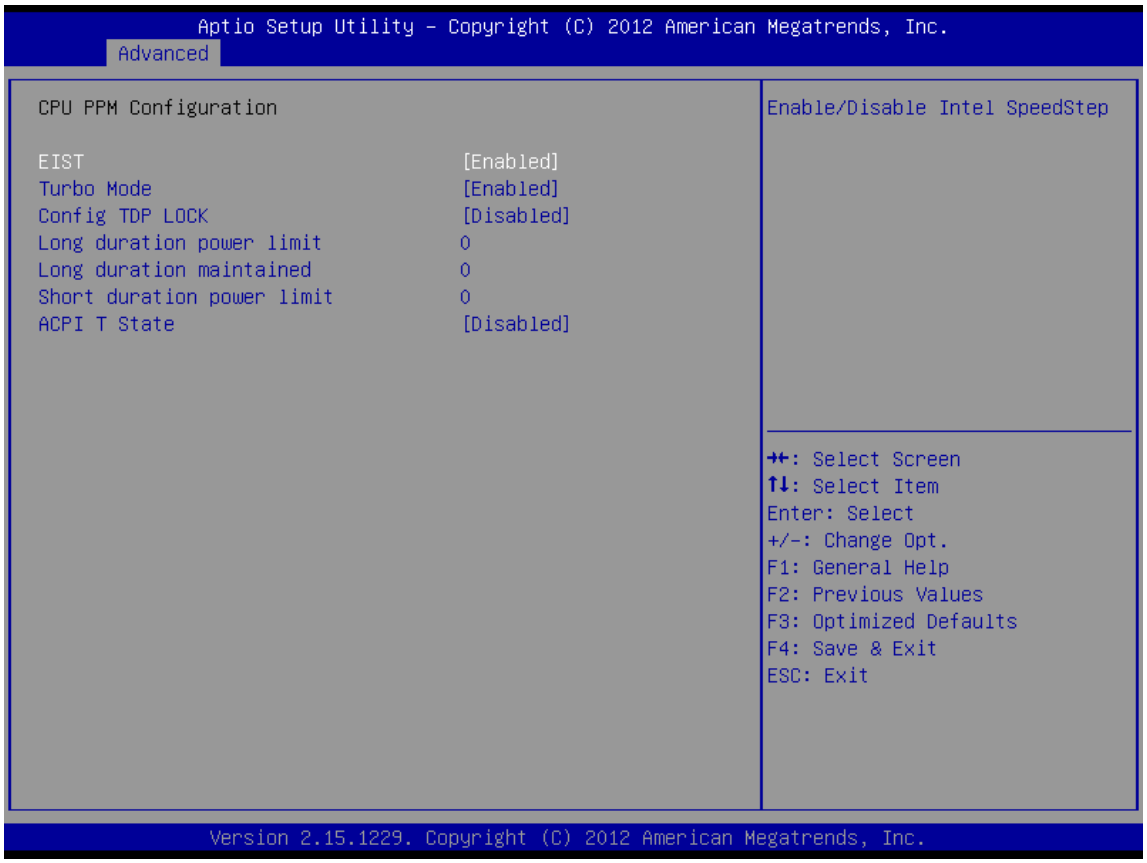


SETTING	DESCRIPTION
Use Watchdog Timer for ICC	Enables watchdog timer operation for ICC. If enabled, watchdog timer will be started after ICC-related changes. This timer detects platform instability caused by wrong clock settings.
Turn off unused PCI/PCIe clocks	Disabled: all clocks turned on. Enabled: clocks for empty PCI/PCIe slots will be turned off to save power.
Lock ICC registers	All registers: all ICC registers will be locked. Static only: only static ICC registers will be locked.

➢ Intel RC Drivers Version Detail

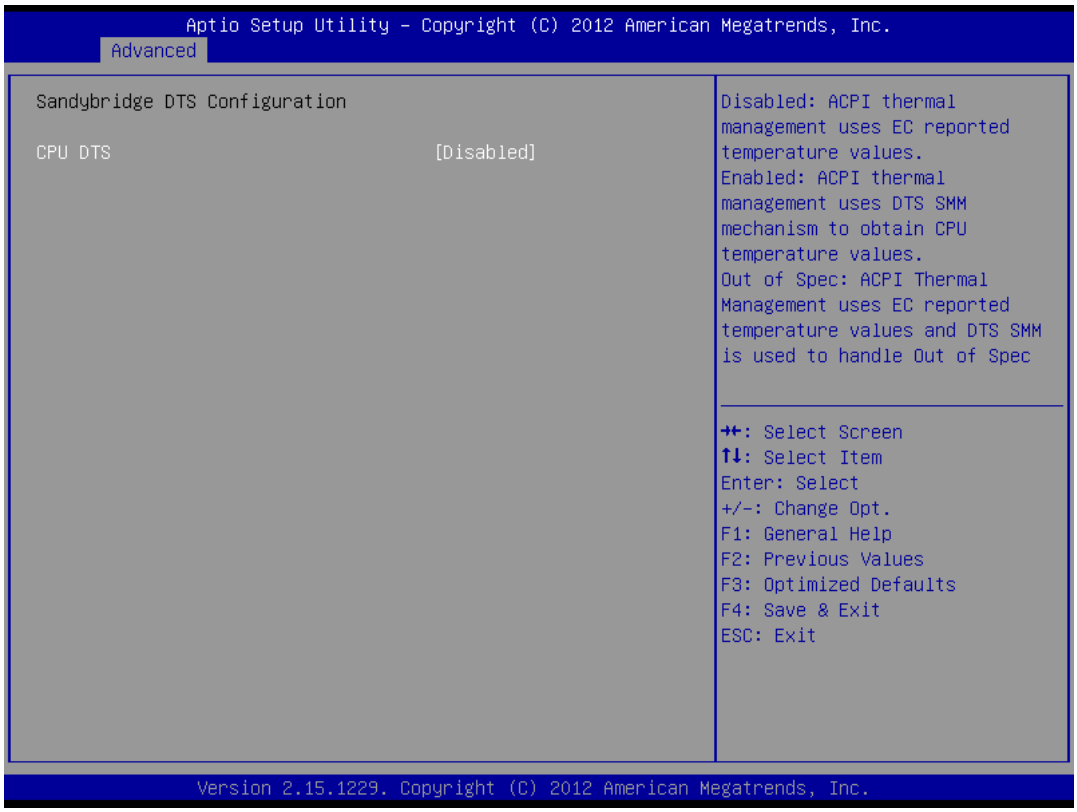


➢ CPU PPM Configuration



SETTING	DESCRIPTION
EIST	CPU runs at its default speed if disabled; CPU speed is controlled by the operating system if enabled.
Turbo Mode	This item allows users to enable or disable turbo mode.
Config TDP lock	Lock the config TDP control register
Long duration power limit	Long duration power limit in watts, 0 means use factory default.
Long duration maintained	Time window which the long duration power is maintained.
Short duration power limit	This item allows users to enable or disable CPU TDP lock function.
ACPI T state	This item allows users to enable or disable ACPI T state function.

