

IB917 Series

**Intel® 7th Gen. Core™
U-series / Celeron® SoC
3.5" Disk-Size SBC**

User's Manual

Version 1.2
(Aug. 2017)

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Compliance



This product has passed CE Class B tests for environmental specifications and limits. This product is in accordance with the directives of the European Union (EU). In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.



This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

WEEE



This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

Green IBASE



This product is compliant with the current RoHS restrictions and prohibits use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

Important Safety Information

Carefully read the precautions before using the board.

Environmental conditions:

- Use this product in environments with ambient temperatures between 0°C and 60°C.
- Do not leave this product in an environment where the storage temperature may be below -20° C or above 80° C. To prevent from damages, the product must be used in a controlled environment.

Care for your iBASE products:

- Before cleaning the PCB, unplug all cables and remove the battery.
- Clean the PCB with a circuit board cleaner or degreaser, or use cotton swabs and alcohol.
- Vacuum the dust with a computer vacuum cleaner to prevent the fan from being clogged.



WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the top of this product.

Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the PCB on an anti-static kit or mat.
- Hold the edges of PCB when handling.
- Touch the edges of non-metallic components of the product instead of the surface of the PCB.
- Ground yourself by touching a grounded conductor or a grounded bit of metal frequently to discharge any static.



CAUTION

Danger of explosion if the internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or recycle them at a local recycling facility or battery collection point.

Warranty Policy

- **IBASE standard products:**

24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

- * PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.
 - Product model name
 - Product serial number
 - Detailed description of the problem
 - The error messages in text or in screenshots if there is any
 - The arrangement of the peripherals
 - Software in use (such as OS and application software, including the version numbers)
3. If repair service is required, you can download the RMA form at <http://www.ibase.com.tw/english/Supports/RMAService/>. Fill out the form and contact your distributor or sales representative.

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Chapter 1

General Information

The information provided in this chapter includes:

- Features
- Packing List
- Optional Accessories
- Specifications
- Block Diagram
- Board Overview
- Board Dimensions

1.1 Introduction

IB917 series is a 3.5" disk-size single board computer based on the platform of Intel® 7th Gen. Core™ U-series or Celeron® processor. It features both HDMI and Display Port at I/O coastline, and on-board headers for dual channel LVDS interface for video display. It is able to be operated at the ambient operating temperature ranging from 0 ~ 60 °C, and even from -20 ~ 80 °C for models of wide temperature.

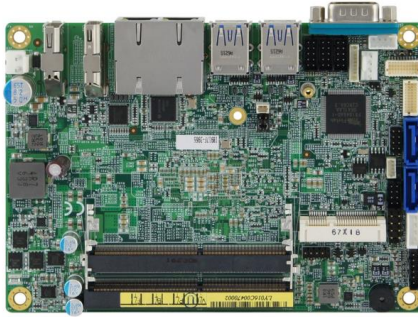


Photo of IB917AF

1.2 Features

- 3.5" disk-size SBC with Intel® 7th Gen. Core™ U-series or Celeron® processor
- 2 x DDR4-2133 SO-DIMM slots, expandable up to 32 GB
- Video output through LVDS connector, Display Port, and HDMI 1.4
- 2 x GbE LAN ports, 2 x USB 2.0, 4 x USB 3.0, 4 x COM, 2 x SATAIII, 1 x Mini-PCIe slot (full-size)
- Configurable watchdog timer, digital I/O, mSATA, iSMART, TPM 2.0

1.3 Packing List

Your IB917 package should include the items listed below. If any of the items below is missing, contact the distributor or dealer from whom you purchased the product.

- IB917 SBC x 1
- Disk x 1
(including chipset drivers and flash memory utility)
- This User's Manual x 1

1.4 Optional Accessories

IBASE provides optional accessories as follows. Please contact us or your dealer if you need any.

- Cable Kit (IB76A-1)
 - Including:
 - DC-In Power Cable (PW87) x 1
 - COM Ports Cable (PK1H) x 1
 - SATA & HDD Power Cable (SATA-53A) x 1
 - USB 2.0 Cable (USB29) x 1
- Audio cable (Audio-18)
- Heatsink (HSIB916-A)
- Heat Spreader (HSIB916-1)

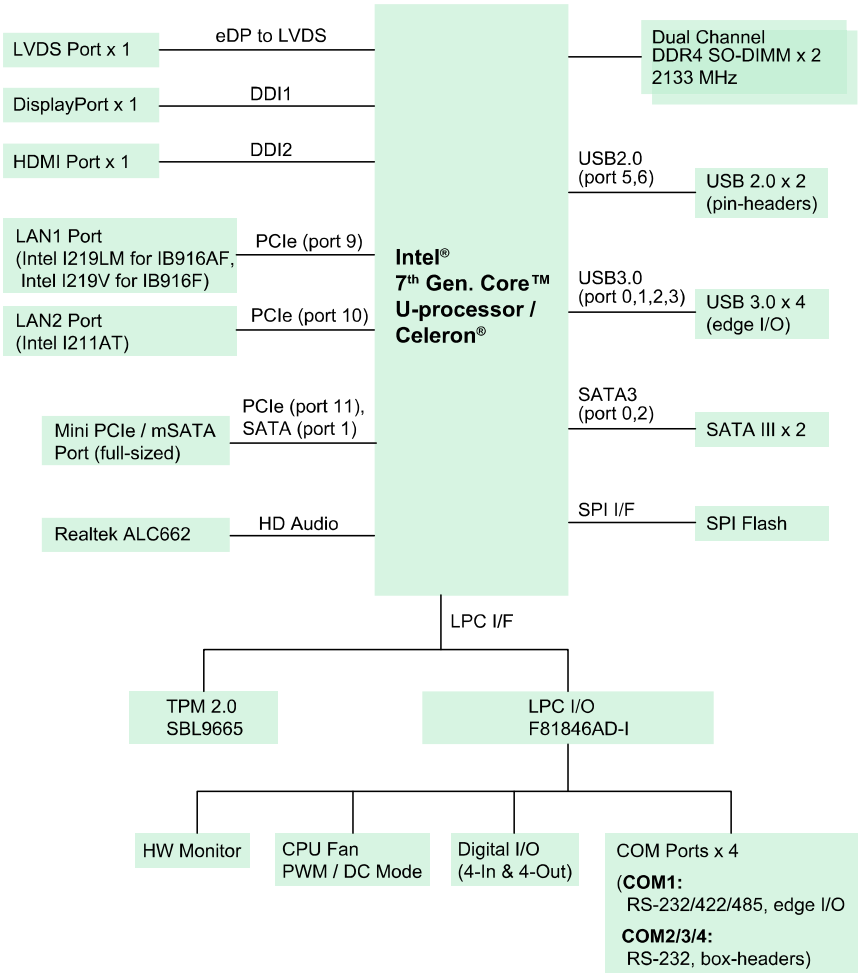
1.5 Specifications

| Product Name | IB917AF-7600 | IB917AF-7300 | IB917F-7100 | IB917F-3965 |
|--------------------------|---|--|--|-----------------------|
| Form Factor | 3.5" disk-size SBC | | | |
| System | | | | |
| Operating System | <ul style="list-style-type: none"> Windows 10 Linux Ubuntu / Fedora | | | |
| CPU Type | Intel® 7 th Gen. Core™ i7-7600U | Intel® 7 th Gen. Core™ i5-7300U | Intel® 7 th Gen. Core™ i3-7100U | Intel® Celeron® 3965U |
| CPU Speed | 2.8 GHz / 3.9 GHz | 2.6 GHz / 3.5 GHz | 2.4 GHz | 2.2 GHz |
| Cache | 4 MB | | | |
| Chipset | Integrated in Intel® U-series processor | | | |
| Memory | 2 x DDR4-2133 SO-DIMM, expandable up to 32 GB (Non-ECC) | | | |
| Storage | 1 x mSATA SSD | | | |
| Graphics | Intel® 7 th Gen. Core™ U-series integrated graphics | | | |
| Network | Intel® I219LM & I211AT | | Intel® I219V & I211AT | |
| Super I/O | Fintek F81846AD-I | | | |
| Audio Codec & Controller | Intel® U-series processor built-in HD audio controller Realtek ALC662 codec | | | |
| Power Requirement | 9 ~ 24V DC-In | | | |
| iAMT | 11.6 | | N/A | |
| iSMART | 3.2 | | | |
| TPM | 2.0 | | | |
| RAID | Yes | | | |
| Watchdog Timer | Yes (256 segments, 0, 1, 2...255 sec / min) | | | |

| BIOS | AMI BIOS |
|--------------------------|---|
| H/W Monitor | Yes |
| Dimensions | 102.22 x 147.01 mm (4.02" x 5.8") |
| RoHS | Yes |
| Certification | CE, FCC Class B |
| I/O Ports | |
| Display | <ul style="list-style-type: none"> • 1 x HDMI (1.4), 3840 x 2160 at 30 Hz • 1 x DisplayPort (1.2), 3840 x 2160 at 60 Hz • 1 x dual-channel LVDS, 1920 x 1080 at 60 Hz |
| LAN | 2 x RJ45 GbE LAN |
| USB | <ul style="list-style-type: none"> • 4 x USB 3.0: I/O coastline connectors • 2 x USB 2.0: via an on-board pin headers |
| Serial | 4 x COM ports: <ul style="list-style-type: none"> • COM1: RS-232/422/485 (I/O coastline DB9 connector, jumper-less selection) • COM2, COM3, COM4: RS-232 only (via on-board box-headers) |
| SATA | 2 x SATA III |
| Audio | On-board audio connector for Line-In, Line-Out, and Mic-In |
| Digital IO | 4-In & 4-Out |
| Expansion Slots | 1 x Mini-PCIe slot (x 1, full-size) with mSATA |
| Environment | |
| Temperature | <ul style="list-style-type: none"> • Operation: 0 ~ 60 °C (32 ~ 140 °F) • Storage: -20 ~ 80 °C (-4 ~ 176 °F) |
| Relative Humidity | 0 ~ 90 %, non-condensing at 60 °C |

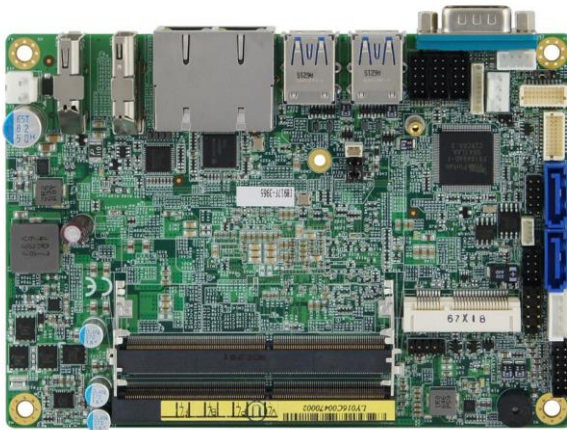
All specifications are subject to change without prior notice.

