User Manual

MIC-3329

3U CompactPCI Intel® Baytrial Quad-Core Atom™ Processor Blade with ECC support

ADVANTECH

Enabling an Intelligent Planet

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

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 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.

FM

This equipment has passed the FM certification. According to the National Fire Protection Association, work sites are classified into different classes, divisions and groups, based on hazard considerations. This equipment is compliant with the specifications of Class I, Division 2, Groups A, B, C and D indoor hazards.

Technical Support and Assistance

1. Visit the Advantech website at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech'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. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- MIC-3329 all-in-one single board computer (CPU heatsink) x1
- SATA Daughter board for SATA bracket (Assembled) x 1
- HDD screws x 4 or CFast screw x 1 (Accessories)
- Warranty certificate document x1, China Rohs List document x1 (Accessories)
- Safety Warnings: CE, FCC class A

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

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. 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.

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. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

We Appreciate Your Input

Please let us know of any aspect of this product, including the manual, which could use improvement or correction. We appreciate your valuable input in helping make our products better

Contents

Chapter 1

Hardware Configuration

This chapter describes how to configure MIC-3329 hardware.

1.1 Introduction

Advantech MIC-3329 Series, using Intel® latest 22 nm Atom™ technology (code name: Bay Trial) to provide significant performance and power efficiency.

MIC-3329 series, as a 3U CompactPCI® processor blade, is featured with a dual-quad E3827 and quad-core E3845 ATOM SOC processors, up to 4GB soldered DDR3L-1333 ECC memory. It is available in single and dual slots width form factors, to offer various I/O functionality by XTM (8HP) & Rear IO extensions. Front panel I/O on the single slot (4HP) provides 2xRJ45 GbE ports (Switchable with RIO 4HP),1xVGA port(Switchable with RIO 4HP), 1xUSB2.0 port and 1xUSB3.0 port. Front panel I/O on the second layer (XTM) provides 2xCOM ports (RS232/422/485), 1xPS/2 KB/MS and 1xAudio ports. There are three types of storage device available such as on board 8GB SSD flash on 4HP(optional) or a Cfast socket on RIO 4HP, Cfast socket or 2.5" on board SATA drive on the front second layer.

MIC-3329 provides an ideal solution for transportation, railway and factory automation application. With its robust design on board layout & thermal, it is available to meet or exceed EN50155 and EN50121-4; It provides a very low TDP of processors as 8W/10W, its low power consumption & industrial SOC features make it perfect fit for all fanless system applications.

Table 1.1: MIC-3329 Variants		
Model number	MIC-3329Cx-D1E	MIC-3329Bx-D1E
Slot Width	Dual Slots (8HP)	Dual Slots (8HP)
2nd Layer XTM	Yes	Yes
Storage	CFsat/SATA HDD	CFast/SATA HDD

X*= A/B/C

- ■ C means CPU is "Atom E3845",10W
- ■ B means CPU is "Atom E3827", 8W

System board	Front panel							On board Features			
	4HP				Second Layer XTM						
	LAN (1)	USB 2.0	USB 3.0	VGA(2)	COM	PS/2	Audio	CPU	Memory	SATA (3)	Slot Width
MIC-3329B1-D1E	2	1	1	1	2	1	1	E3827	4GB	1	2
MIC-3329C1-D1E	2	1	1	1	2	1	1	E3845	4GB	1	2

Note! *(1)(2): 2xLAN and 1xVGA are switchable between front and RTM;*

(3) 2.5" SATA connector is reserved as default. Since SATA space is shared with Cfast socket, please contact sales for Cfast SKU.

1.2   Specifications

1.2.1   CompactPCI Bus Interface

The MIC-3329 is compliant with PICMG 2.0 Rev. 3.0. It supports a 32-bit / 33 MHz PCI bus for up to 8 CompactPCI slots. The MIC-3329 is hot-swap compliant (PICMG 2.1).The board can be configured as a system master or a drone board. In drone mode, it only draws power from the CompactPCI backplane and is not active on the Compact-PCI bus.

1.2.2   CPU

The MIC-3329 supports the 22nm technology Quad-Core Intel® Atom® E3845 and Dual-Core Intel® Atom® E3827 SOC processors with clock frequencies up to 1.91GHz .Supported processors are listed in the table below. The forced airflow cooling is required.

Intel CPU Model NO.	Cores	Freq.	CPU architecture	Memory	L2 Cache	CPU TDP
E3845	4	1.91 GHz	Baytrial (22nm)	DDR3L 1333	2 MB	10W
E3827	2	1.75 GHz	Baytrial(22nm)	DDR3L 1333	1 MB	8W

1.2.3   BIOS

Dual 8M-Byte SPI flash contain a board-specific BIOS (from AMI) designed to meet industrial and embedded system requirements.

1.2.4   Memory

The MIC-3329 has up to 4 GB onboard soldered DDR3L memory with ECC support.

Default SKU is 4GB on board, if any 2GB cost effective SKU request, please contact local sales for more information.

1.2.5   Ethernet and VGA

The MIC-3329 uses two Intel I210AT Controller to provide 10/100/1000 Mbps Ethernet connectivity. These are mutually exclusive and can be any one of:

■   Front I/O (RJ-45)
■   Rear I/O (Rear Transition Module)

User can access LAN1/LAN2 and VGA via front panel or rear panel using on board switch setting.

1.2.6   Storage Interface

The MIC-3329 supports two SATA II interfaces. The SATA1 interface can be routed to an on board 2.5" SATA hard disk drive or one Cfast on the second layer of front board as BOM option. The SATA 2 interface is routed to one 8G on board NAND flash or one Cfast socket on RIO as different SKU;

8G on board NAND flash and XTM's Cfast module is not standard SKU but based on customer request only.

1.2.7 Serial Interface

Four serial ports from LPC UART controller, two DB9 COM1/COM2 ports (RS-232/422 interface) are provided on the front panel. Another two COM ports (RS-232/422/485 interface) are routed to a rear I/O module as DB9 port via the J2 connector.

1.2.8 USB Port

Three USB 2.0 compliant ports are provided. One USB3.0 and one USB2.0 ports are routed to front panel connectors; Two USB2.0 ports are routed to rear I/O through the J2 connector.

1.2.9 LEDs

Four LEDs are provided on the front panel as follows:

Table 1.2: LED Indicator for the MIC-3329			
Function	**Color**	**Indicator**	**LED Status**
Hotswap LED	Blue	The board can be safely removed from system when blue LED is on	
HDD LED	Yellow	HDD is activity	
Power LED	Green	The power is provided to the board.	
Master/Drone mode LED	Green	LED On-> "Master" mode. LED Off-> "Drone" mode.	

1.2.10 Watchdog Timer

An onboard watchdog timer provides system reset capabilities via software control. The programmable time interval is from 1 to 255 seconds.

1.2.11 Optional Rear I/O Modules

The MIC-3329R is the rear I/O module, reserved for the MIC-3329 extension. It offers a wide variety of I/O features, such as two USB2.0 and two DB9 COM ports.

Rear I/O modules key features as below shows:

Table 1.3: MIC-3329 RIO Configurations						
	Rear Panel					
	LAN(1)	VGA(1)	COM	USB2.0	Slot width	Conn.
MIC-3329R1-D1E	2	1	2	2	2	J2

Note! *LAN port and VGA port are switchable with front panel IO ports by switch.*

1.2.12 Mechanical and Environmental Specifications

■ **Operating temperature:** -40 ~ 55° C (-40° F ~ 122° F)

> *Note!* *The operating temperature range of the MIC-3329 depends on the installed processor and the airflow through the chassis. For extended temperature products please contact your ADVANTECH representative.*

■ **Storage Temperature:** -40 ~ 85° C (-40 ~ 185° F)

■ **Humidity:** 95% @ 40° C (non-condensing)

■ **Humidity (Non-operating):** 95% @ 60° C (non-condensing)

■ **Vibration:** 5 ~ 100Hz, 2.0 Grms with CFast/SSD (without on-board 2.5" SATA HDD)

■ **Vibration (Non-operating):** 5 ~ 500Hz, 2 Grms

■ **Shock:** 10 G (without on-board 2.5" SATA HDD), 11ms

■ **Shock (Non-operating):** 30 G, 11ms (On dual slot SKU)

■ **Board size:**
3U/2 slot width (8HP): 100 x 160 x 40 mm

■ **Weight:**
3U/2 slot width (Front Board 8HP): 0.3 kg (Bare board)
3U/2 slot width (Rear Board 8HP): 0.4 kg (Bare board)

1.2.13 CompactPCI Mechanical Design

MIC-3329 series is assembled with Aluminium heatsink for CPU.

1.2.14 CompactPCI Bridge

The MIC-3329 uses a Pericom PI7C9 universal bridge as a gateway to an intelligent subsystem. When configured as a system controller, the bridge acts as a standard transparent PCI Express to PCI/PCI-X Bridge. As a peripheral controller it allows the local MIC-3329 processor to configure and control the onboard local subsystem independently from the CompactPCI bus host processor. The MIC-3329 local PCI subsystem is presented to the CompactPCI bus host as a single CompactPCI device. When the MIC-3329 is in drone mode, the Pericom PI7C9 is electrically isolated from the CompactPCI bus. The MIC-3329 receives power from the backplane, supports rear I/O. The Pericom PI7C9 PCI bridge offers the following features:

■ PCI Interface
Full compliance with the PCI Local Bus Specification, Revision 3.0 pport transparent mode of operations.

■ Support forward bridging

■ 32-bit, 33MHz asynchronous operation

■ Provides two level arbitration support for 7 PCI Bus masters

■ 16-bit address decode for VGA

■ Usable in CompactPCI system slot

Please consult the Pericom PI7C9 data book for details.

1.2.15 I/O Connectivity

For MIC-3329, the front panel I/O is provided with two RJ-45 Gigabit Ethernet ports, two DB9 COM ports, one USB 2.0 port, one USB 3.0 port, one VGA port, 1 audio port and 1 PS/2 port. Its onboard I/O consists of two SATA channels, one is for 2.5" on board SATA connector or Cfast socket, the other one is for on board NAND flash or is routed to rear transition module as RIO on board cfast socket. Rear I/O connectivity is available via the following CompactPCI connectors:

- J2: Two Gigabit Ethernet LAN ports, two USB2.0 ports, one VGA port on 4HP, two COM ports on the XTM of RTM.

1.2.16 XTM Connectors (Extension Module)

MIC-3329 is extended by a XTM board with two COM ports, one PS/2, one KB/MS port and one onboard SATA or Cfast connector.

1.2.17 LPC UART Controller

One UART controller F81216 is available for four UART interfaces.

1.2.18 RTC and Battery

The RTC module keeps the system date and time by connecting a CR2032(3 V, 210 mAH) battery.