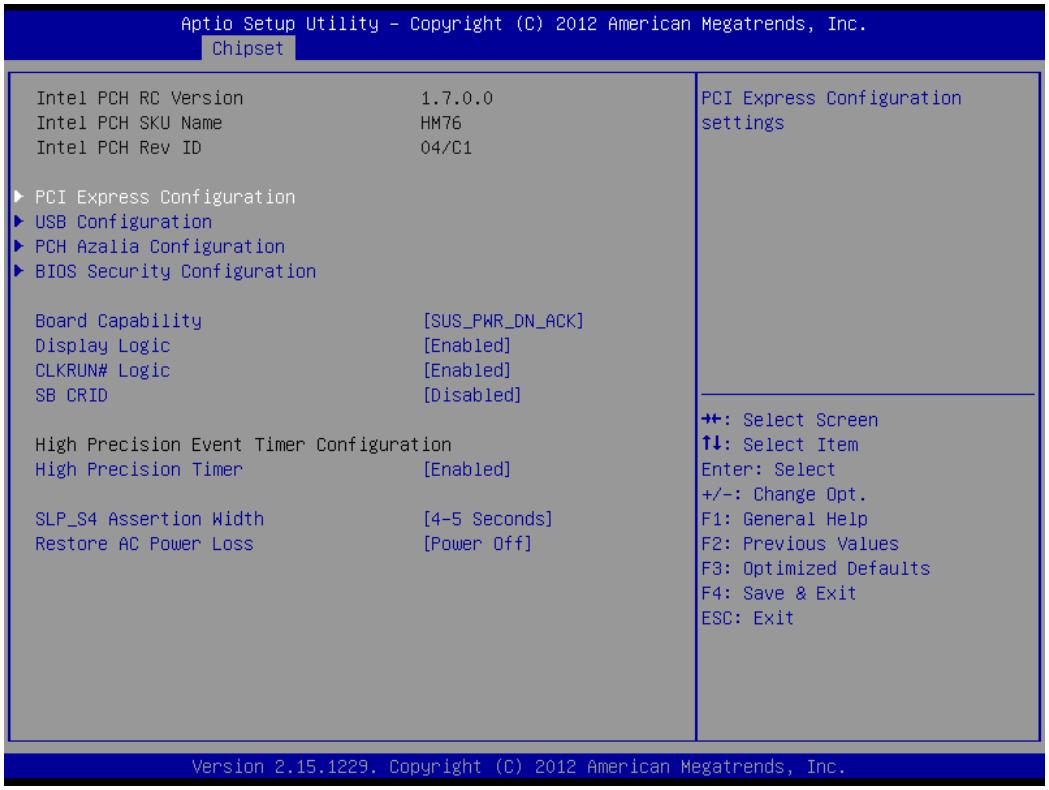
➢ Sandybridge DTS Configuration



CPU DTS

This item allows users to select the ACPI thermal management uses EC reported temperature value function.

11.3 Chipset Setting



PCI Express Configuration

Detail of PCI Express items.

USB Configuration

Details of USB items.

PCH Azalia Configuration

Details of PCH azalia items.

High Precision Timer

Enables or disables the high precision timer.

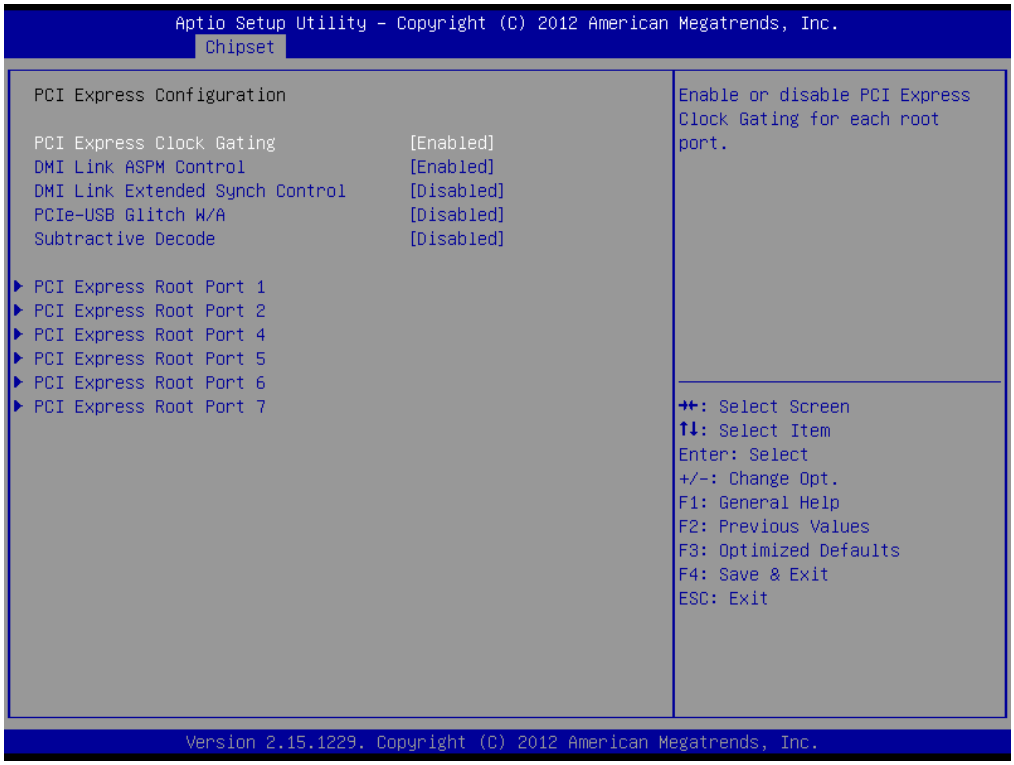
SLP_S4 Assertion Width

This item allows users to set a delay of sorts.

