User Manual Ver 1.7

IFC-BOX2800

Fanless Embedded Box PC

- Intel® Atom™ processor
- Intel CG82NM10 PCH
- Onboard 2GB DDR3 memory
- Intel® integrated graphic media accelerator 3600
- VGA/LVDS Display
- 2 x Intel®82583GbE LAN
- Rich I/O Connector
- 9V~36V Wide range voltage input

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For more information about this and other IFC products, please visit our web site at: **http://www.IFC-ipc.cn**

Product Warranty (1 years)

IFC warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one years from the date of purchase.
This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by IFC, or which have been subject to misuse, abuse, accident or improper installation. IFC assumes no liability under the terms of this warranty as a consequence of such events.

Because of IFC's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an IFC product is defective, it will be repaired or replaced at no charge during the warranty period. For out of warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, IFC products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

Declaration of Conformity

FCC Class A

Note: 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 part15, CE E50252E, GB9254 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 his own expense.

Technical Support and Assistance

1. Visit the IFC web site at www.ifc-ipc.cn where you can find the latest information about the product.
2. Contact your distributor, sales representative, or IFC's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

– Product name and serial number
– Description of your peripheral attachments
– Description of your software (operating system, version, application software, etc.)
– A complete description of the problem
– The exact wording of any error messages

Warnings, Cautions and Notes

Warning!
Warnings indicate conditions, which if not observed, can cause personal injury!

Caution!
Cautions are included to help you avoid damaging hardware or losing data.

Note! *Notes provide optional additional information.*

Safety Instructions

1. Read these safety instructions carefully. Keep this User Manual for later reference.
2. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located 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 may 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 overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. Do not leave this equipment in an environment where the storage temperature may go below -20° c (-4° f) or above 60° c (140° f). This could damage the equipment. The equipment should be in a controlled environment.
16. Caution: danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer, discard used batteries according to the manufacturer's instructions.
17. Caution: Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. Screws) provided with the accessory box.
18. Caution: The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacturer’s instructions.

19. Caution: 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 The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

Disclaimer: This set of instructions is given according to IEC 704-1. IFC disclaims all responsibility for the accuracy of any statements contained herein.

Packing list

Before installation, please ensure the following items have been shipped:
1 x IFC-BOX2800 BOX PC

Phoenix DC Power Connector (F Model).

Ordering Information

Model Number	Description
IFC-BOX2800	Intel® Atom™ N2800 1.86GHz w/VGA+2 LAN+6 RS232 +2 RS232/485 Option+4USB+6 DI+6 DO

Optional Accessories

Model Number	Description
IFC-BOX2800	AC-DC Adaptor，DC 12V@5A 60W, with DC jack，0~45℃，a perfect solution for home and office application. VESA installation bracket.

Contents

Chapter 1

General Introduction

This chapter gives background information on IFC-BOX2800 series.

1.1 Introduction

The IFC-BOX2800 fanless Embedded Box Computer is an ideal, application-ready system platform solution. All electronics are protected in a compact, sealed, aluminum case for easy embedding in the customer's own housing, or as a stand-alone application where space is limited and the environment harsh.
The solid, sealed aluminum case offers vibration and dust resistance while also providing a passive cooling solution. The IFC-BOX2800 provides system integrators with a turnkey solution and versatile application development path without breaking the bank or missing time-to-market deadlines.

IFC-BOX2800 is designed as a palm-size fanless embedded system and occupies only205 x 127 x 56.5mm. The rugged, cast aluminum case not only provides great protection from EMI, shock/vibration, cold and heat, but also passive cooling for quiet, fanless operation.
IFC-BOX2800 meets demands by offering up to1 x VGA, 2 x Giga LAN, 4 x USB 2.0 ports, and 8 x COM ports all packed into a compact rugged unit and powered by an Intel® Atom™ N2600/N2800 processor. IFC-BOX2800 also supports both 2.5 SATA HDD and C-FAST SSD for storage. Besides, IFC-BOX2800 is a low-power-consumption system and it is powered by DC

9-36V input. TheIFC-BOX2800 provides for diversified application fields.

1.2 Features

Key features

- Extremely compact, sealed construction with fanless operation, supports Intel® Atom™ N2600 1.6 GHz CPU
- Ultra slim palm-size system with 2.5" SATA HDD/C-FAST SSD support
- Low power consumption system
- Support VESA/desk/DIN-rail mountings

1.3 Specifications

1.3.1 General

CPU: Intel® Atom™ Dual Core Processor N2800 1.86 GHz

System Chipset: Intel® NM10 Express Chipset

BIOS: AMI 16 Mbit Flash BIOS

System Memory: On board 2GByte DDR3 1066GHz SDRAM

Watchdog Timer: 255-level interval timer, setup by software

Serial Ports:

- 2 RS-232/485 BIOS select, support RS-485 auto flow control and TI ISO7221C 4 kV isolation protection
- 4-6 RS232 port (ESD protection: air gap ±15 kV, contact ±8 kV), 4KV Surge protection(only TX/RX);

USB:

- 6 x USB 2.0

Audio: High Definition Audio Codec - Realtek ALC662, with Line-in, Line-out

Expansion Interface: Support up to 1 x full size Mini-PCI

Storage:

- Support C-FAST SSD device
- SATA: Support 1 x 2.5 SATAII HDD

1.3.2 Integrated Graphics Controller

- Contains Intel graphics processing GMA3600 core DirectX 10.1 compliant Pixel Shader* V3.0 and OGL 3.0 400 MHz(N2600/N2650) graphic core frequency
- Video RAM shared with system memory Display ports: VGA and LVDS output
- VGA: analog RGB display output up to resolution 1920 x 1200 @ 60Hz for N2000 serial
- LVDS:18bit single channel LVDS display output up to resolution 1366 x 768
-
- The Intel® Atom™ Processor N2000 series supports full MPEG2 (VLD/ iDCT/MC), WMV, Fast video Composing, HW decode/ acceleration for MPEG4 Part 10 (AVC/H.264) & VC-1; 720p60, 1080i60, 1080p@24 up to 20 Mps
- MPEG4 part2 does not utilize Next Generation Intel® Atom™ Processor based (Desktop and Mobile) Platform H/W
- Hardware Decode assist for Flash Decode for Adobe 11.0 and newer versions

1.3.3 Ethernet

Chipset: Intel® 82583V

Speed: 10/100/1000 Mbps, support Wake on

LAN **Interface:** Up to 2 x RJ45

Standard: Compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 8023y, IEEE 802.ab

1.3.4 Electrical Specifications

- **Power supply type:** AT / ATX jumper select Power management: ACPI 3.0, APM
- **Power requirement:** +9V-36V DC Wide range voltage input. Support power input

reverse direction protection, recoverable fuse.

- **Input Voltage:** DC 9-36V
- **Power Adapter:** AC to DC 12V/5A, 60W
- **Power consumption:**

Voltage		2957U-1.4GHz (Fanless)	
		Current	Power
Idle mode	+12V	0.94	10.92
Power on	+12V	1.21	14.52
Max load	+12V	1.23	14.76

- Power consumption test conditions:
  - Test conditions: Windows®XP Professional, Burntest ver5.3,RENICE X1 C-FAST 16G SSD
  - Idle mode: Measure the current value when system is on windows mode and without running any program
  - Power on - Boot: Measure the maximum current value between system power on and boot-up to OS
  - Max load: Measure the maximum current value when system is under maximum load (CPU with top speed, RAM & Graphic with full loading)
- RTC battery: Lithium 3 .3V/210mAH CR2032 battery

1.4 OS Support

It supports Win7, Win XP (Not support 3D and Media Hardware Decode), Win CE 6.0, and Linux Ubuntu 10.04 UP.

1.5 Other

- Deep sleep S4 mode
- Reset/Power bottom/Power LED/HDD LED/Com state LED
- 12-bit programmable GPIO (General Purpose Input/Output) with 3.3V tolerance
- Watchdog Timer: Output system reset, programmable counter from 1-255 min/sec
- Security data area: 64 bytes on EEPROM for customer saving sensitive data

1.6 Environmental Specifications

Operating temperature:

-20 ~ 60° C (With extended temperature SSD/C-Fast devices)

0 ~ 45° C (With HDD/SSD/C-Fast devices)

Relative humidity: 95% @ 40°C (non-condensing)

Storage temperature: -40 ~ 85°C (-40 ~ 185°F)

Vibration loading during operation:

— With SSD/C-FAST: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis

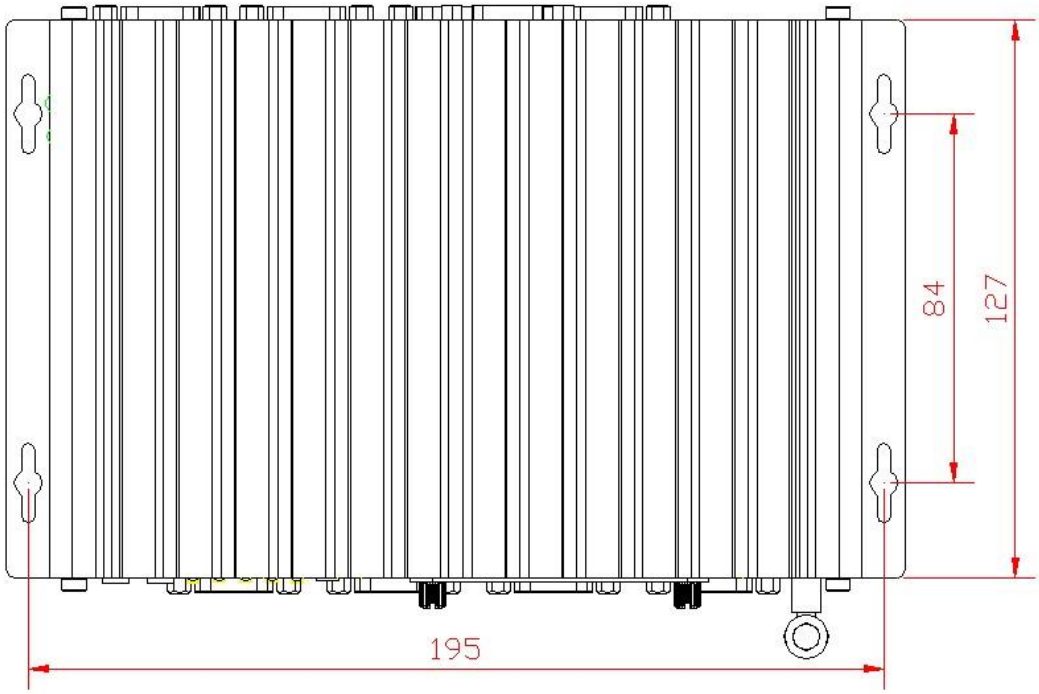
— Shock during operation:

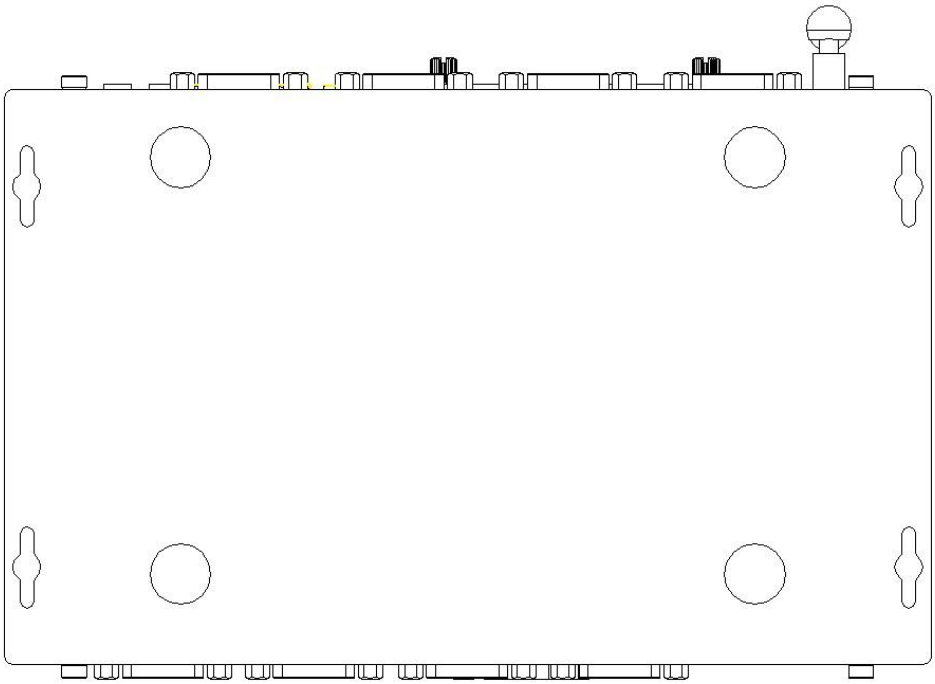
— With C-FAST SSD 30 G, IEC 60068-2-64, half sine, 11 ms duration

Safety: UL,CCC

EMC: CE, FCC Class A

1.7 Mechanical Specifications





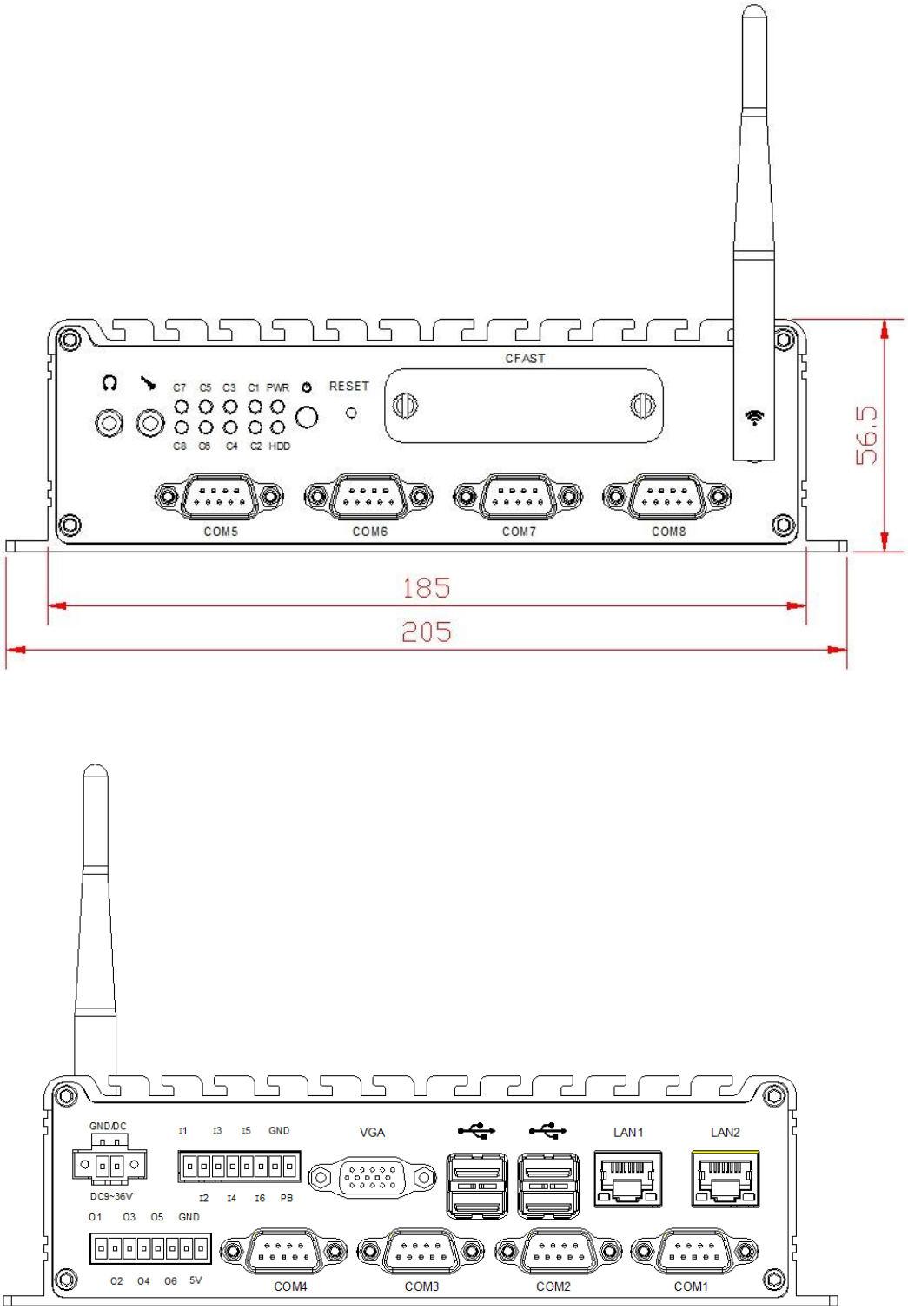


Figure 1.7 IFC-BOX2800 mechanical dimension drawing

Chapter 2

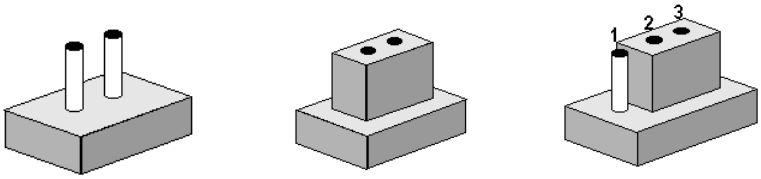
H/W Installation

This chapter explains the setup procedures of the IFC-BOX2800 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

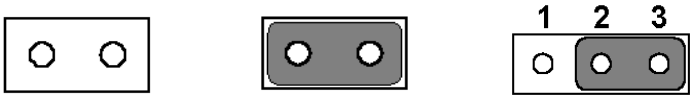
2.1 Jumpers

2.1.1 Jumper Description

Board can be configured by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you connect the pins with the clip. To open a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



The jumper settings are schematically depicted in this manual as follows.



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.

Warning! *To avoid damaging the computer, always turn off the power supply before setting jumpers.*

How to verify Pin1 of the jumper?
1. Please check the M/B carefully, where there is a mark of “1” or white thick line, there is Pin1.
2. Look into the pad on the back side of the M/B, generally the square side of the pad is Pin1.

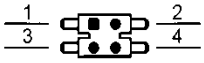
2.1.2 Jumper Setting

JVDD1 LVDS LCD Working Voltage Select

Part Number

Description Pin Header 2x2Pin 2.0mmDIP& Jumper 2.0mm

Setting	Function
(1-2)	+3.3V(Default)
(3-4)	+5V



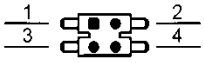
The operating voltage of LCD in the market are generally 3.3V and 5V, so please read the LCD Datasheet carefully before setting right operating voltage, otherwise the LCD panel may be burned or not work normally. Any damage result from this is NOT covered in free warranty range.

JCOM1 COM1 DB9 Pin9 voltage Select

Part Number

Description Pin Header 2x2Pin 2.0mmDIP& Jumper 2.0mm

Setting	Function
(1-2)	Ring(Default)
(3-4)	+5V
(5-6)	+12v



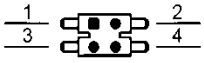
COM1 DB9 Pin9 voltage select, max500mA

JCOM2/JCOM3/JCOM4 COM2-COM4 DB9 Pin9 Voltage Select

Part Number

Description Pin Header 2x2Pin 2.0mmDIP& Jumper 2.0mm

Setting	Function
(1-2)	N/A
(3-4)	+5V
(5-6)	+12v

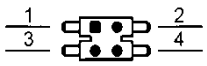


COM1 DB9 Pin9 voltage select, max500mA

JCMOS_AT1 COM2-COM4 DB9 Pin9 Voltage Select

Part Number

Description Pin Header 2x2Pin 2.0mmDIP& Jumper 2.0mm

Setting	Function		
(3-4)	OFF	KEEP CMOS(Default)	
	ON	CLEAR CMOS	
(1-2)	ON	ATX (Default)	
	OFF	AT	

How to clear CMOS: (Must follow steps as below)

If any of these states happens: such as CMOS data corruption, administrator or password of the BIOS forgotten, not able to boot-up due to wrong setting of the CPU frequency in BIOS, or the CPU/Memory need to clear the CMOS setting, then you can use this jumper to clear CMOS, and BIOS will reset to default settings.

• Pin1 and Pin2 short circuit (default): Normal Condition; • Pin2 and Pin3 short circuit: Clear CMOS setting;

Clear CMOS setting and load default settings:

1. Turn-off the system power;
2. Use jumper to make Pin2 and Pin3 short circuit, waiting for 3-5sec., then reset the jumper as Pin1 and Pin2 short circuit.
3. Turn-on the system power
4. If it is the wrong setting of CPU frequency in BIOS, then please press F2 to enter BIOS setting menu once the system reboot.
5. Set the CPU operating speed to default value or a reasonable value;
6. Save & Exit the BIOS menu.

Power Mode Select: AT power mode: Boot-up automatically when power-on.