1.6 Block Diagram

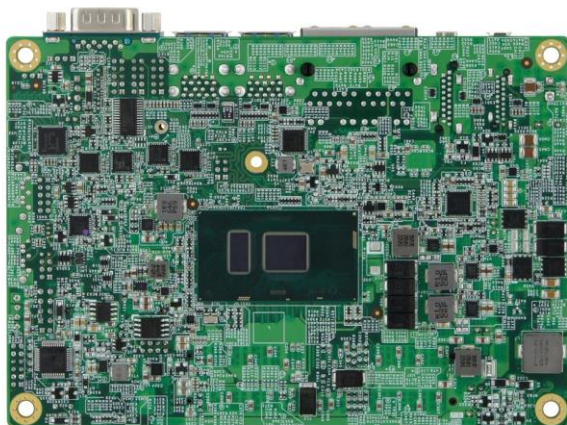


1.7 Overview

Top View



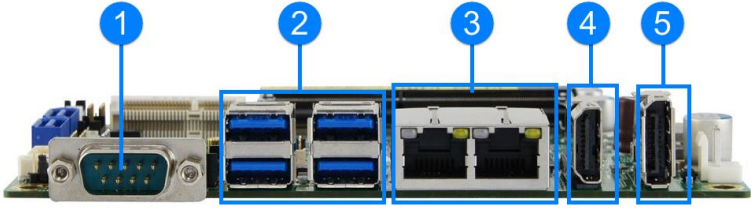
Bottom View



Photos of IB917AF

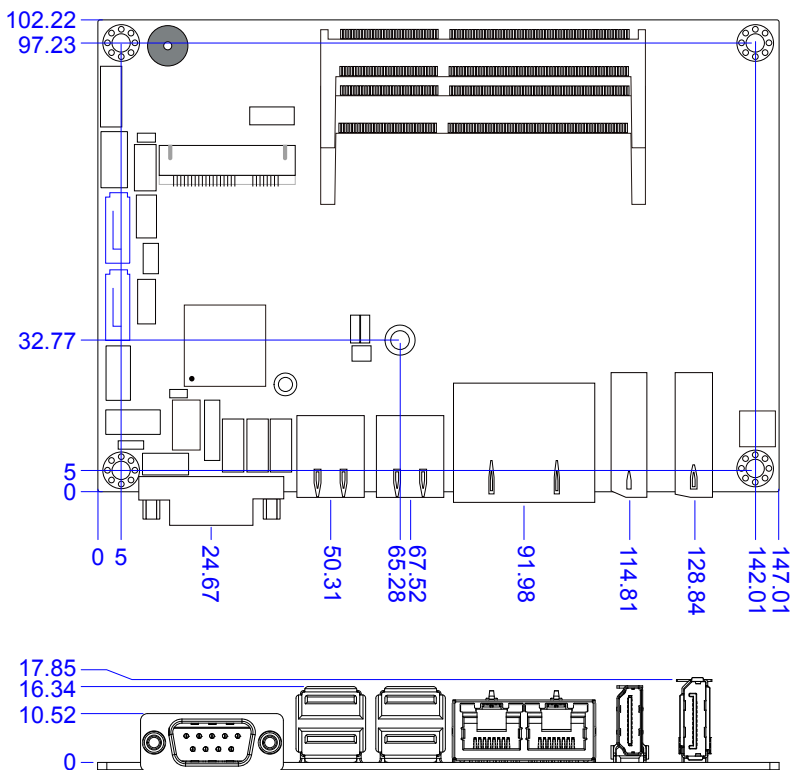
* The photos above are for reference only. Some minor components may differ.

I/O View



| No. | Name | No. | Name |
|-----|--------------------------|-----|-------------|
| 1 | COM1 RS-232/422/485 Port | 4 | HDMI Port |
| 2 | USB 3.0 Ports | 5 | DisplayPort |
| 3 | LAN Port | | |

1.8 Dimensions



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Chapter 2

Hardware Configuration

This section provides information on jumper settings and connectors on the IB917 in order to set up a workable system. On top of that, you will also need to install crucial pieces such as the CPU and the memory before using the product. The topics covered are:

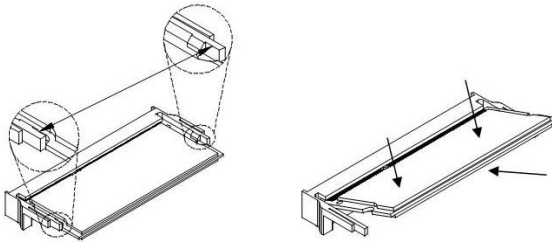
- Essential installations before you begin
- Jumper and connector locations
- Jumper settings and information of connectors

2.1 Essential Installations Before You Begin

Follow the instructions below to install the memory.

2.1.1 Installing the Memory

The IB917 series supports two DDR4 memory sockets for a maximum total memory of 32 GB. To install the modules, locate the memory slot on the board and perform the following steps:



1. Align the key of the memory module with that on the memory slot and insert the module slantwise.
2. Gently push the module in an upright position until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.

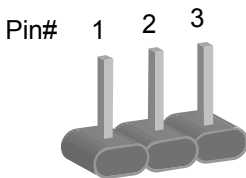
To remove the module, press the clips outwards with both hands, and the module will pop-up.

2.2 Setting the Jumpers

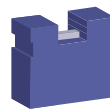
Set up and configure your IB917 by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

2.2.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

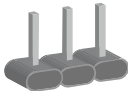
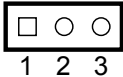
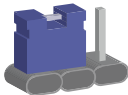
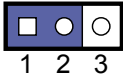
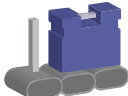
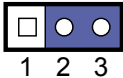


A 3-pin jumper



A jumper cap

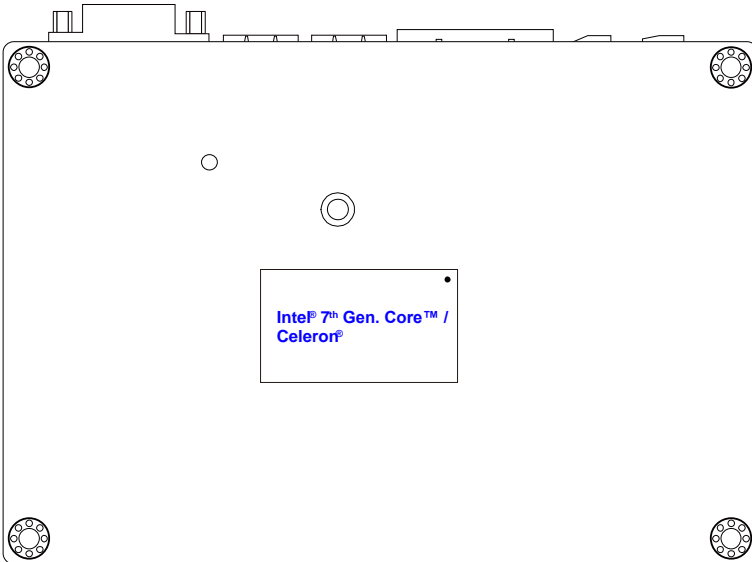
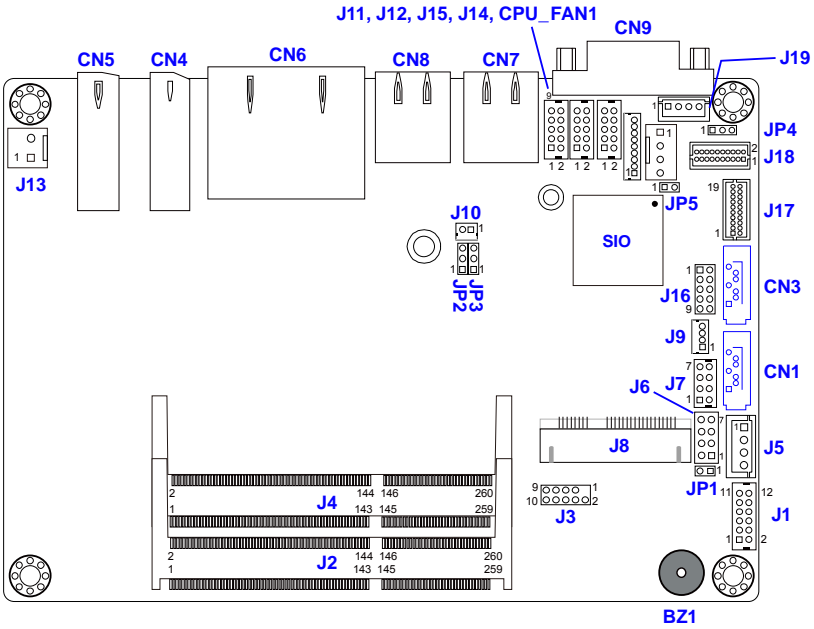
Refer to the illustration below to set jumpers.

| Pin closed | Oblique view | Schematic illustration in the manual |
|------------|---|--|
| Open |  |  1 2 3 |
| 1-2 |  |  1 2 3 |
| 2-3 |  |  1 2 3 |

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3 Jumper & Connector Locations

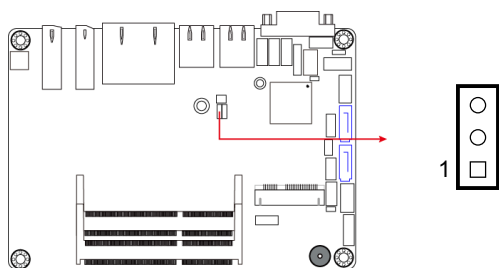


Board diagram of IB917

2.4 Jumpers Quick Reference

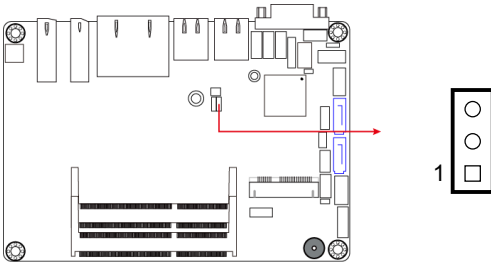
| Function | Jumper Name | Page |
|--|---|------|
| CMOS Data Clearance | JP2 | 15 |
| ME Register Clearance | JP3 | 16 |
| LVDS Panel Power / Brightness Selections | JP4 (For power) / JP5 (For brightness) | 16 |
| Factory Use Only | JP1 | - - |

2.4.1 CMOS Data Clearance (JP2)



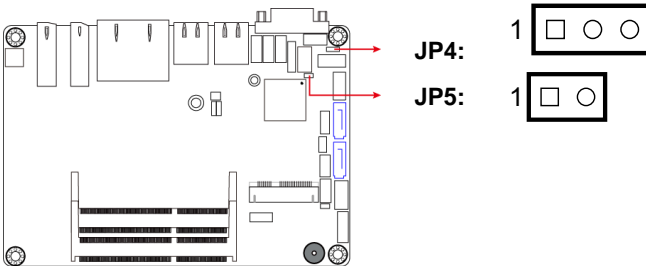
| Function | Pin closed | Illustration |
|---------------------|------------|--------------|
| Normal (default) | 1-2 | |
| Clear CMOS | 2-3 | |

2.4.2 ME Register Clearance (JP3)



| Function | Pin closed | Illustration |
|---------------------|------------|--------------|
| Normal (default) | 1-2 | 1 |
| Clear ME | 2-3 | 1 |

2.4.3 LVDS Panel Power / Brightness Selections (JP4 / JP5)

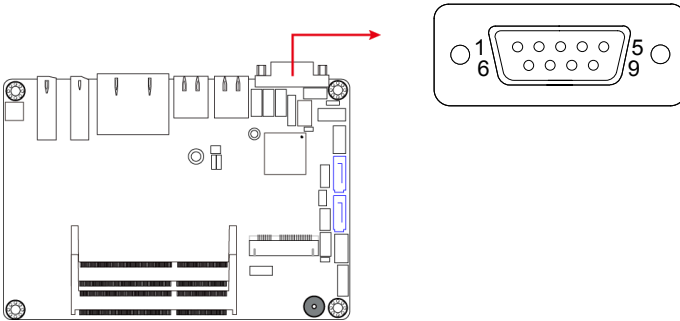


| Jumper | Function | Pin closed | Illustration |
|--------|----------------|------------|--------------|
| JP4 | 3.3V (default) | 1-2 | 1 |
| | 5V | 2-3 | 1 |
| JP5 | 3.3V (default) | Open | 1 |
| | 5V | Close | 1 |

2.5 Connectors Quick Reference

| Function | Connector Name | Page |
|--------------------------------|---|------|
| COM1 RS-232/422/485 Port | CN9 | 18 |
| Audio Connector | J1 | 19 |
| SATA HDD Power Connector | J5 | 19 |
| Front Panel Setting Connector | J6 | 20 |
| USB 2.0 Connector | J7 | 21 |
| Battery Connector | J10 | 21 |
| COM 2, COM3, COM4 RS-232 Ports | J15, J12, J11 | 22 |
| DC Power Input Connector | J13 | 22 |
| Digital I/O Connector | J16 | 23 |
| LCD Backlight Connector | J19 | 23 |
| LVDS Connectors | J17 (1 st channel), J18 (2 nd channel) | 24 |
| CPU Fan connector | CPU_FAN1 | 24 |
| SATA III Port | CN1, CN3 | -- |
| HDMI 1.4 Port | CN4 | -- |
| Display Port | CN5 | -- |
| GbE LAN Ports | CN6 | -- |
| USB 3.0 Port | CN7, CN8 | -- |
| DDR4 SO-DIMM Slot | J2, J4 | -- |
| Mini-PCIe / mSATA Slot | J8 | -- |
| Factory Use Only | J3, J9, J14 | -- |