1.3 Functional Block Diagram
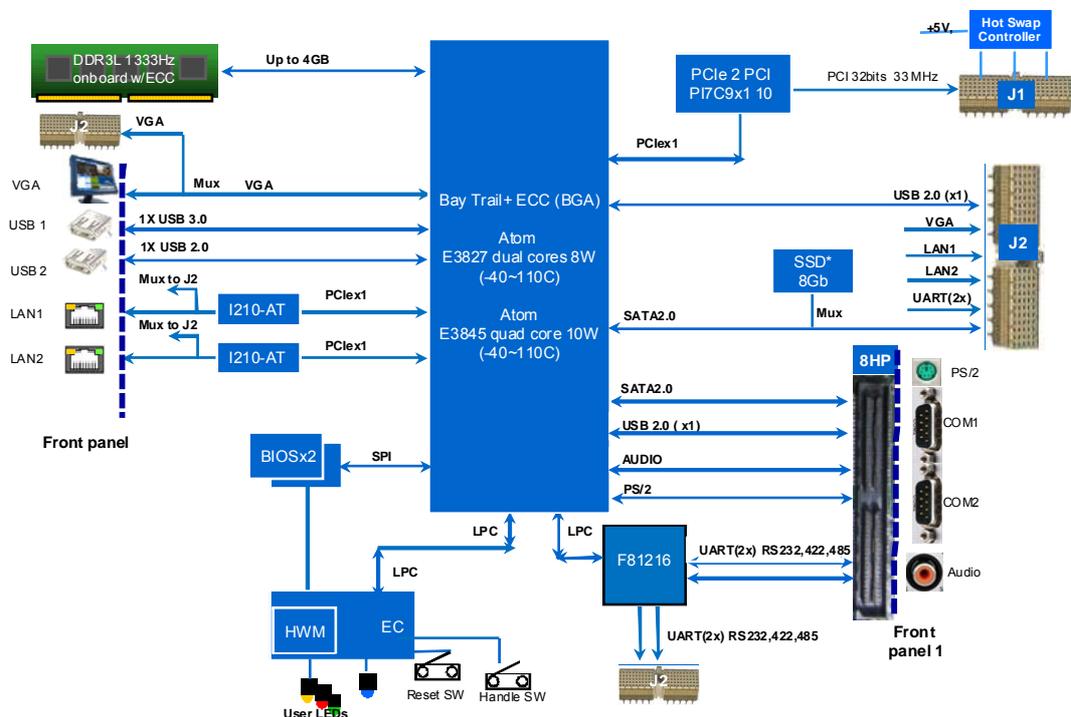
Figure 1.1 MIC-3329 Front 4HP Functional block diagram
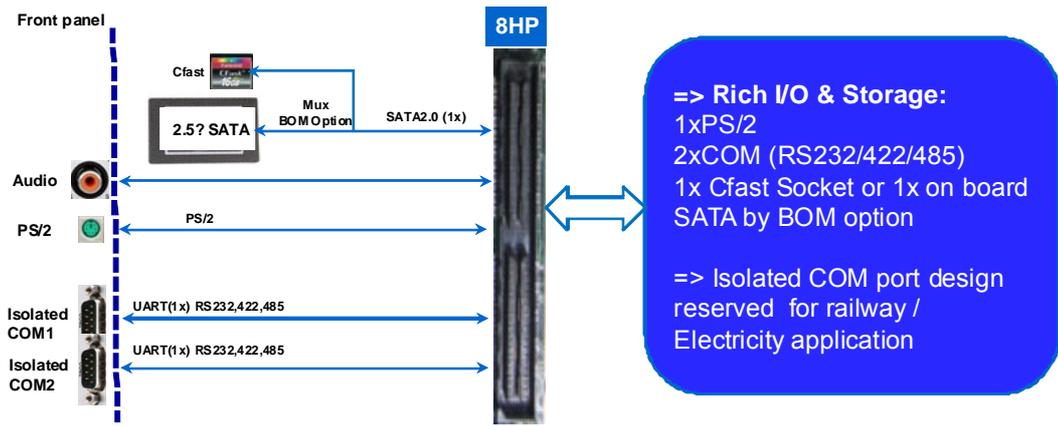
Figure 1.2 MIC-3329 Front 8HP XTM Functional block diagram
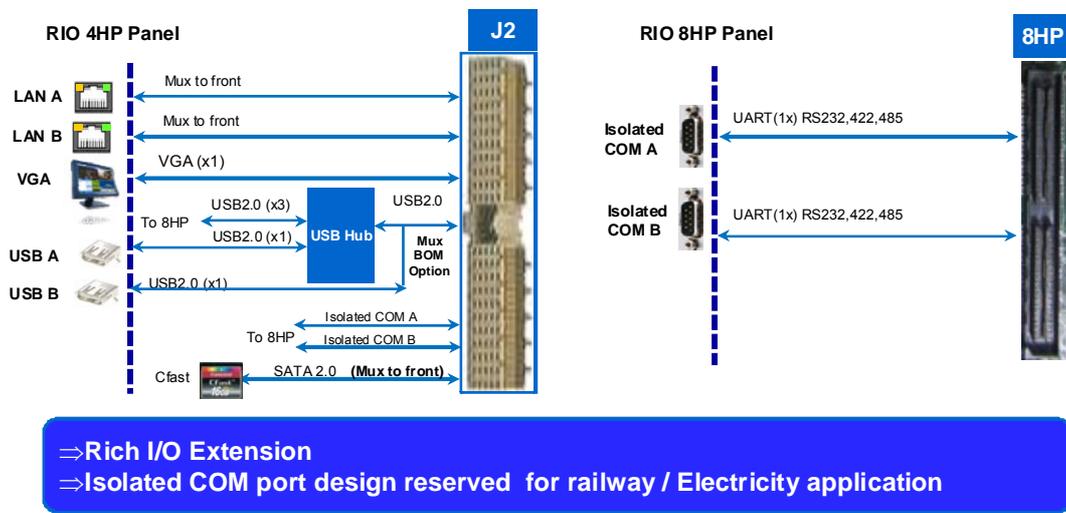
Figure 1.3 MIC-3329 RIO 4HP & XTM Functional block diagram

1.4 Jumpers and Switches

Table 1.5 lists the jumper and switch functions. Refer this section carefully before changing the jumper and switch settings on your MIC-3329 board.

Figure 1.2 illustrates the jumper and switch locations.

The MIC-3329 provides a system reset button on the front panel, it resets all payload and application-related circuitry.

Table 1.4: MIC-3329 Switch Descriptions			
Board	**Position**	**Description**	**Default Setting**
MIC-3329 Front 4HP Board	CN3	Battery pin head	
	SW1	DIP Switch for setting LAN1/2 and VGA as front or rear	Front VGA/LAN1 LAN2
MIC-3329 Front 8HP XTM Board	SW3/SW4	DIP Switch for COM 232/422/485 setting (4 code for SP338)	Default setting RS232;
			RS422/RS485 setting refer to silkscreen on PCB top side
	SW5/SW6/ SW7/SW8	Control COM workable or not	Always setting "ON", refer to PCB bottom side
MIC-3329 RIO 8HP XTM Board	SW3/SW4	DIP Switch for COM 232/422/485 setting (4 code for SP338)	Default setting RS232;
			RS422/RS485 setting refer to silkscreen on PCB top side
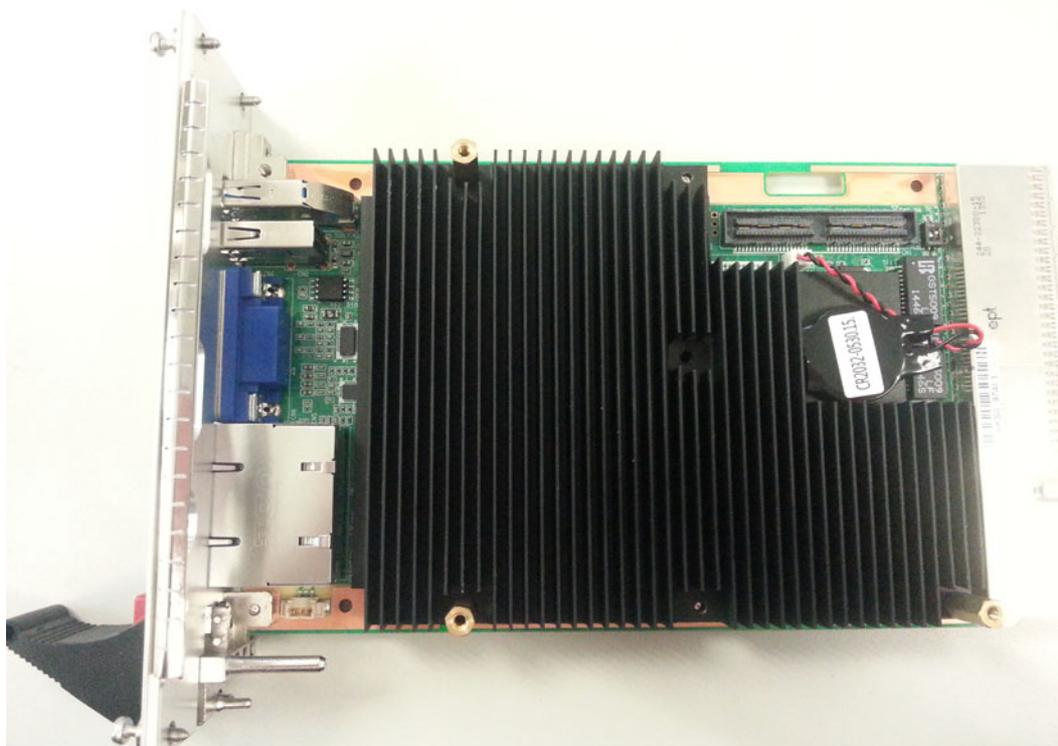
Figure 1.4 MIC-3329 Front 4HP Board Jumper Locations

MIC-3329 Front 4HP Board SW1 Setting

Front LAN1/2&VGA(Default): 1 set to "OFF" is Front VGA 2 set to "ON" is Front LAN1/2	Rear LAN1/2&VGA: 1 set to "ON" is Rear VGA 2 set to "OFF" is Rear LAN1/2
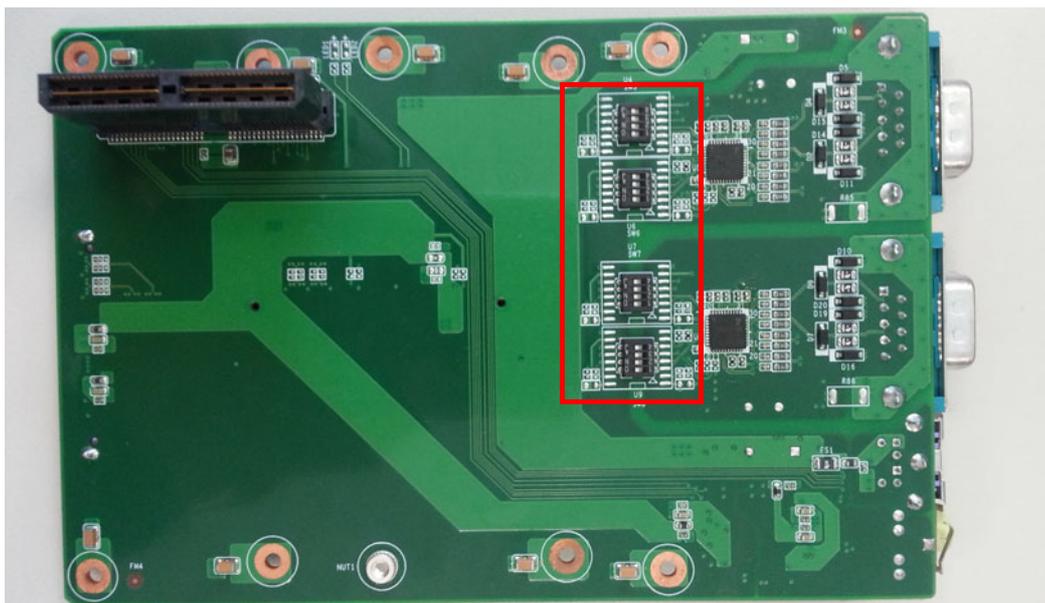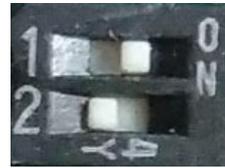
Figure 1.5 MIC-3329 Front 8HP XTM Board Jumper Locations

MIC-3329 Front 8HP XTM Board SW5, SW6, SW7, SW8,Setting

Control COM workable, Always setting "ON"
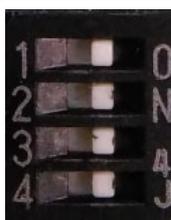
MIC-3329 Front 8HP XTM Board SW3, SW4 Setting