Restore AC Power Loss

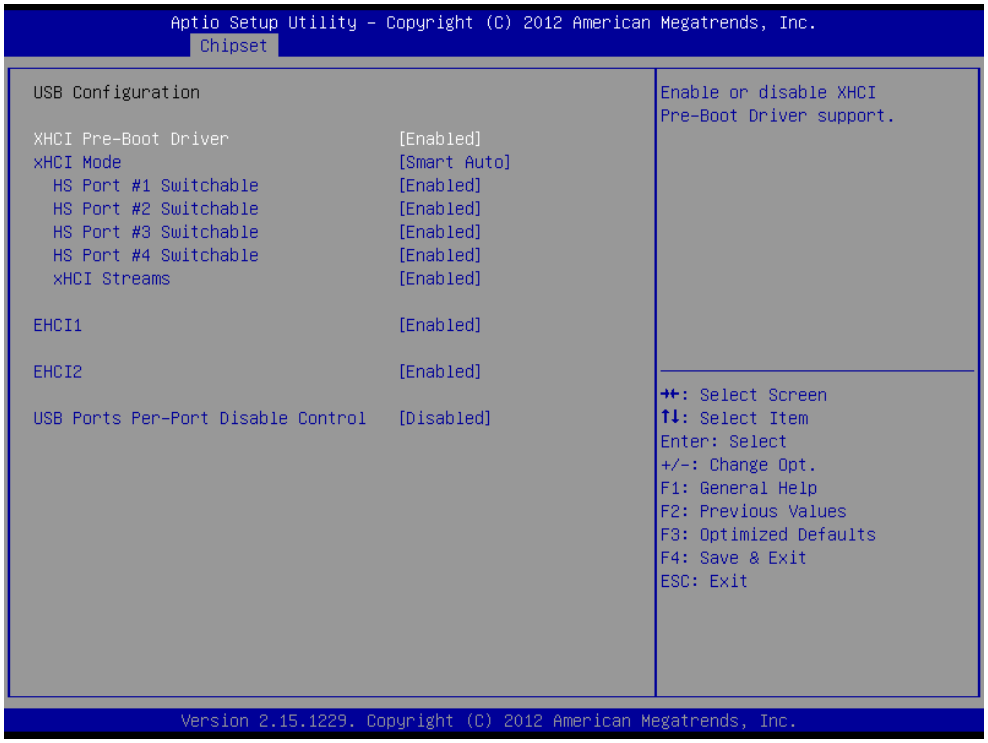
This item allows users to select off, on and last state.

➢ PCI Express Configuration



SETTING	DESCRIPTION
PCI Express Clock Gating	Enable or disable PCI Express clock gating for each root port.
DMI Link ASPM Control	The control of active state power management on both NB side and SB side of the DMI link.
DMI Link Extended Synch Control	The control of extended synch on SB side of the DMI link.
PCIe-USB Glitch W/A	PCIe-USB glitch W/A for bad USB device connected behind PCIE/PEG port.
Subtractive Decode	Enable or disable PCI Express subtractive decode.
PCI Express Root Port 1~7	This item allows users to enable or disable the PCI Express Root Port.

➢ USB Configuration



XHCI Pre-Boot Driver

This item allows user to enable or disable XHCI Pre-boot driver.

XHCI Mode

This item allows user to enable or disable XHCI Mode.

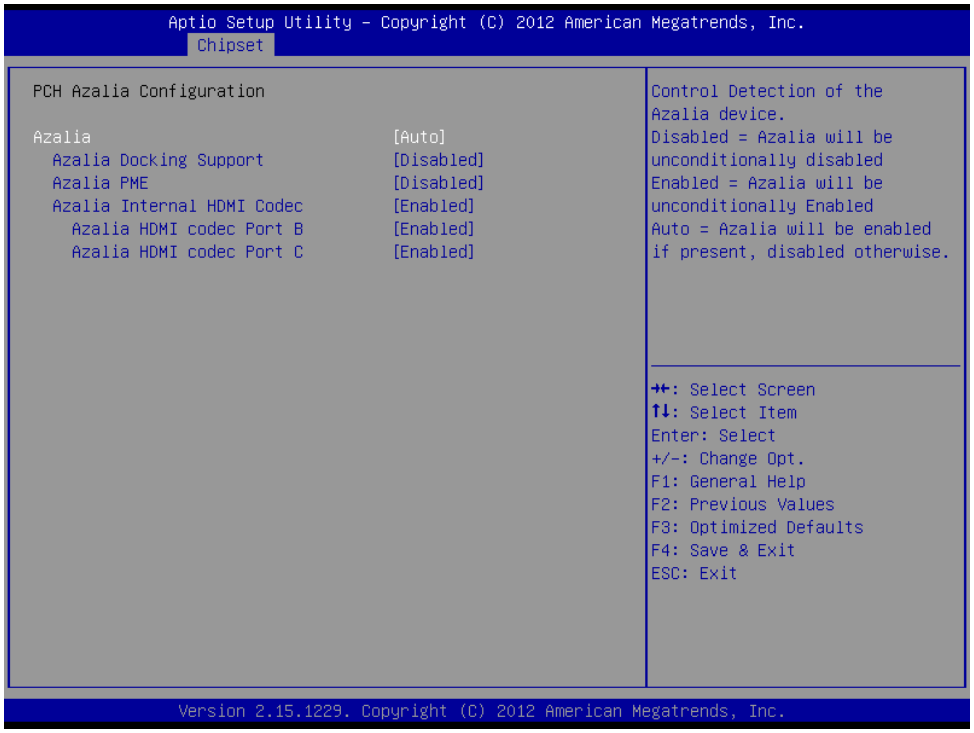
EHCI 1/2

Enables or disables the EHCI controller.

USB Ports pre-port Disable Control

This item allows users to enable or disable each USB port individually.