2.5.1 COM1 RS-232/422/485 Port (CN9)

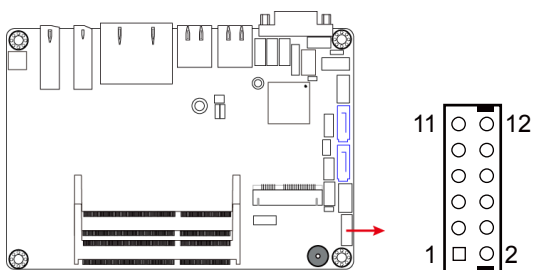


COM1 port is jumper-less and configurable in BIOS.

| Pin | Assignment | Pin | Assignment |
|-----|--------------------------|-----|----------------------|
| 1 | DCD, Data carrier detect | 6 | DSR, Data set ready |
| 2 | RXD, Receive data | 7 | RTS, Request to send |
| 3 | TXD, Transmit data | 8 | CTS, Clear to send |
| 4 | DTR, Data terminal ready | 9 | RI, Ring indicator |
| 5 | Ground | | |

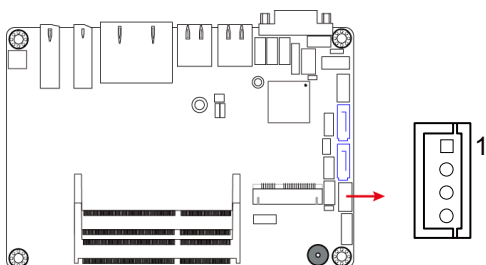
| Pin | Assignment | | |
|-----|------------|--------|--------|
| | RS-232 | RS-422 | RS-485 |
| 1 | DCD | TX- | DATA- |
| 2 | RX | TX+ | DATA+ |
| 3 | TX | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | Ground | Ground | Ground |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC | NC |
| 9 | RI | NC | NC |

2.5.2 Audio Connector (J1)



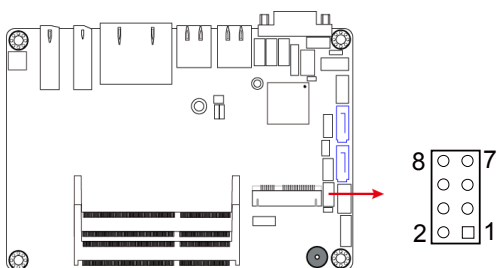
| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | Lineout_L | 2 | Lineout_R |
| 3 | JD_FRONT | 4 | Ground |
| 5 | LINEIN_L | 6 | Linein_R |
| 7 | JD_LINEIN | 8 | Ground |
| 9 | MIC_L | 10 | MIC-R |
| 11 | JD_MIC1 | 12 | Ground |

2.5.3 SATA HDD Power Connector (J5)



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | +5V | 3 | Ground |
| 2 | Ground | 4 | +12V |

2.5.4 Front Panel Connector (J6)



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | Ground | 2 | PWR_BTN |
| 3 | 3.3V | 4 | HDD Active |
| 5 | Ground | 6 | Reset |
| 7 | +5V | 8 | Ground |

J6 is utilized for system indicators to provide light indication of the computer activities and switches to change the computer status. It provides interfaces for the following functions.

- **ATX Power ON Switch (Pins 1 and 2)**

The 2 pins makes an “ATX Power Supply On/Off Switch” for the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will power off the system.

- **Hard Disk Drive LED Connector (Pins 3 and 4)**

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

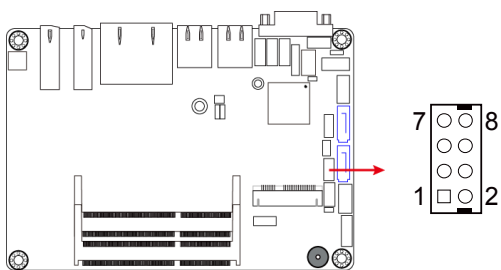
- **Reset Switch (Pins 5 and 6)**

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

- **Power LED: Pins 7 and 8**

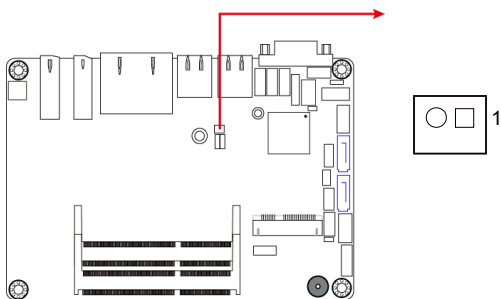
This connector connects to the system power LED on control panel. This LED will light when the system turns on.

2.5.5 USB 2.0 Connector (J7)



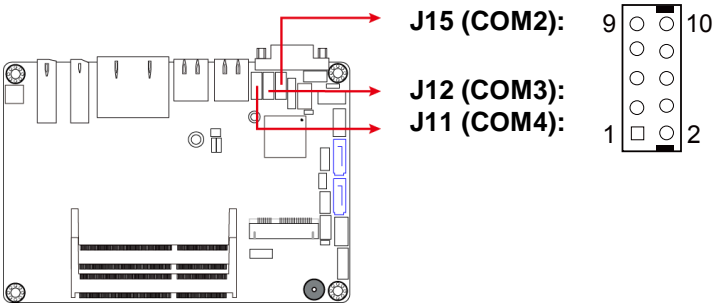
| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | VCC | 2 | Ground |
| 3 | D0- | 4 | D1+ |
| 5 | D0+ | 6 | D1- |
| 7 | Ground | 8 | VCC |

2.5.6 Battery Connector (J10)



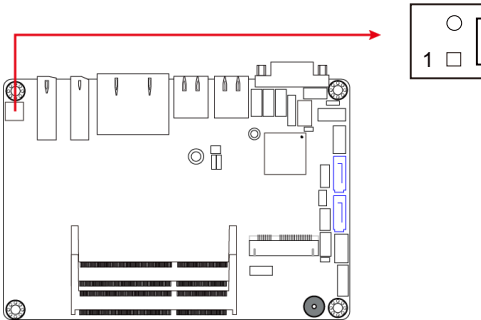
| Pin | Assignment |
|-----|------------|
| 1 | Battery+ |
| 2 | Ground |

2.5.7 COM2, COM3, COM4 RS-232 Ports (J15, J12, J11)



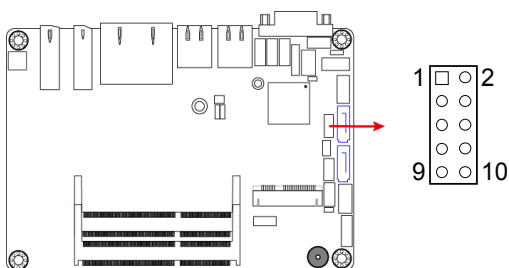
| Pin | Assignment | Pin | Assignment |
|-----|--------------------------|-----|--------------------------|
| 1 | DCD, Data carrier detect | 2 | RXD, Receive data |
| 3 | TXD, Transmit data | 4 | DTR, Data terminal ready |
| 5 | Ground | 6 | DSR, Data set ready |
| 7 | RTS, Request to send | 8 | CTS,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

2.5.8 DC Power Input Connector (J13)



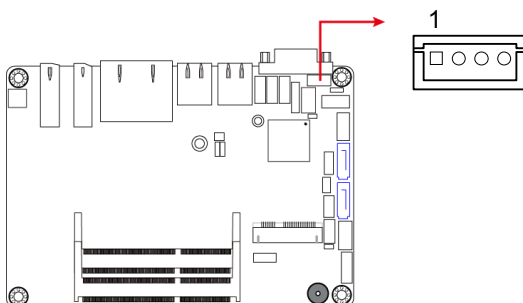
| Pin | Assignment |
|-----|------------|
| 1 | +9V ~ +24V |
| 2 | Ground |

2.5.9 Digital I/O Connector (J16)



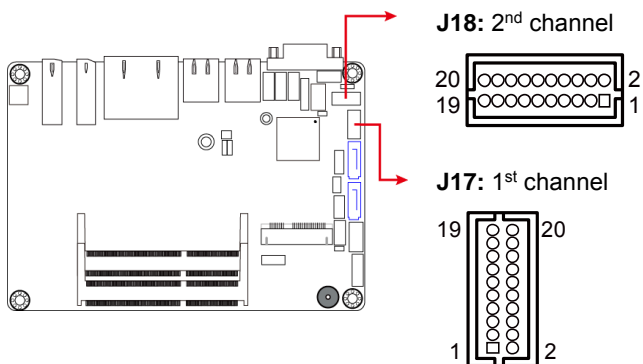
| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | Ground | 2 | VCC |
| 3 | OUT3 | 4 | OUT1 |
| 5 | OUT2 | 6 | OUT0 |
| 7 | IN3 | 8 | IN1 |
| 9 | IN2 | 10 | IN0 |

2.5.10 LCD Backlight Connector (J19)



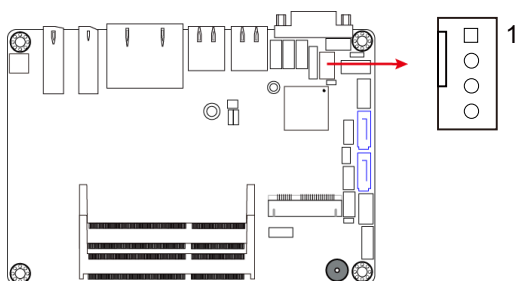
| Pin | Assignment | Pin | Assignment |
|-----|------------------|-----|--------------------|
| 1 | +12V | 3 | Brightness Control |
| 2 | Backlight Enable | 4 | Ground |

2.5.11 LVDS Connector (J17, J18)



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | TX0P | 2 | TX0N |
| 3 | Ground | 4 | Ground |
| 5 | TX1P | 6 | TX1N |
| 7 | Ground | 8 | Ground |
| 9 | TX2P | 10 | TX2N |
| 11 | Ground | 12 | Ground |
| 13 | CLKP | 14 | CLKN |
| 15 | Ground | 16 | Ground |
| 17 | TX3P | 18 | TX3N |
| 19 | Power | 20 | Power |

2.5.12 CPU Fan Connector (CPU_FAN1)



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|-------------|
| 1 | Ground | 3 | CPU Fan In |
| 2 | 12V | 4 | CPU Fan Out |

Chapter 3

Drivers Installation

This chapter introduces installation of the following drivers:

- Intel® Chipset Software Installation Utility
- VGA Driver
- HD Audio Driver
- LAN Driver
- Intel® Management Engine Drivers Installation

3.1 Introduction

This section describes the installation procedures for software and drivers. The software and drivers are included with the motherboard. If you find anything missing, please contact the distributor where you made the purchase. The contents of this section include the following:

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

3.2 Intel® Chipset Software Installation Utility

The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for Intel chipset components. Follow the instructions below to complete the installation.

1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Kabylake-U Chipset Drivers** on the right pane.



2. Click **Intel(R) Chipset Software Installation Utility**.



3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.
4. Accept the software license agreement and proceed with the installation process.
5. On the *Readme File Information* screen, click **Install** for installation.
6. The driver has been completely installed. You are suggested to restart the computer for changes to take effect.

3.3 VGA Driver Installation

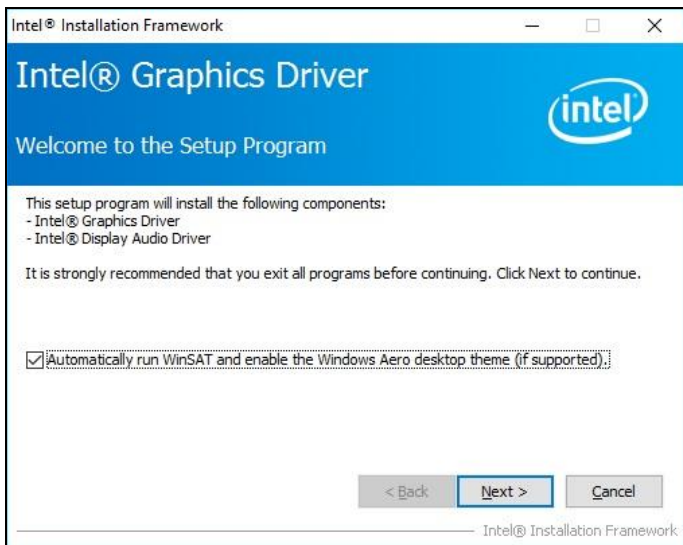
1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Kabylake-U Chipset Drivers** on the right pane.