2.1.3 IFC-BOX2800 I/O Indication

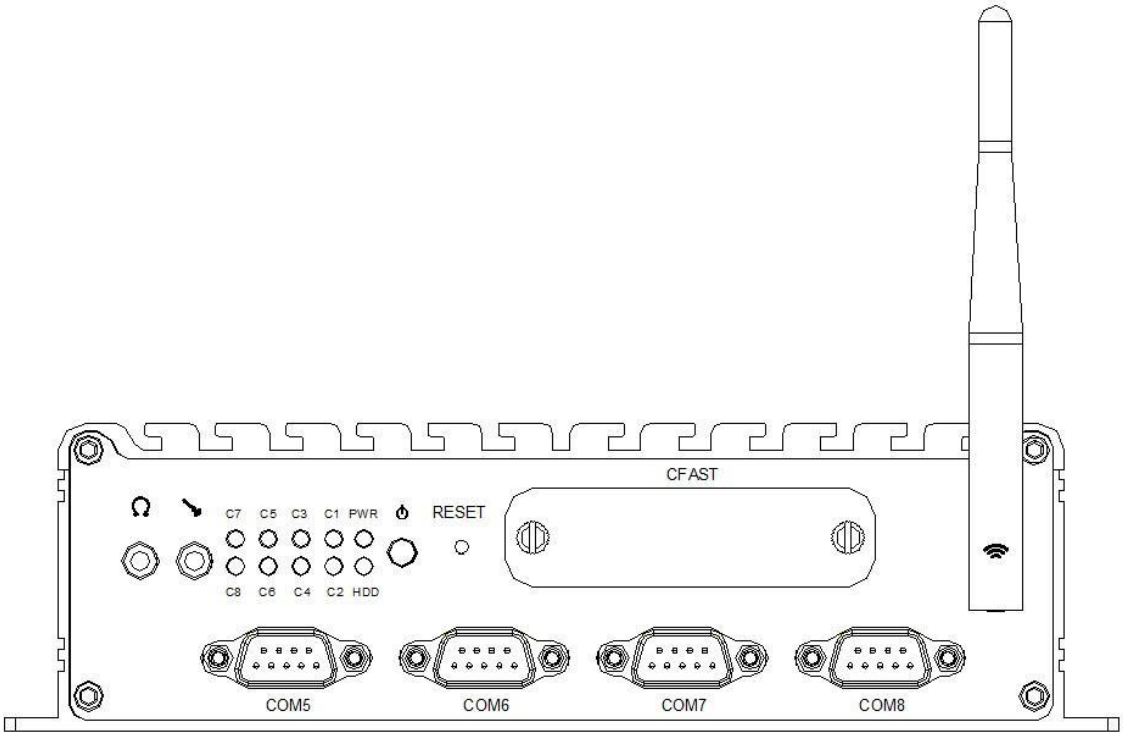


Figure 2.1.3.a1 Front panel of IFC-BOX2800

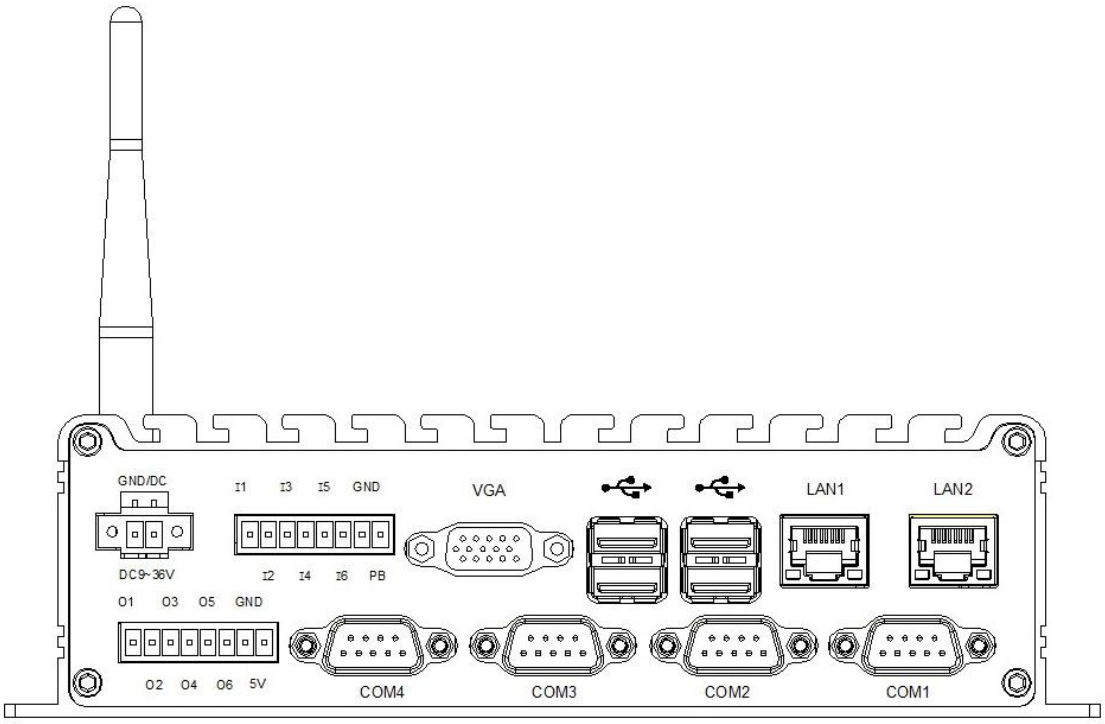


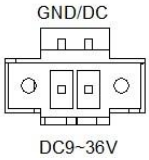
Figure 2.1.3.a2 Back panel of IFC-BOX2800

2.2 External I/O Connectors & Pin Assignments

Power Input Connector (DC_IN1)

Part Number

Description Terminal MB1.5/VF3.5/2-G2Pin3.5mm 90°GreenDIP



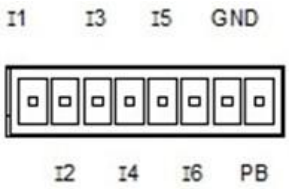
Pin	Signal	Pin	Signal
1	GND	2	DC

IFC-BOX2800 comes with a 3.5mm Phoenix header that carries 9-36VDC external power input, inappropriate connection （inverted connection） of the power will burn the M/B. The bracket makes the power connector very secure.

DI (DI1) GPIO Pin-Header

Part Number

Description Terminal MB1.5/V3.5/8-G 8Pin3.5mm 90°GreenDIP



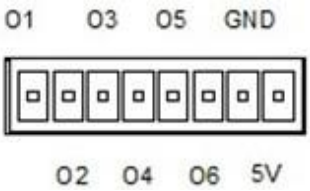
Pin	Signal	Pin	Signal
1	GPI9	2	GPI10
3	GPI12	4	GPI13
5	GPI14	6	GPI22
7	GND	8	Power Bottom

1. User can refer to our example for GPI setting. When it is defined as "input", it can receive 3.3V or 5V level signal.
2. User can select Pin7, Pin8 connect external POWER BOTTOM
3. GPIO program example VIA PART 4.5 of manual

DO(D01) GPIO Pin-Header

Part Number

Description Terminal MB1.5/V3.5/8-G 8Pin3.5mm 90°GreenDIP



Pin	Signal	Pin	Signal

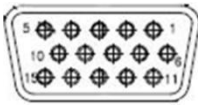
1	GPO28	2	GPO33
3	GPO34	4	GPO36
5	GPO38	6	GPO39
7	GND	8	+5V

1. User can refer to our example for GPO setting. When it is defined as "output", it can output5V@24mA level signal.
2. Pin8 Max +5V@1A
3. GPIO program example VIAPART 4.5 of manual

VGA(VGA1) VGA Port with Back I/O Panel

Part Number

Description VGA PortD-Sub 15PinFemale DIP



Pin	Signal	Pin	Signal
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DATA
13	HSYNC	14	VSYNC
15	DCLK		

VGA: analog RGB display output up to resolution1920 x 1200 @ 60Hz

USB1, USB2 USB2.0/1.1 Port with Back I/O pane

Part Number

Description Double USB Port AF90° 12Pin DIP

Pin	Signal	Pin	Signal
1	USB1_VCC	2	USB_DATA-
3	USB_DAT+	4	GND
5	USB1_VCC	6	USB_DATA-
7	USB_DAT+	8	GND
9	CHASSIS	10	CHASSIS
11	CHASSIS	12	CHASSIS

1. Provides four USB (Universal Serial Bus) 2.0 Ports Plug and Play . The USB interface complies with high speed USB specification Rev. 2.0 which sup Ports 480 Mbps transfer rate, and are fuse protected.
2. The USB interface can be disabled in the system BIOS setup.

3. To better meet our clients' application, +5V doesn't do limited 500mA current protection, so every USB output can satisfy max. 1A current demand.

SIM1 SIM Card Socket

Part Number

Description SIM Card Socket Clamshell-Type 2x3Pin SMD

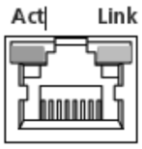
Pin	Signal	Pin	Signal
1	SIM_PWR	2	SIM_RST#
3	SIM_CLK	4	GND
5	SIM_VPP	6	SIM_DATA

Support 3G UIM card,Pop-up holder

LAN1, LAN2 RJ45 Port with Back I/O panel

Part Number

Description RJ45 Port with Active/link state LED



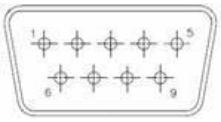
Pin	Signal	Pin	Signal
1	GND	2	LAN1_MDI0P
3	LAN1_MDI0N	4	LAN1_MDI1P
5	LAN1_MDI1N	6	LAN1_MDI2P
7	LAN1_MDI2N	8	LAN1_MDI3P
9	LAN1_MDI3N	10	CHASSIS
11	+3.3V_LAN1	12	LAN1_LINK#
13	LAN1_ACT#	14	+3.3V_LAN1
15	CHASSIS	16	CHASSIS
17	NC	18	NC
19	LAN1TCT(LAN21V9)	20	LAN1TCTG

IFC-BOX2800 provides one RJ45 LAN interface connector which is fully compliant with IEEE 802.3u 10/100/1000 Mbps CSMA/CD standards. It is equipped with 82583V and support Wake on LAN. The Ethernet port uses a standard RJ-45 jack connector with LED indicators on the front side to show Active/Link status and Speed status Intel 82583V PCI-E 10/100/1000 Mb/s Ethernet, supporting wake on LAN and PXE.

COM1 DB9 COM Port with Back I/O Panel

Part Number

Description COM Port D-Sub 9Pin Male DIP



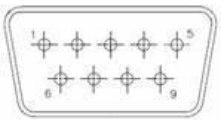
Pin	Signal	Pin	Signal
1	NNDCD1#	2	NRX1
3	NTX1	4	NDTR1#
5	GND	6	NDSR1#
7	NRTS1#	8	NCTS1#
9	Ring/+5V/+12V Option		

1. RS232 RX/TX signal support 4KV surge protection;
2. Max. traffic rate: 115200bps
3. Pin9 voltage select via JCOM1,max 500mA

COM2 DB9 COM Port with Back I/O Panel

Part Number

Description COM Port D-Sub 9Pin Male DIP



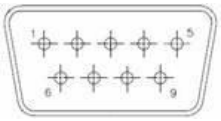
Pin	Signal	Pin	Signal
1	NC	2	NRX1
3	NTX1	4	NC
5	GND	6	NC
7	NC	8	NC
9	VCC(+5V/+12V Option)		

1. .Only RX/TX/GND 3 line RS232 port
2. RS232 RX/TX signal support 4KV surge protection;
3. Max. traffic rate: 115200bps
4. Pin9 voltage select via JCOM2,max 500mA

COM3, COM4, COM7, COM8 DB9 COM Port with Back I/O Panel

Part Number

Description COM Port D-Sub 9Pin Male DIP



Pin	Signal	Pin	Signal
1	NC	2	NRX
3	NTX	4	NC
5	GND	6	NC
7	NC	8	NC
9	VCC(+5V/+12V Option)		

1. .Only RX/TX/GND 3 line RS232 port
2. RS232 RX/TX signal support 4KV surge protection; 3.

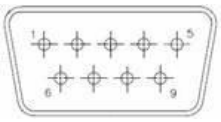
Max. traffic rate: 115200bps

4. Pin9 voltage select via JCOM2, max 500mA

COM5~COM6 DB9 COM Port with Front I/O Panel

Part Number

Description COM Port D-Sub 9Pin Male DIP



Pin	Signal	Pin	Signal
1	NC	2	NRX1
3	NTX1	4	NC
5	GND	6	RS485-
7	RS485+	8	NC
9	NC		

1. By BIOS setup RS232/485;
2. When select RS485, then Pin6& Pin7 are RS485 output, support 4KV electromagnetic isolation and automatically data flow control.
3. Only RX/TX/GND 3 line RS232 port
4. RS232 RX/TX signal support 4KV surge protection;
5. Max. traffic rate: 115200bps

AUDIO (AUDIO1) AUDIO Connector

Part Number

Description AUDIO Jack Green Vertical 5Pin DIP

Pin	Signal	Pin	Signal

IFC-BOX2800 offers stereo audio ports by two 3.5 ear phone jack connectors of Line_out and Line_in. The audio chip controller is ALC892 which is compliant with the Azalea standard.

MIC (MIC1) MIC Connector

Part Number

Description MIC Jack Green Vertical 5Pin DIP

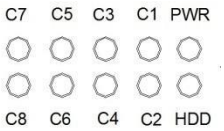
Pin	Signal	Pin	Signal

IFC-BOX2800 offers stereo audio ports by two 3.5 ear phone jack connectors of Line_out and Line_in. The audio chip controller is ALC662 which is compliant with the Azalea standard

Com_LED LED1, LED2, LED3, LED4, LED

Part Number

Description LED Group 2Row Green DIP-4P



Pin	Signal	Pin	Signal

The LED is blinking when COM1-COM8 is transferring data; Vice versa.

PWR_SW1 Power ON/OFF Button

Part Number

Description Power Button LED PTCT-07-A 5P 7Pin DIP

Pin	Signal	Pin	Signal

IFC-BOX2800 comes with a Power On/Off button with LED indicators on the front side to show its On status (Green LED) and Off/Suspend status (Orange LED). Dual functions of Soft Power -On/Off (Instant off or Delay 4 Seconds), and Suspend are supported.

SW2 Reset Butto

Part Number

Description Power Button DTSA-6444Pin DIP

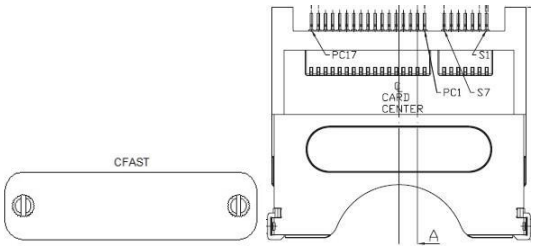
Pin	Signal	Pin	Signal

IFC-BOX2800 comes with a RESET button.

CFAST (CFAST1) Compact Flash Type II Socket

Part Number

Description CF Socket CFAHU-SSC1-110-004024Pin1.27mmSMD



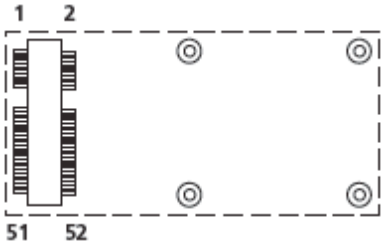
Pin	Signal	Pin	Signal
1	GND	2	TX+
3	TX-	4	GND
5	RX+	6	RX-8
7	GND	8	CDI
9	GND	10	TBD
11	TBD	12	TBD
13	TBD	14	GND
15	IO11	16	IO12
17	IO1	18	IO2
19	IO3	20	VCC33
21	VCC33	22	PGND
23	PGND	24	CDO

Standard C-FAST SATAII socket

MINI-PCIE1 Mini-PCIe Connector

Part Number

Description Mini-PCIe Slot SD-8003-402 52Pin H6.7mm SMD



Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3V_1
3	RSVD1	4	CND7
5	RSVD2	6	+1.5V_1
7	CLKREQ#	8	SIM_PWR
9	CND1	10	SIM_DATA
11	REFCLK-	12	SIM_CLK
13	REFCLK+	14	SIM_RST#
15	CND2	16	SIM_VPP
17	RSVD3	18	CND8
19	RSVD4	20	W_DISABLE#
21	CND3	22	PERST#

23	PER_N0	24	+3.3V_AUX
25	PER_P0	26	CND9
27	CND4	28	+1.5V_2
29	CND5	30	SMB_CLK
31	PET_N0	32	SMB_DATA
33	PET_P0	34	CND10
35	CND6	36	USB_D-
37	RSVD5	38	USB_D+
39	RSVD6	40	CND11
41	RSVD7	42	LED_WWAN#
43	RSVD8	44	LED_WLAN#
45	RSVD9	46	LED_WPAN#
47	RSVD10	48	+1.5V_3
49	RSVD11	50	CND12
51	RSVD12	52	+3.3V_2
Support PCI Express x1 bus Mini PCIE and USB device			

2.3 Peripheral Installation

2.3.1 HDD Installation (IFC-BOX2800 only)

Unscrew the bottom cover screws. (marked with "HDD")

Chapter 3

BIOS Settings

AMIBIOS has been integrated into many motherboards for over a decade. With the AMIBIOS Setup program, you can modify BIOS settings and control the various system features. Thi chapter describes the basic navigation of the IFC-BOX2800 BIOS setup screens.

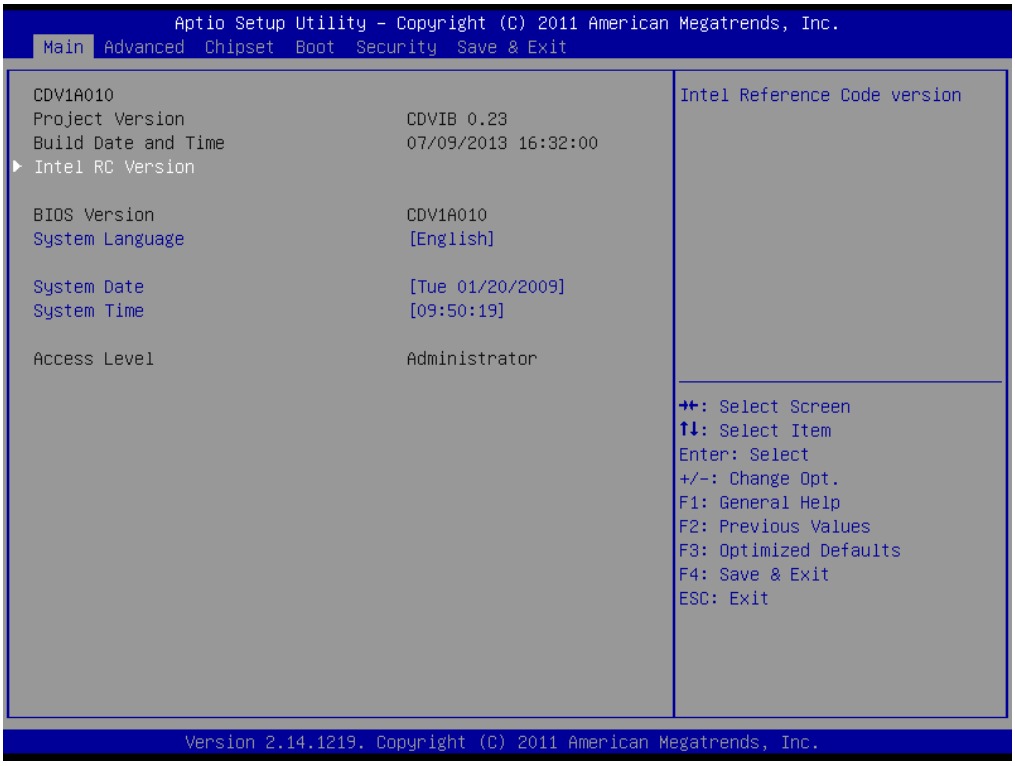


Figure 3.1 Setup Program Initial Screen

AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed CMOS so it retains the Setup information when the power is turned off.

3.1 Entering Setup

Turn on the computer and check for the —patch" code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an IFC application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press <DEL> and you will immediately be allowed to enter Setup.

3.2 Main Setup

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.