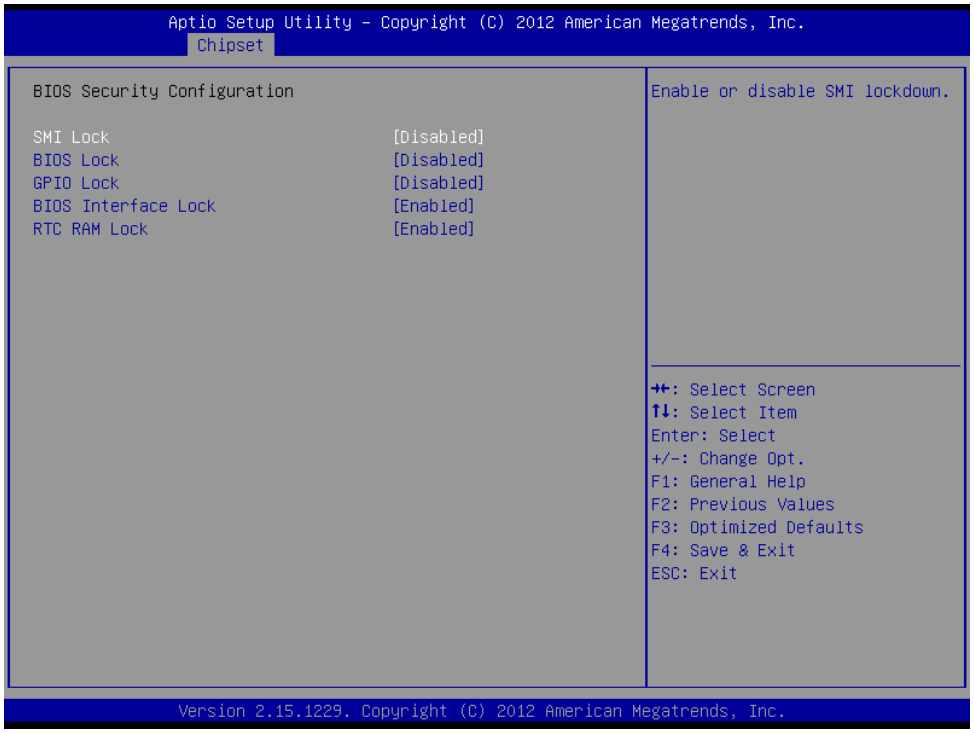
➢ PCH Azalia Configuration



Azalia

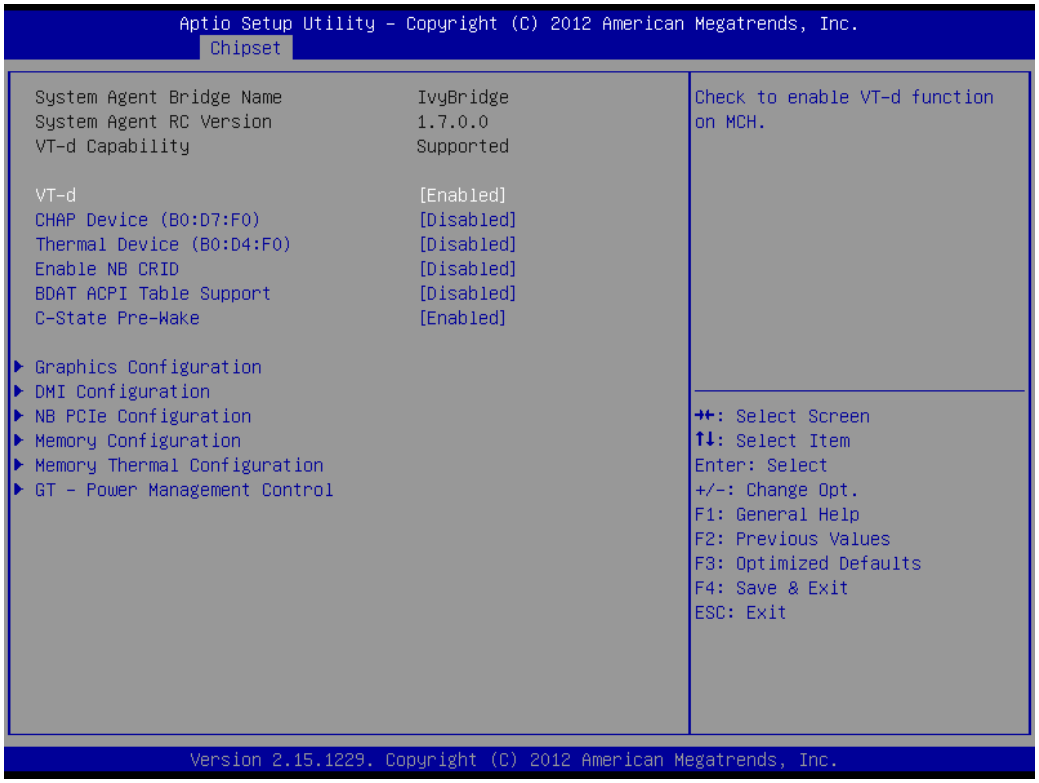
This item allows user to enable or disable azalea device.

➢ BIOS Security Configuration



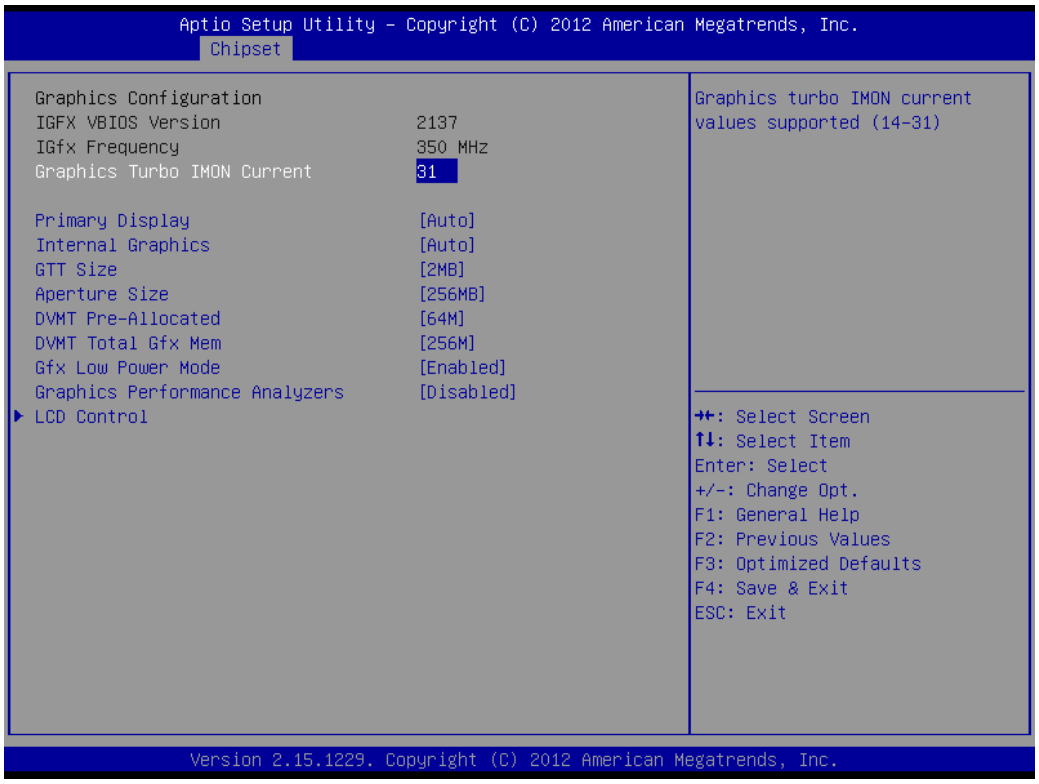
Enable or disable SMI/BIOS/GPIO/BIOS interface/RTC RAM Lock.