RS232(Default) 1 set to "ON"	RS422 1 set to "ON", 2 set to "ON"	RS485 2 set to "ON"
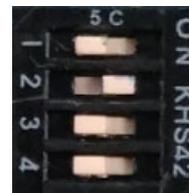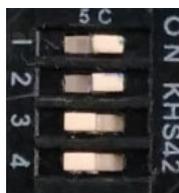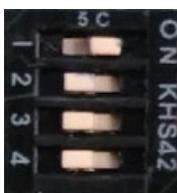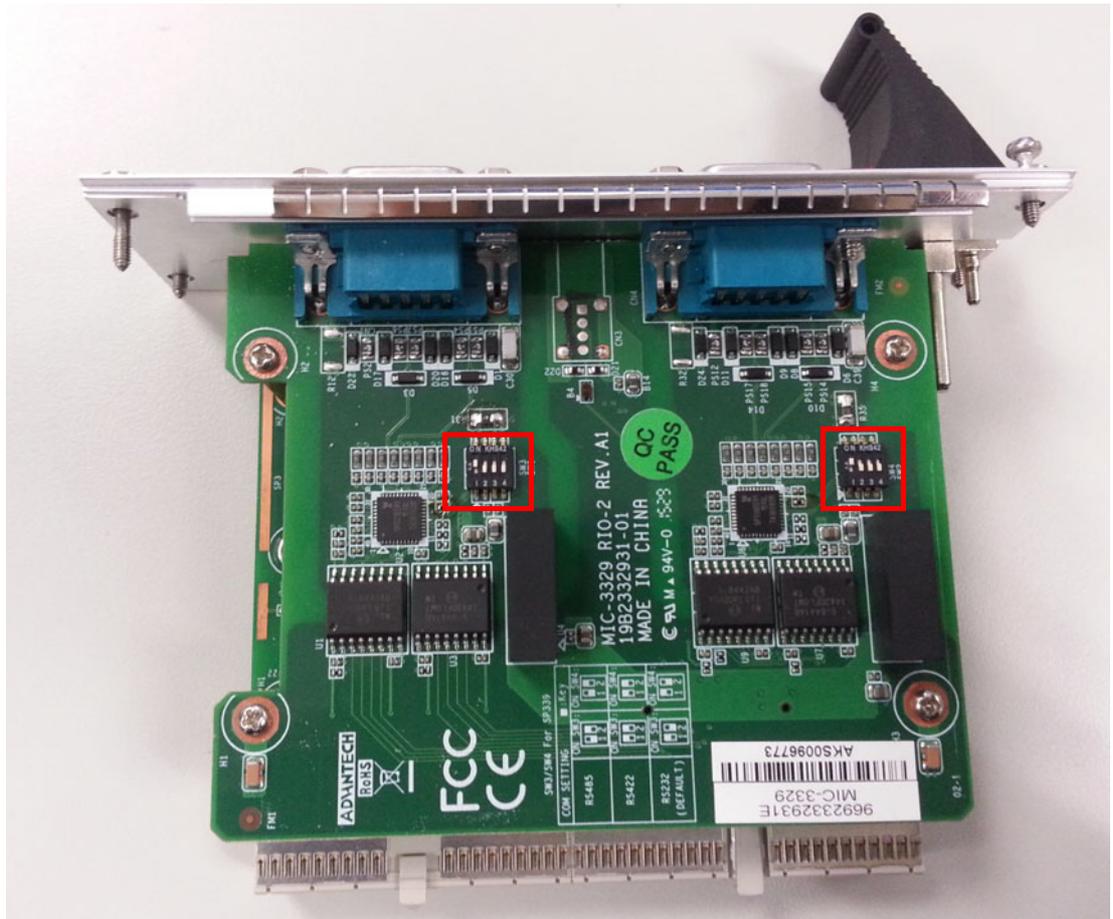
Figure 1.6 MIC-3329 Rear 8HP XTM Board Jumper Locations

MIC-3329 Front 8HP XTM Board SW3, SW4 Setting

SW3, SW4 RS232(Default) 1 set to "ON"	SW3, SW4 RS422 1 set to "ON" 2 set to "ON"	SW3, SW4 RS485 2 set to "ON"
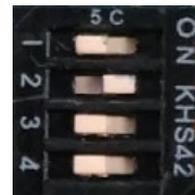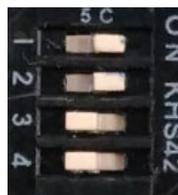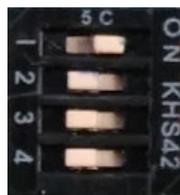
1.4.1 Clear CMOS (JP2)

This jumper is used to erase CMOS data. MIC-3329 Clear CMOS is allowed to erase "user password and time" information only since we implement CMOS backup mechanism in case of user data loss when battery power is working out.

1.5 Connector Definitions

Table 1.7 and Table 1.8 list the function of each connector of MIC-3329 and its RIO, Figure 1.3 and 1.4 illustrate each connector location.

Table 1.5: MIC-3329 Connector Descriptions	
Number	**Function**
J1/J2	Primary CompactPCI bus
CN1	Board to board connector on 4HP
CN7	Board to board connector on XTM
CN3	SATA2.0 on board connector on XTM
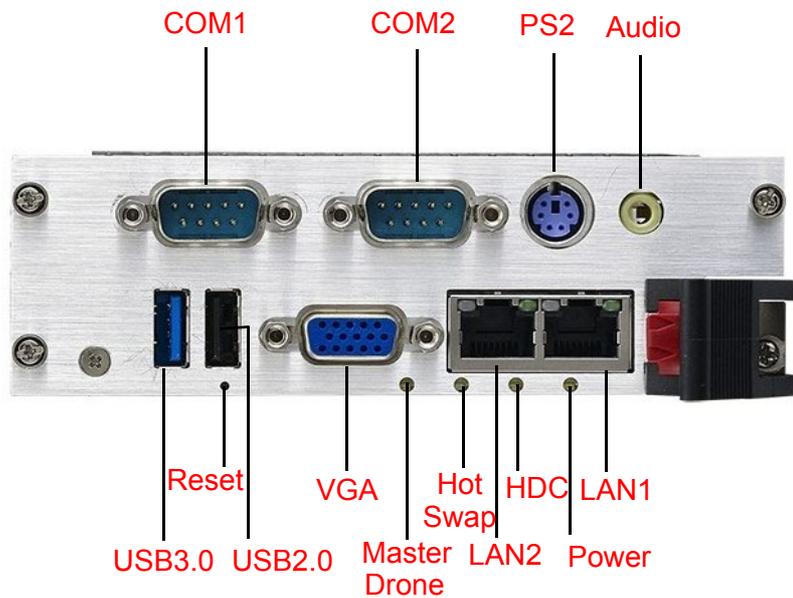
Figure 1.7 MIC-3329 8HP Front Panel Ports, Indicators and Buttons

Figure 1.8 MIC-3329 8HP View

	Number	Function
MIC-3329R1-D1E	RJ1/RJ2	Rear I/O transition
	CN3	Cfast connector
	CN5 CN6	Board to board connector
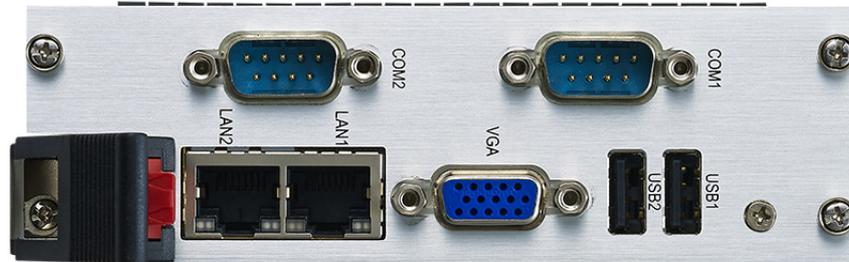
Figure 1.9 MIC-3329 RIO Front Panel Ports

Figure 1.10 MIC-3329 RIO 8HP View

1.6 Safety Precautions

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electric shock, always disconnect the power from your CompactPCI chassis before you work on it. Don't touch any components on the CPU board or other boards while the CompactPCI chassis is powered.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a board may damage sensitive electronic components.
- Always ground yourself to remove any static charge before you touch your CPU board. Be particularly careful not to touch the chip connectors.
- Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electric discharges and fields. Keep the board in its antistatic packaging when it is not installed in the chassis, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

1.7 Installation Steps

The MIC-3329 contains electro-statically sensitive devices. Please discharge your clothing before touching the assembly. Do not touch components or connector pins. We recommend that you perform assembly at an anti-static workbench.
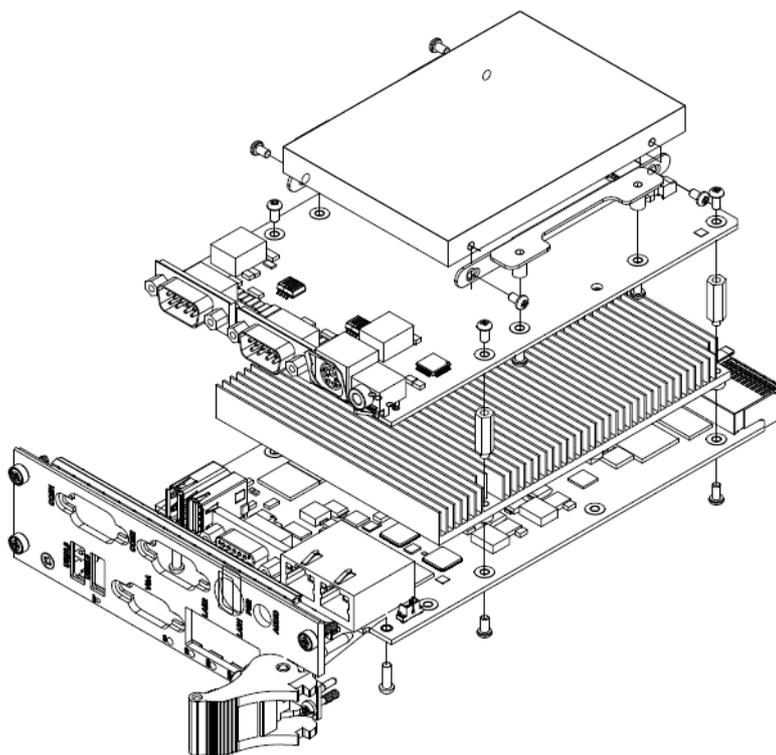
Figure 1.11 Complete Assembly of MIC-3329 Dual Slot with SATA HDD

1.8 Software Support

Windows 7, Windows8.1, Linux CentOS6.6 have been tested on the MIC-3329. Please contact your local sales representative for details on support for other operating systems.

Chapter **2**

AMI BIOS Setup

This chapter describes how to configure the AMI BIOS.

2.1 Introduction

The AMI BIOS has been customized and integrated into many industrial and embedded motherboards for over a decade. This section describes the BIOS which has been specifically adapted to the MIC-3329. With the AMI BIOS Setup Utility, you can modify BIOS settings and control the special features of the MIC-3329. The Setup program uses a number of menus for making changes and turning the special features on or off. This chapter describes the basic navigation of the MIC-3329 setup screens.

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit

  BIOS Information                                        Choose the system default
  BIOS Vendor                    American Megatrends      language
  Core Version                   Aptio V 5.010 x64
  Compliancy                     UEFI 2.4; PI 1.3
  Project Version                3329000IF60V032
  Build Date and Time            04/05/2016 10:15:30
  Project Board Version          MIC-3329

  Memory Information
  Memory Frequency               1333 MHz
  Total Memory                   4096 MB (DDR3L)

  System Language                [English]
                                                         →←: Select Screen
  System Date                    [Tue 04/05/2016]        ↑↓: Select Item
  System Time                    [10:48:02]              Enter: Select
                                                         +/-: Change Opt.
  Access Level                   Administrator           F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



                Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.1 Setup Program Initial Screen

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

2.2 BIOS Setup

The MIC-3329 Series system has AMI BIOS built in, with a CMOS SETUP utility that allows users to configure required settings or to activate certain system features. The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to preserve the CMOS RAM. But there is CMOS backup mechanism in MIC-3329 to protect user's personal setting, which allows final BIOS setup information is reserved always except "date/time and user password" when remove CMOS battery or "erase only password" by clear jumper.

When the power is turned on, press the <Del> button during the BIOS POST (Power - On Self Test) to access the CMOS SETUP screen.

Control Keys	
< → > < ←>:	Select screen
<↑><↓>:	Select item
<Enter>:	Select
<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>	Previous values
<F3>	Optimized defaults
<F4>	Save and exit

2.2.1 Entering Setup

Turn on the computer, and there should be a POST (Power-On Self Test) screen that shows the BIOS supporting the CPU, press <DEL> or <F2>, then you will immediately be allowed to enter Setup.
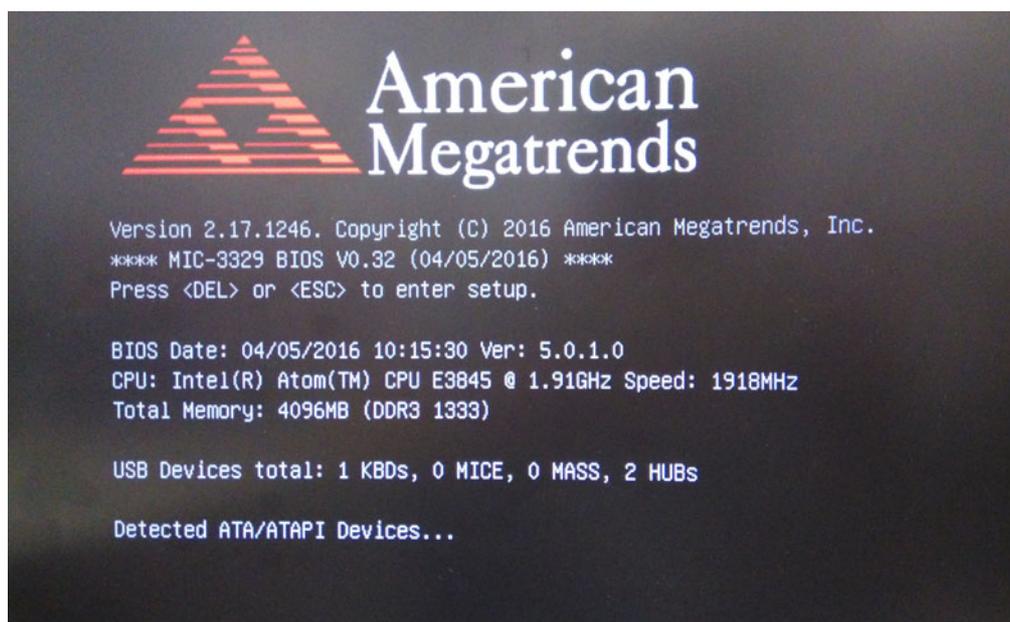
Figure 2.2 Press <DEL> or <F2> to Run Setup

2.2.2 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. Two main setup options are described in this section. The main BIOS setup screen is shown below.

```
         Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

    BIOS Information                                     Choose the system default
    BIOS Vendor                    American Megatrends    language
    Core Version                   Aptio V 5.010 x64
    Compliancy                     UEFI 2.4; PI 1.3
    Project Version                3329000IF60V032
    Build Date and Time            04/05/2016 10:15:30
    Project Board Version          MIC-3329

    Memory Information
    Memory Frequency               1333 MHz
    Total Memory                   4096 MB (DDR3L)

    System Language                [English]
                                                         →←: Select Screen
    System Date                    [Tue 04/05/2016]      ↑↓: Select Item
    System Time                    [10:48:02]            Enter: Select
                                                         +/-: Change Opt.
    Access Level                   Administrator         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

         Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.3 Main Setup Screen

The main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured while the 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.

■ **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 is entered in HH:MM:SS format.

2.2.3 Advanced BIOS Features Setup

Select the Advanced tab from the MIC-3329 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 screen is shown below. The sub menus are described on the following pages.