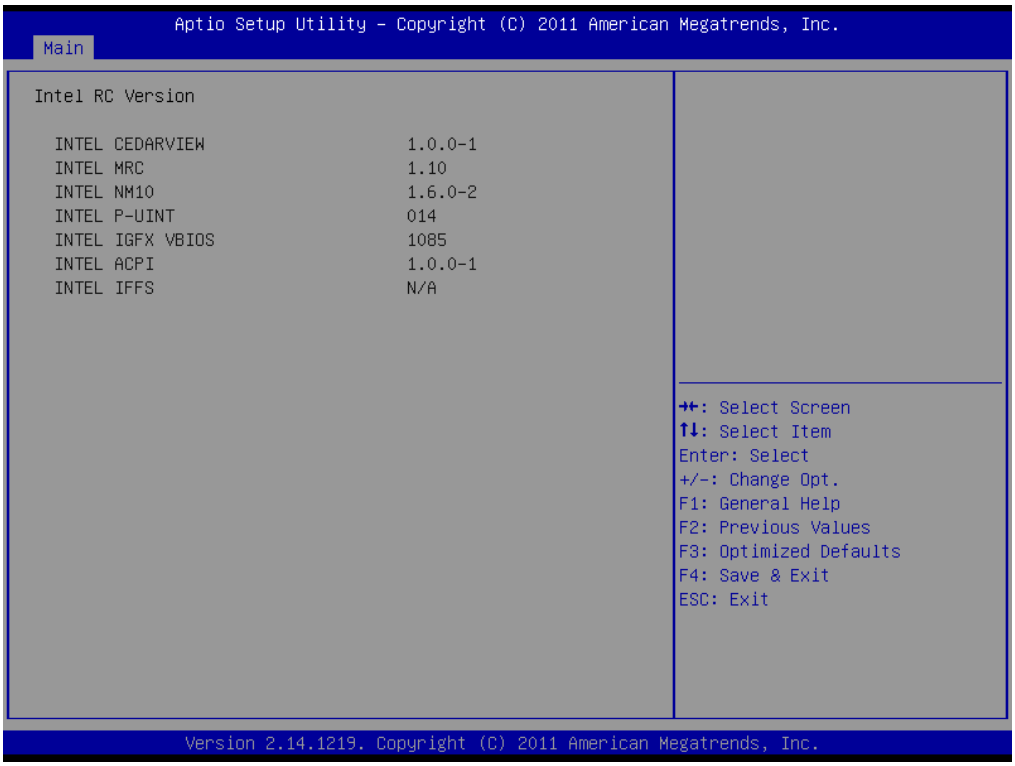


Figure 3.2 Main Setup Screen

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. 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.

3.2.1 System Time / System Date

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

3.3 Advanced BIOS Features Setup

Select the Advanced tab from the IFC-BOX2800 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described

in this section. The Advanced BIOS Setup screens is shown below. The sub menus are described on the following pages.

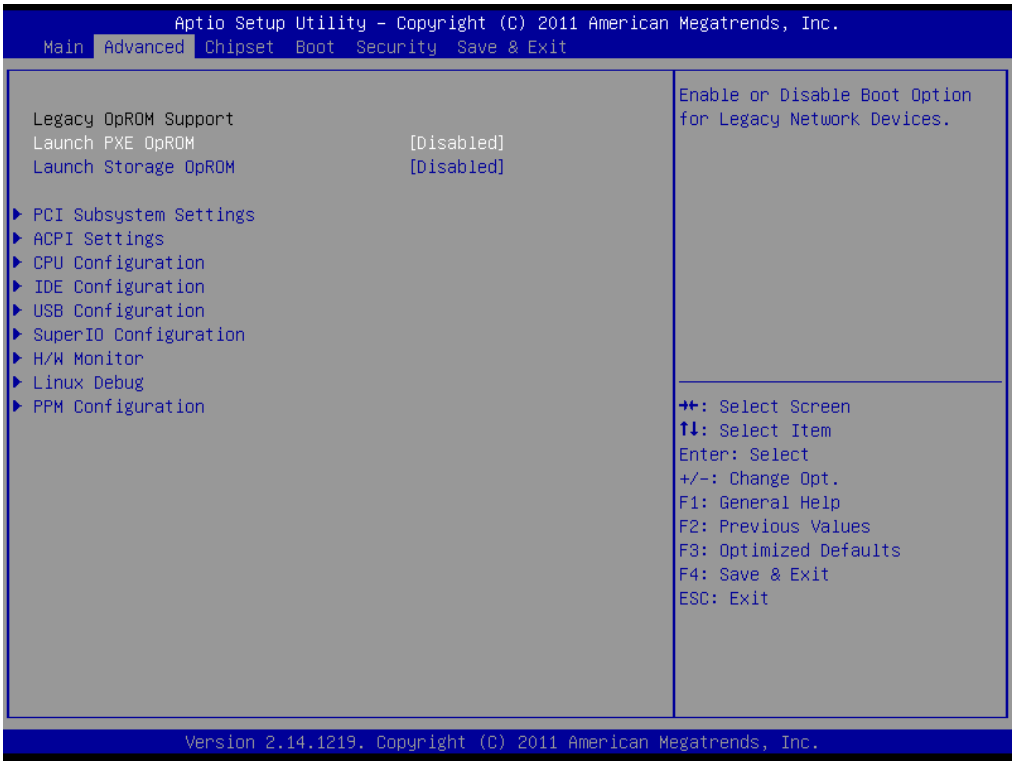
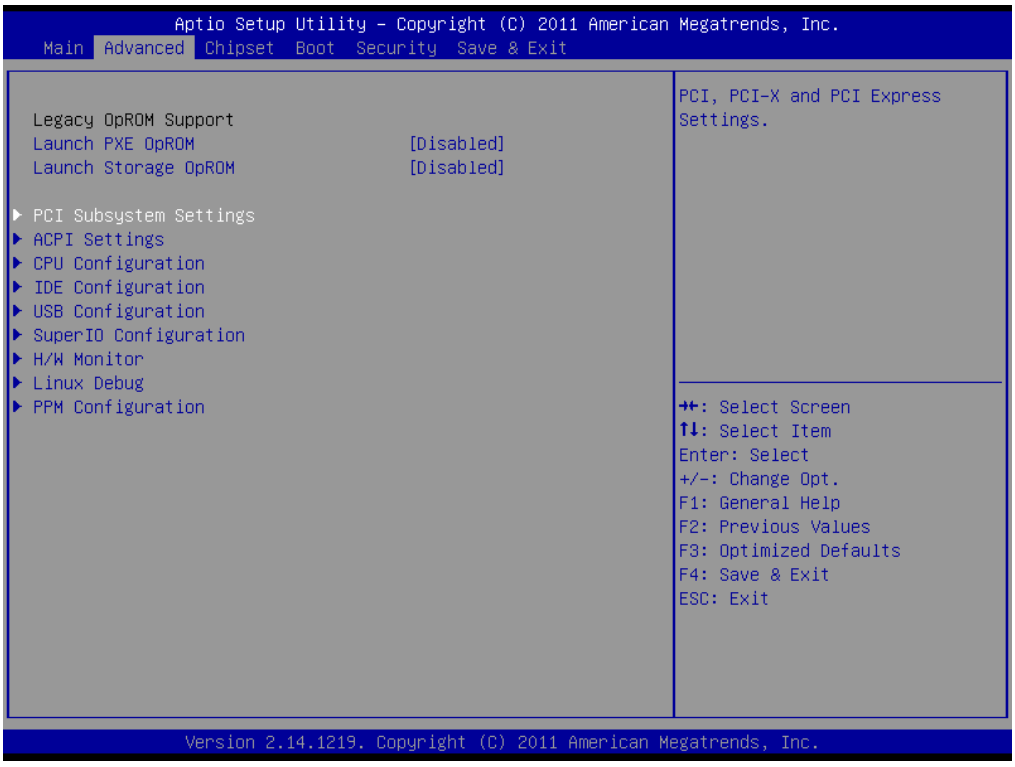


Figure 3.3 Advanced BIOS Features Setup Screen

3.3.1 PCI Subsystem Setting



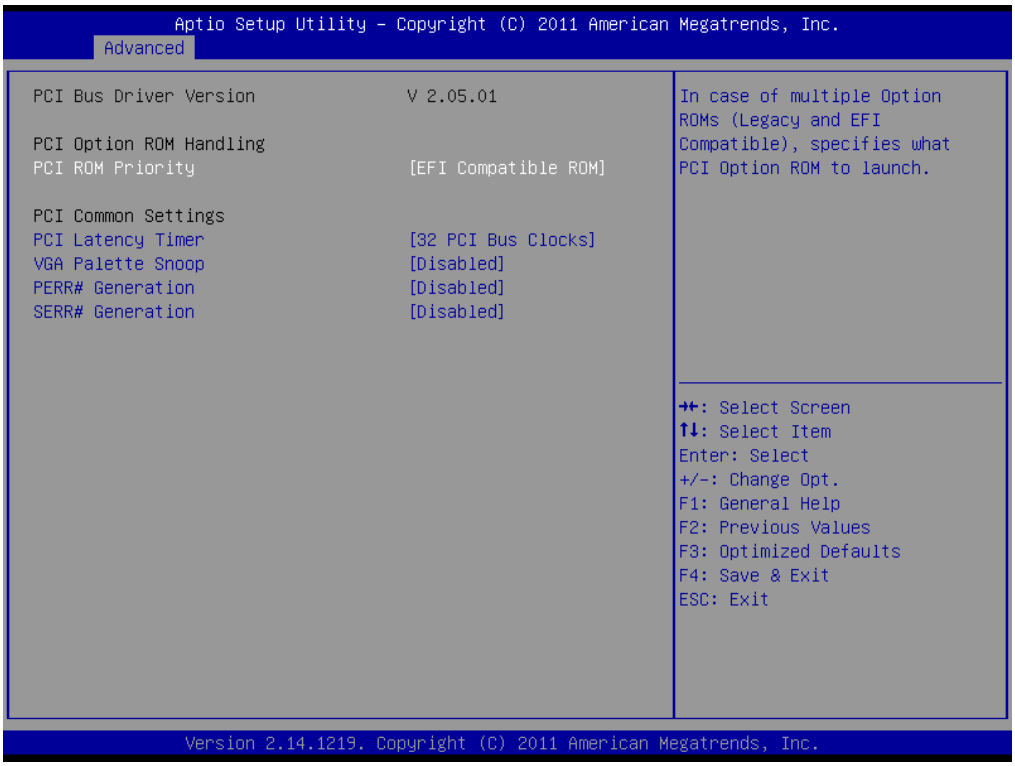
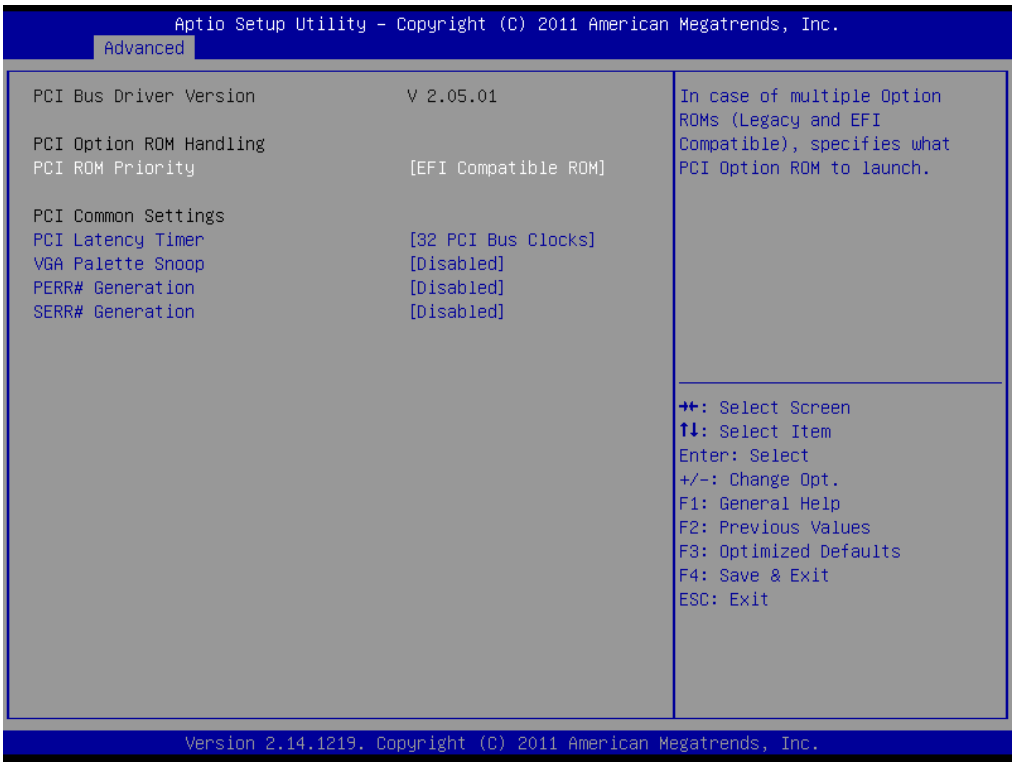


Figure 3.3.1PCI Subsystem Configuration Setting

3.3.2 ACPI Setting



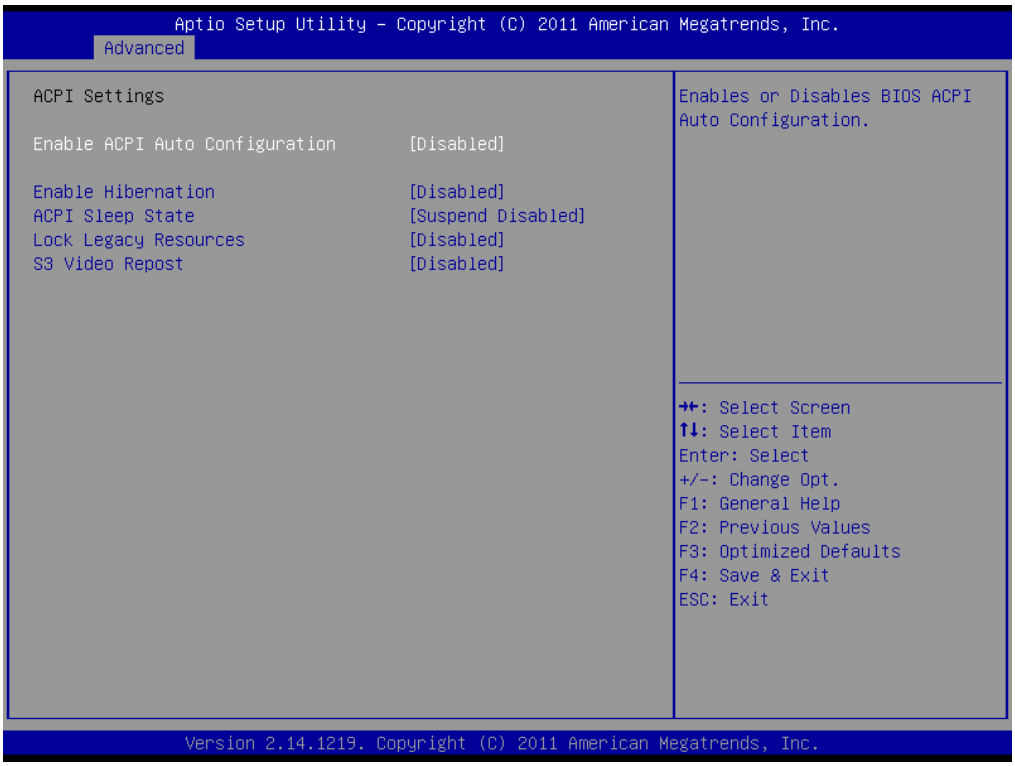


Figure 3.3.2ACPI Configuration Setting

3.3.3 CPU Configuration

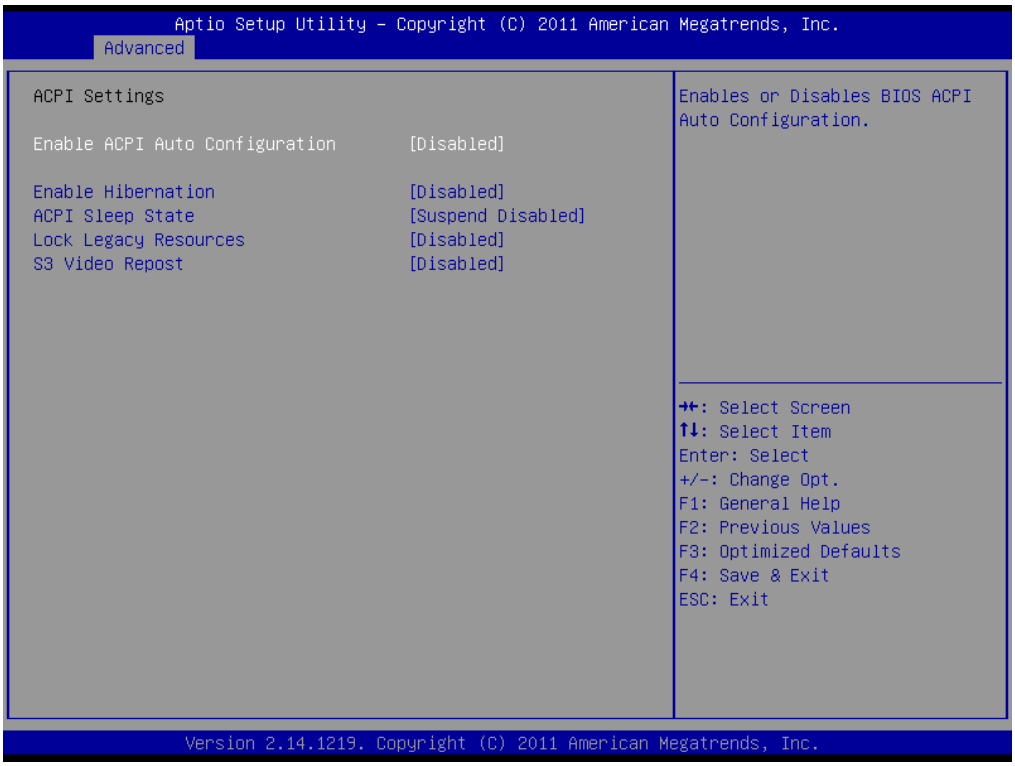


Figure 3.3.3CPU Configuration Setting

- **Max CPUID Value Limit**

  This item allows you to limit CPUID maximum value.

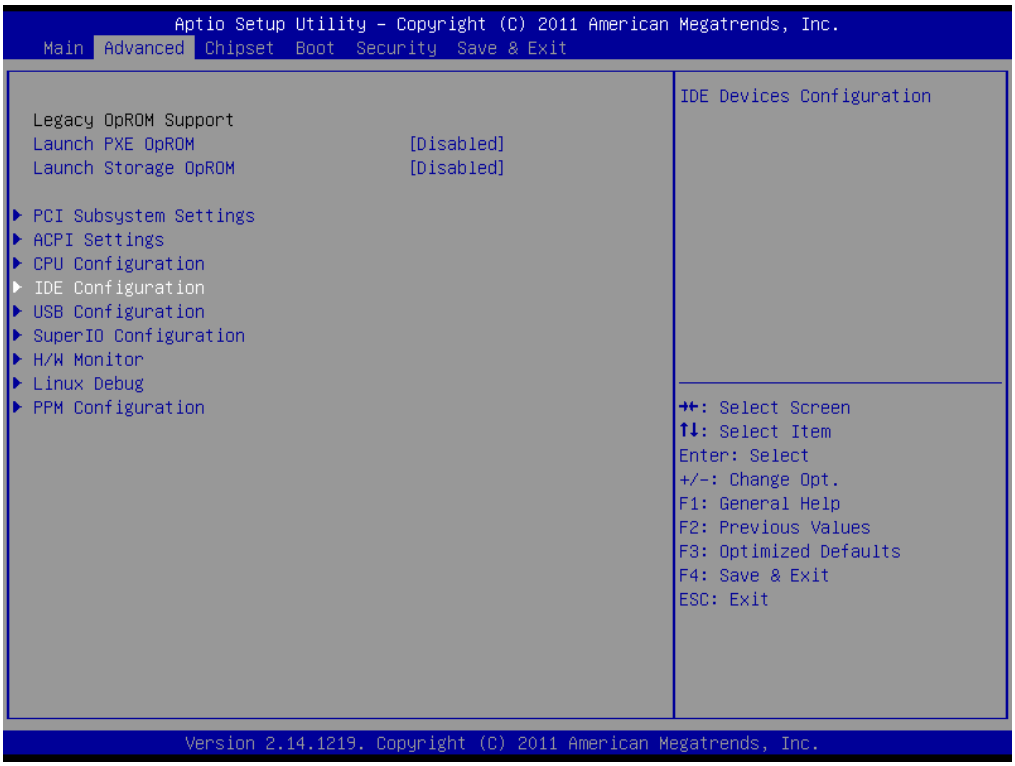
- **Execute-Disable Bit Capability**

  This item allows you to enable or disable the No-Execution page protection technology.

- **Hyper Threading Technology**

  This item allows you to enable or disable Intel Hyper Threading technology.