➢ System Agent Bridge Name



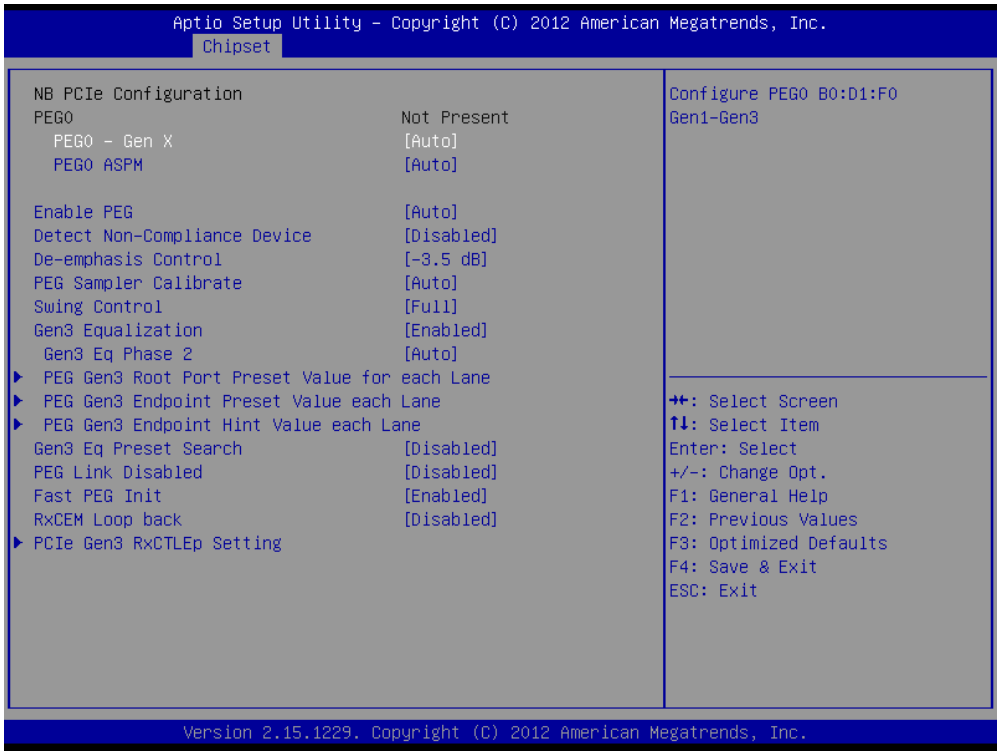
This item allows users to enable or disable VT-d.

➢ Graphic Configuration



SETTING	DESCRIPTION
Primary Display	This item allows users to select which graphics controller to use as the primary boot device.
Internal Graphics	This item allows users to enable or disable IGD.
GTT Size	This item allows users to select GTT size.
Aperture Size	This item allows users to select aperture size.
DVMT Pre-Allocated	This item allows users to select DVMT pre-allocated memory size.
DVMT Total Gfx Mem	This item allows users to select DVMT total memory size.
Gfx Low Power Mode	This item allows users to enable or disable IGD low power mode.
Graphic Performance Analyzers	This item allows users to enable or disable graphic performance analyzer function.

➢ NB PCIe Configuration



PEG0 - Gen x

Select PEG0 speed.

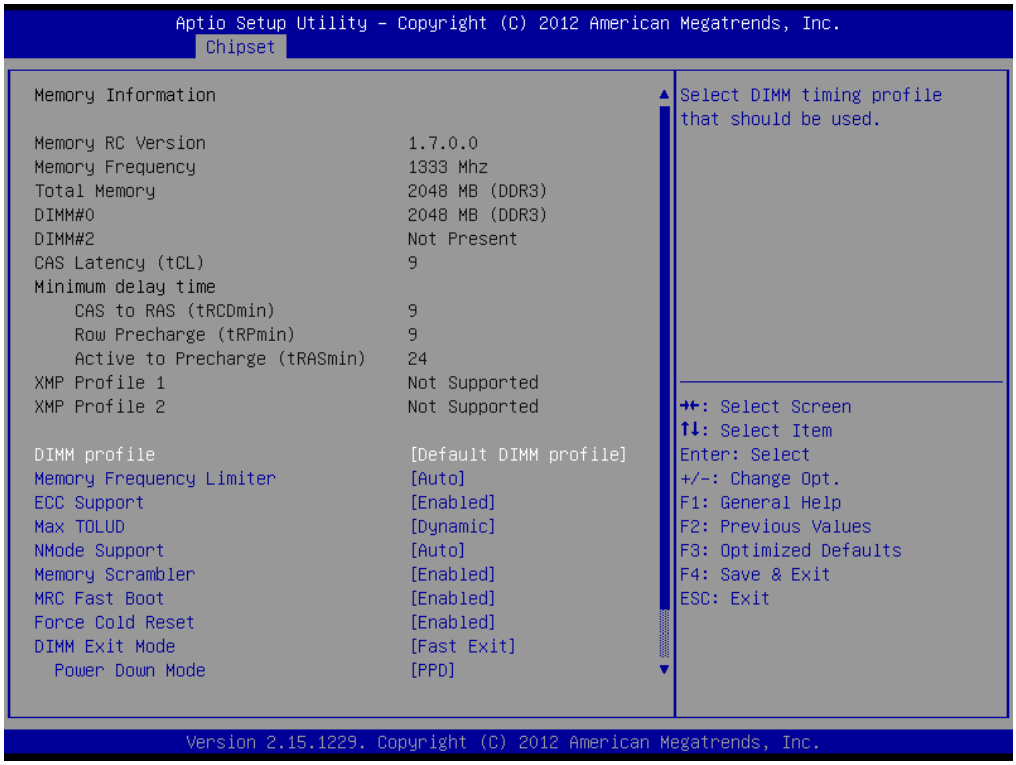
Enable PEG

This item allows users to enable or disable PEG always.