```
                 Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
          Main  Advanced  Chipset  Security  Boot  Save & Exit

      ▶ iManager Configuration                                    iManager Parameters.
      ▶ F81216SEC Super IO Configuration
      ▶ Serial Port Console Redirection
      ▶ CPU Configuration
      ▶ PPM Configuration
      ▶ IDE Configuration
      ▶ PCI Subsystem Settings
      ▶ Network Stack Configuration
      ▶ CSM Configuration
      ▶ USB Configuration
      ▶ Security Configuration


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



                 Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.4 Advanced BIOS Features Setup Screen

2.2.3.1 iManager Configuration

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Advanced

     iManager Configuration                                        Monitor hardware status

     iManager Chipset                     IT8528E
     Firmware Version                     I283DV0100


▶    Hardware Monitor

                                                                   ➔←: Select Screen
                                                                   ↑↓: Select Item
                                                                   Enter: Select
                                                                   +/-: Change Opt.
                                                                   F1: General Help
                                                                   F2: Previous Values
                                                                   F3: Optimized Defaults
                                                                   F4: Save & Exit
                                                                   ESC: Exit



                 Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Advanced

     PC Health Status

     CPU temperature                   : +51
     System temperature                : +47

     +VBAT                             : +3.260 V
     +V5                               : +5.038 V
     +V3.3                             : +3.306 V
     +Vcore                            : +0.850 V
     +V1.35DDR                         : +1.354 V

                                                                   ➔←: Select Screen
                                                                   ↑↓: Select Item
                                                                   Enter: Select
                                                                   +/-: Change Opt.
                                                                   F1: General Help
                                                                   F2: Previous Values
                                                                   F3: Optimized Defaults
                                                                   F4: Save & Exit
                                                                   ESC: Exit



                 Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.5 H/W Monitor PC Health Status

System temperature, CPU temperature and voltage status can be checked up on hardware health.

2.2.3.2 F81216SEC Super IO configuration
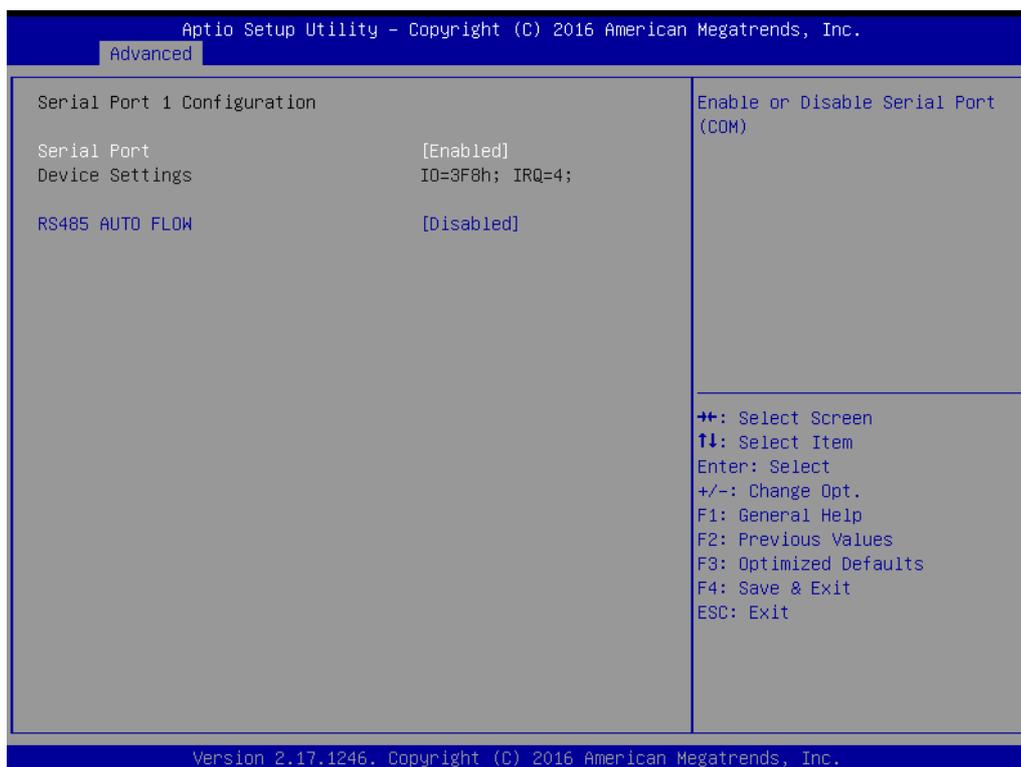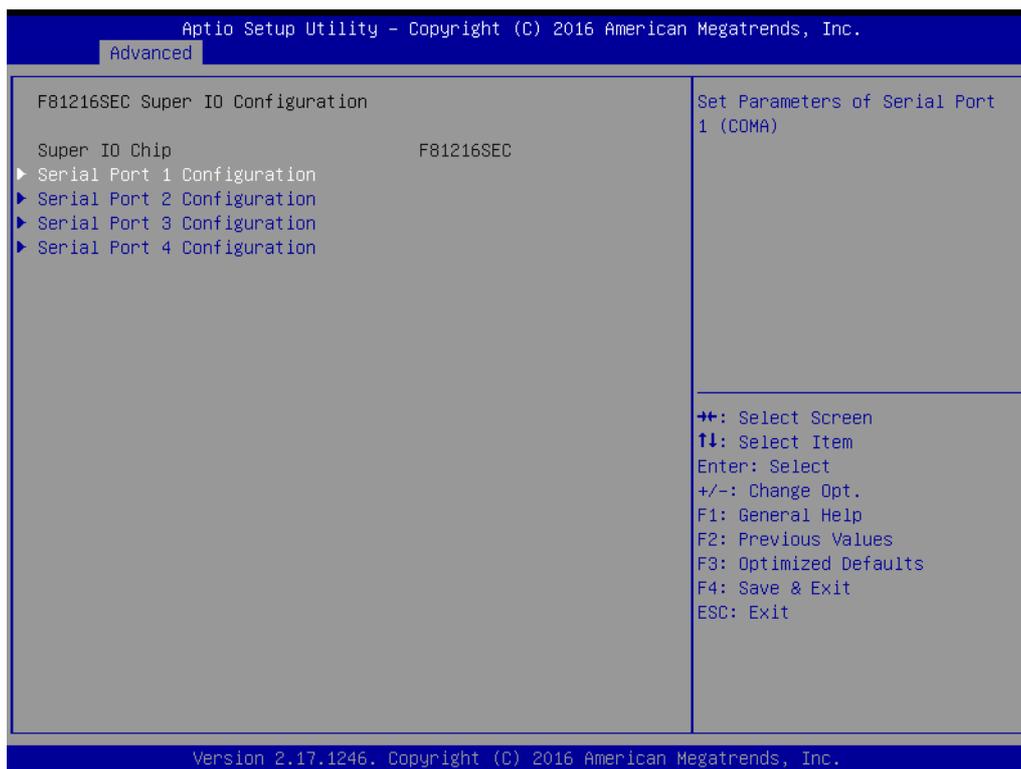
Figure 2.6 Super IO Configuration

■ **Serial Port 1/2/3/4 Configuration**

For serial port 1/2/3/4/, IRQ/IO resource configuration, can be selected by users. MODE.

■ **R485 auto flow**

It allows users to enable/disable R485 AUTO FLOW function.

2.2.3.3 Serial Port Console Redirection
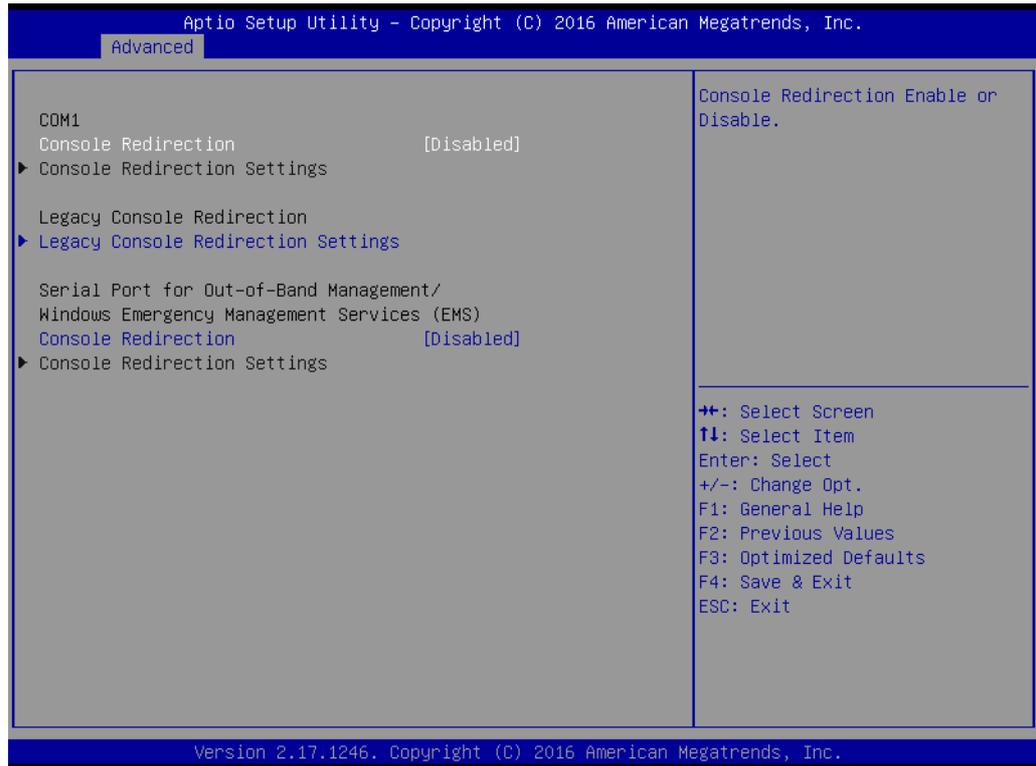
Figure 2.7 Serial Port Console Redirection