3.3.4 SATA Configuration



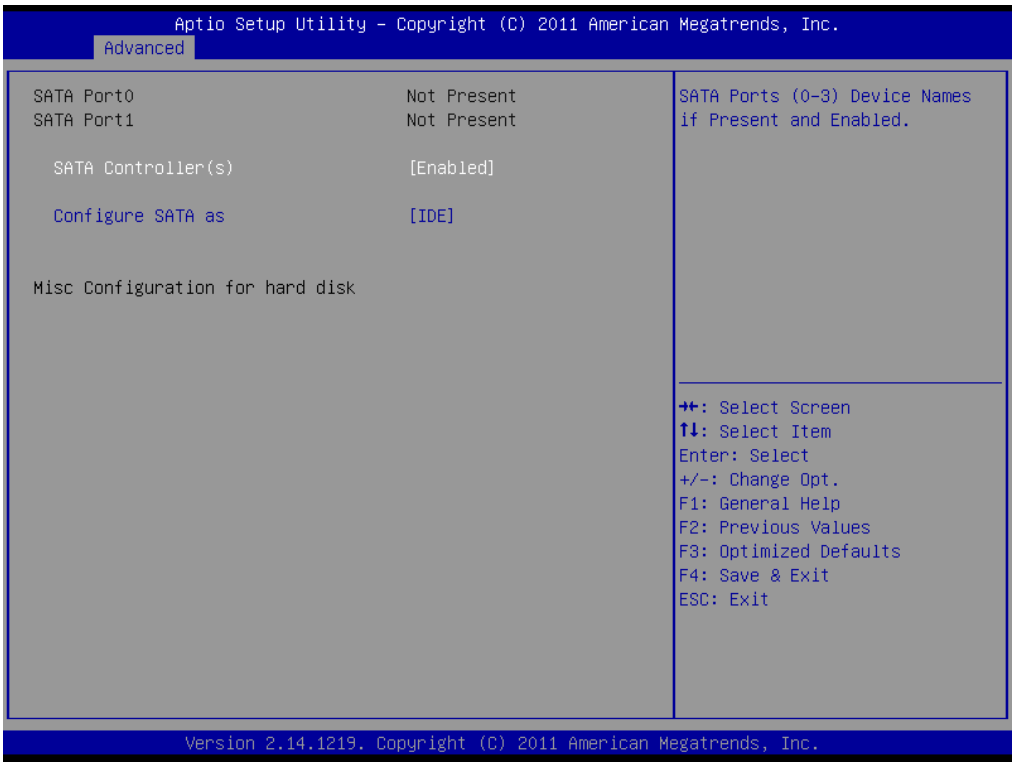
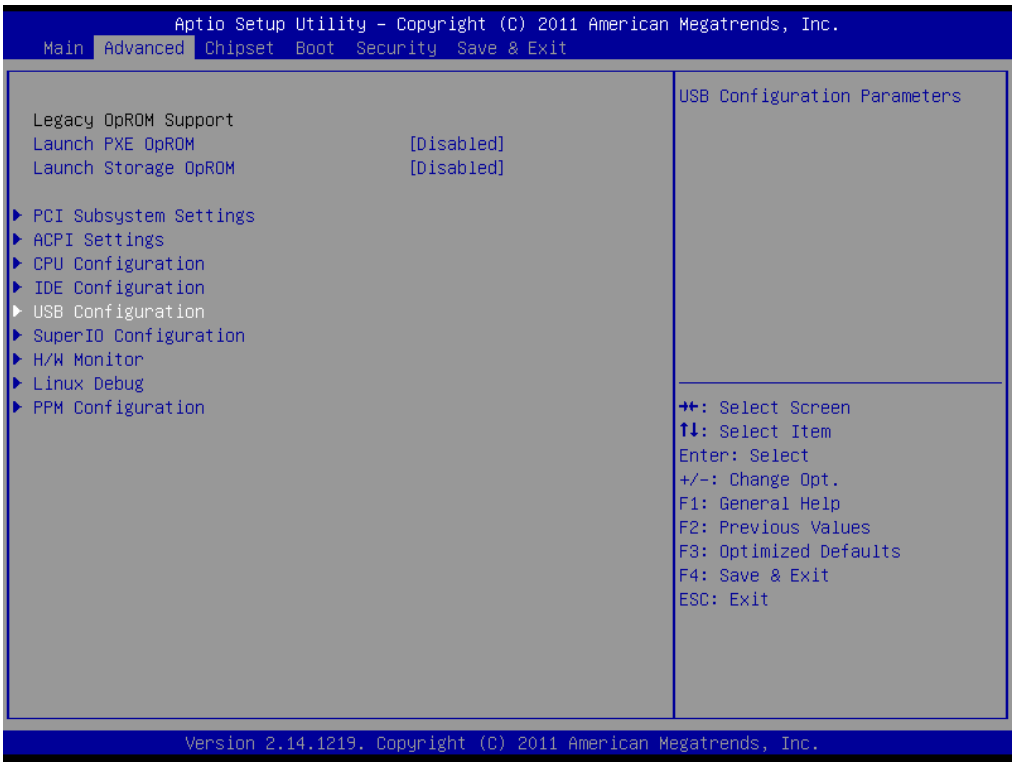


Figure 3.3.4 SATA Configuration

- **SATA E Configuration**
  This item allows you to select Disabled / IDE / AHCI

3.3.5 USB Configuration



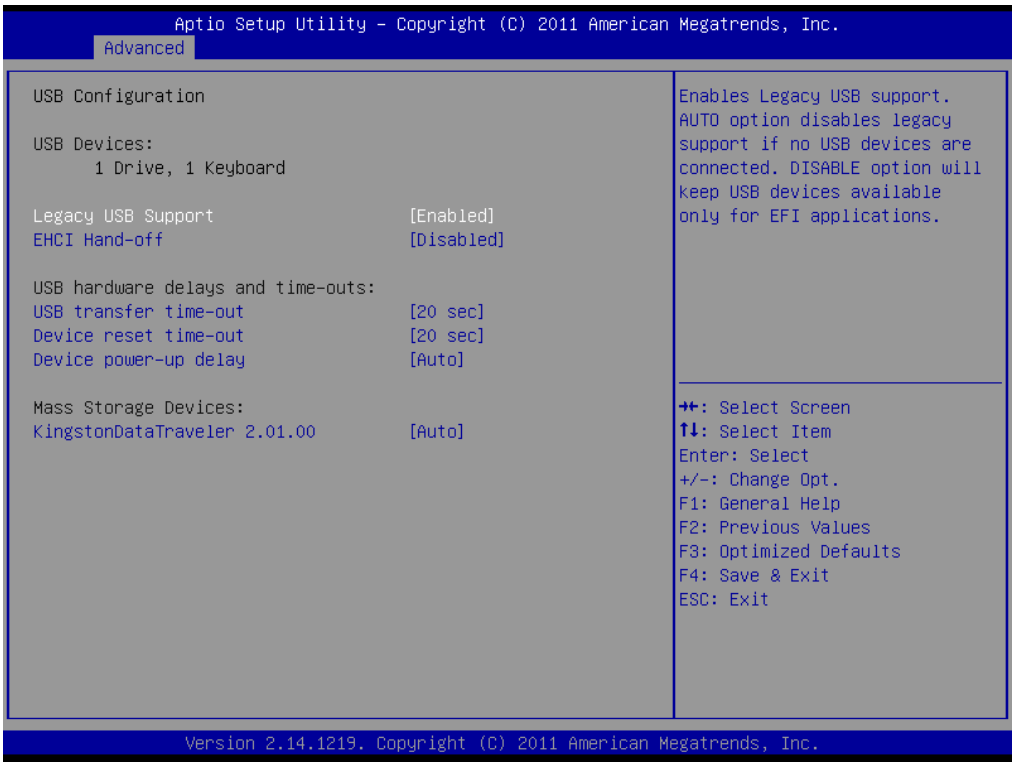
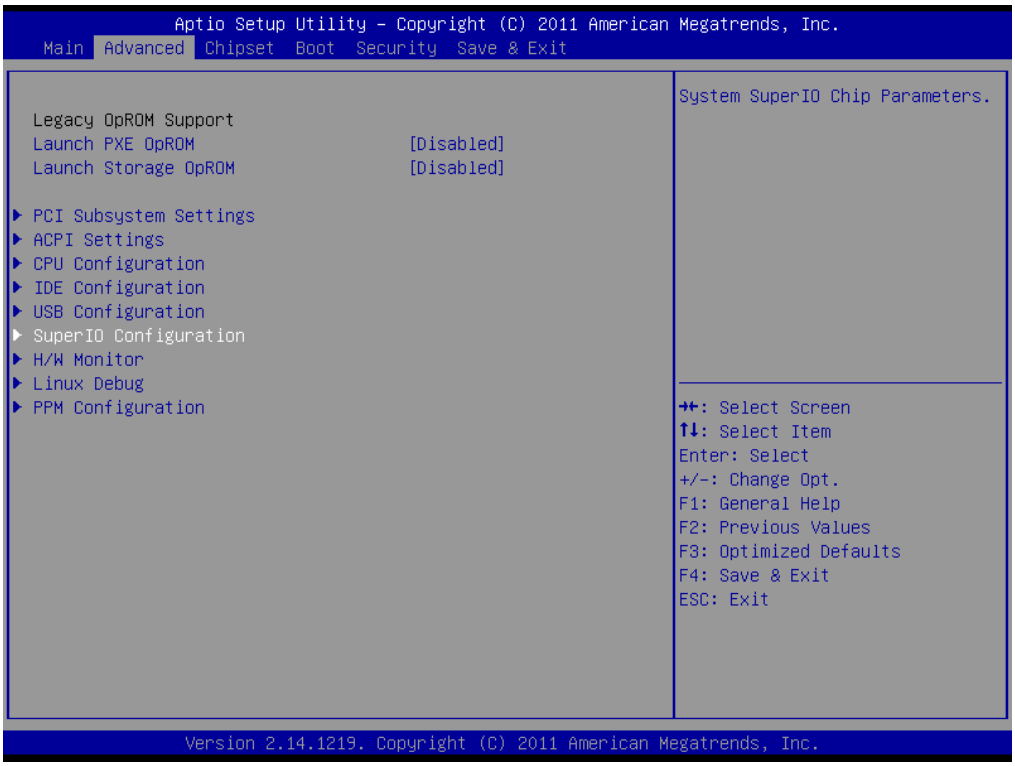
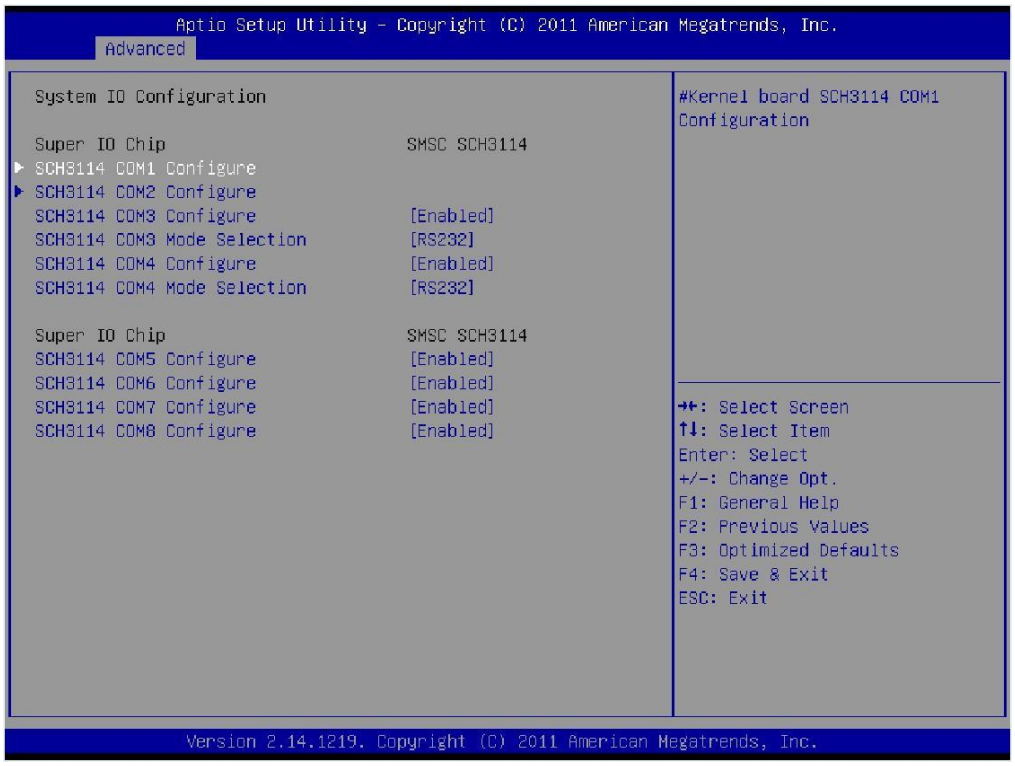
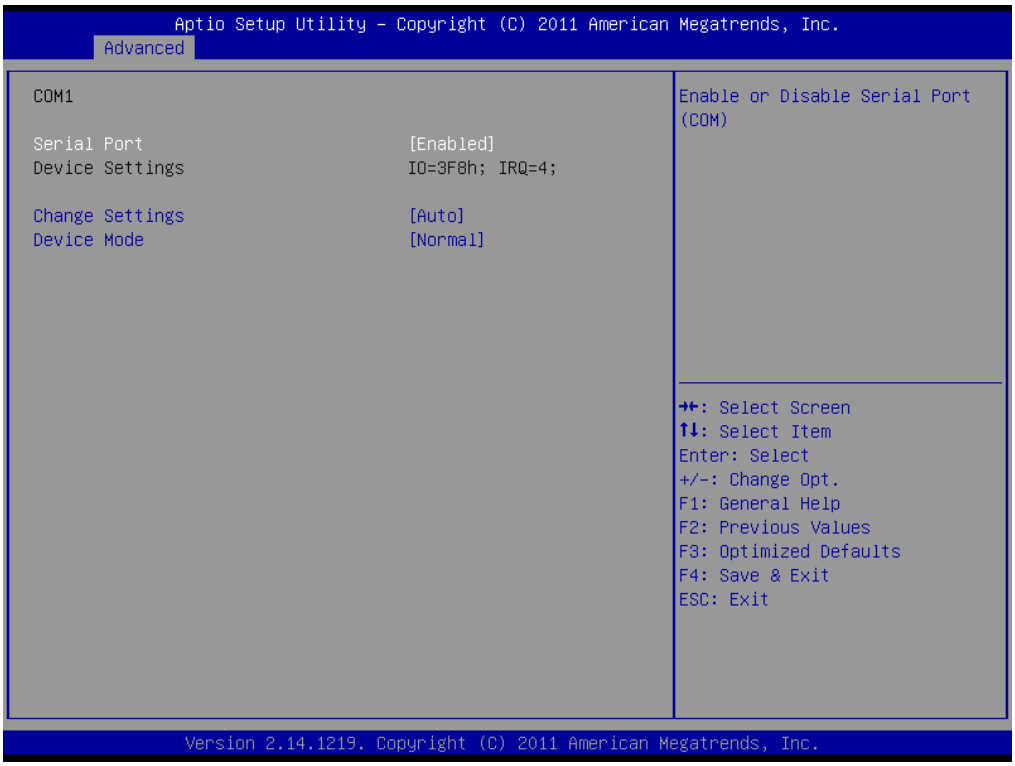


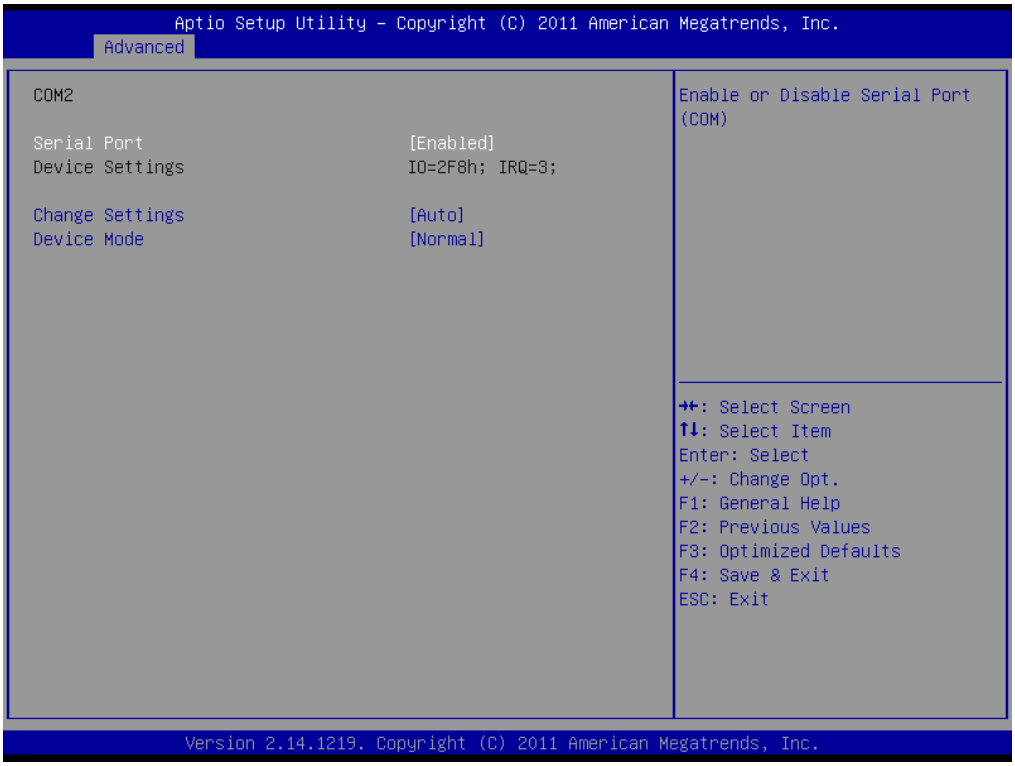
Figure 3.3.5 USB Configuration

3.3.6 Super IO Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Disabled]
PCI Subsystem Settings
ACPI Settings
CPU Configuration
IDE Configuration
USB Configuration
SuperIO Configuration
H/W Monitor
Linux Debug
PPM Configuration
System SuperIO Chip Parameters.
→←: 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
System IO Configuration
Super IO Chip SMSC SCH3114
SCH3114 COM1 Configure
SCH3114 COM2 Configure
SCH3114 COM3 Configure [Enabled]
SCH3114 COM3 Mode Selection [RS232]
SCH3114 COM4 Configure [Enabled]
SCH3114 COM4 Mode Selection [RS232]
Super IO Chip SMSC SCH3114
SCH3114 COM5 Configure [Enabled]
SCH3114 COM6 Configure [Enabled]
SCH3114 COM7 Configure [Enabled]
SCH3114 COM8 Configure [Enabled]
#Kernel board SCH3114 COM1 Configuration
→←: 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
COM1
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [Auto]
Device Mode [Normal]
Enable or Disable Serial Port (COM)
→←: 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
COM2
Serial Port [Enabled]
Device Settings IO=2F8h; IRQ=3;
Change Settings [Auto]
Device Mode [Normal]
Enable or Disable Serial Port (COM)
→←: 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.