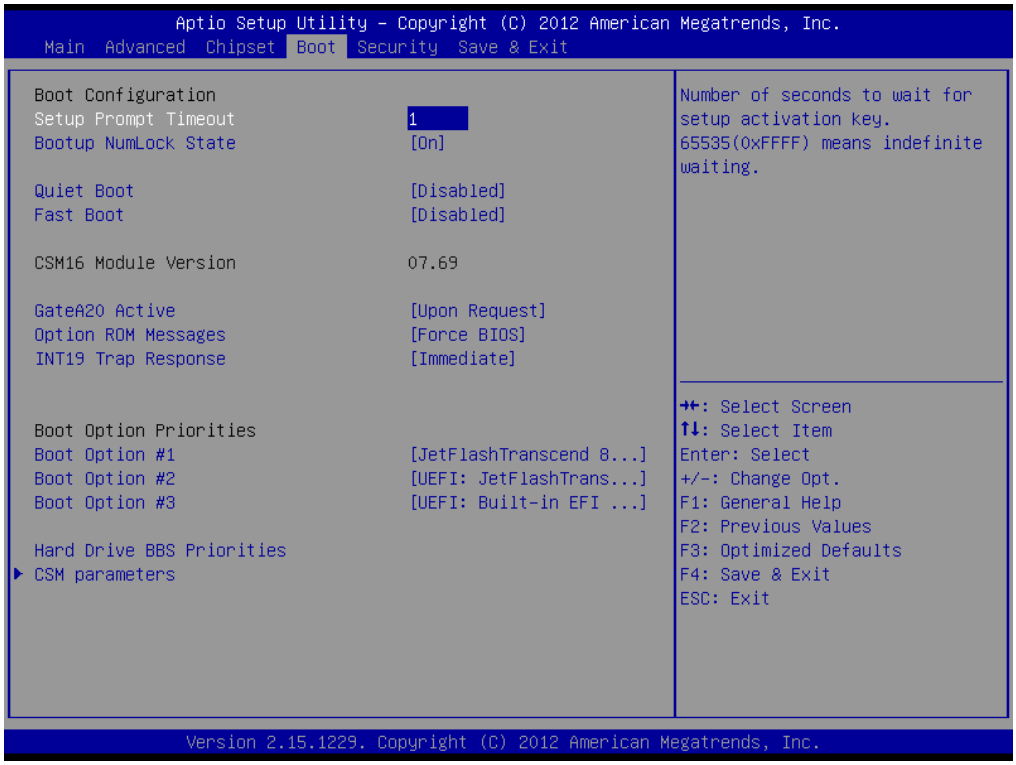
PEG Sampler Calibrate

This item allows users to enable or disable PEG sampler calibrate function.

➢ Memory Information



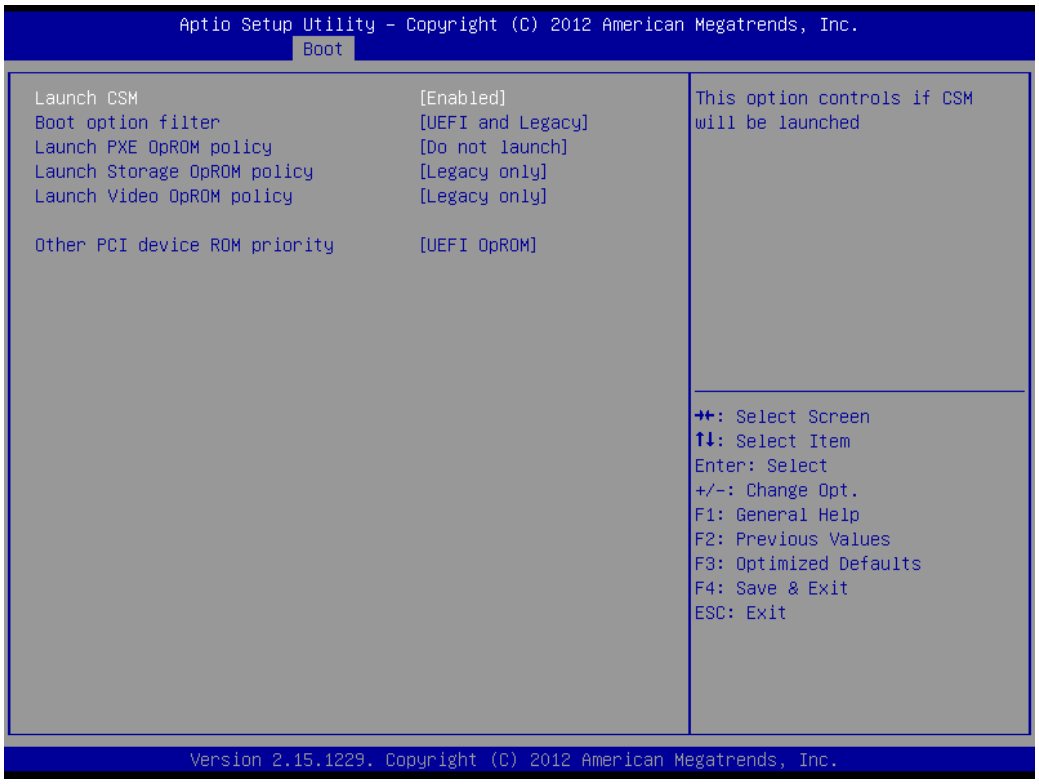
11.4 Boot



SETTING	DESCRIPTION
Setup Prompt Timeout	This item allows you to change number of seconds to wait for setup activation key.
Bootup NumLock State	This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.
Quiet Boot	If this option is set to Disabled, the BIOS display normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.
Fast Boot	Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
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.
OptionROM Messages	Set display mode for Option ROM. Options are Force BIOS and Keep Current.
INT19 Trap Response	This item allows option ROMs to trap interrupt 19
Boot Option #1、#2、#3	Selects the boot sequence of the device.

Hard Drive BBS Priorities	Set the order of the legacy devices in this group.