2. Click **Intel(R) HD Graphics Driver**.



- When the *Welcome* screen appears, click **Next** to continue.



- Click **Yes** to accept the license agreement and click **Next** until the installation starts.
- On the *Readme File Information* screen, click **Next** until the installation starts.
- The driver has been completely installed. You are suggested to restart the computer for changes to take effect.

3.4 HD Audio Driver Installation

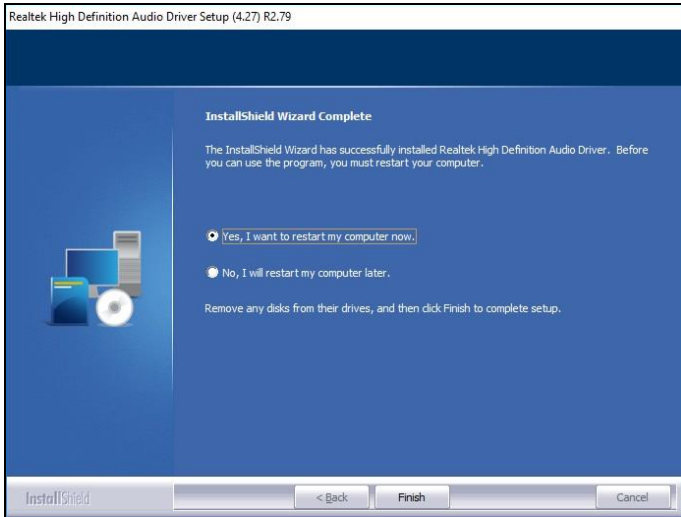
1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Kabylake-U Chipset Drivers** on the right pane.



2. Click **Realtek High Definition Audio Driver**.



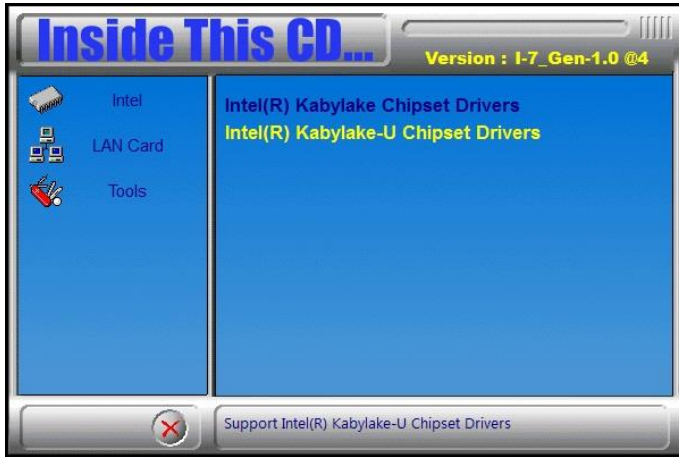
3. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



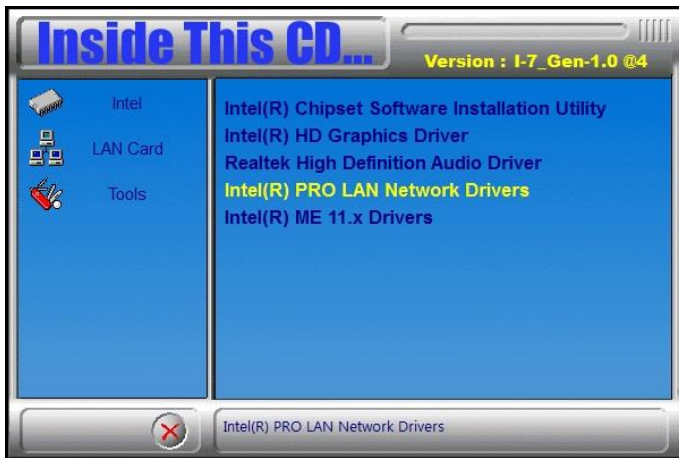
4. Click **Next** until the installation starts.
5. The driver has been completely installed. You are suggested to restart the computer for changes to take effect.

3.5 LAN Driver Installation

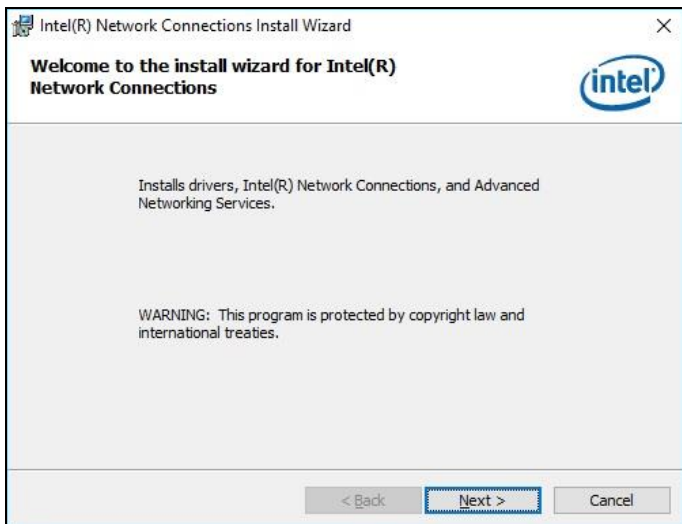
1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Kabylake-U Chipset Drivers** on the right pane.



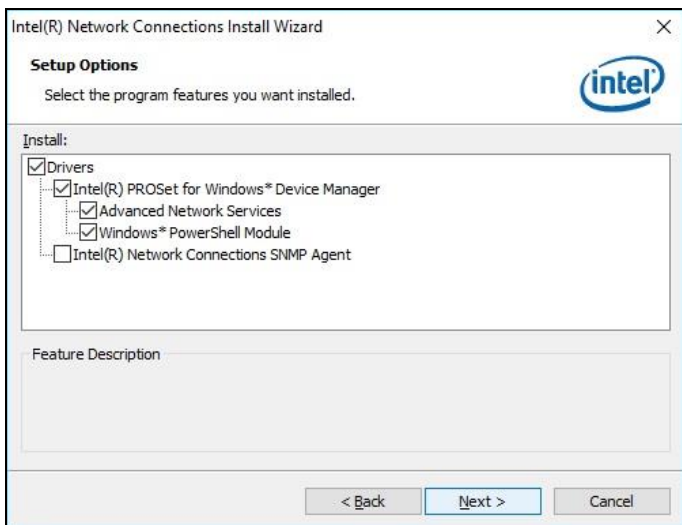
2. Click **Intel(R) PRO LAN Network Drivers..**



- When the *Welcome* screen appears, click **Next**.



- Accept the license agreement and click **Next**.
- On the *Setup Options* screen, click the checkbox to select the desired driver(s) for installation. Then click **Next** to continue.



- The wizard is ready for installation. Click **Install**.
- As the installation is complete, you are suggested to restart the computer for changes to take effect.

3.6 Intel® Management Engine Drivers Installation

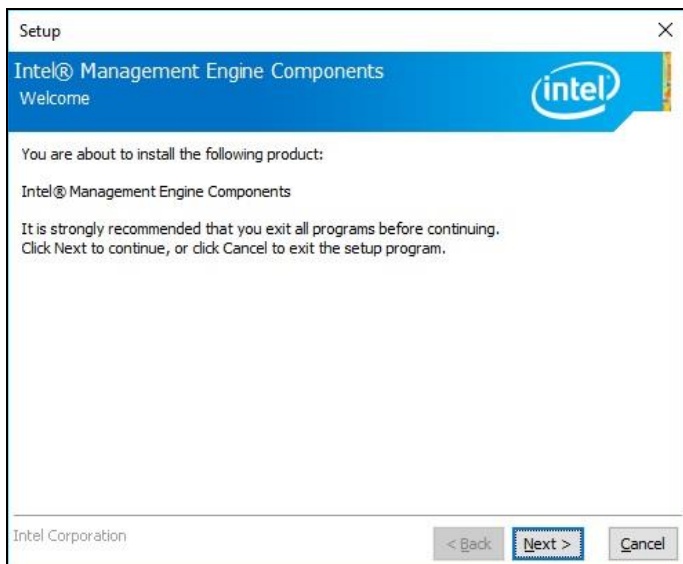
1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Kabylake-U Chipset Drivers** on the right pane.



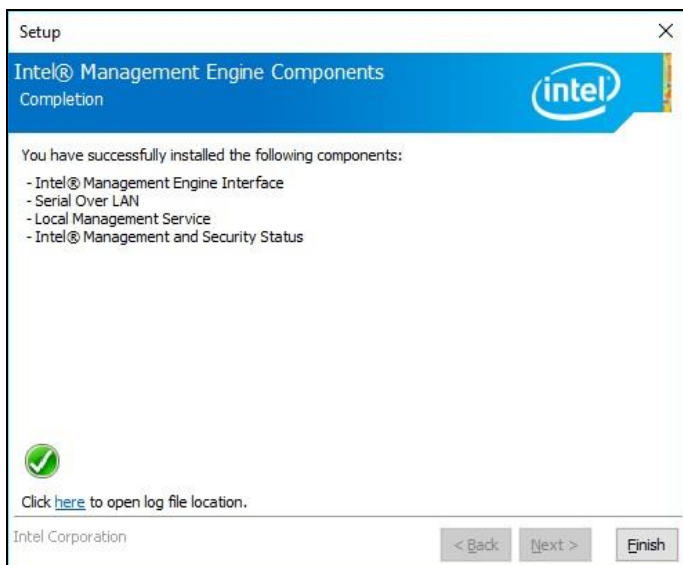
2. Click **Intel(R) ME 11.x Drivers**.



- When the *Welcome* screen appears, click **Next**.



- Accept the license agreement and click **Next** until the installation starts.
- As the driver has been successfully installed, you are suggested to restart the computer for changes to take effect.



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Chapter 4

BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

4.1 Introduction

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

4.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Press the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

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

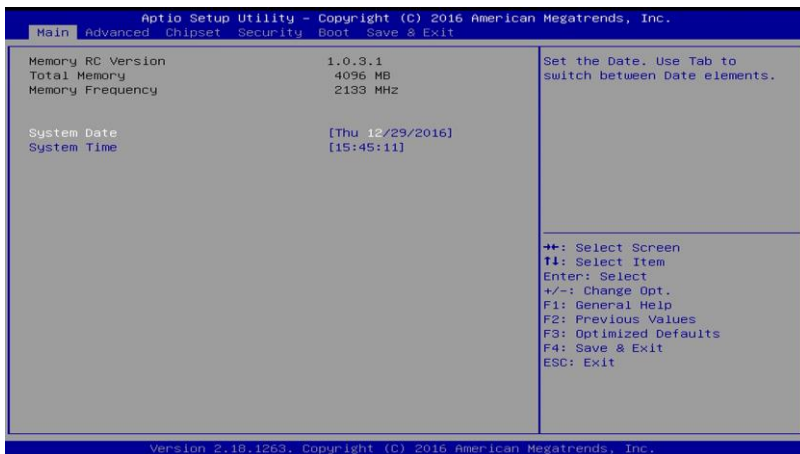
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