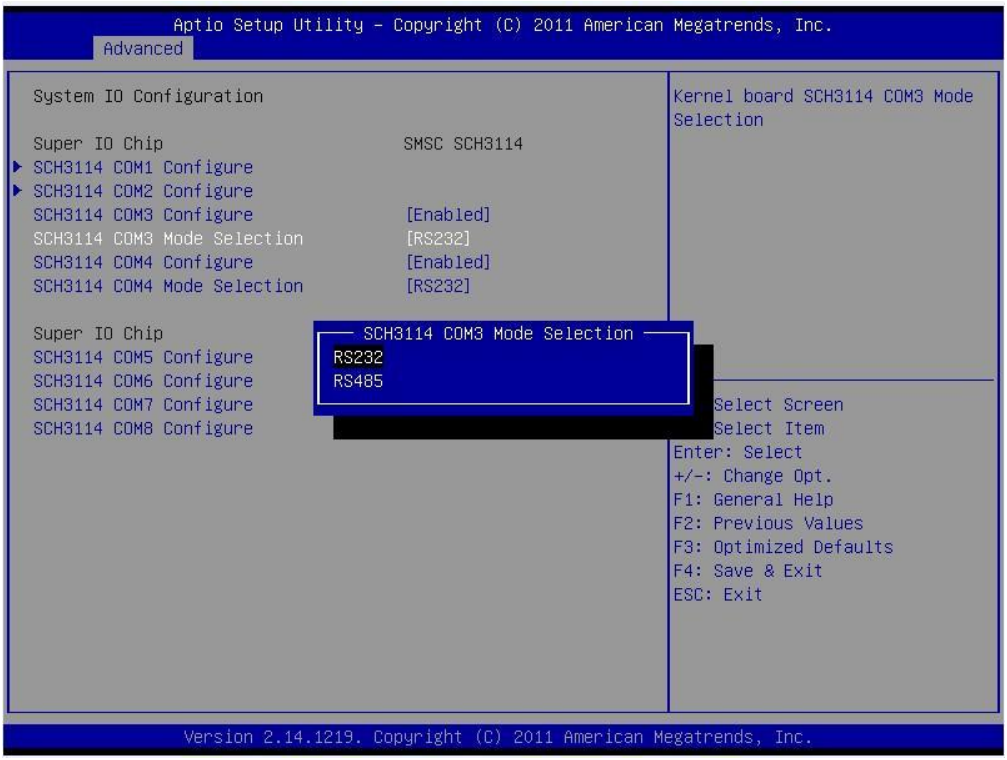
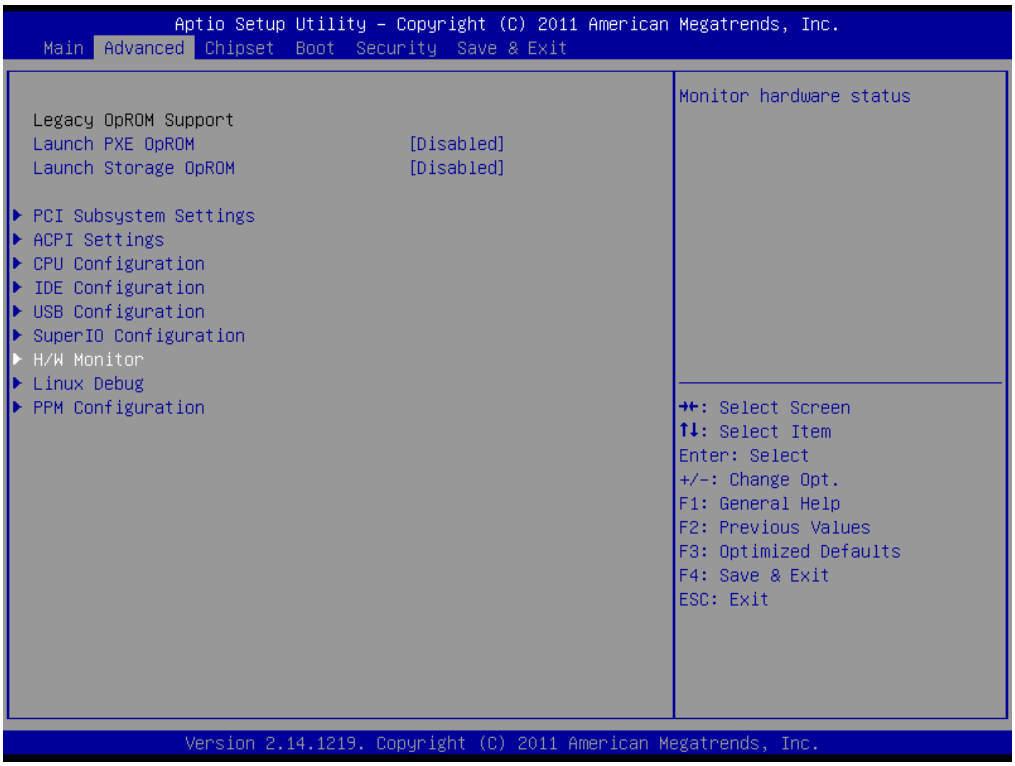


Figure 3.3.6 Super I/O Configuration

- Serial Port1- Port8 address
  This item allows you to select serial port1 ~ port8 of base addresses.
- Serial Port1- Port8 IRQ
  This item allows you to select serial port1 ~ port8 of IRQ.
- Com3-Com4 RS232/RS485 Select
  This item allows you to select Com3-Com4 RS232/RS485 model

3.3.7 PC Health Status



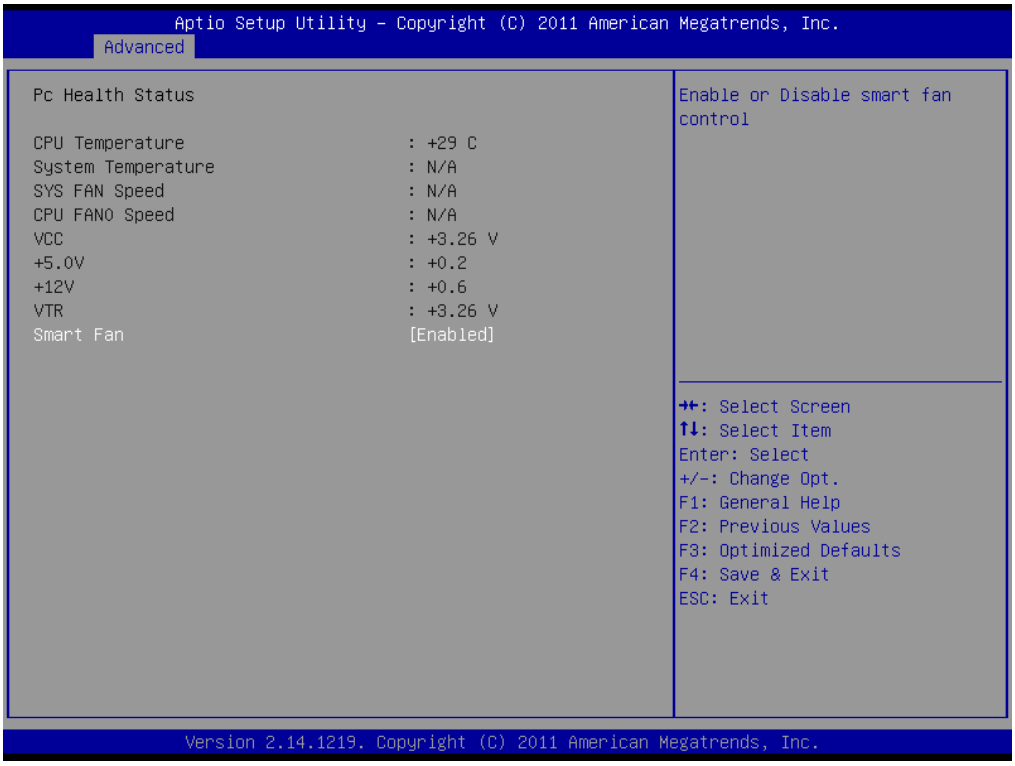
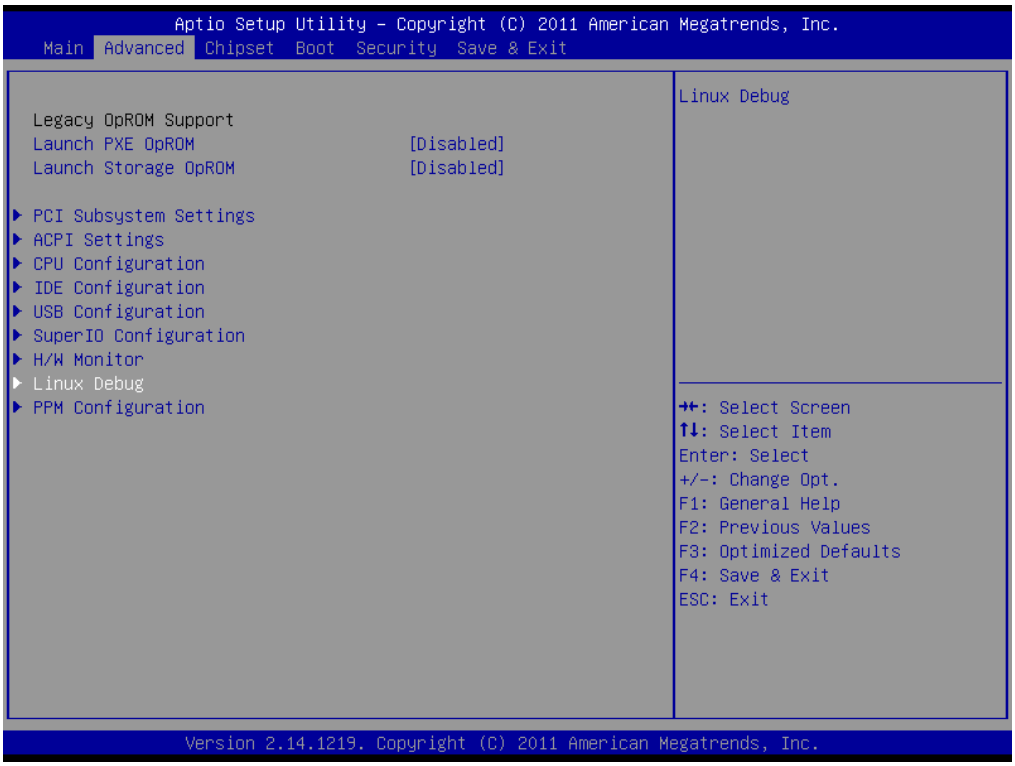
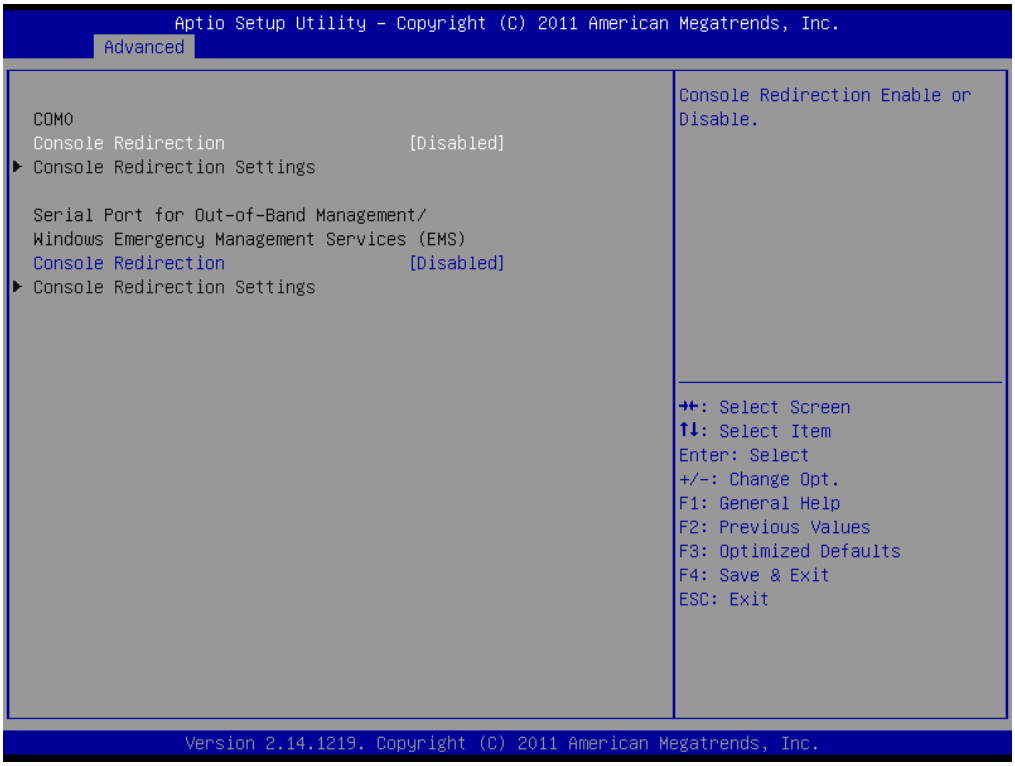
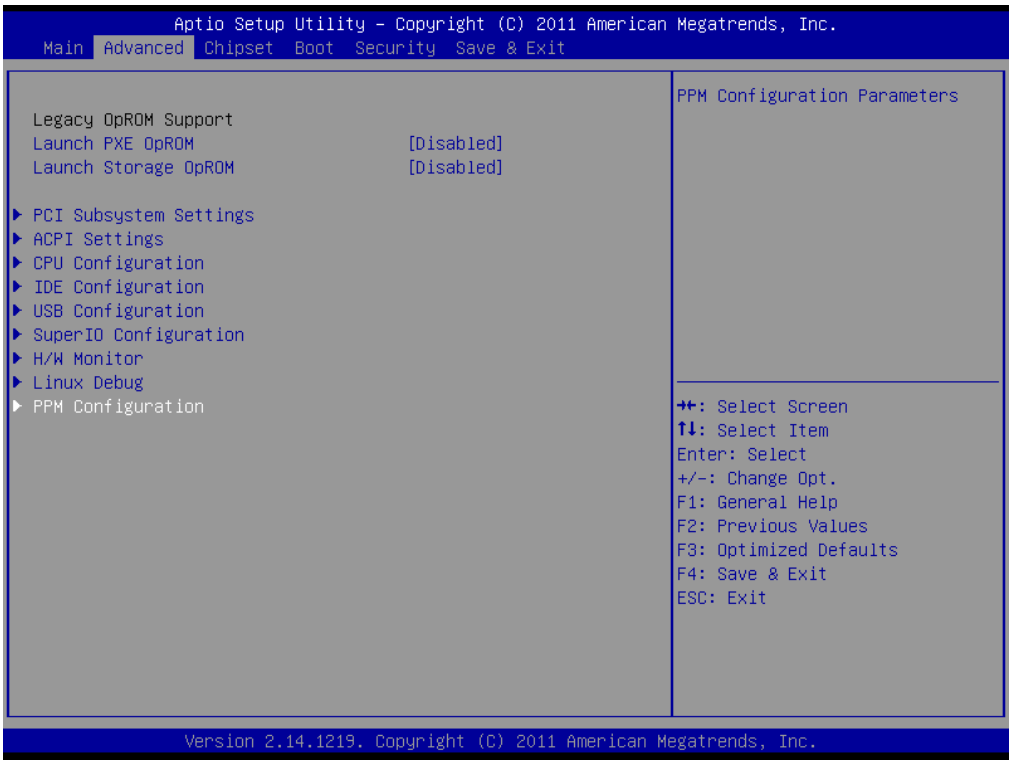


Figure 3.3.7 PC Health status





3.3.8 PPM Configuration



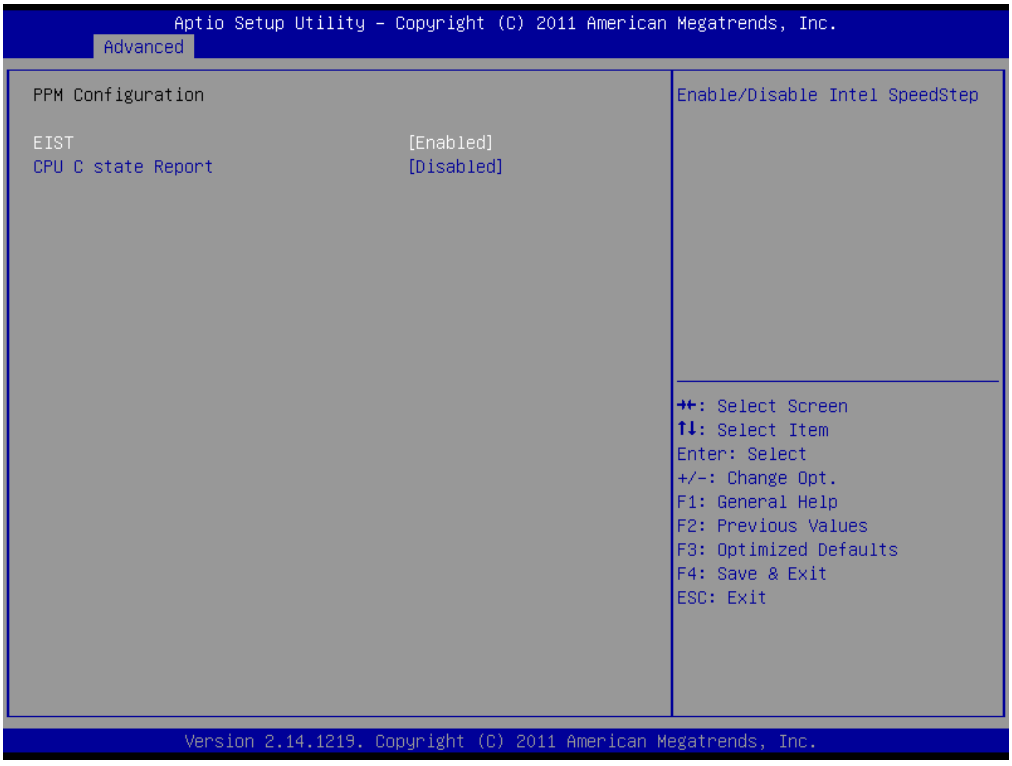


Figure 3.3.8 PPM Configuration

- EIST

  When configuration is Enabled, the M/B will auto-adjust operation frequency according to current CPU operation status, for power saving consideration.
- This selection item also support the configuration of CPU sleep state, support max. Intel C6 mode.

3.4 Chipset Settings

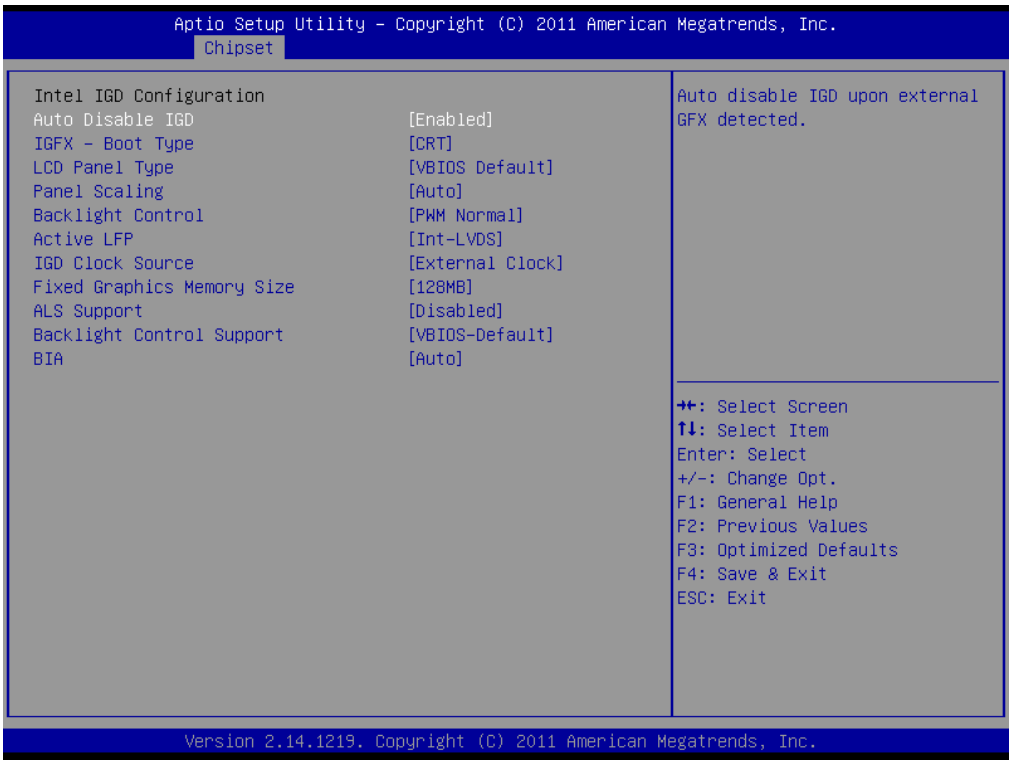


Figure 3.4 Advanced Chipset Settings

3.4.1 Intel IGD Configuration

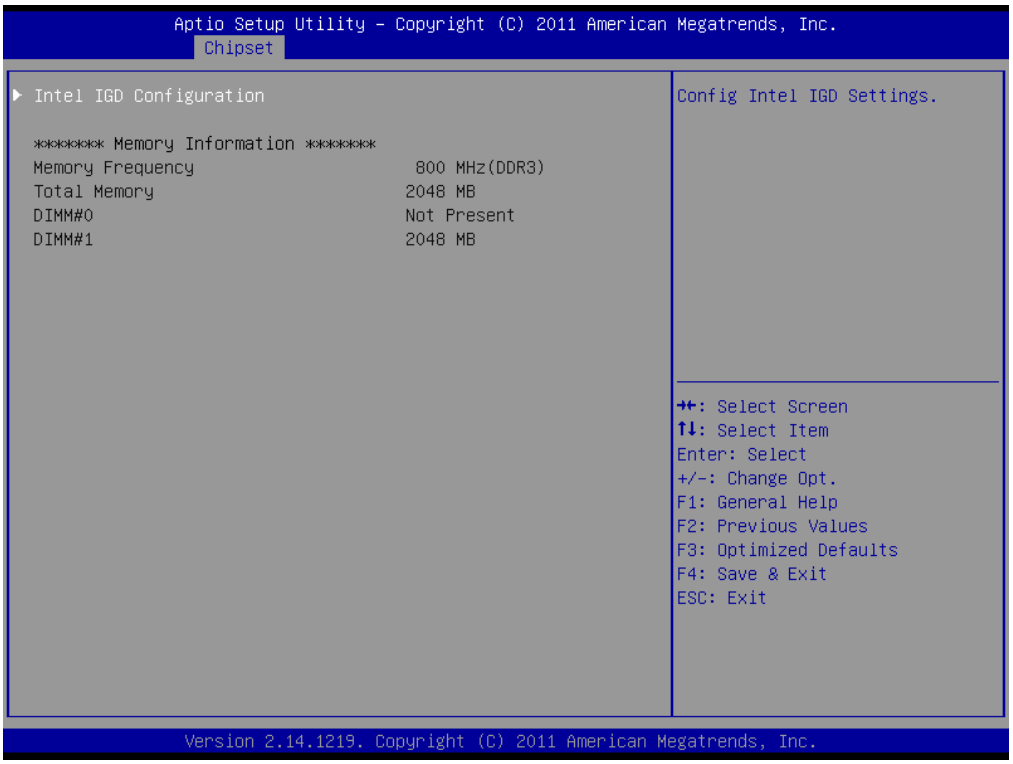


Figure 3.4.1 PPM Configuration

- This selection item mainly for display application configuration.
- IGFX--Boot Type is for configuration of boot-up main display: VGA/LVDS/VBIOS Default.
- During POST process and DOS mode, only one display device can be chosen for display, otherwise, it won't work; And only after entering to Windows or Linux OS, it can support dual display (simultaneously or asynchronous display).