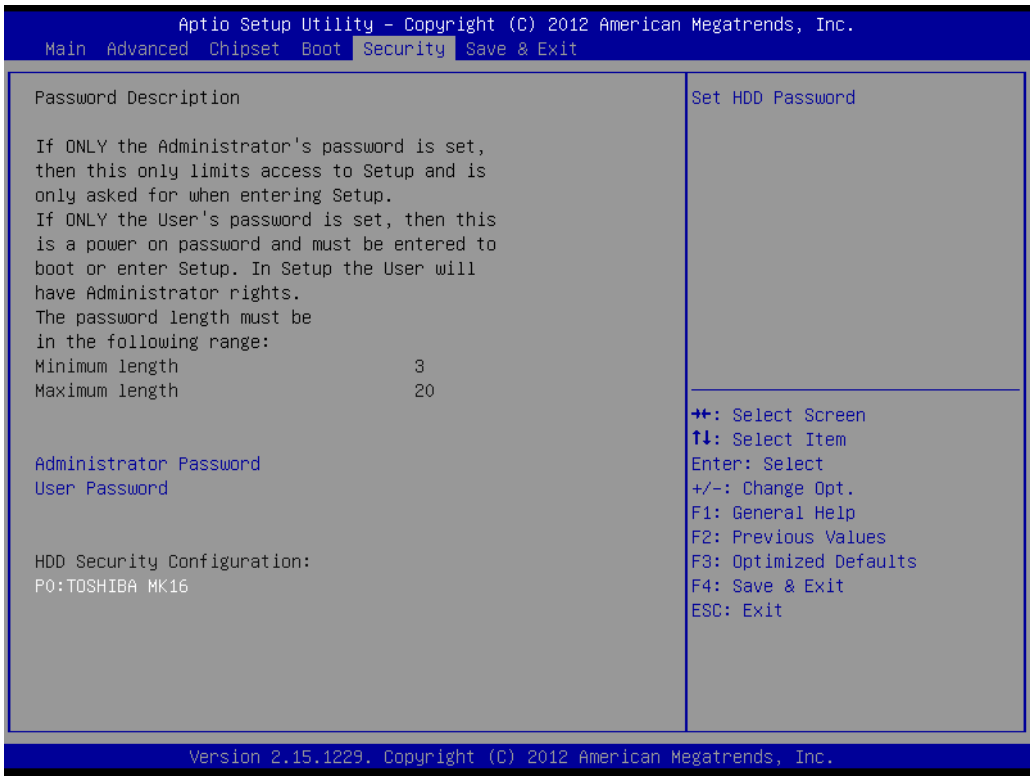
➢ CSM parameters



SETTING	DESCRIPTION
Launch CSM	This option controls if CSM will be launch.
Boot option filter	This option controls what devices system can boot to.
Launch PXE OpROM policy	Controls the execution of UEFI and legacy PXE OpROM.
Launch Storage OpROM policy	Controls the execution of UEFI and legacy storage OpROM.
Launch Video OpROM policy	Controls the execution of UEFI and legacy video OpROM.
Other PCI device ROM priority	For PCI device than Network, mass storage or video defines which OpROM to launch.

11.5 Security

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



Administrator Password

Set Setup Administrator Password.

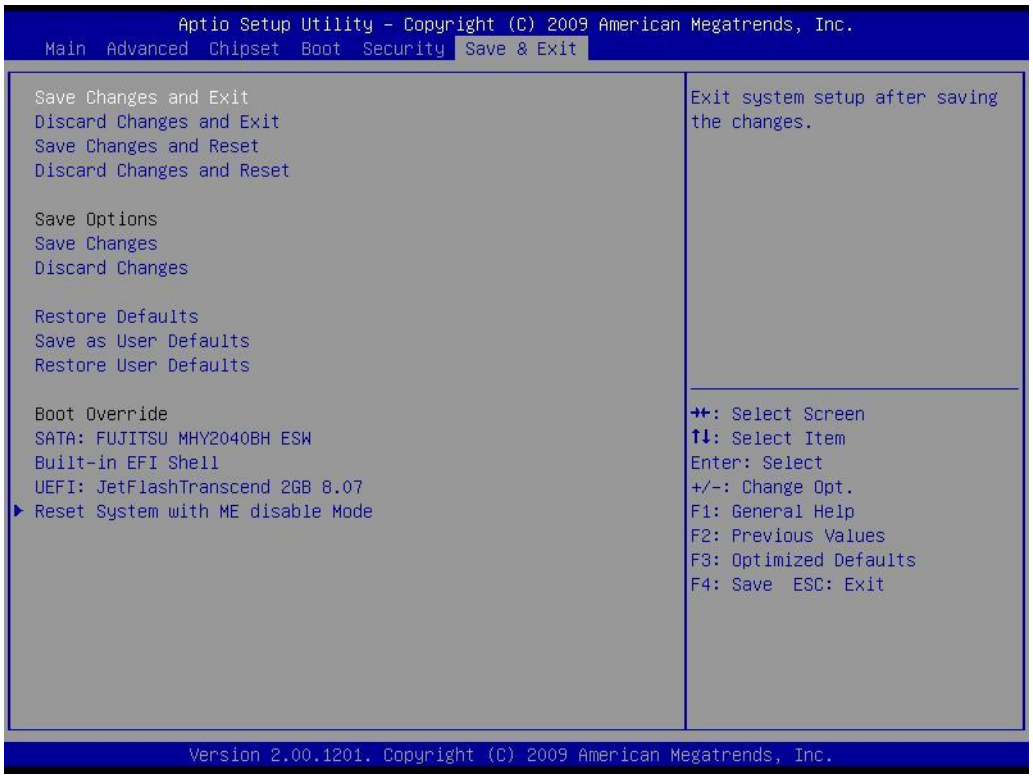
User Password

Set User Password.

HDD 0: FUJITSU MHY2

Sets the HDD password.

11.6 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.

Reset System with ME disable Mode

ME will run into the temporary disable mode.

CHAPTER 12

Watchdog Function Settings

This chapter includes how to set the watch dog function for IV7T-RK2U/IV7W-RK2U Embedded Server

Sections include:

- What is Watchdog Timer
- Demo and coding reference
- Watchdog Timer Behavior Under Different ACPI Status

Chapter 12 Watchdog Function Settings

12.1 What is Watchdog Timer

Watchdog timer is an electronic timer that is used to detect and recover computer from malfunctioning. When the computer is under normal operation, the watchdog timer regularly resets and prevents the watchdog timer from timing out. If there is an issue with the computer, the watchdog timer will eventually timeout, and send out signal to initiate **shutdown** or **reboot procedure**, recovering the computer from system failure. Watchdog timer operates independently from the computer, making the failsafe mechanism more reliable.