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

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

4.3 Main Settings



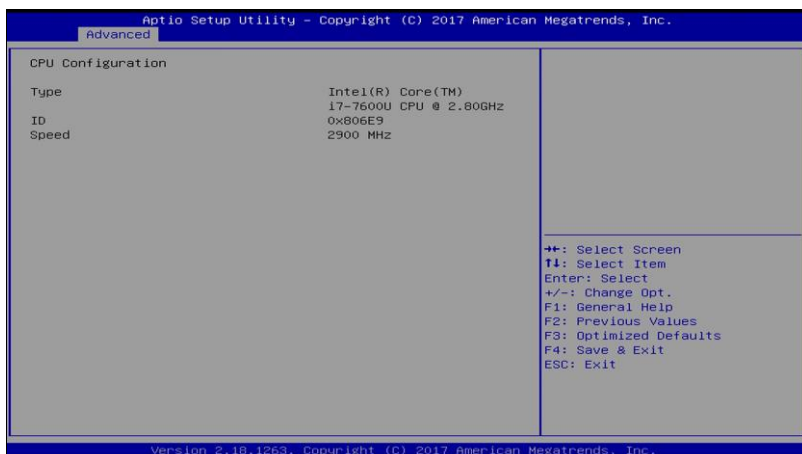
| BIOS Setting | Description |
|--------------|---|
| System Date | Sets the date. Use the <Tab> key to switch between the data elements. |
| System Time | Set the time. Use the <Tab> key to switch between the data elements. |

4.4 Advanced Settings

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



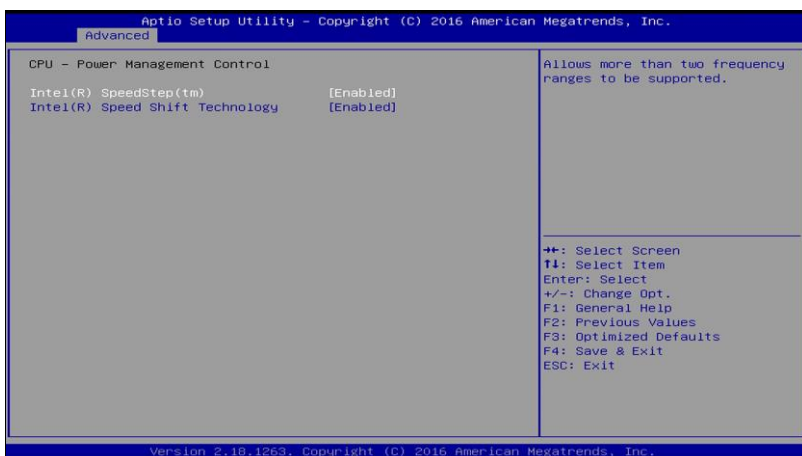
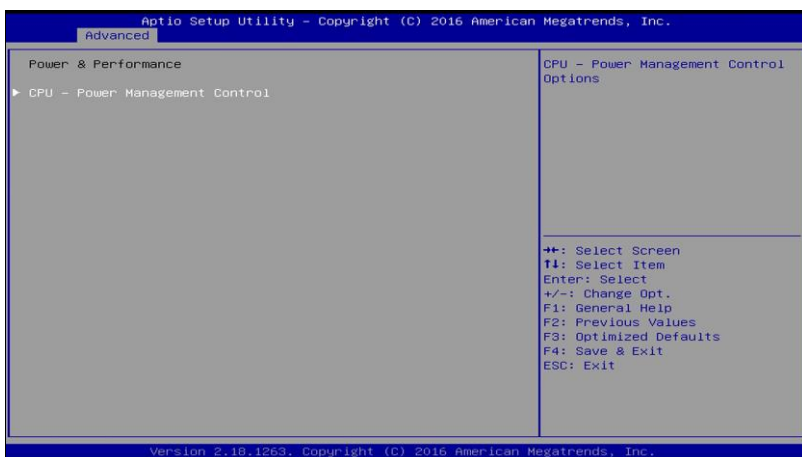
4.4.1 CPU Configuration



Displays the type, ID and speed of the CPU.

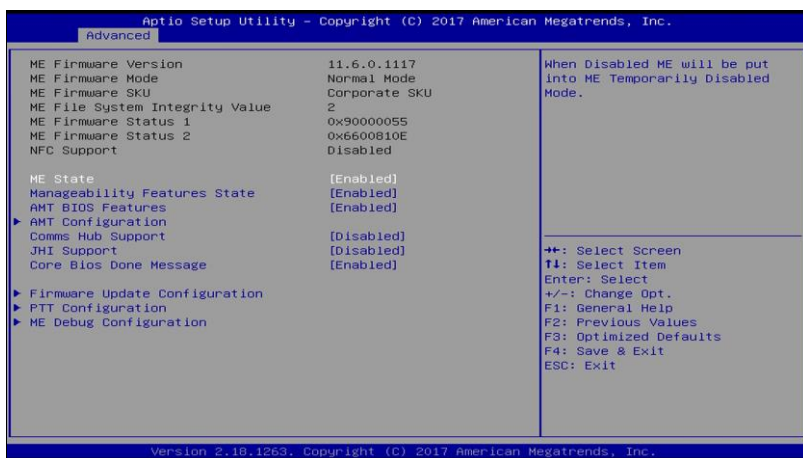
Note: The CPU information displayed varies upon your actual CPU type.

4.4.2 Power & Performance



| BIOS Setting | Description |
|---------------------------------|---|
| Intel(R) SpeedStep(tm) | Allows more than two frequency ranges to be supported. |
| Intel(R) Speed Shift Technology | Enables / Disables Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states. |

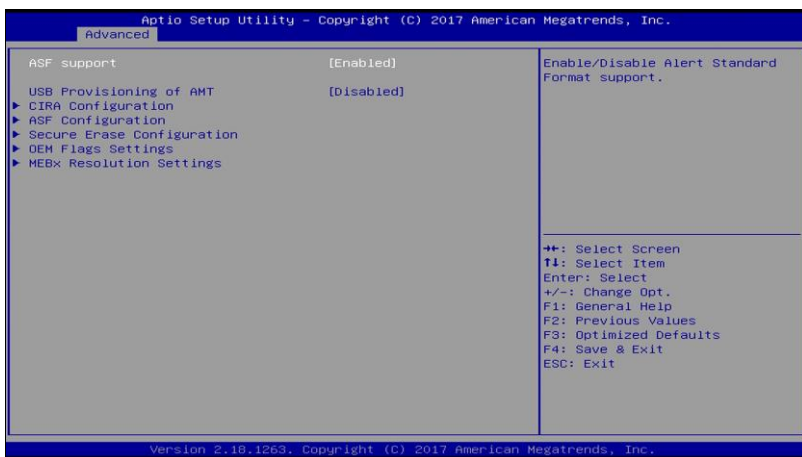
4.4.3 PCH-FW Configuration



| BIOS Setting | Description |
|-------------------------------|---|
| ME State | When disabled ME will be put into ME Temporarily Disabled Mode. |
| Manageability Features State | Enables / Disables Intel(R) manageability features in FW. To disable support platform must be in an unprovisioned state first. |
| AMT BIOS Features | When disabled AMT BIOS features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable manageability features in FW. |
| AMT Configuration | Configures Intel(R) Active Management Technology Parameters. |
| Comms Hub Support | Enables / Disables support for Comms Hub. |
| JHI Support | Enables / Disables Intel(R) DAL Host Interface Service (JHI). |
| Core BIOS Done Message | Enables / Disables Core BIOS done message sent to ME. |
| Firmware Update Configuration | Configures Management Engine Technology parameters. |
| PTT Configuration | Configures PTT capability or state. |

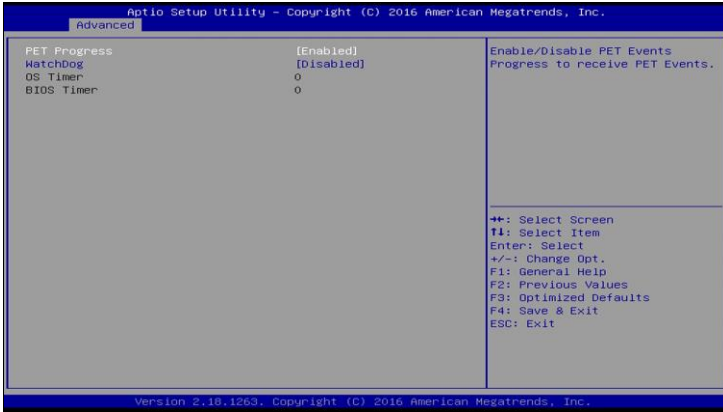
| BIOS Setting | Description |
|------------------------|--|
| ME Debug Configuration | Configures ME debug options. Note: This menu is provided for testing purposes. It is recommended to leave the options in their default states. |

4.4.3.1. AMT Configuration



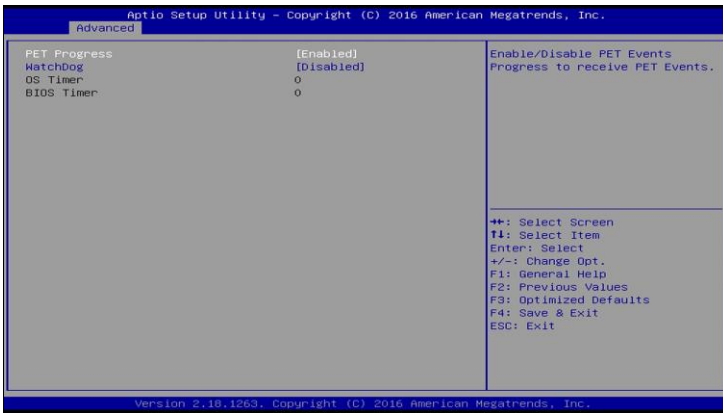
| BIOS Setting | Description |
|----------------------------|---|
| ASF Support | Enables / Disables Alert Standard Format support. |
| USB Provisioning of AMT | Enables / Disables of AMT USB provisioning. |
| CIRA Configuration | Configures remote assistance process parameters. |
| ASF Configuration | Configures Alert Standard Format parameters. |
| Secure Erase Configuration | Secures erase configuration menu. |
| OEM Flags Settings | Configures OEM Flags. |
| MEBx Resolution Settings | Shows resolution settings for MEBx display modes. |

CIRA Configuration



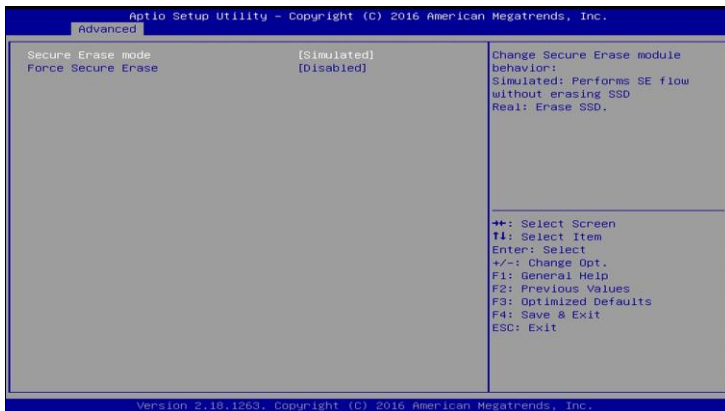
| BIOS Setting | Description |
|------------------------------------|--|
| Activate Remote Assistance Process | Trigger CIRA boot. Note: Network Access must be activated first from MEBx Setup. |

ASF Configuration



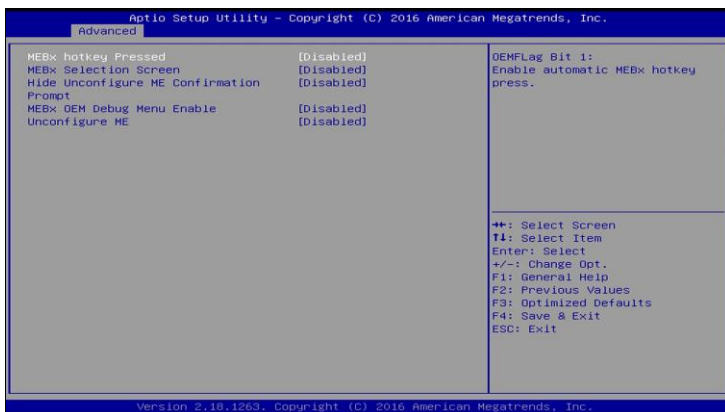
| BIOS Setting | Description |
|--------------|---|
| PET Progress | Enables / Disables PET events progress to receive PET events. |
| WatchDog | Enables / Disables the watchdog timer. |