3.5 Chipset Settings/SOUTH Bridge

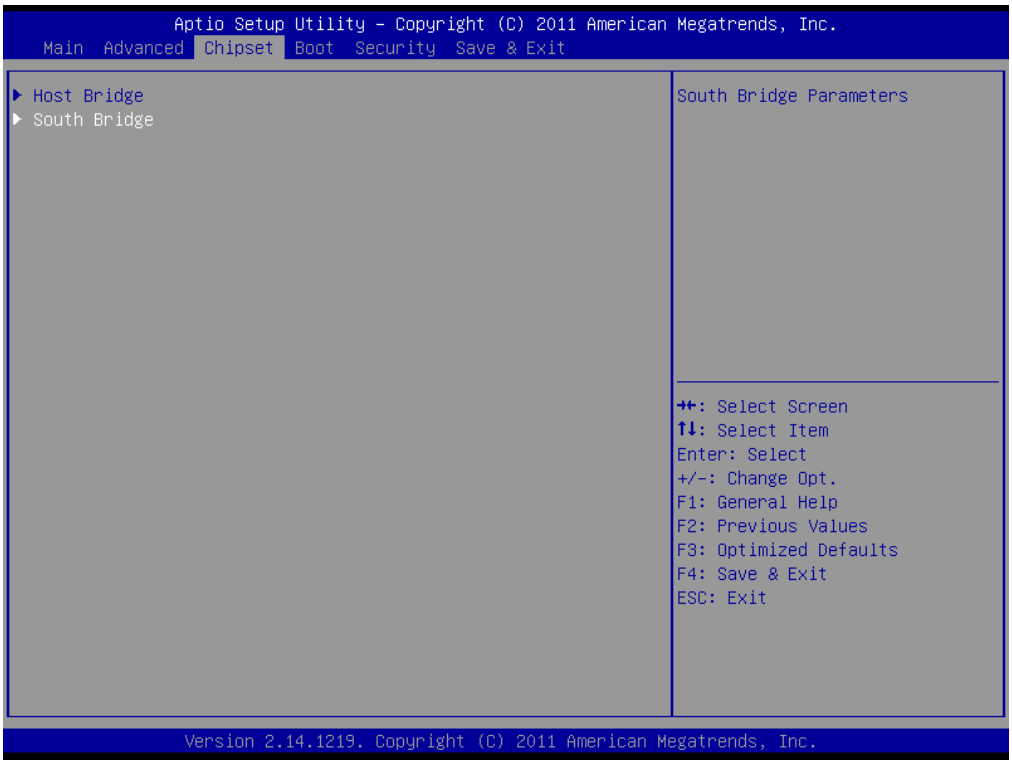
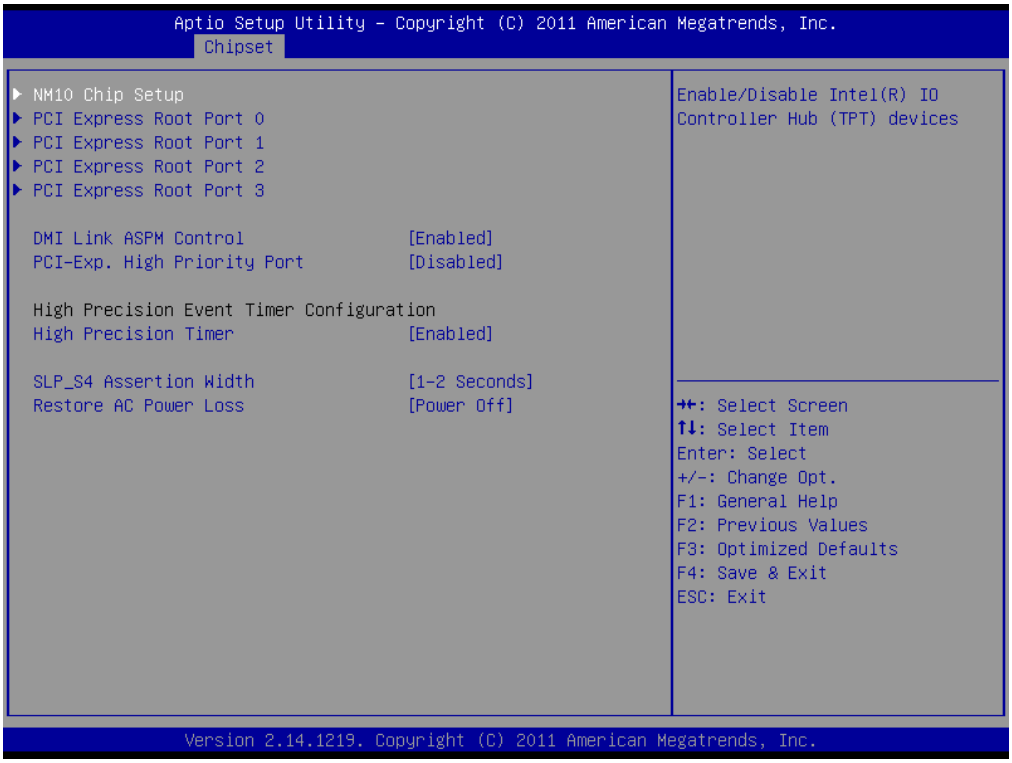


Figure 3.5 Advanced Chipset Settings

3.5.1 NM10 Chip Configuration



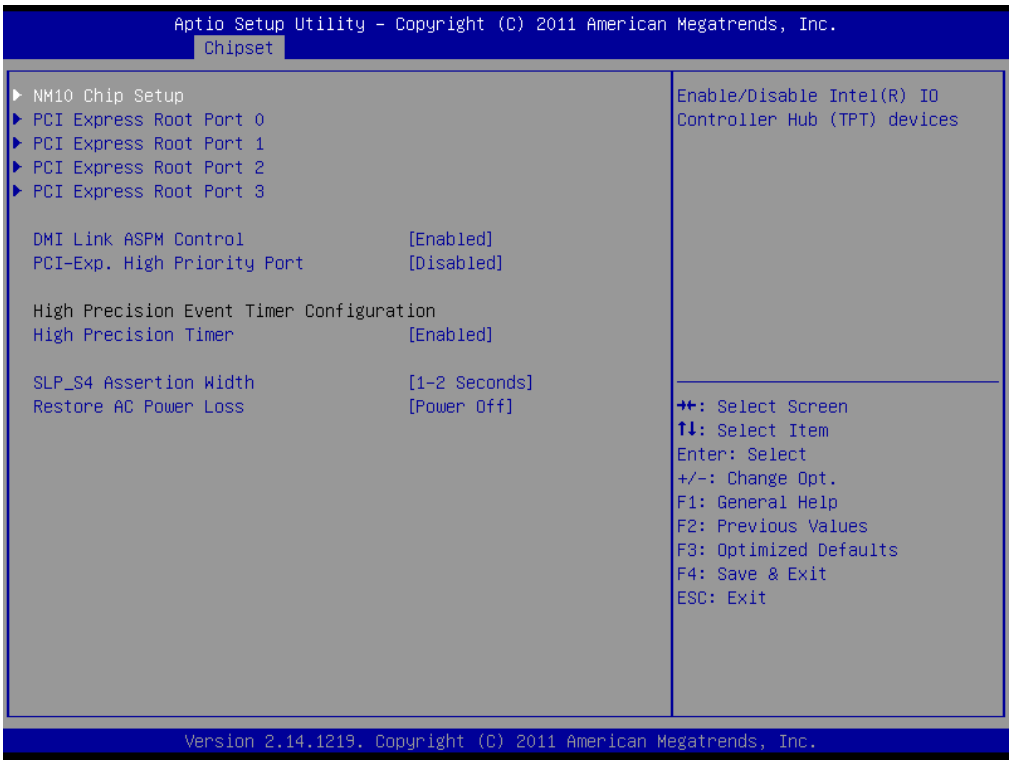
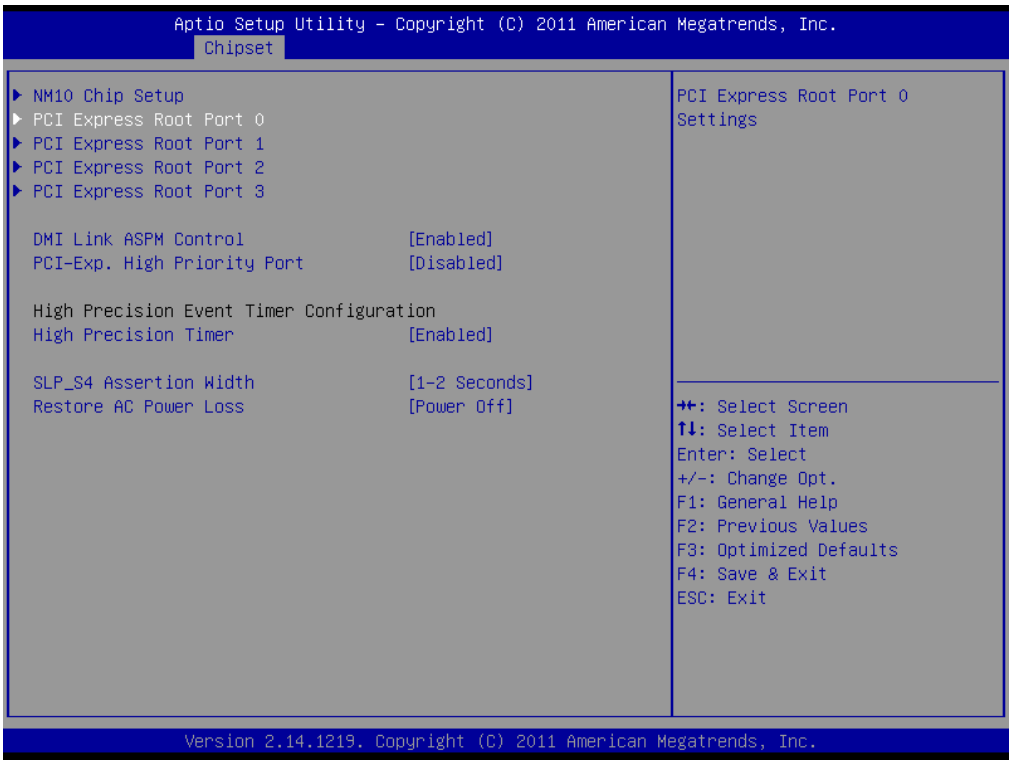
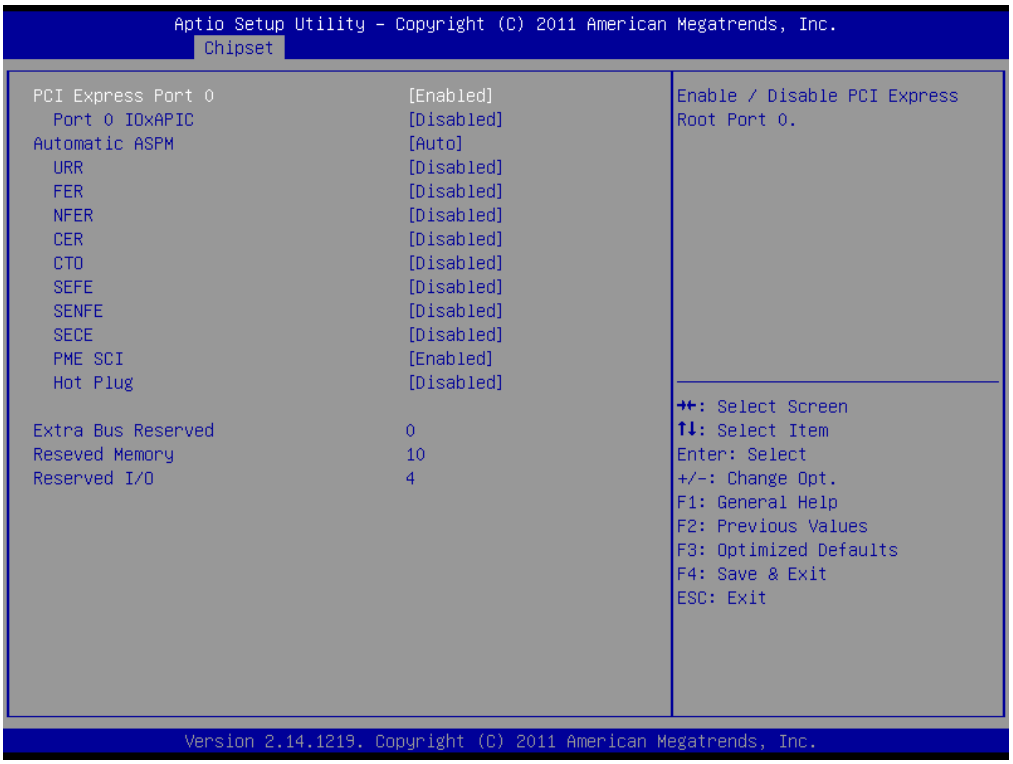


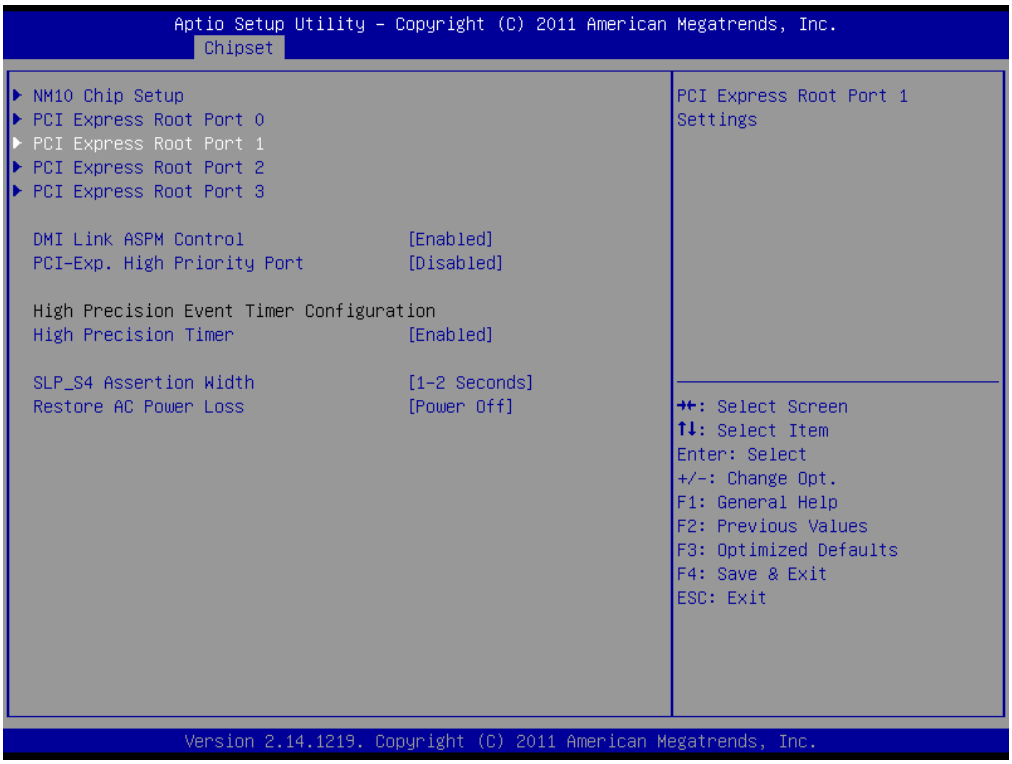
Figure 3.5.1 NM10 Chip Settings

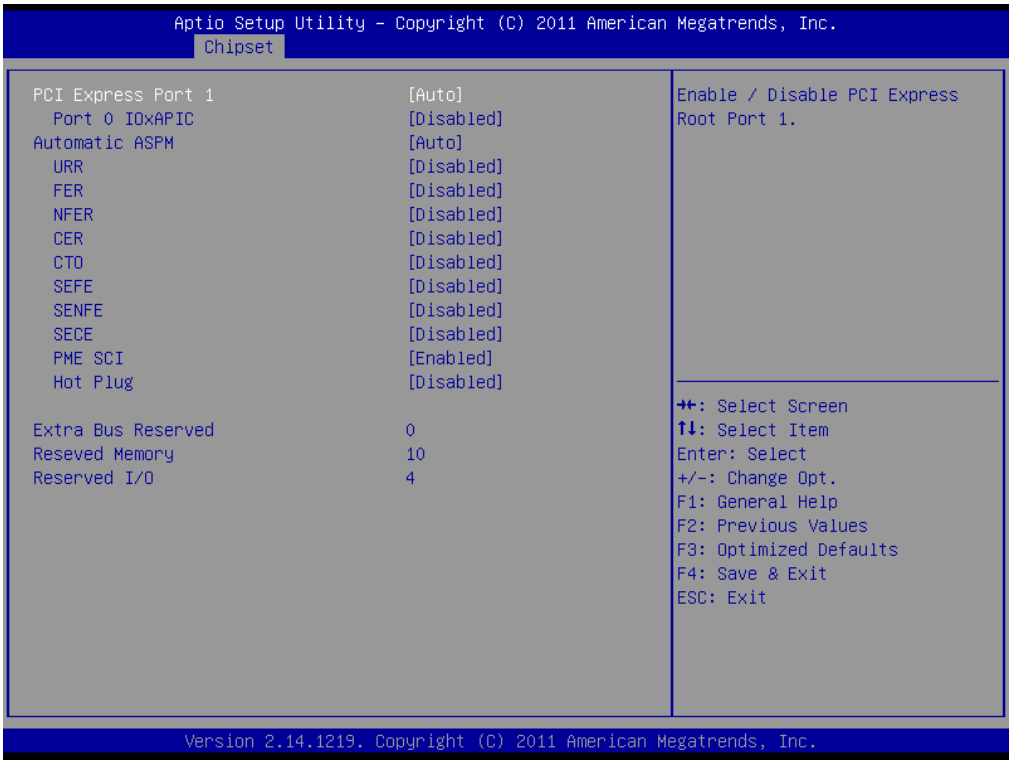
- This selection item is for Audio/NM10 Chip integrated network card / SMBus configuration.
- LAN controller
  IFC-BOX2800 does Not apply Intel NM10 chipset built-in Intel 82567V LAN controller, so the default setting is “Disabled”.
- SMBUS Controller
  Enables or disables the SMBUS controller

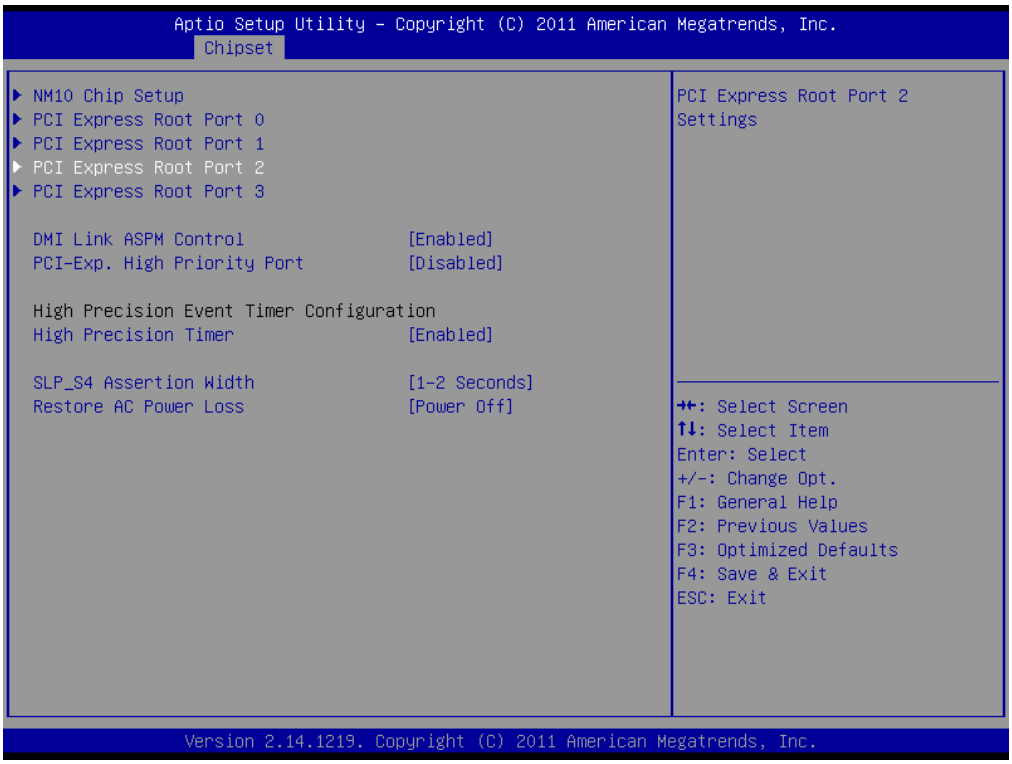
3.5.2 PCI Expresss Port 0-Port 4 Configuration