■ **Console Redirection**

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

2.2.3.4 CPU configuration


```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
       Advanced

    CPU Configuration                                           Socket specific CPU Information

  ▶ Socket 0 CPU Information

    CPU Speed                          1918 MHz
    64-bit                             Supported

    Limit CPUID Maximum                [Disabled]
    Execute Disable Bit                [Enabled]
    Intel Virtualization Technology    [Enabled]
    Power Technology                   [Energy Efficient]

                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit

                Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.8 CPU configuration

■ **Limit CPUID Maximum**
It allows you to limit CPUID maximum value.

■ **Execute Disable Bit**
It allows you to enable or disable the No-Execution page protection technology.

■ **Power Technology**
It allows users to adjust CPU power related parameters.

2.2.3.5 PPM configuration
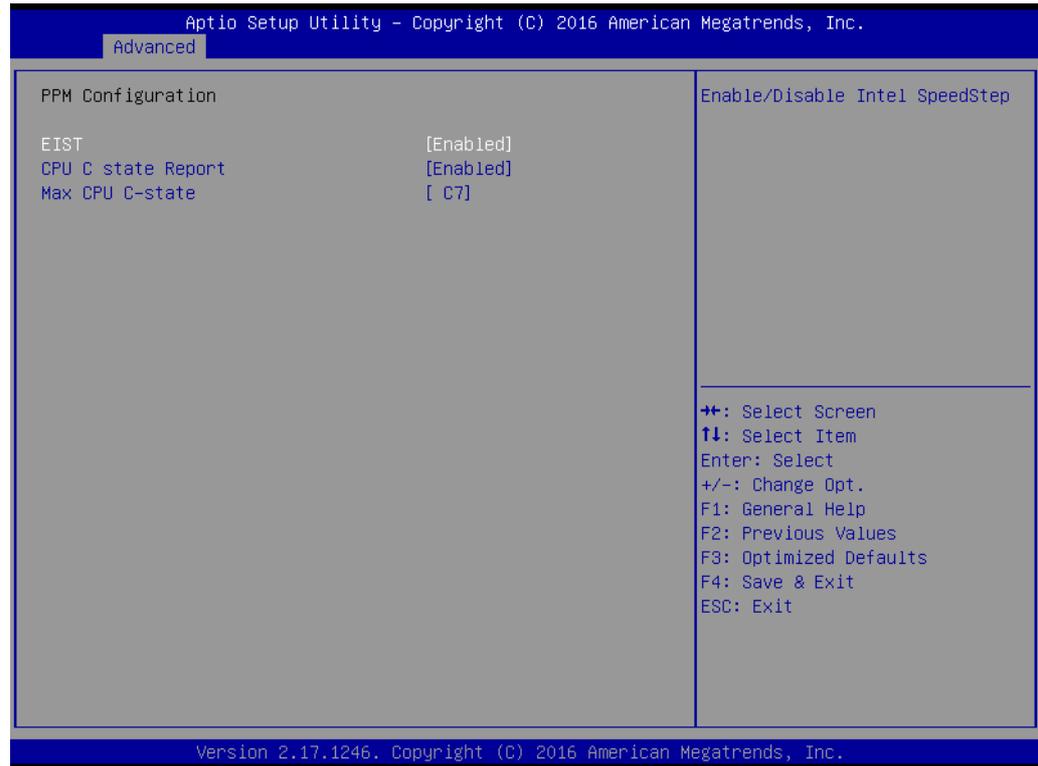
Figure 2.9 PPM configuration

■ **EIST**
  It allows you to enable/disable Intel speedstep.
■ **CPU C state report**
  It allows you to enable/disable CPU C state report to os.
■ **Max CPU C-state**
  This option controls Max C state that the processor will support.

2.2.3.6 IDE configuration

```
                    Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                  Advanced
 IDE Configuration                                             Enable / Disable Serial ATA

 Serial-ATA (SATA)                    [Enabled]

 SATA Speed Support                   [Gen2]
 SATA ODD Port                        [No ODD]
 SATA Mode                            [AHCI Mode]

 Serial-ATA Port 1                    [Enabled]
 SATA Port1 HotPlug                   [Disabled]

 Serial-ATA Port 2                    [Enabled]
 SATA Port2 HotPlug                   [Disabled]
                                                              →←: Select Screen
 SATA Port1                                                   ↑↓: Select Item
 SQF-S10S2-32G- (32.0GB)                                      Enter: Select
                                                              +/-: Change Opt.
 SATA Port2                                                   F1: General Help
 Not Present                                                  F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit


                    Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.10 IDE configuration

■ **SATA mode**

This can be configured as Disable, IDE or AHCI mode.

■ **Disable**

Disable the SATA function.

■ **IDE mode**

Set to [IDE mode] when you want to use the serial ATA hard disk drives as Parallel ATA physical storage devices.

■ **ACHI mode**

Set to [AHCI mode] when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced serial ATA features that increase storage performance on random workloads by allowing the drive to internally optimize the order of commands.

2.2.3.7 PCI Subsystem Settings


```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
         Advanced

    PCI Bus Driver Version          A5.01.05                        Value to be programmed into
                                                                    PCI Latency Timer Register.
    PCI Devices Common Settings:
    PCI Latency Timer               [32 PCI Bus Clocks]
    PCI-X Latency Timer             [64 PCI Bus Clocks]
    VGA Palette Snoop               [Disabled]
    PERR# Generation                [Disabled]
    SERR# Generation                [Disabled]
    Above 4G Decoding               [Disabled]
    SR-IOV Support                  [Disabled]

  ▶ PCI Express Settings
                                                                  →←: Select Screen
  ▶ PCI Hot-Plug Settings                                         ↑↓: Select Item
                                                                  Enter: Select
                                                                  +/-: Change Opt.
                                                                  F1: General Help
                                                                  F2: Previous Values
                                                                  F3: Optimized Defaults
                                                                  F4: Save & Exit
                                                                  ESC: Exit




                Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.11 PCI Setting

- **PCI Latency Timer**

   Value to be programmed into PCI Latency Timer Register.

- **PCI Express Settings**

   Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

2.2.3.8 Network Stack configuration

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
Advanced

Network Stack   [Disabled]   Enable/Disable UEFI Network
                                                               Stack

                                                               ++: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit

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Figure 2.12 Network Stack configuration

■ **Network Stack**
   This option allows users to enable or disable the Network Stack function. The default setting is "Disabled".

2.2.3.9 CSM configuration

Figure 2.13 CSM configuration

- **CSM Support**

  Enable/Disable CSM Support.

- **GateA20 Active**

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

- **Option ROM Messages**

  Set display mode for Option ROM.

- **Boot option filter**

  This option controls Legacy/UEFI ROMs priority.

- **Network**

  Controls the execution of UEFI and Legacy PXE OpROM.

- **Storage**

  Controls the execution of UEFI and Legacy Storage OpROM.

- **Video**

  Controls the execution of UEFI and Legacy Video OpROM.

- **Other PCI devices**

  Determines OpROM execution policy for devices other than Network, Storage, or Video.

2.2.3.10 USB configuration

```
               Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                Chipset

        USB Configuration                                      Mode of operation of xHCI
                                                               controller
        XHCI Mode                        [Auto]

        USB 2.0(EHCI) Support            [Disabled]




                                                               →←: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit




               Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
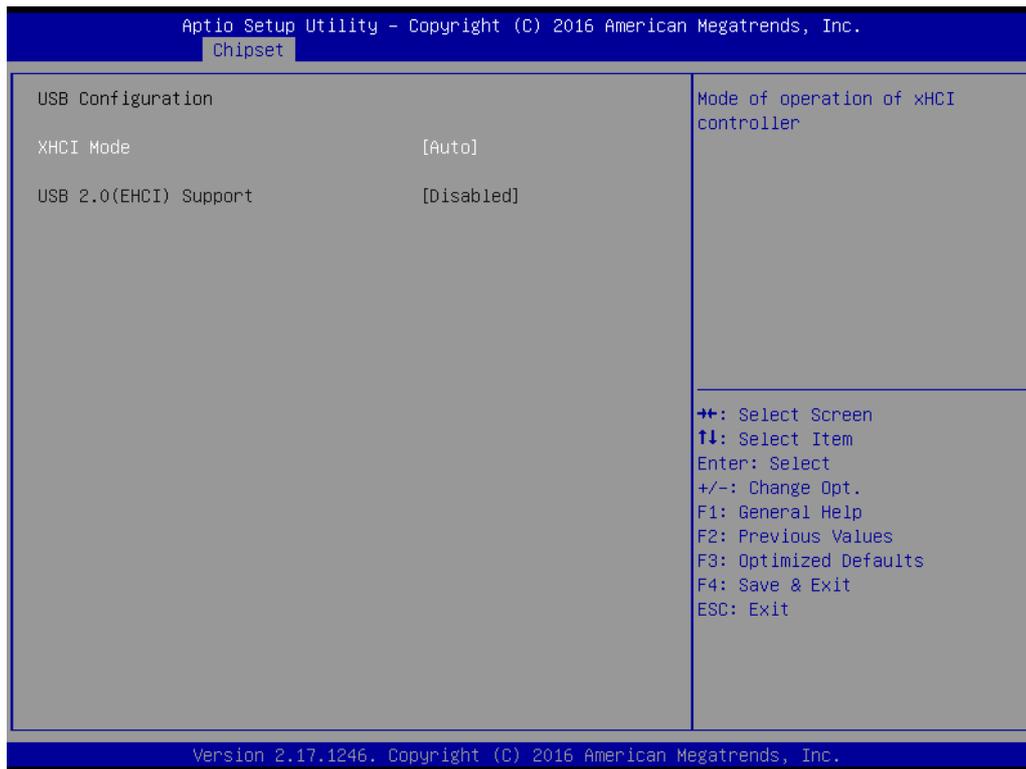
Figure 2.14 USB configuration

■ **XHCI Mode**
Select mode of operation of XHCI controller.

2.2.3.11 Security configuration
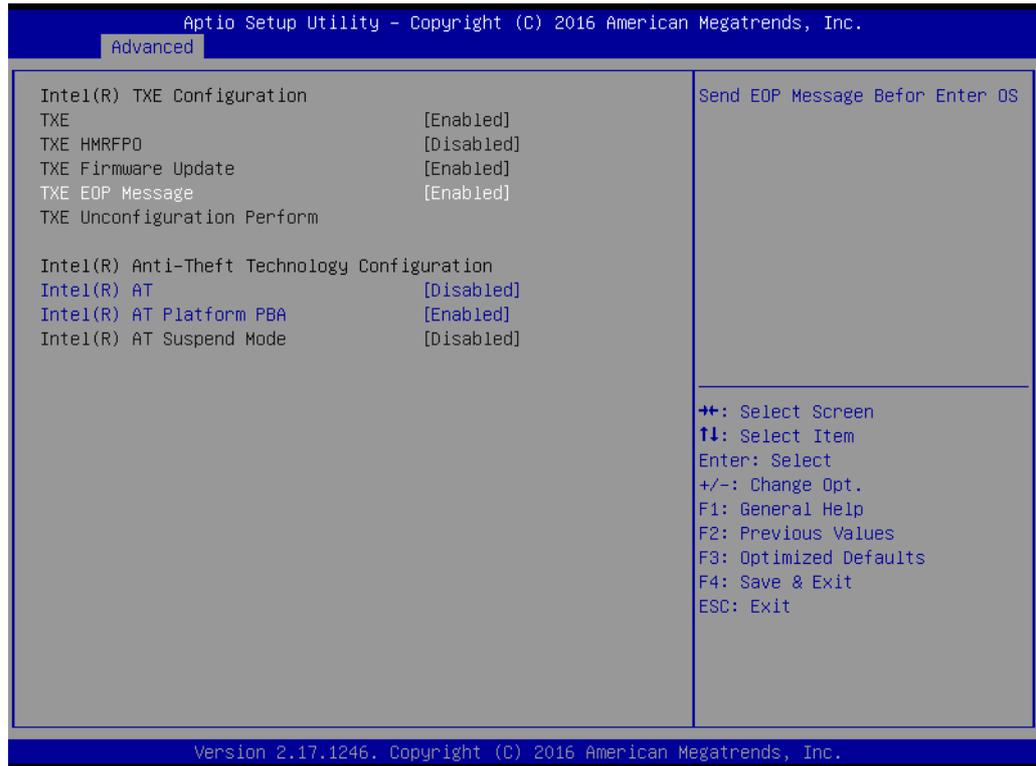
Figure 2.15 Security configuration

Intel(R) Anti-Theft Technology Configuration.

- **TXE EOP Message**

    Send EOP Message Befor Enter OS.

- **Intel(R) AT**

    Enable/Disable BIOS AT Code from Runing.

- **Intel(R) AT Platform PBA**

    Enable/Disable BIOS AT Code from Runing.

2.2.4 Chipset Configuration Setting

Select the chipset tab from the BIOS setup screen to enter the Chipset Setup screen.