Secure Erase Configuration:



| BIOS Setting | Description |
|--------------------|---|
| Secure Erase Mode | Changes Secure Erase module behavior. <ul style="list-style-type: none"> • Simulated performs SE flow without erasing SSD. • Real erases SSD. |
| Force Secure Erase | Force Secure Erase on next boot. |

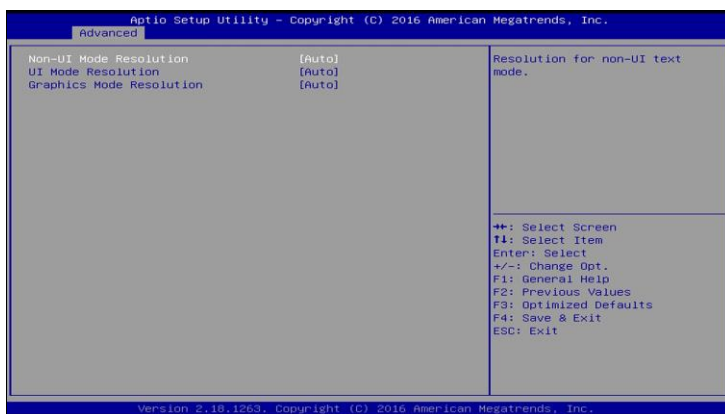
OEM Flags Settings:



| BIOS Setting | Description |
|---------------------|---|
| MEBx hotkey Pressed | OEMFlag Bit 1: enables automatic MEBx hotkey press. |

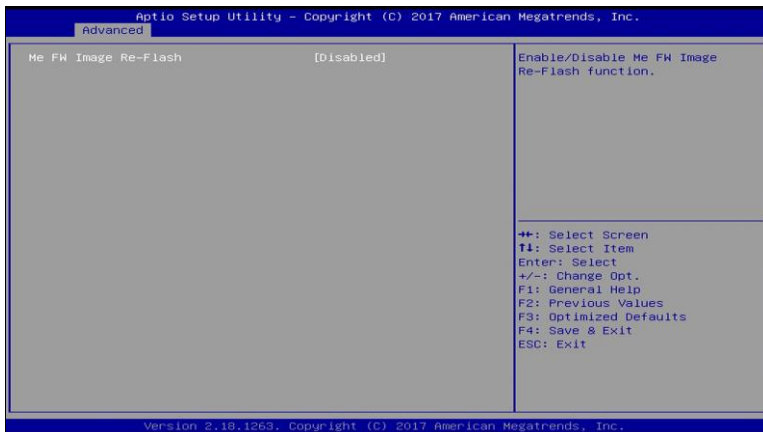
| BIOS Setting | Description |
|---|--|
| OEMFlag Bit 1 | Enables / Disables Automatic MEBx hotkey press. |
| MEBx Selection Screen | OEMFlag Bit 2: enables MEBx selection screen with 2 options. <ul style="list-style-type: none"> • Press 1 to enter ME configuration screens. • Press 2 to initiate a remote connection. Note: Network access must be activated from MEBx Setup for this screen to be displayed. |
| Hide Unconfigure ME Confirmation Prompt | OEMFlag Bit 6: hides the unconfigure ME confirmation prompt when attempting ME unconfiguration. |
| MEBx OEM Debug Menu Enable | OEMFlag Bit 14: enables OEM debug menu in MEBx. |
| Unconfigure ME | OEMFlag Bit 15: Unconfigures ME with resetting MEBx password to default. |

MEBx Resolution Settings:



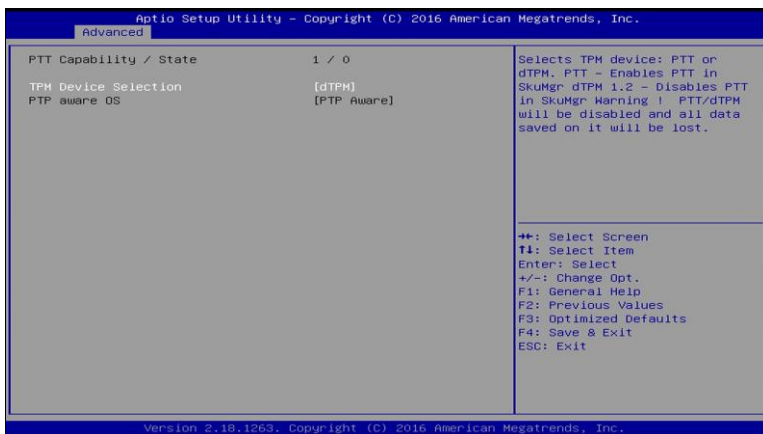
| BIOS Setting | Description |
|--------------------------|---------------------------------------|
| Non-UI Mode Resloution | Sets resolution fro non-UI text mode. |
| UI Mode Resolution | Sets resolution for UI text mode. |
| Graphics Mode Resolution | Sets resolution for graphics mode. |

4.4.3.2. Firmware Update Configuration



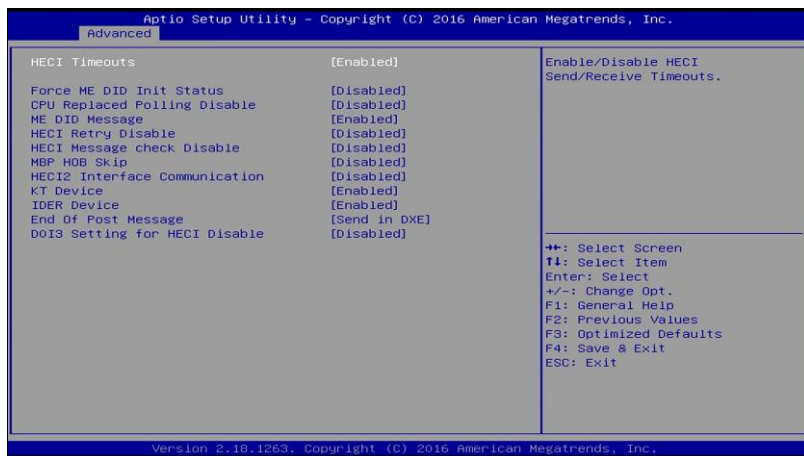
| BIOS Setting | Description |
|----------------------|---|
| ME FW Image RE-Flash | Enables / Disables ME FW Image Re-Flash function. |

4.4.3.3. PTT Configuration



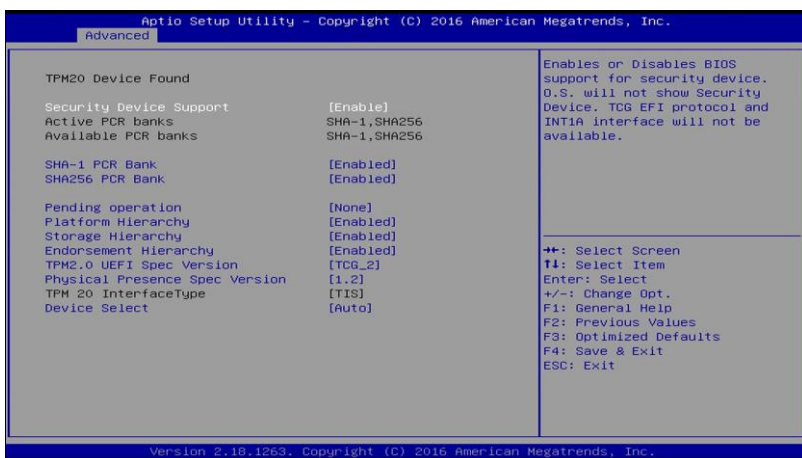
| BIOS Setting | Description |
|----------------------|--|
| TPM Device Selection | Selects TPM device: PTT or dTPM. <ul style="list-style-type: none"> • PTT enables PTT in SkuMgr. • dTPM 1.2 disables PTT in SkuMgr warning. PTT/dTPM will be disabled and all data saved on it will be lost. |

4.4.3.4. ME Debug Configuration



| BIOS Setting | Description |
|--------------------------------|---|
| HECI Timeouts | Enables / Disables HECI sending/receiving timeouts. |
| Force ME DID Init Status | Forces the DID initialization status value. |
| CPU Replaced Polling Disable | Disables CPU replacement polling loop. |
| ME DID Message | Enables / Disables ME DID message (disable will prevent the DID message from being sent). |
| HECI Retry Disable | Setting this option disables retry mechanism for all HECI APIs. |
| HECI Message Check Disable | Disables message check for BIOS boot path when sending messages. |
| MBP HDB Skip | Enables / Disables skip of MBP HDB. |
| HECI2 Interface Communicationn | Adds / Removes HECI2 device from PCI space. |
| KT Device | Enables / Disables KT device. |
| IDER Device | Enables / Disables IDER device. |
| End of Post Message | Enables / Disables end of Post message sent to ME. |
| DOI3 Setting for HECI Disable | Disables setting DOI3 bit for all HECI devices. |

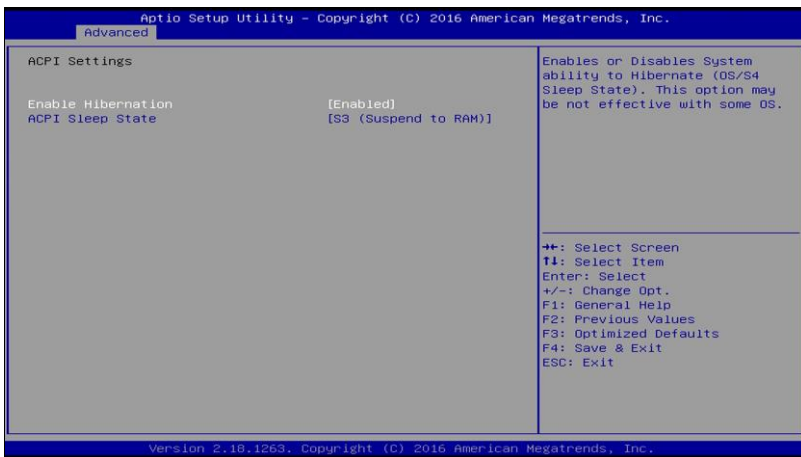
4.4.4 Trusted Computing



| BIOS Setting | Description |
|--------------------------|---|
| Security Device Support | Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INTIA interface will not be available. |
| SHA-1 PCR Bank | Enables / Disables SHA-1 PCR Bank. |
| SHA256 PCR Bank | Enables / Disables SHA256 PCR Bank. |
| Pending operation | Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device. |
| Platform Hierarchy | Enables / Disables platform hierarchy. |
| Storage Hierarchy | Enables / Disables storage hierarchy. |
| Endorsement Hierarchy | Enables / Disables endorsement hierarchy. |
| TPM2.0 UEFI Spec Version | Selects the supported TCG version based on your OS. <ul style="list-style-type: none"> TCG_1_2: supports Windows 8 /10. TCG_2: supports new TCG2 protocol and event format for Windows 10 or later. |

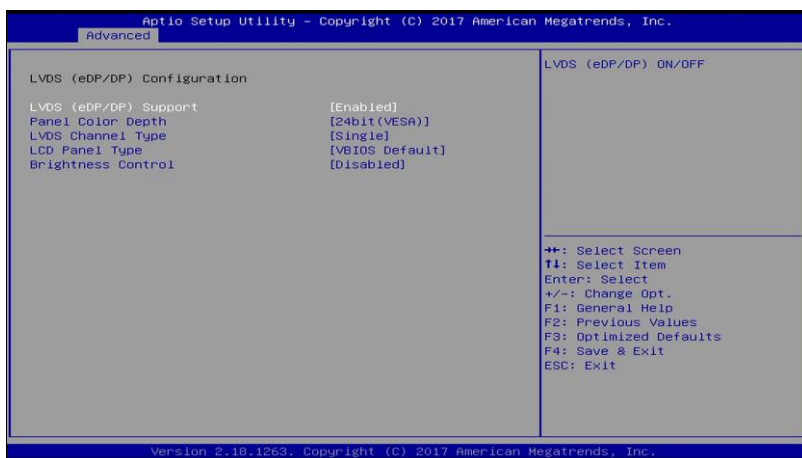
| BIOS Setting | Description |
|--------------------------------|--|
| Physical Presence Spec Version | Selects to show the PPI Spec Version (1.2 or 1.3) that the OS supports. Note: Some HCK tests might not support 1.3. |
| Device Select | <ul style="list-style-type: none">• TPM 1.2 will restrict support to TPM 1.2 devices only.• TPM 2.0 will restrict support to TPM 2.0 devices only.• Auto will support both with the default being set to TPM 2.0 devices if not found, and TPM 1.2 device will be enumerated. |