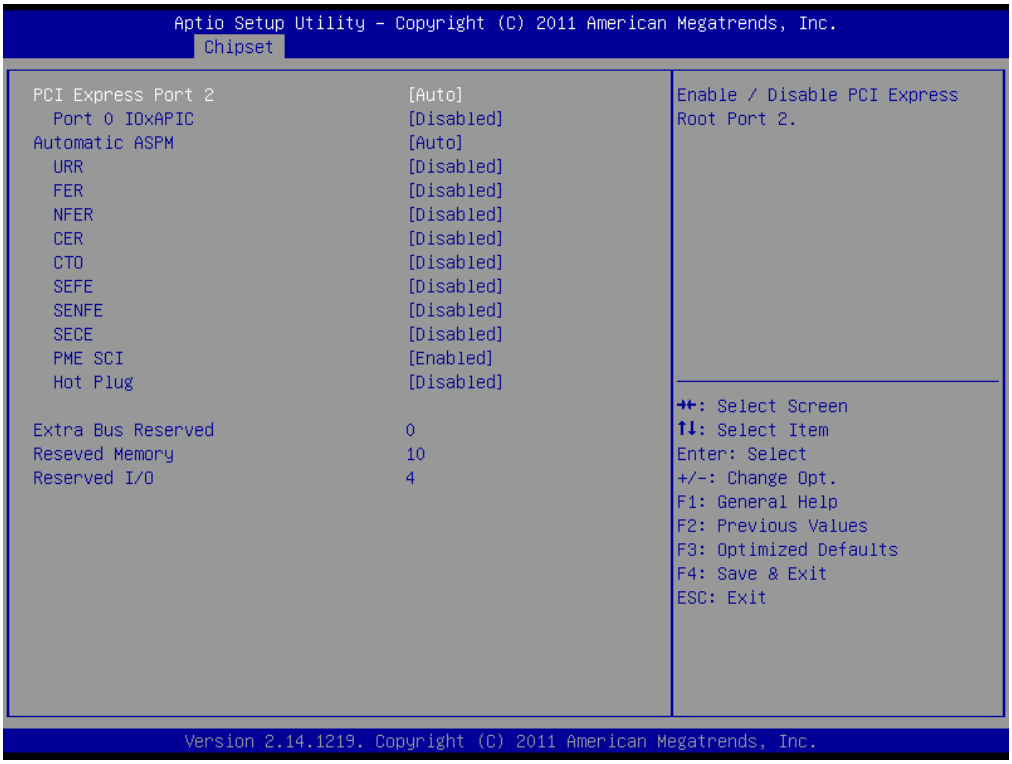


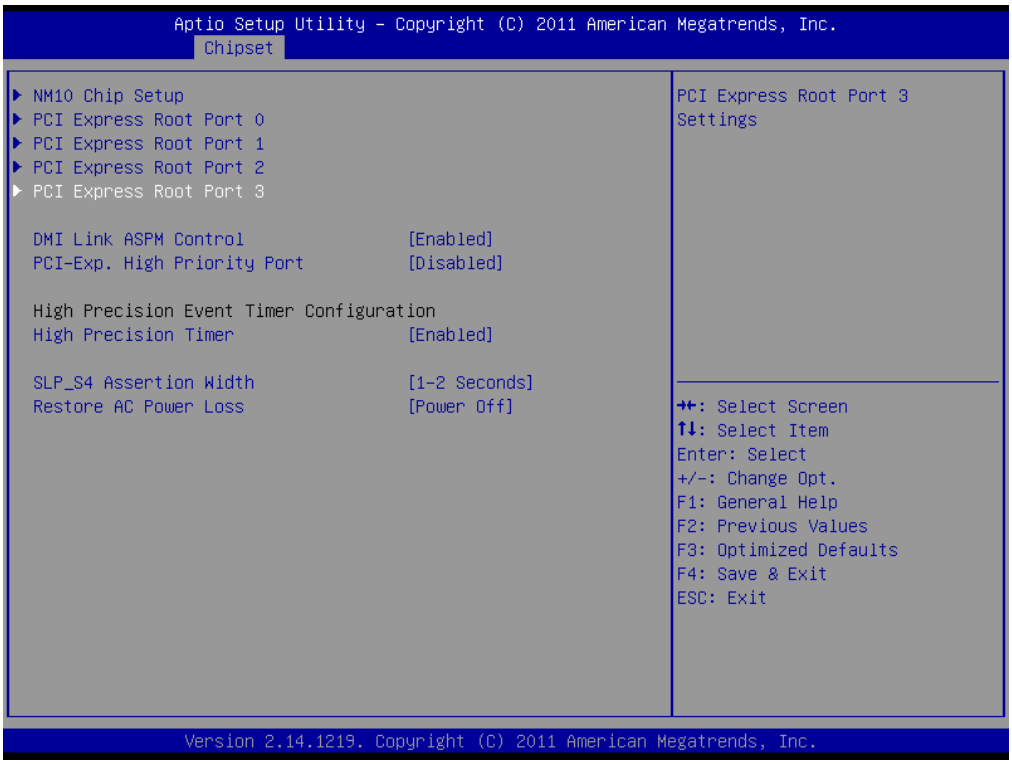



Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
NM10 Chip Setup
PCI Express Root Port 0
PCI Express Root Port 1
PCI Express Root Port 2
PCI Express Root Port 3
DMI Link ASPM Control [Enabled]
PCI-Exp. High Priority Port [Disabled]
High Precision Event Timer Configuration
High Precision Timer [Enabled]
SLP_S4 Assertion Width [1-2 Seconds]
Restore AC Power Loss [Power Off]
PCI Express Root Port 1 Settings
→←: 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.
Chipset
PCI Express Port 1 [Auto]
Port 0 IOxAPIC [Disabled]
Automatic ASPM [Auto]
URR [Disabled]
FER [Disabled]
NFER [Disabled]
CER [Disabled]
CTO [Disabled]
SEFE [Disabled]
SENFE [Disabled]
SECE [Disabled]
PME SCI [Enabled]
Hot Plug [Disabled]
Extra Bus Reserved 0
Reseved Memory 10
Reserved I/O 4
Enable / Disable PCI Express Root Port 1.
→←: 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.
Chipset
NM10 Chip Setup
PCI Express Root Port 0
PCI Express Root Port 1
PCI Express Root Port 2
PCI Express Root Port 3
DMI Link ASPM Control [Enabled]
PCI-Exp. High Priority Port [Disabled]
High Precision Event Timer Configuration
High Precision Timer [Enabled]
SLP_S4 Assertion Width [1-2 Seconds]
Restore AC Power Loss [Power Off]
PCI Express Root Port 2 Settings
→←: 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.
Chipset
PCI Express Port 2 [Auto]
Port 0 IOxAPIC [Disabled]
Automatic ASPM [Auto]
URR [Disabled]
FER [Disabled]
NFER [Disabled]
CER [Disabled]
CTO [Disabled]
SEFE [Disabled]
SENFE [Disabled]
SECE [Disabled]
PME SCI [Enabled]
Hot Plug [Disabled]
Extra Bus Reserved 0
Reseved Memory 10
Reserved I/O 4
Enable / Disable PCI Express Root Port 2.
→←: 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.



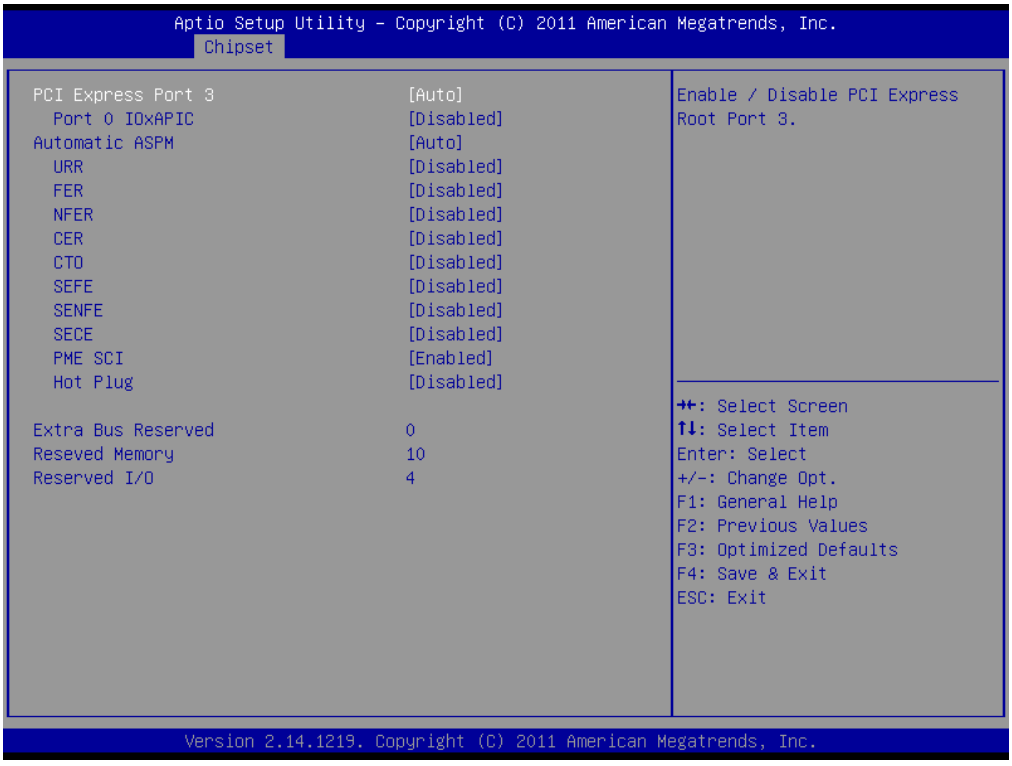


Figure 3.5.2PCI Express Port Settings

- **SB PCIE Ports Configuration**
- Intel NM10 chipset support 4 PCI Express x 1 bus， in which PCIE Port 1和PCIE Port 2 are allocated to onboard LAN1 and LAN2

3.5.3 Restore AC Power LOSS Configuration

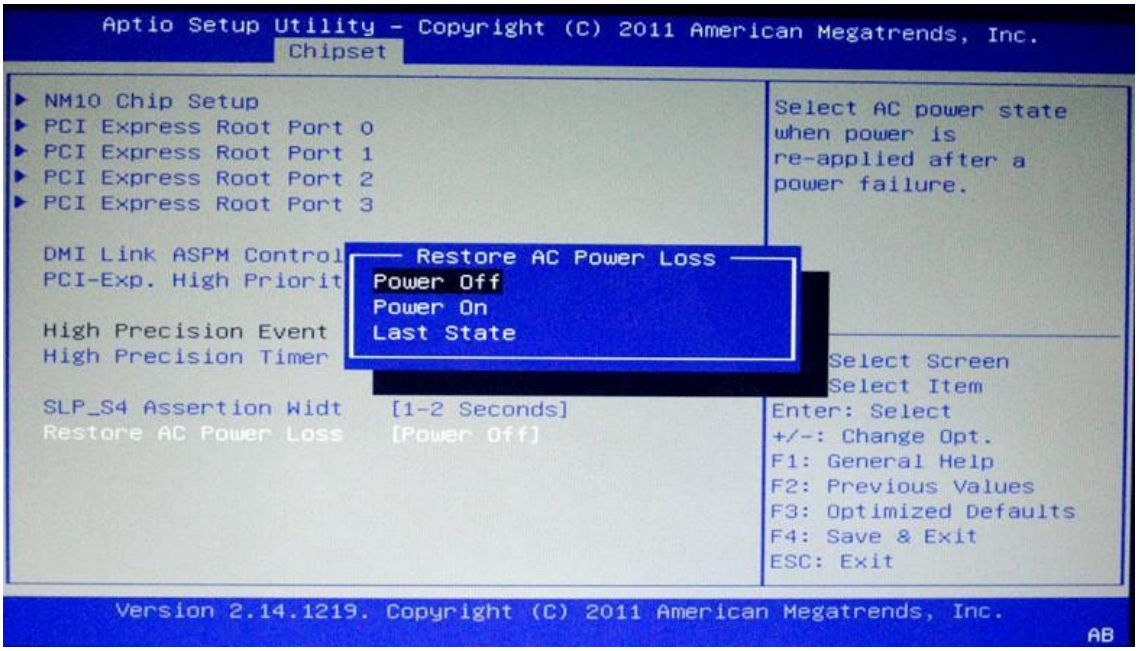
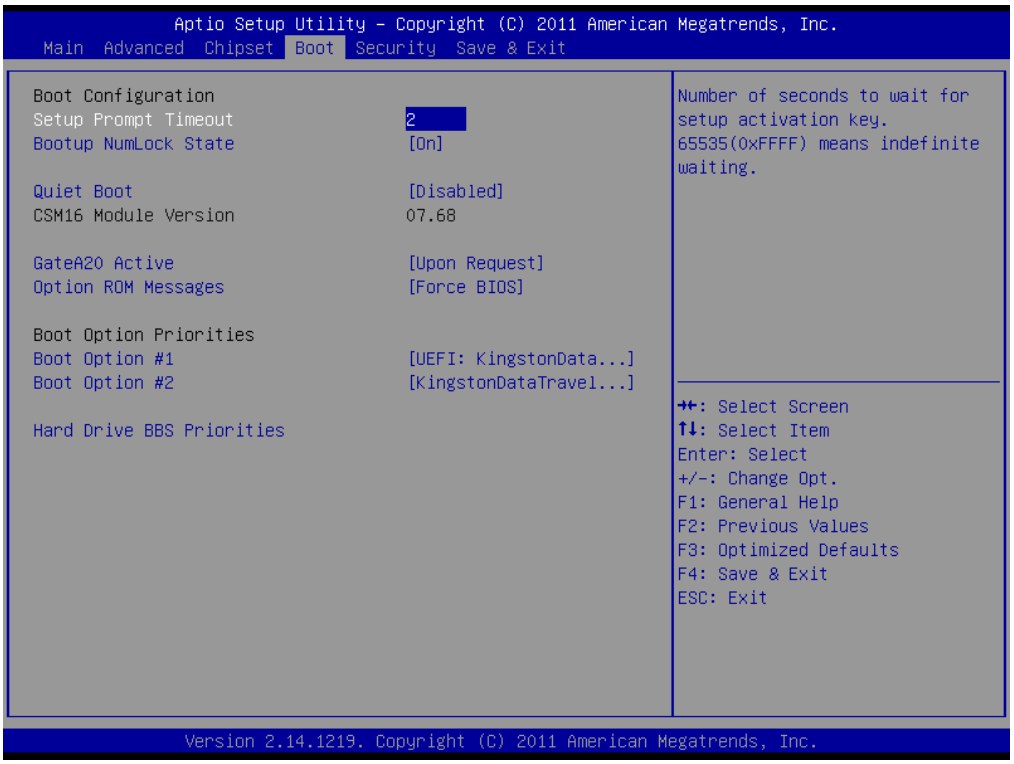


Figure 3.5.3 Restore AC Power LOSS Settings

- **Power OFF:** After accidental power-off, the device won't automatically boot-up when power-on again.
- **Power ON:** After accidental power-off, the device will automatically boot-up when power-on again.
- **Last State:** After accidental power-off, the device will recover to the state of the former stat e before power-off. i.e.: If the former state is "Power On", then the device will automatically boot-up when power-on again; if the former state is "Power off", then the device will remain power-off when the power- on again.

3.5.4 BOOT Configuration



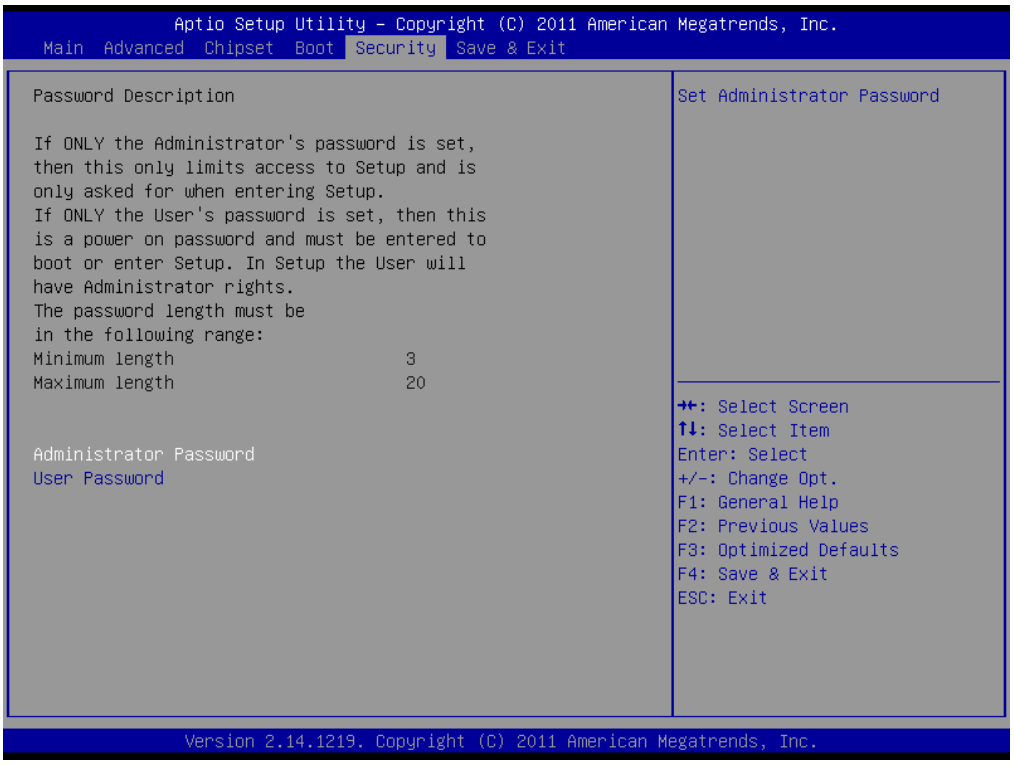


Figure 3.5

3.6 Exit Option

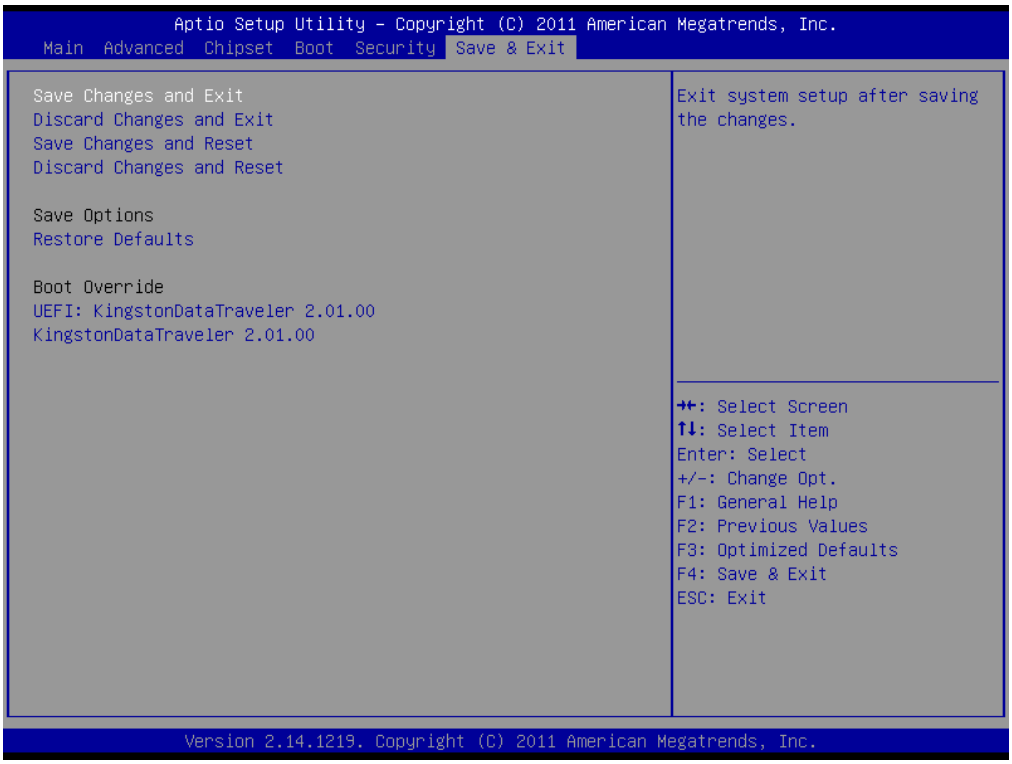


Figure 3.6 Exit Option

3.6.1 Save Changes and Exit

When you have completed system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.
1. Select Exit Saving Changes from the Exit menu and press <Enter>. The following message appears: Save Configuration Changes and Exit Now? [Ok] [Cancel]
2. Select Ok or cancel.