Users can select any item in the left frame of the screen to go to the sub menu for that item. Users can display a Chipset Setup option by highlighting it using the <Arrow> keys. All Chipset Setup options are described in this section. The Chipset Setup screens are shown below. The sub menus are described on the following pages.

```
            Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

 ▶ North Bridge                                       North Bridge Parameters
 ▶ South Bridge







                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



            Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
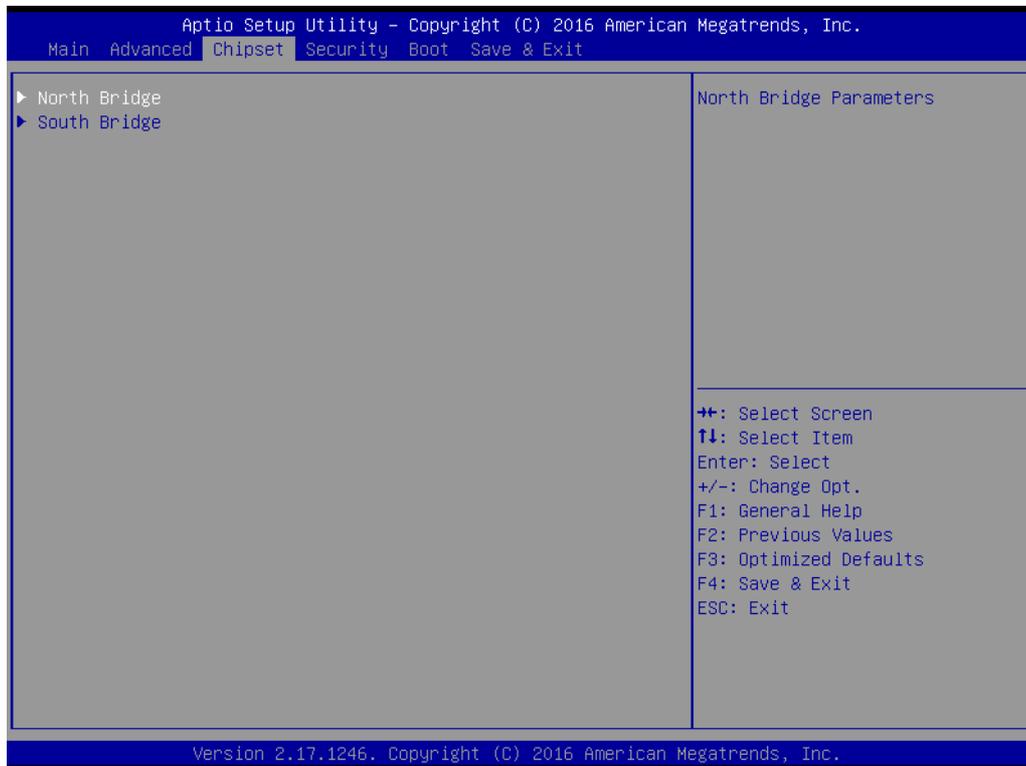
Figure 2.16 Chipset Setup Screen

2.2.4.1 South Bridge

```
            Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
            Chipset

    OS Selection                          [Windows 7]           OS Selection
  ▶ USB Configuration
  ▶ PCI Express Configuration

    BIOS Read/Write Protection            [Enabled]




                                                               ←→: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit




            Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
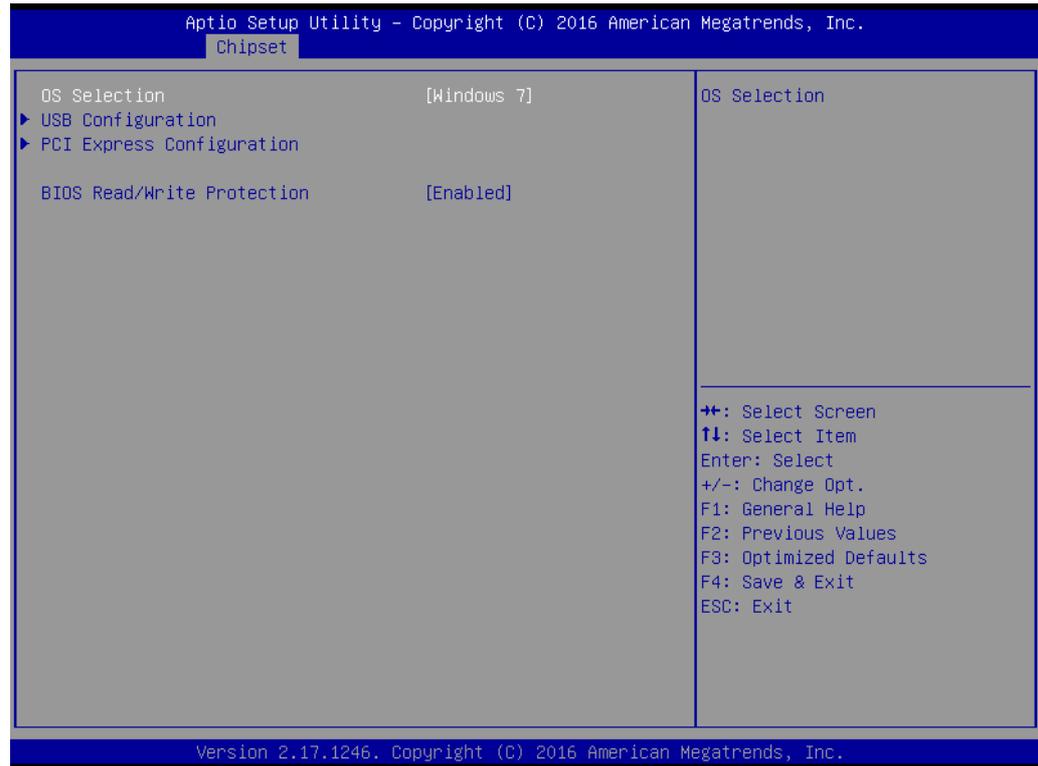
Figure 2.17 South Bridge Configuration

■ **OS Selection**

You should check this item before install OS.

■ **PCI express configuration**

Enable/disable PCIE port?select PCIE SPEED.