4.4.5 ACPI Settings



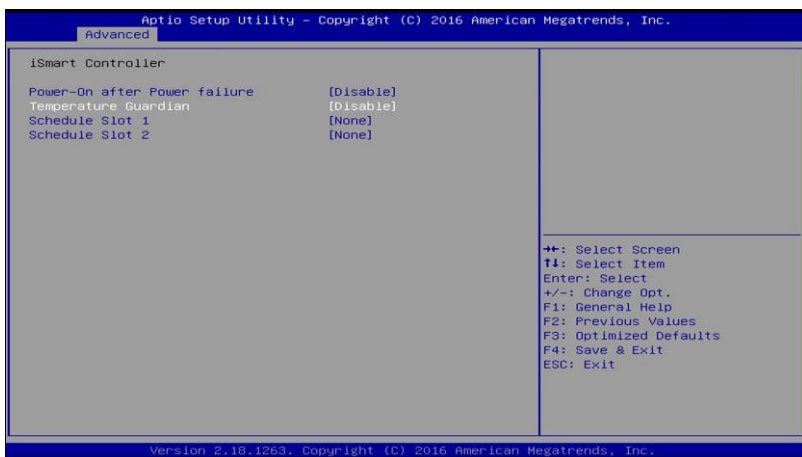
| BIOS Setting | Description |
|--------------------|--|
| Enable Hibernation | Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS. |
| ACPI Sleep State | Selects an ACPI sleep state (Suspend Disabled or S3) where the system will enter when the Suspend button is pressed. |

4.4.6 LVDS (eDP/DP) Configuration



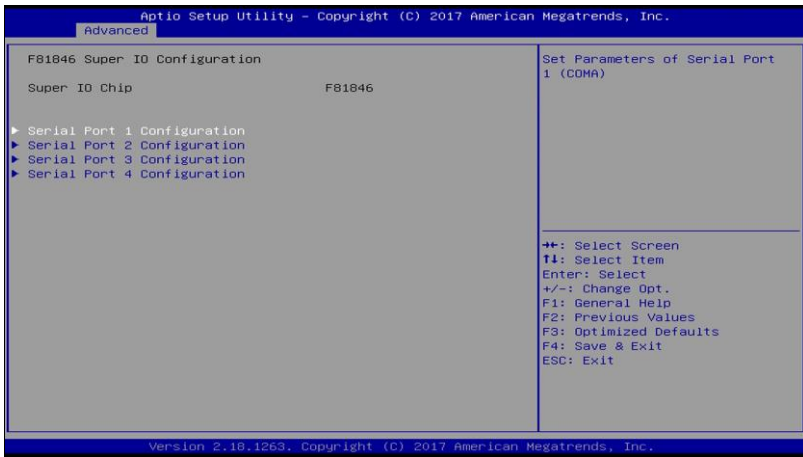
| BIOS Setting | Description |
|-----------------------|--|
| LVDS (eDP/DP) Support | Enables / Disables LVDS (eDP/DP). |
| Panel Color Depth | Selects the panel color depth. Options: 18 bit, 24 Bit (VESA), 24 bit (JEIDA) |
| LVDS Channel Type | Chooses the LVDS as single or dual channel. |
| LCD Panel Type | Selects LCD panel used by Intel Graphics Device by selecting the appropriate setup item. Resolution Options: VBIOS Default, 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1400 x 1050, 1366 x 768, 1600 x 1200, 1680 x 1050, 1920 x 1200, 1440 x 900, 1600 x 900, 1280 x 800, 1920 x 1080, 2048 x 1536 |
| Brightness Control | Enables / Disables the brightness control. |

4.4.7 iSMART Controller



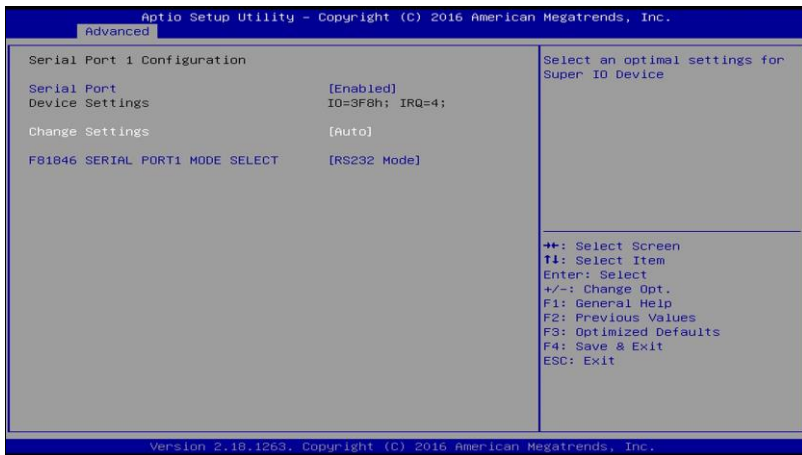
| BIOS Setting | Description |
|------------------------------|--|
| Power-On after Power failure | Enables / Disables the system to be turned on automatically after a power failure. |
| Temperature Guardian | Generate the reset signal when system hands up on POST. |
| Schedule Slots | Sets up the hour / minute / day for the power-on schedule for the system. Options: <ul style="list-style-type: none"> • None • Power On • Power On / Off |

4.4.8 F81846 Super IO Configuration



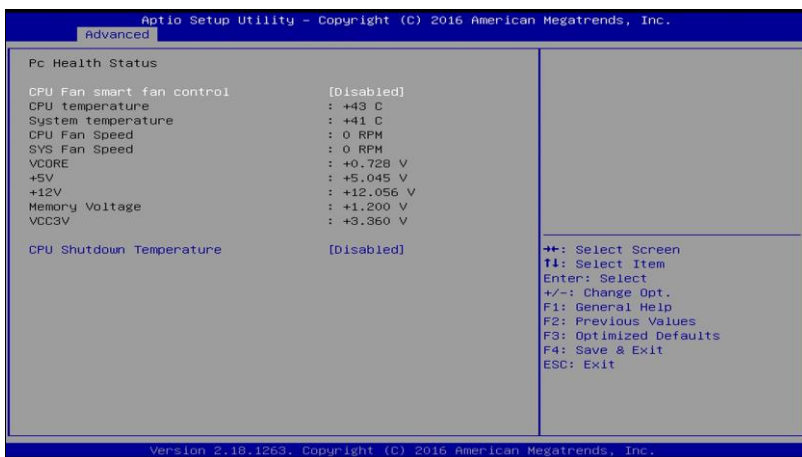
| BIOS Setting | Description |
|----------------------------|---|
| Serial Ports Configuration | Sets parameters of serial ports. Enables / Disables the serial port and select an optimal setting for the Super IO device. |

4.4.8.1. Serial Port 1 Configuration



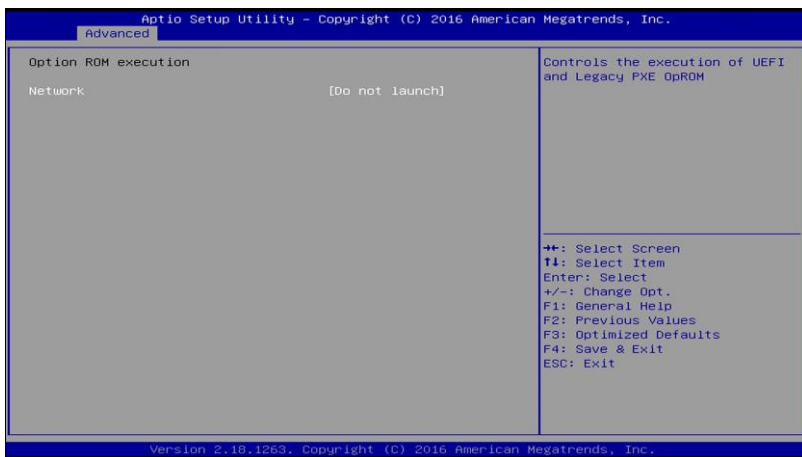
| BIOS Setting | Description |
|----------------------------------|--|
| Serial Port | Enables / Disables the serial port. |
| Change Settings | Selects an optimal settings for Super I/O device. Options: <ul style="list-style-type: none"> • Auto • IO = 3F8h; IRQ = 4 • IO = 3F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 |
| F81846 Serial Port 1 Mode Select | Changes the serial port mode to RS-232 / 422 / 485. |

4.4.9 Hardware Monitor



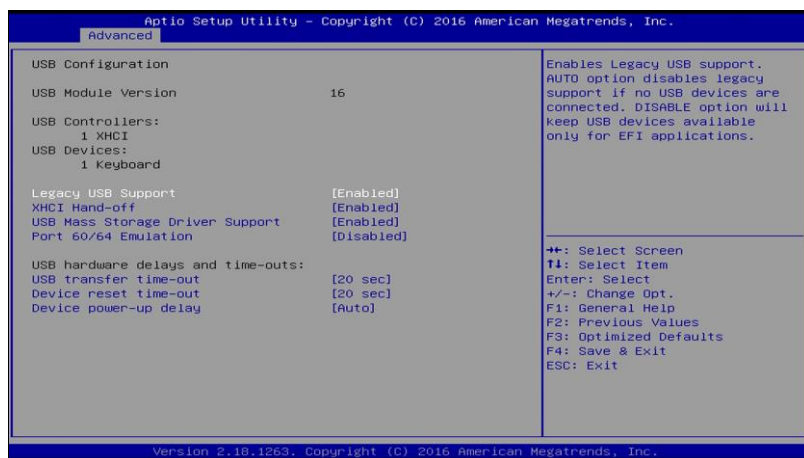
| BIOS Setting | Description |
|---------------------------|---|
| CPU Fan smart fan control | Enables / Disables smart fan control. |
| Temperatures / Voltages | These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status. |
| CPU Shutdown Temperature | Sets a threshold of temperature to shut down if CPU goes overheated. Options: Disabled / 70 °C / 75 °C / 80 °C / 85 °C / 90 °C / 95 °C |

4.4.10 CSM Configuration



| BIOS Setting | Description |
|--------------|--|
| Network | Controls the execution of UEFI and Legacy PXE OpROM. |

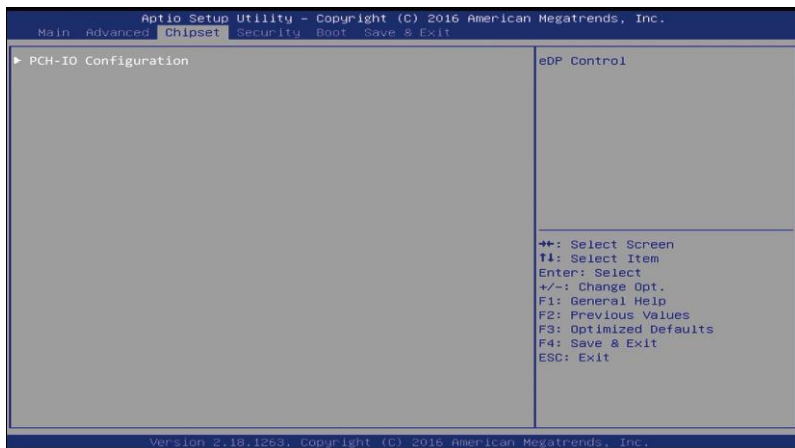
4.4.11 USB Configuration



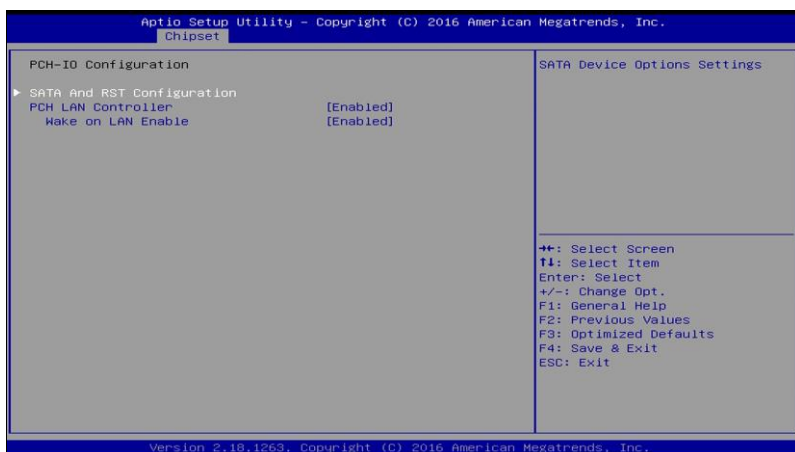
| BIOS Setting | Description |
|---------------------------------|--|
| Legacy USB Support | <ul style="list-style-type: none"> • Enabled enables Legacy USB support. • Auto disables legacy support if there is no USB device connected. • Disabled keeps USB devices available only for EFI applications. |
| XHCI Hand-off | This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. |
| USB Mass Storage Driver Support | Enables / Disables the support for USB mass storage driver. |
| Port 60/64 Emulation | Enables / Disables the support for I/O port 60h / 64h emulation. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSES. |
| USB Transfer time-out | The time-out value (1 / 5 / 10 / 20 secs) for Control, Bulk, and Interrupt transfers. |
| Device reset time-out | Gives seconds (10 / 20 / 30 / 40 secs) to delay execution of Start Unit command to USB mass storage device. |

| BIOS Setting | Description |
|-----------------------|--|
| Device power-up delay | The maximum time the device will take before it properly reports itself to the Host Controller. Auto uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor. |