3.6.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.
1. Select Exit Discarding Changes from the Exit menu and press <Enter>. The following message appears: Discard Changes and Exit Setup Now? [Ok] [Cancel]
1. Select Ok to discard changes and exit. Discard Changes

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

3.6.3 Load Optimal Defaults

The IFC-BOX2800 automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

3.6.4 Load Fail-Safe Defaults

The IFC-BOX2800 automatically configures all setup options to fail-safe settings when you select this option. Fail-Safe Defaults are designed for maximum system stability, but not maximum performance. Select Fail-Safe Defaults if your computer is experiencing system configuration problems.

1. Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The following message appears: Load Fail-Safe Defaults? [OK] [Cancel]
2. Select OK to load Fail-Safe defaults.

:

Chapter 4

S/W Introduction & Installation

4.1 S/W Service Introduction

IFC provides all the drivers and services as bellow to ensure fast and smooth accomplishment of clients' project:

- Drivers for Windows ® XP Professional, Windows7, Linux
- Windows ® XP Embedded tailor service;
- Watchdog program example
- GPIO program example
- BIOS upgrade burning and curing service

4.2 Driver Install

There is a driver CD with the IFC-BOX2800 accessory, and all the driver programs are in it, please install the drivers and application programs after the OS installation to ensure the M/B can fully play the great performance. If you are using the upgraded version, we suggest to remove all the drivers and application programs of the old version before installing the new version. For more detailed information, please consult the H/W supplier.

4.2.1 Windows® XP Professional Driver Install

Step1: Install Chipset driver, open Intel_Chipset_WinXP_infinst_autol folder, double click Setup to install
Step2: Install Graphics driver, double click EMGD_CDV_1_15_1_GC_3278.exe to install
Step3: Install audio driver, open Realtek_WDM_R270_WinX folder, double click Setup to install
Step4: Install LAN driver, double click Intel 82583v_PRO2K3XP_32.exe to install

REMARK:
The display driver for Windows® XP Professional is tailored by using the software tool of Intel EMGD, and this driver program does NOT support 3D and media acceleration function.

4.2.2 Windows® 7 Driver Install

Step1: Install Chipset driver,open Intel_Chipset_Win7_infinst_autol folder, double click Setup
Step2: Install Graphics driver,double click Intel GMA3600_Win7_32_8.14.8.1083_PV.exe
Step3: Install audio driver,double click Vista_Win7_Win8_R270.zip
Step4: Install LAN driver,doubleclickIntel 82583v_PRO2K3XP_32.exe to install

4.2.3 Windows Driver Upgrade

Chip manufacturers association regularly to upgrade its corresponding product drive, the user can access through the following links attention or update drive.

- **Intel Chipset driver upgrade:**
  http://downloadcenter.intel.com/Detail_Desc.aspx?agr=Y&DwnldID=20775&lang=eng&wapkw=nm10
- **Intel Graphics driver upgrade:**
  http://downloadcenter.intel.com/Detail_Desc.aspx?agr=Y&DwnldID=21690&lang=eng&OSVersion=Windows%207%20(32-bit)*&DownloadType=Drivers
- **Reltek HD audio driver upgrade:**
  http://www.realtek.com.tw/downloads/downloadsView.aspx?Langid=3&PNid=24&PFid=24&Level=4&Conn=3&DownTypeID=3&GetDown=false
- **Intel 82583V LAN driver upgrade:**
  http://downloadcenter.intel.com/SearchResult.aspx?lang=ZHO&ProductFamily=%e4%bb%a5%e5%a4%aa%e7%bd%91%e7%bb%84%e4%bb%b6&ProductLine=%e4%bb%a5%e5%a4%aa%e7%bd%91%e6%8e%a7%e5%88%b6%e5%99%a8&ProductProduct=%e8%8b%b1%e7%89%b9%e5%b0%94%c2%ae+82583V+%e5%8d%83%e5%85%86%e4%bb%a5%e5%a4%aa%e7%bd%91%e6%8e%a7%e5%88%b6%e5%99%a8&ProdId=3147&LineId=976&FamilyId=2280

4.2.4 Linux Driver Install

IFC-BOX2800 provides 2line onboard Intel82583 Giga LAN, since the kernel of Linux OS has not loaded Intel82583 Driver, so when we run Linux OS, we need set PCIE Port 0 and PCIE Port 1 as Disabled, and enter Linux OS to install Intel82583 Driver, then restart OS and set PCIE Port 0 and PCIE Port 1 as Enabled, only after that the LAN can work normally (Refer to part 3.5.2 for PCI Express Configuration）

4.2.5 Linux Driver Upgrade

Chip manufacturers association regularly to upgrade its corresponding product drive, the user can access through the following links attention or update drive.

- **Intel Graphics driver upgrade:**
  https://01.org/linuxgraphics/downloads
- **Reltek HD audio driver upgrade:**
  http://www.realtek.com.tw/downloads/downloadsView.aspx?Langid=3&PNid=24&PFid=24&Level=4&Conn =3&DownTypeID=3&GetDown=false

4.3 Windows ® XP Embedded Service

IFC provides free service of Windows® XP Embedded tailor service.

4.4 Watchdog program example

A watchdog timer (abbreviated as WDT) is a hardware device which triggers an action, e.g. rebooting the system, if the system does not reset the timer within a specific period of time. The WDT program example provides developers with functions such as starting the timer, resetting the timer, and setting the timeout value if the hardware requires customized timeout values.

Please contact our service personnel for program example source code and packaging EXE executable file

4.4.1 WDT Programming Model

WDT related registers, generally there are two frequently-used registers named as—WDT_TIME_OUT and —WDT_VAL , detailed descriptions refer to bellow:

WDT_TME_OUT (I/O address 0x665， Default 0x00)	Bit7: WDT countdown mode selection: 0: to countdown with minute; 1: to countdown with second;
	Bit [6:0]: Reserved bit, keep it as default value.
WDT_VAL (I/O address 0x666， Default 0x00)	Bit[7:0] 0x00: Stop countdown; 0x01: time-out value 1min./sec.; 0x02: time-out value 2min./sec.; 0x03: time-out value 3min./sec.; ．．．．．． 0xFF: time-out value 255min./sec.;
	This register is used for WDT time-out-value setting, write in a nonzero value, then WDT begins to countdown from this value

```
#include <stdio.h>
#include <dos.h>
void main()
{
int value=0; int unit=0;
printf("please input value (1~255) : ");
scanf("%d",&value);
printf("please input unit 0/1(0=seconds,1=minutes) : ");
scanf("%d",&unit);
outportb(0x647,0x0c);
if(unit==0)
{outportb(0x665,0x80);}
else
```

```
{outportb(0x665,0x00);}
outportb(0x666,value);
}
```

4.5 GPIO program example

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the out- put status to switch on/off a device. Our program example also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.
Please contact our service personnel for program example source code and packaging EXE executable file.

4.5.1 Overview

This instruction is only applied to the CMS-B802 Motherboard with NM10 chipset. Altogether there are 12 sets GPIO on this M/B.
The level of input/output of all those 12 sets GPIO(GP9、GP10、GP12、GP13、GP14、GP22、GP28、GP33、GP34、GP36、GP38、GP39)are designed as 5VTTL.

Correspondence between GPIO interface and actual GPIO signal:

Output Type						
Interface S/N	1	2	3	4	5	6
GPIO Signal	GP28	GP33	GP34	GP36	GP38	GP39
Input Type						
Interface S/N	1	2	3	4	5	6
GPIO Signal	GP9	GP10	GP12	GP13	GP14	GP22

We don't recommend using those GPIO to directly drive devices which require comparatively large current (eg. Relay, Optocoupler etc..)

Besides, it also provides a 255sec./min. countdown WDT (Watch Dog Timer).

4.5.2 GPIO programming model

- A. Configure GPIO Output: Running application —GPIOOUT.EXE to set these 12 GPIO as output. Please refer to —GPIOOUT.CPP for reference code.
  B. Configure GPIO as —High Running application —HIGHGPIO.EXE to set these 12 GPIO output as —High .Please refer to —HIGHGPIO.CPP for reference code.
  C. Configure GPIO as —Low Running application —LOWGPIO.EXE to set these 12 GPIO output as —Low .Please refer to —LOWGPIO.CPP for reference code.

Remark:

During the configuration process of setting "Output High/Low", we can use multimeter or indicator to testify, or we can also check the status by running GETIO.

- Configure GPIO Input: Running application —GPIOIN.EXE to set these 12 GPIO as —Input . Please refer to —GPIOIN.CPP for reference code.

Remark:

During the configuration process of setting "Input High/Low", we can check the status by running GETIO.

4.6 BIOS Service

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers'disk. The BIOS Flash utility also provides a command line version for fast implementation into customized applications.
IFC also provides BIOS curing service for clients.

4.6.1 BIOS Upgrade Tool Instruction

The burner can be only applied to DOS environment the user should prepare a boot disk with DOS system before BIOS burning process;
Copy burner —EFIDOS.EXE and the BIOS file to the root directory of the DOS boot disk;
Connect the DOS boot disk to the M/B, startup and press —DEL to enter CMOS setting interface, and set the DOS boot disk as the first boot device in —boot->BIOS;
Press F10 to save the new setting and reset the system;

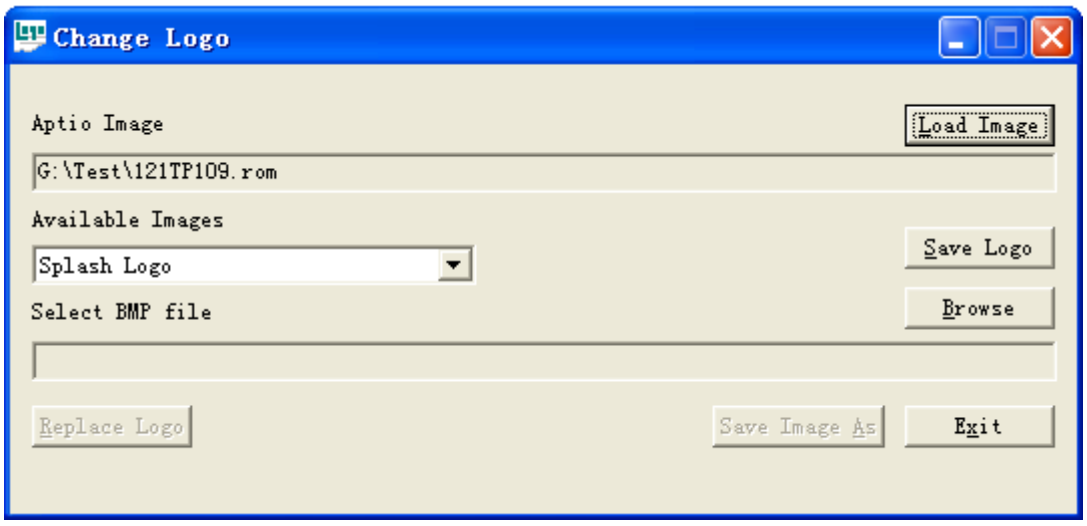
When the M/B enter DOS system, and display the drive letter of DOS system, please input the command character as bellow, and then press —Enter (Assume the BIOS file named —BIOS.ROM):
EFIDOS /IBIOS.ROM /pbnc /n

After —Enter, BIOS start to refresh, the M/B is not allowed to be turned-off, reset or power-off etc. during the whole refresh process, otherwise the M/B will not be able to start up again. When the BIOS burning process is finished, the user can reset the system.

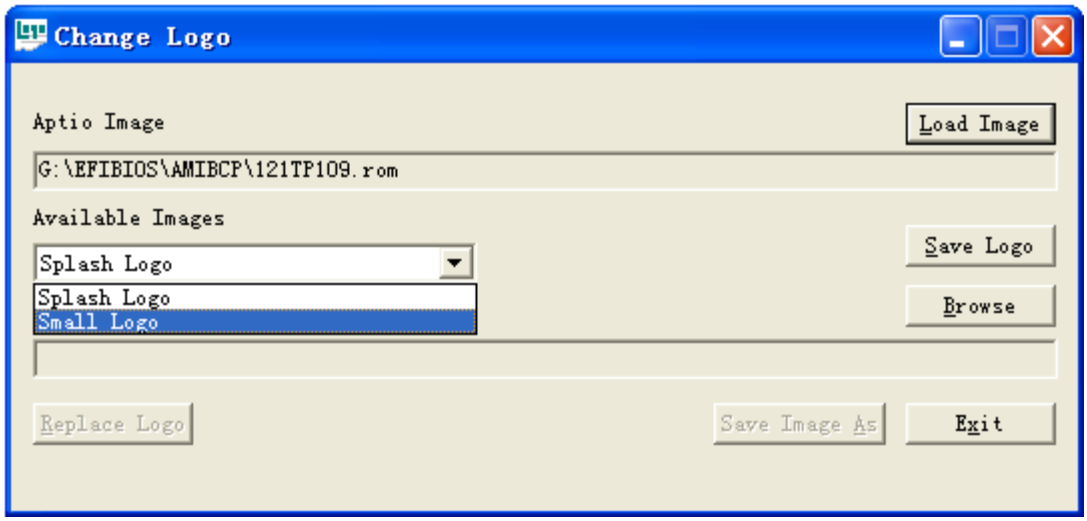
4.6.2 BIOS LOGO Replacement Tool Instruction

Logo change can be directed as following steps Save the primary—SplashLogo of BIOS Save the primary —Small Logo of BIOS Replace the primary —Splash Logo of BIOS Replace the primary —Small Logo of BIOS

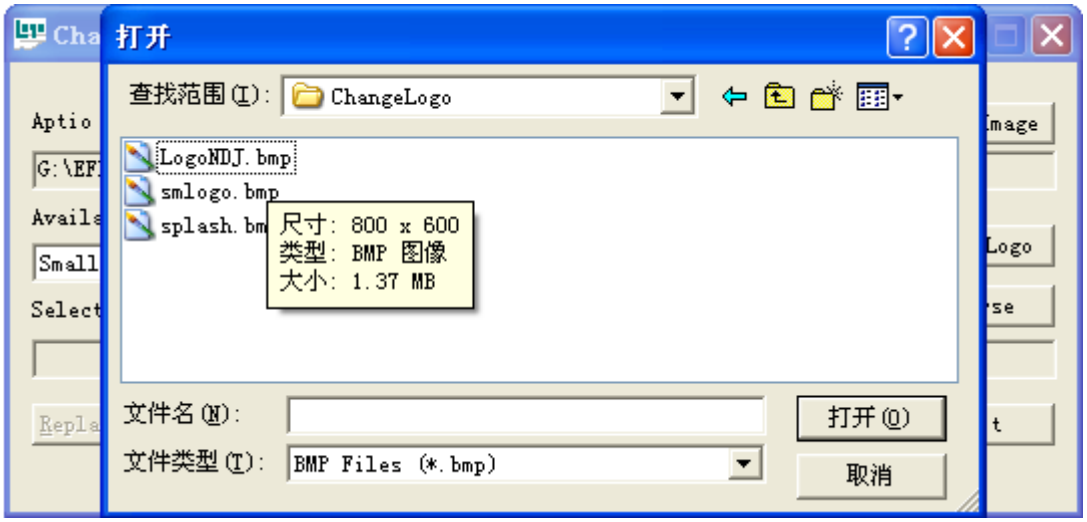
Click -Load Image to load the primary BIOS file.



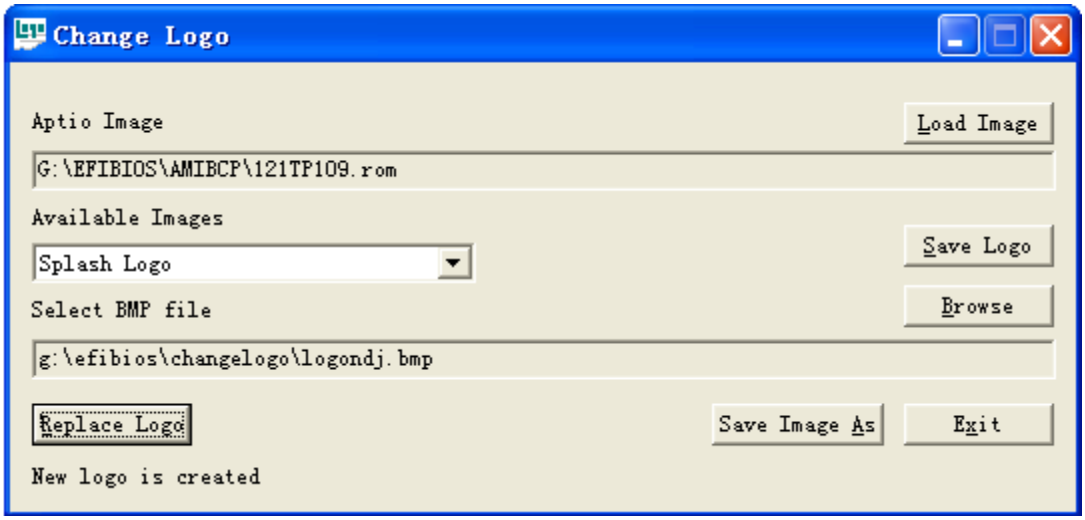
3. Select the logo which will be saved from the drop-down box of —Splash Logo , then click —save logo to save the logo under a specified directory.



4. During the Logo replacement operation, please click —Browse to select Logo which is to be adopted in the BIOS, and the image size must be 800x600 or 640x480 with BMP format:



5. . After selecting the right Logo, click -Replace Logo , then the Logo replacement is done:



6. After clicking -Replace Logo , there will be a message shows up:- New logo is created , which means the new Logo is replaced successfully. If you replace-Splash Logo , then the new BIOS Logo will be displayed with full screen after the system reboot; if you replace-SmallLogo , then the new BIOS Logo will be displayed on the up-left corner of the screen after the system reboot.

7. Click -Save Image AS , to save the new BIOS under a specified directory.

8. If it doesn't display the new BIOS Logo after system reboot, please check if the setting as bellow is Enable:

   Boot-->Quiet Boot-->Enable

Chapter 5

Appendix: A

A.1 System I/O Ports

Addr.	Range
000-01F	DMA
020-021	Interrupt
040-043	Timer/Counter
060-06F	8042
070-07F	Real-time
080-09F	DMA
0A0-0BF	Interrupt
0C0-0DF	DMA
274-279	ISAPNP read data port
2F8-2FF	COM2
3B0-3DF	VgaSave
3F8-3FF	COM1
400-4D1	Interrupt
500-77F	Motherboard
A79-A79	ISAPNP read data port
B78-B7F	Motherboard

Table 5.1: System I/O Ports

A.2 1st MB Memory Map

Addr. Range (Hex)	Device
00000000h - 00003FFFh	Motherboard resources
000A0000h - FEBFFFFFh	PCI bus
FEC00000h - FEC00FFFh	Motherboard resources
FED00000h - FED003FFh	High precision event timer
FED14000h - FED19FFFh	System board
FED1C000h - FEE00FFFh	Motherboard resources
FF000000h - FFFFFFFFh	Intel 82802 firmware Hub Device

Table 5.2: 1st MB Memory Map

A.3 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Available
3	Available
4	Direct memory access controller
5	Available
6	Available
7	Available

Table 5.3: DMA Channel Assignments

A.4 Interrupt Assignments

Interrupt#	Interrupt source
IRQ0	System timer
IRQ1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ3	COM2
IRQ4	COM1
IRQ5	COM6
IRQ7	COM5 /SMBus Controller
IRQ8	System CMOS/real time clock
IRQ9	Microsoft ACPI-Compliant System
IRQ10	COM7 /COM8
IRQ11	COM3/COM4
IRQ12	PS/2 compatible mouse
IRQ13	Numeric data processor
IRQ16	Network /USB
IRQ17	Network
IRQ18	USB
IRQ19	SATA
IRQ22	HDA
IRQ23	USB

Table 5.4: Interrupt Assignments

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