***If the watchdog behavior is rebooting, please set the "Restore AC Power Loss" option to "on". Please refer to Chapter 11.3.**

***To normal shutdown, please turn off the watchdog function to avoid automatically boot situations.**

12.2 Demo and coding reference

Please refer to the “Winmate PPC SDK V 2.0” for demo and coding reference.

12.2.1 Demo Application

Included in “Winmate PPC SDK V1.2” is a demo application called “Windows Sample AP Setting” that has the watchdog timer function. To test watchdog functionality, click on any of the time buttons shown on the program. Within the time set by the time buttons, the system should reboot if the timers are not resetted again by clicking on any of the time buttons.

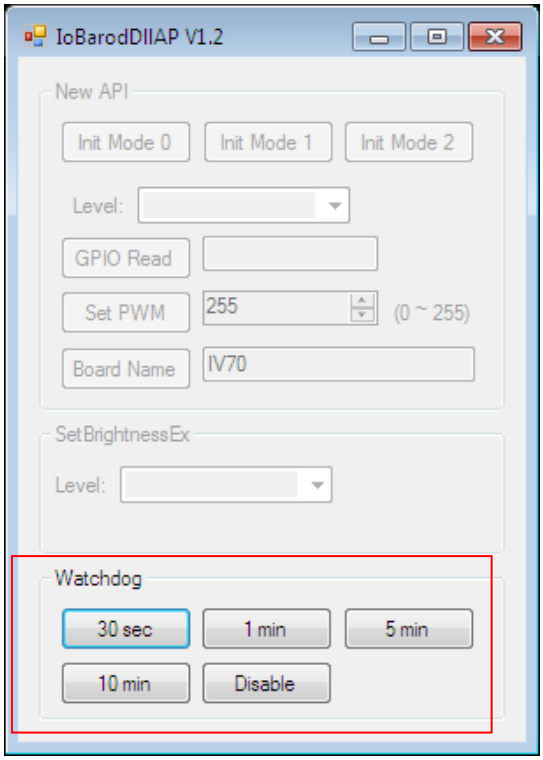


Figure 1: Windows Sample AP Setting

12.2.2 Porting Guide

For porting reference, please refer to the following watching function diagram. More detailed reference can be found in the document of “Winmate PPC SDK V 2.0”, section 5.1.2 Watchdog Function Block on page 8.

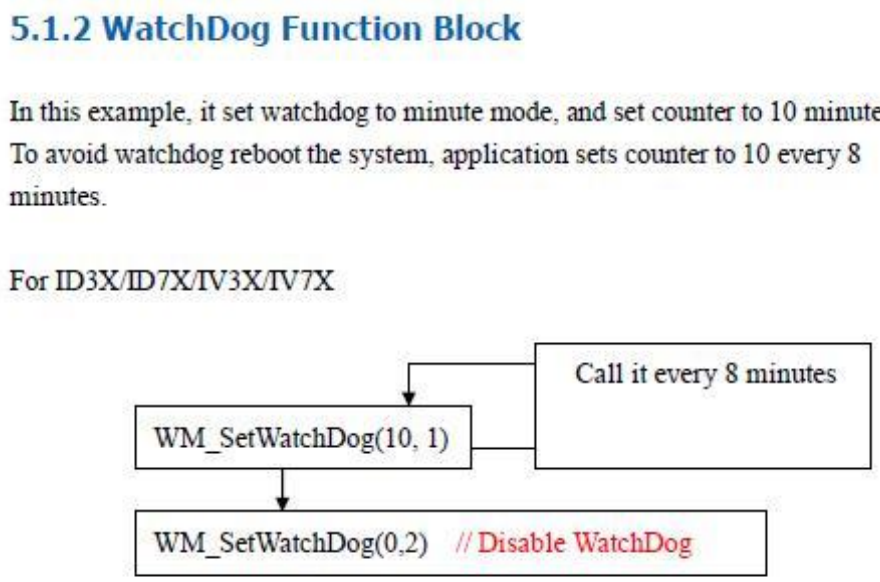


Figure 2: Section from Porting Guide on Watchdog Function

12.2.3 Watchdog Timer Behavior Under Different ACPI States

The Advanced Configuration and Power Interface (ACPI) specification provides an open standard for device configuration and power management by the operating system. Table 1 below defines the different states:

Power state	ACPI state	Description
Working	S0	The system is fully usable. Devices that are not in use can save power by entering a lower power state.
Sleep	S3	The system appears to be off. Power consumption is reduced to one of several levels, depending on how the system is to be used. The lower the level of power consumption, the more time it takes the system to return to the working state.
Hibernation	S4	The system appears to be off. Power consumption is reduced to the lowest level. The system saves the contents of memory to a hibernation file, preserving the state of the operating system, applications, and open documents.
Off State	S5	The system appears to be off. Some components remain powered so the computer can wake from input from the keyboard, LAN, or a USB device. The working context can be restored if it is stored on nonvolatile media.

Table 1: ACPI State Descriptions

Correspondingly, the watchdog timer on IV70 behaves differently under different ACPI states, shown in the Table 2:

Power state	ACPI state	Watch Dog Behavior
Working	S0	1. Supported 2. Works by having the windows application to set the watch dog timer. When the system hangs, and the watchdog timer times out, the watchdog timer notify the system to shutdown or reboot. **If the watchdog behavior is reboot, please set the "Restore AC Power Loss" option to "on". Please refer to Chapter 11.3.**
Sleep	S3	Not Supported
Hibernation	S4	Not Supported
Off State	S5	Not Supported

Table 2: Watchdog Timer Behavior for each ACPI state

CHAPTER 13

Services/Updates

This chapter includes IV7T-RK2U/IV7W-RK2U Embedded Server PC Services and Updates information.
Sections include:

- Official Website
- Company Information

Chapter 13 Services/ Updates

13.1 IV70 Official website

The relevant information about IV70 Products including the latest news and downloads will be presented in the website below:

http://www.winmate.com.tw/PanelPc/PPcQuery_tab.asp?Type=B01080119

Please go there to obtain further details of IV70 Products.

13.2 Company information

Winmate Communication Inc.

9F, No.111-6, Shin- De Rd,. San- Chung City Taipei 241, Taiwan, R.O.C.

Tel: 886-2-8511-0288

Fax: 886-2-8511-0211

Contact us: sales@winmate.com.tw

Distributor and more products:

Please refer to our website: www.winmate.com.tw