2.2.4.2 North Bridge

```
                    Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                    Chipset

  ▶ Intel IGD Configuration                              Config Intel IGD Settings.
    Max TOLUD                          [Dynamic]












                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




                    Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
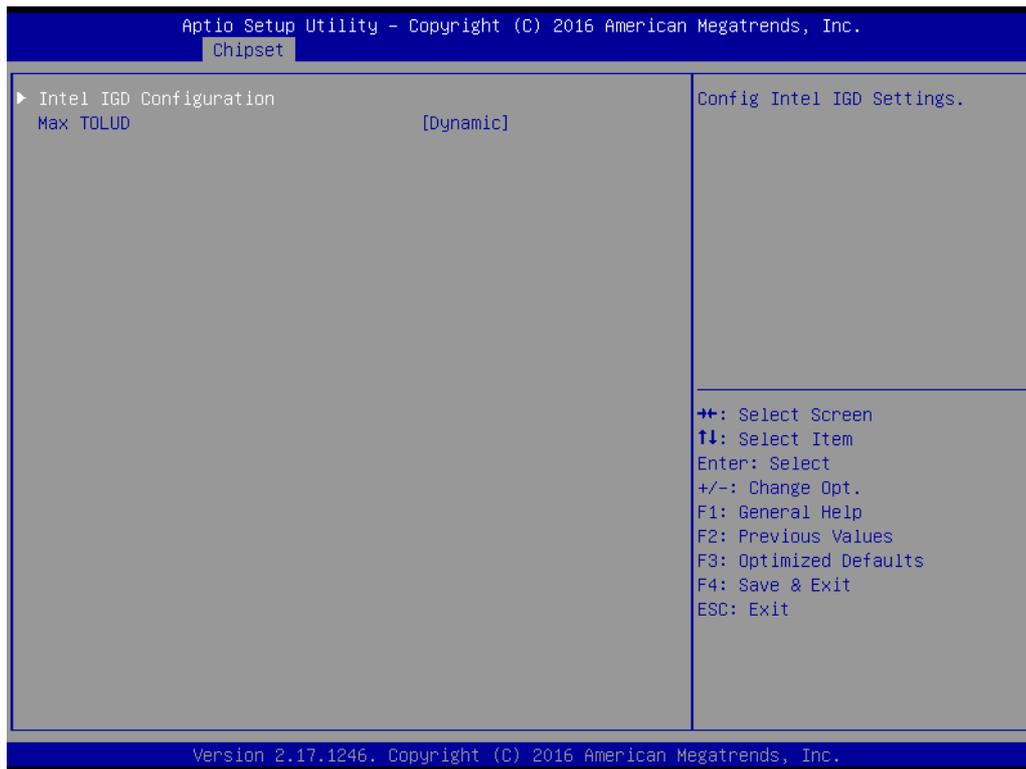
Figure 2.18 North Bridge Configuration

■ **Intel IGD configuration**
Configure Intel IGD Setting.
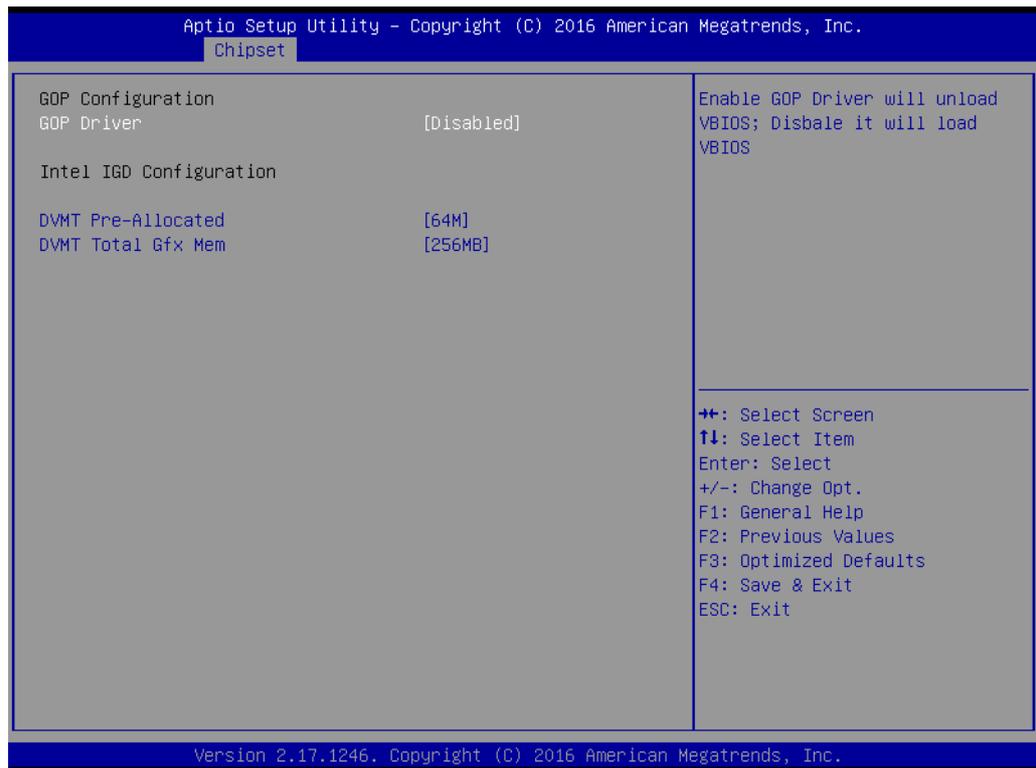■ **Max TOLUD**
select maximum value of TOLUD.

Figure 2.19 Intel IGD configuration

- ■ **GOP configuration**
  Enable/disable GOP driver;
- ■ **Intel IGD Configuration**
  Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size or Total Graphic Memory size used by the Internal Graphics Device.

2.2.5   Boot Setting
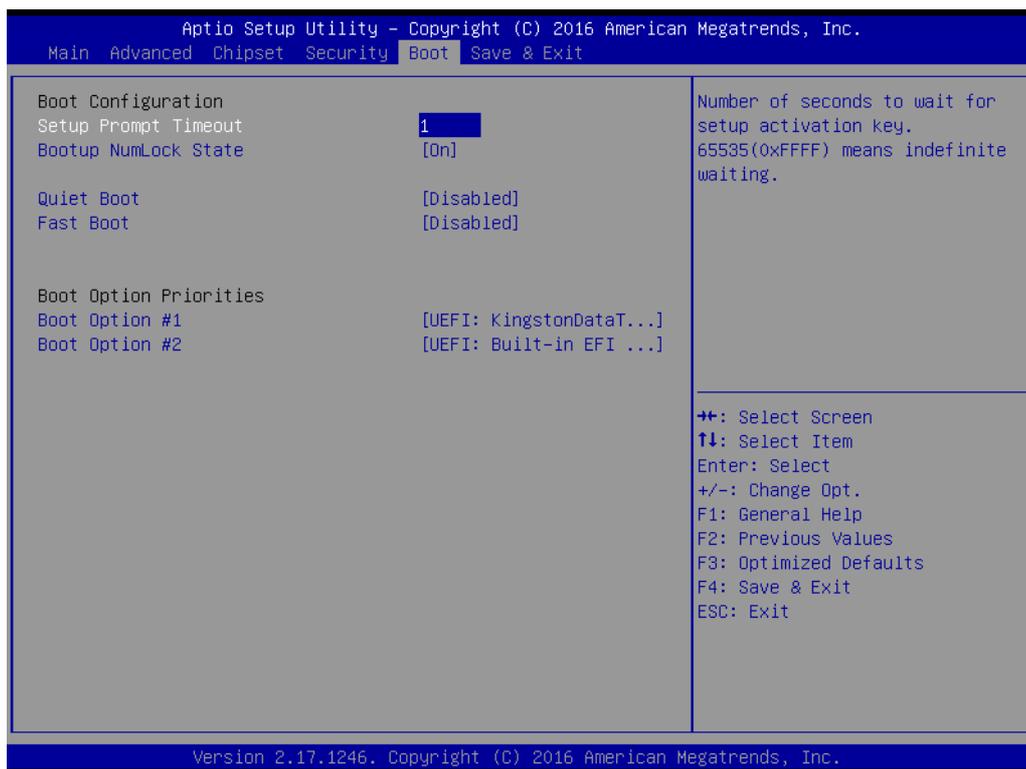
Figure 2.20 Boot Setting

- **Setup Prompt Timeout**

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

- **Bootup NumLock State**

  This setting allows system automatically turns on your NumLock key when the system is booted.

- **Quiet Boot**

  If this option is set to Disabled, the BIOS displays normal POST messages. If enabled, an OEM Logo is shown instead of POST messages.

- **Fast Boot**

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

- **Boot Option Priorities**

  The option shows you the boot priority of device.

- **Hard Drive BBS Priorities**

  This option specifies the boot device priority sequence from available hard disk drives.

2.2.6 Security Setting

Figure 2.21 Security Setting

■ **Administrator Password**

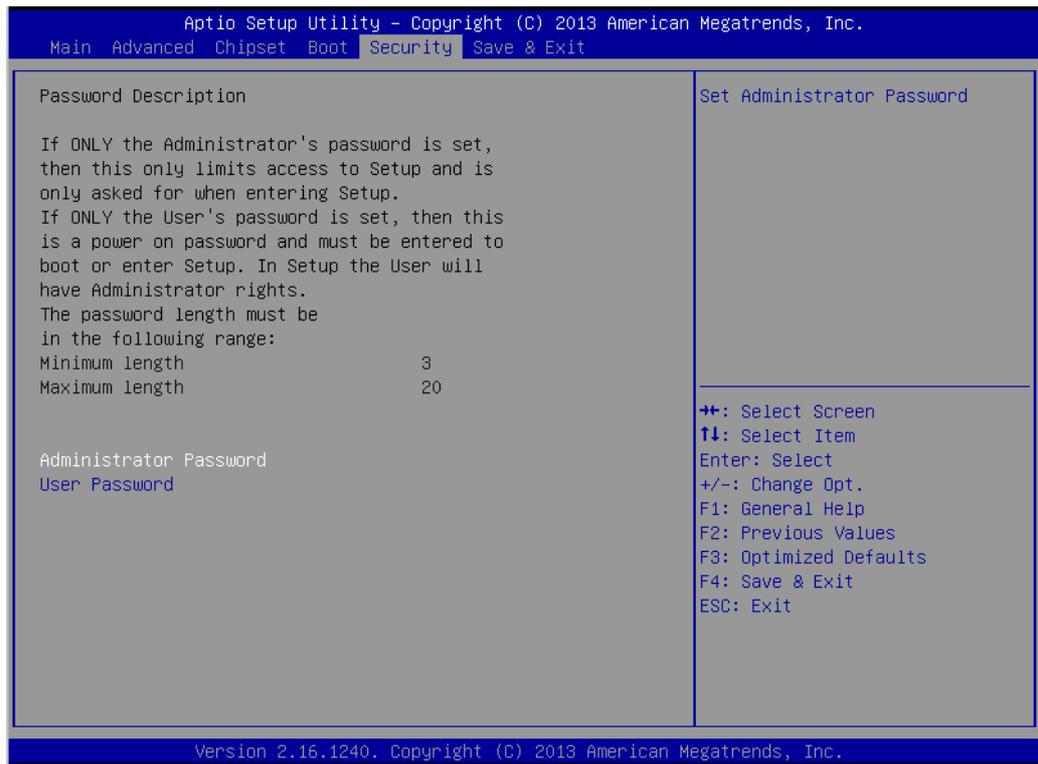Select this option and press <ENTER> to access the sub menu, and then type in the password. Set the Administrator password.

■ **User Password**

Select this option and press <ENTER> to access the sub menu, and then type in the password. Set the User Password.
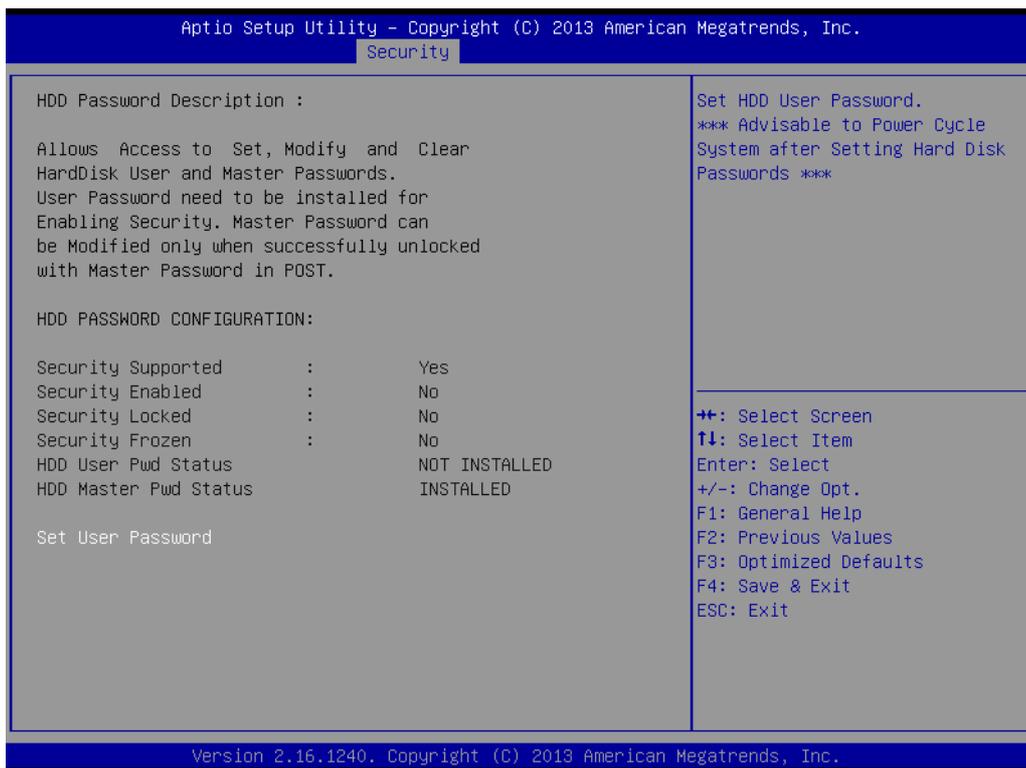
■ **HDD Security Configuration**

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                                    Security

 HDD Password Description :                       Set HDD User Password.
                                                  *** Advisable to Power Cycle
 Allows  Access to  Set, Modify  and  Clear      System after Setting Hard Disk
 HardDisk User and Master Passwords.              Passwords ***
 User Password need to be installed for
 Enabling Security. Master Password can
 be Modified only when successfully unlocked
 with Master Password in POST.

 HDD PASSWORD CONFIGURATION:

 Security Supported       :        Yes
 Security Enabled         :        No
 Security Locked          :        No          ➔←: Select Screen
 Security Frozen          :        No          ↑↓: Select Item
 HDD User Pwd Status               NOT INSTALLED   Enter: Select
 HDD Master Pwd Status             INSTALLED    +/-: Change Opt.
                                                F1: General Help
 Set User Password                              F2: Previous Values
                                                F3: Optimized Defaults
                                                F4: Save & Exit
                                                ESC: Exit




              Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
```

Figure 2.22 HDD Security Configuration

■ **Set User Password**
Select this option and press <ENTER> to access the sub menu, and then type in the password. Set the HDD User Password.
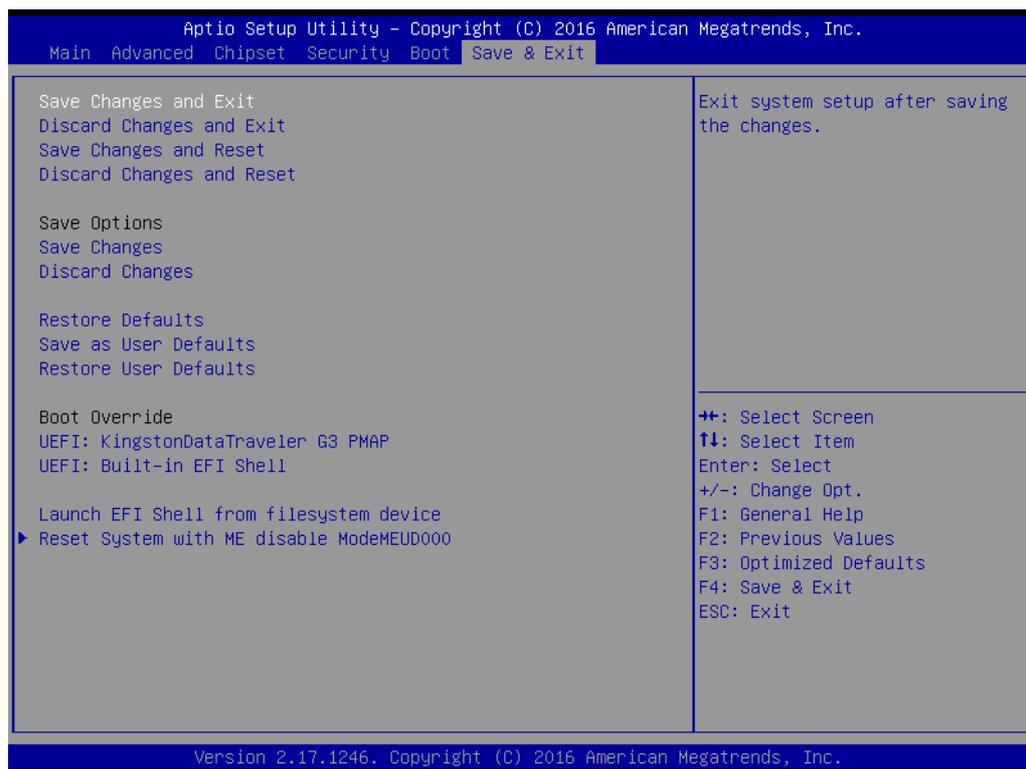
2.2.7 Save and Exit Configuration

```
              Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
       Main  Advanced  Chipset  Security  Boot  Save & Exit

      Save Changes and Exit                            Exit system setup after saving
      Discard Changes and Exit                         the changes.
      Save Changes and Reset
      Discard Changes and Reset

      Save Options
      Save Changes
      Discard Changes

      Restore Defaults
      Save as User Defaults
      Restore User Defaults

      Boot Override                               →←: Select Screen
      UEFI: KingstonDataTraveler G3 PMAP          ↑↓: Select Item
      UEFI: Built-in EFI Shell                    Enter: Select
                                                  +/-: Change Opt.
      Launch EFI Shell from filesystem device     F1: General Help
    ▶ Reset System with ME disable ModeMEUD000    F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit


              Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Figure 2.23 Save & Exit

■ **Save changes and Exit**

When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect all system configuration parameters.

1. Select Exit Saving Changes from the Exit menu and press <Enter>. The following message appears: Save Configuration Changes and Exit Now? [Yes] [No]
2. Select [Yes] or [No].

■ **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? [Yes] [No]
2. Select Yes to discard changes and exit. Discard Changes: Select Discard Changes from the Exit menu and press <Enter>.

■ **Save Changes and Reset**

1. Select this option to save the changes and reboot the computer to take effect all system configuration parameters. Select this option the following message appears: Save Configuration and Reset? [Yes] [No]
2. Select Yes or No.

■ **Discard Changes and Reset**

1. Select "Discard Changes and Reset" and press <Enter>. The following message appears: Reset without saving? [Yes] [No]
2. Select Yes to discard changes and reset.

■ **Save Options**

Select this option to save or discard the changes.

■ **Restore Defaults**

The BIOS automatically configures all setup items to optimal settings when users select this option. Defaults are designed for maximum system perfor-mance, but may not work best for all computer applications. In particular, do not use the Defaults if the user's computer is experiencing system configuration problems. Select Restore Defaults from the Exit menu and press <Enter>.

■ **Save as User Default**

Save the all current settings as a user default.

■ **Restore User Default**

Restore all settings to user default values.

■ **Boot Override**

This option shows the boot device for you to choose.

■ **Launch EFI Shell from filesystem device**

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

■ **Reset System with ME disable Mode MEUD000**

ME will runs into the temporary disable mode, Ignore if ME Ignition FW MEUD001.

Appendix A

Pin Assignments

This appendix describes pin assignments.

A.1 J1 Connector

Table A.1: J1 Compact PCI Pin Define											
A01	+5V_HOT	B01	NC	C01	TRST#	D01	NC	E01	+5V_HOT	F01	GND
A02	TCK	B02	+5V_HOT	C02	TMS	D02	TDO	E02	TDI	F02	GND
A03	INTA#	B03	INTB#	C03	INTC#	D03	+5V_HOT	E03	INTD#	F03	GND
A04	NC	B04	HEALTHY#	C04	CPCI_VIO	D04	INTP	E04	INTS	F04	GND
A05	NC	B05	NC	C05	PCI_RST#	D05	GND	E05	GNT#0	F05	GND
A06	REQ#0	B06	PCI_Present#	C06	NC	D06	CLK0	E06	AD31	F06	GND
A07	AD30	B07	AD29	C07	AD28	D07	GND	E07	AD27	F07	GND
A08	AD26	B08	GND	C08	CPCI_VIO	D08	AD25	E08	AD24	F08	GND
A09	CBE3#	B09	IDSEL	C09	AD23	D09	GND	E09	AD22	F09	GND
A10	AD21	B10	GND	C10	NC	D10	AD20	E10	AD19	F10	GND
A11	AD18	B11	AD17	C11	AD16	D11	GND	E11	CBE2#	F11	GND
										F12	NC
				KEY						F13	GND
										F14	NC
A15	NC	B15	FRAME#	C15	IRDY#	D15	BD_SEL#	E15	TRDY#	F15	GND
A16	DEVSEL#	B16	PCIX-CAP	C16	CPCI_VIO	D16	STOP#	E16	LOCK#	F16	GND
A17	NC	B17	IPMB0_SCL	C17	IPMB0_SDA	D17	GND	E17	PERR#	F17	GND
A18	SERR#	B18	GND	C18	NC	D18	PAR	E18	CBE1#	F18	GND
A19	NC	B19	AD15	C19	AD14	D19	GND	E19	AD13	F19	GND
A20	AD12	B20	GND	C20	CPCI_VIO	D20	AD11	E20	AD10	F20	GND
A21	NC	B21	AD9	C21	AD8	D21	M66EN	E21	CBE0#	F21	GND
A22	AD7	B22	GND	C22	NC	D22	AD6	E22	AD5	F22	GND
A23	NC	B23	AD4	C23	AD3	D23	+5V_HOT	E23	AD2	F23	GND
A24	AD1	B24	+5V_HOT	C24	CPCI_VIO	D24	AD0	E24	ACK64#	F24	GND
A25	+5V_HOT	B25	REQ64#	C25	ENUM#	D25	NC	E25	+5V_HOT	F25	GND

Note! *NC: No Connection.*

A.2 J2 Connector

Table A.2: Table A.2: J2 Compact PCI Pin Define											
A01	CLK1	B01	GND	C01	REQ#1	D01	GNT#1	E01	REQ#2	F01	GND
A02	CLK2	B02	CLK3	C02	SYSEN#	D02	GNT#2	E02	REQ#3	F02	GND
A03	CLK4	B03	GND	C03	GNT#3	D03	REQ#4	E03	GNT#4	F03	GND
A04	CPCI_V IO	B04	SIO_SP I_CLK_ 3.3	C04	LAN1_LIN K1000#	D04	NC	E04	UART4_ DCD#	F04	GND
A05	REAR_ DDC_D AT	B05	GND/ 64EN#	C05	NC	D05	UART4_ RXD	E05	UART4_ DSR#	F05	GND
A06	REAR_ DDC_C LK	B06	MDIA3+	C06	MDIA3-	D06	GND	E06	UART4_ RTS#	F06	GND
A07	REAR_ RED	B07	GND	C07	VCC5	D07	UART4_ CTS#	E07	UART4_ TXD	F07	GND
A08	REAR_ HSYNC	B08	MDIA2+	C08	MDIA2-	D08	GND	E08	UART4_ DTR#	F08	GND
A09	REAR_ VSYNC	B09	GND	C09	REAR_GR EEN	D09	UART3_ DCD#	E09	UART4_ RI#	F09	GND
A10	LAN1_L INK100 #	B10	MDIA1-	C10	USB3_P-	D10	GND	E10	UART3_ DSR#	F10	GND
A11	MDIA1+	B11	GND	C11	SATA0_R X+	D11	UART3_ RTS#	E11	UART3_ RXD	F11	GND
A12	LAN1_L INK- ACT#	B12	MDIA0-	C12	USB3_P+	D12	SATA0_R X-	E12	UART3_ TXD	F12	GND
A13	MDIA0+	B13	GND	C13	SATA0_TX -	D13	UART3_ DTR#	E13	UART3_ CTS#	F13	GND
A14	MDIB0-	B14	SIO_SP I_MISO _3.3	C14	SIO_SPI_ CS_3.3	D14	SATA0_T X-	E14	UART3_ RI#	F14	GND
A15	REAR_ BLUE	B15	NC	C15	FAL#	D15	REQ#5	E15	GNT#5	F15	GND
A16	MDIB0+	B16	SIO_SP I_MOSI _3.3	C16	DEG#	D16	GND	E16	LAN2_LI NK1000 #	F16	GND
A17	MDIB1-	B17	GND	C17	PRST#	D17	REQ#6	E17	GNT#6	F17	GND
A18	MDIB1+	B18	MDIB2+	C18	MDIB2-	D18	GND	E18	3.3V	F18	GND
A19	NC	B19	GND	C19	SMB_SDA	D19	SMB_SC L	E19	ALERT#	F19	GND
A20	CLK5	B20	NC	C20	LAN2_LIN K100#	D20	GND	E20	REAR_G REEN	F20	GND
A21	CLK6	B21	GND	C21	MDIB3+	D21	MDIB3-	E21	LAN2_LI NK- ACT#	F21	GND
A22	GA4	B22	GA3	C22	GA2	D22	GA1	E22	GA0	F22	GND

Note! *NC: No Connection.*

Appendix B

Programming the Watchdog Timer

This appendix describes how to program the watchdog timer.

B.1 Watchdog Timer Programming Procedure

Method 1: Using IO tool or RU tool under DOS, press "F5" to select ISA IO, input "272"in "Index Port", input "273"in "Data port", press "enter"to into register configuration space as below picture shows:

> **Note!** Offset 93h is "Watchdog Count Value", offset 94h is "Watchdog Enable and unit type"as below picture

Register Address :   **IO address 93h**
Register Name :   **Watchdog Count Value**
Default Value: 00
Attribute :   Read/Write

Bit	Description	Access
7-0	Watchdog Count Value (unit: determined by IO address 94h)	RW

Register Address :   **IO address 94h**
Register Name :   **Watchdog Function**
Default Value: 00
Attribute :   Read/Write

Bit	Description	Access
7-0	Watchdog Enable and unit type. Value list: 0x1 – Enable unit 250ms. 0x2 – Enalbe unit 1 sec Other - reserved	RW

Method 2: Using RW tool under Windows OS, select "IO index/Data", input "272"in "Index poet",input "273"in "Data port" as picture shows:
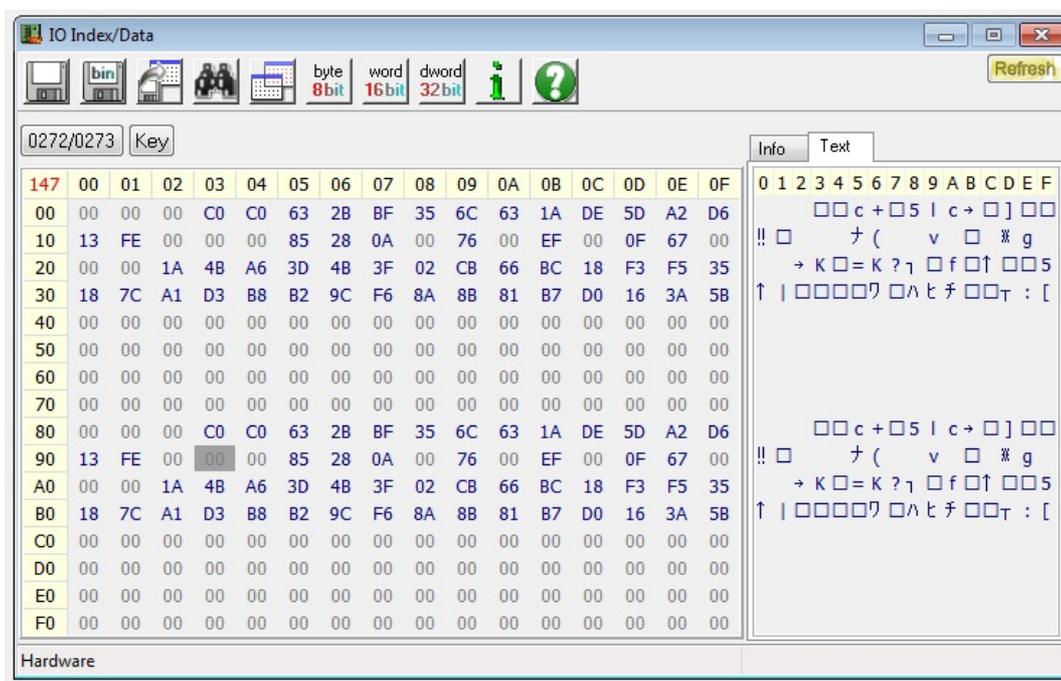
Note!   Offset 93h is "Watchdog Count Value", offset 94h is "Watchdog Enable and unit type"as below picture

Appendix C

Embeded Controller

This appendix describes EC configuration.

C.1 Features

- Power Sequence
- Hot-Swap: Hot insertion and removal control
- LPC Bus: Provide LPC Bus access
- Watchdog
- 2x SPI Cross-Switch: Dedicated SPI cross-switch for BIOS
- Debug Message: Boot time POST message

C.2 I/O Registers

The Advantech MIC-3329 EC communicates with main I/O spaces. The LPC unit is used to interconnect the Intel LPC signals. The Debug Port Unit is used to decode POST codes. The Watchdog is used to detect BIOS ready signal or recover BIOS code from redundant BIOS flash. The Hot-Swap Out-Of-Service LED Control Unit is used to control the blue LED during Hot-Insert and Hot-Remove. The other signals in the Miscellaneous Unit are for interfacing with corresponding I/O interface signals.

Table C.1: LPC I/O Register Addresses		
Address	**I/O Type**	**Description**
0x80h	W	Port 80 Display

Other register is access by ISA I/O, index port 0x272, data port 0x273.

Table C.2: LPC I/O Register Addresses		
Address	**I/O Type**	**Description**
0x90h~0x91h	R	Manufacture ID
0x92h	R/W	Dual BIOS switch display
0x93h~0x94h	R/W	Watchdog Register
0x95h~0x96h	R	EC Device ID
0x97h	R	EC Chip Revision ID
0x98h	R/W	GPO2 LED Control Register
0x99h	R	Power Status
0x9Ah	R	GA Status
0x9Bh	R	GPIO Input Status
0x9Ch	R/W	GPIO Output Value
0x9Dh	R/W	GPIO Input/Output Settings
0x9Eh	R	Port 80h Status
0x9Fh	R/W	GPO1 LED Control

Appendix D

Glossary

D.1 Glossary

ACPI Advanced Configuration and Power Interface

CPU Central Processing Unit

CPCI CompactPCI

DMA Direct Memory Access

DRAM Dynamic Random Access Memory

ECC Error Checking and Correction

EEPROM Electrically Erasable Programmable Read-Only Memory

EMC Electro Magnetic Compatibility

ESD Electro Static Discharge

HDD Hard Disk Drive

HW HardWare

I/O Input/Output

IC Integrated Circuit

LED Light Emitting Diode

LPC Low Pin Count

LV Low Voltage

MAC Medium Access Control

OS Operating System

PCB Printed Wiring Board

PCI Peripheral Component Interconnect

PCIe Peripheral Component Interconnect Express

PHY Physical layer Interface

RIO Rear Input/Output

RS-232 An Interface specified by Electronic Industries Alliance

RTC Real Time Clock

RTM Rear Transition Module

SBC Single Board Computer

SDRAM Synchronous DRAM

SFP Small From-factor Pluggable

SPD Serial Presence Detect

SPI Serial Peripheral Interface

SSD Solid State Disk

SW SoftWare

ULV Ultra Low Voltage

XMC PCIe interface mezzanine card

XTM Extension Module

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