4.5 Chipset Settings

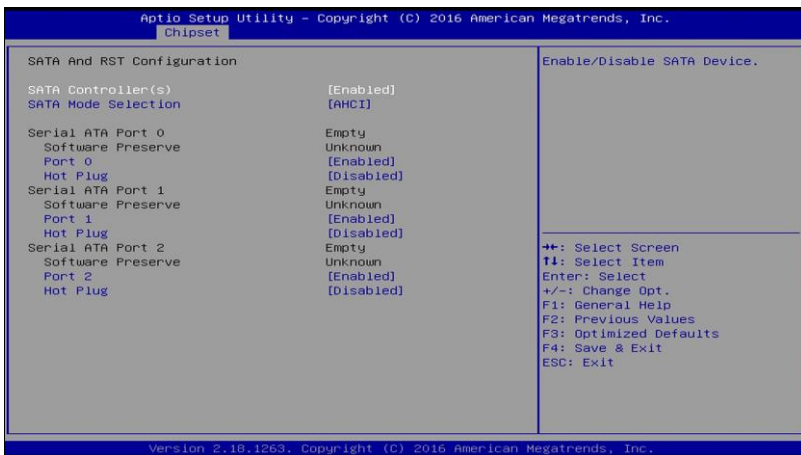


4.5.1 PCH-IO Configuration



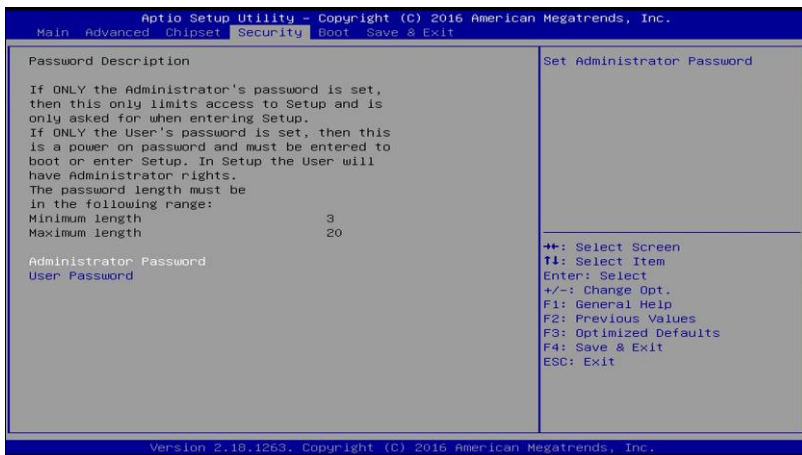
| BIOS Setting | Description |
|----------------------------|---|
| SATA and RST Configuration | SATA device options and settings |
| PCH LAN Controller | Enables / Disables onboard NIC. |
| Wake on LAN Enable | Enables / Disables integrated LAN to wake the system. |

4.5.1.1. SATA and RST Configuration:



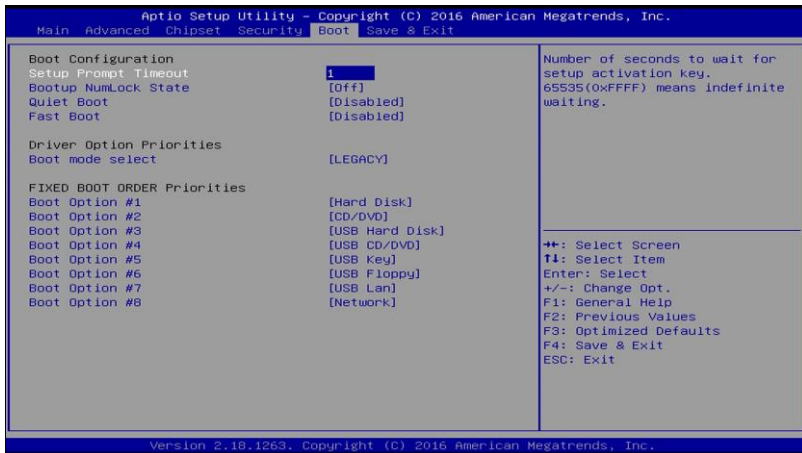
| BIOS Setting | Description |
|---------------------|--|
| SATA Controller(s) | Enables / Disables the Serial ATA. |
| SATA Mode Selection | Selects IDE or AHCI Mode. |
| Serial ATA Port 0~2 | Enables / Disables Serial Port 0 ~ 2. |
| SATA Ports Hot Plug | Enables / Disables SATA Ports HotPlug. |

4.6 Security Settings



| BIOS Setting | Description |
|------------------------------|---|
| Setup Administrator Password | Sets an administrator password for the setup utility. |
| User Password | Sets a user password. |

4.7 Boot Settings



| BIOS Setting | Description |
|------------------------|--|
| Setup Prompt Timeout | Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. |
| Bootup NumLock State | Selects the keyboard NumLock state. |
| Quiet Boot | Enables / Disables Quiet Boot option. |
| Fast Boot | Enables / Disables boot with initialization of a minimal set of devices required to launch the active boot option. Has no effect for BBS boot options. |
| Boot mode select | Selects a Boot mode, Legacy / UEFI / Dual. |
| Boot Option Priorities | Sets the system boot order priorities for hard disk, CD/DVD, USB, Network. |

4.8 Save & Exit Settings



| BIOS Setting | Description |
|---------------------------|---|
| Save Changes and Exit | Exits system setup after saving the changes. |
| Discard Changes and Exit | Exits system setup without saving any changes. |
| Save Changes and Reset | Resets the system after saving the changes. |
| Discard Changes and Reset | Resets system setup without saving any changes. |
| Save Changes | Saves changes done so far to any of the setup options. |
| Discard Changes | Discards changes done so far to any of the setup options. |
| Restore Defaults | Restores / Loads defaults values for all the setup options. |
| Save as User Defaults | Saves the changes done so far as User Defaults. |
| Restore User Defaults | Restores the user defaults to all the setup options. |

Appendix

This section provides the mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

A. I/O Port Address Map

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

| Address | Device Description |
|-----------------------|-----------------------------------|
| 0x00000020-0x00000021 | Programmable interrupt controller |
| 0x00000024-0x00000025 | Programmable interrupt controller |
| 0x00000028-0x00000029 | Programmable interrupt controller |
| 0x0000002C-0x0000002D | Programmable interrupt controller |
| 0x00000030-0x00000031 | Programmable interrupt controller |
| 0x00000034-0x00000035 | Programmable interrupt controller |
| 0x00000038-0x00000039 | Programmable interrupt controller |
| 0x0000003C-0x0000003D | Programmable interrupt controller |
| 0x000000A0-0x000000A1 | Programmable interrupt controller |
| 0x000000A4-0x000000A5 | Programmable interrupt controller |
| 0x000000A8-0x000000A9 | Programmable interrupt controller |
| 0x000000AC-0x000000AD | Programmable interrupt controller |
| 0x000000B0-0x000000B1 | Programmable interrupt controller |
| 0x000000B4-0x000000B5 | Programmable interrupt controller |
| 0x000000B8-0x000000B9 | Programmable interrupt controller |
| 0x000000BC-0x000000BD | Programmable interrupt controller |
| 0x000004D0-0x000004D1 | Programmable interrupt controller |
| 0x00000A00-0x00000A0F | Motherboard resources |
| 0x00000A10-0x00000A1F | Motherboard resources |
| 0x00000A10-0x00000A1F | Motherboard resources |
| 0x0000002E-0x0000002F | Motherboard resources |
| 0x0000004E-0x0000004F | Motherboard resources |
| 0x00000061-0x00000061 | Motherboard resources |

| Address | Device Description |
|-----------------------|--|
| 0x00000063-0x00000063 | Motherboard resources |
| 0x00000065-0x00000065 | Motherboard resources |
| 0x00000067-0x00000067 | Motherboard resources |
| 0x00000070-0x00000070 | Motherboard resources |
| 0x00000070-0x00000070 | System CMOS/real time clock |
| 0x00000080-0x00000080 | Motherboard resources |
| 0x00000092-0x00000092 | Motherboard resources |
| 0x000000B2-0x000000B3 | Motherboard resources |
| 0x00000680-0x0000069F | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x00001800-0x000018FE | Motherboard resources |
| 0x0000164E-0x0000164F | Motherboard resources |
| 0x00001854-0x00001857 | Motherboard resources |
| 0x000003F8-0x000003FF | Communications Port (COM1) |
| 0x000002F8-0x000002FF | Communications Port (COM2) |
| 0x000003E8-0x000003EF | Communications Port (COM3) |
| 0x000002E8-0x000002EF | Communications Port (COM4) |
| 0x00000000-0x00000CF7 | PCI Express Root Complex |
| 0x00000D00-0x0000FFFF | PCI Express Root Complex |
| 0x00000040-0x00000043 | System timer |
| 0x00000050-0x00000053 | System timer |
| 0x0000E000-0x0000EFFF | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #11 - 9D1A |
| 0x0000F040-0x0000F05F | Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23 |

| Address | Device Description |
|-----------------------|-------------------------------|
| 0x0000FF00-0x0000FFFE | Motherboard resources |
| 0x00000060-0x00000060 | Standard PS/2 Keyboard |
| 0x00000064-0x00000064 | Standard PS/2 Keyboard |
| 0x0000F090-0x0000F097 | Standard SATA AHCI Controller |
| 0x0000F080-0x0000F083 | Standard SATA AHCI Controller |
| 0x0000F060-0x0000F07F | Standard SATA AHCI Controller |
| 0x0000F000-0x0000F03F | Intel(R) HD Graphics 620 |
| 0x000003B0-0x000003BB | Intel(R) HD Graphics 620 |
| 0x000003C0-0x000003DF | Intel(R) HD Graphics 620 |

B. Interrupt Request Lines (IRQ)

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

| Level | Function |
|-------------------|--|
| IRQ 0 | System timer |
| IRQ 1 | Standard PS/2 Keyboard |
| IRQ 3 | Communications Port (COM2) |
| IRQ 4 | Communications Port (COM1) |
| IRQ 5 | Communications Port (COM3) |
| IRQ 7 | Communications Port (COM4) |
| IRQ 8 | System CMOS/real time clock |
| IRQ 11 | Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23 |
| IRQ 11 | Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31 |
| IRQ 12 | Microsoft PS/2 Mouse |
| IRQ 14 | Motherboard resources |
| IRQ 16 | High Definition Audio Controller |
| IRQ 54 ~ IRQ 204 | Microsoft ACPI-Compliant System |
| IRQ 256 ~ IRQ 511 | Microsoft ACPI-Compliant System |
| IRQ 4294967285 | Intel(R) Management Engine Interface |
| IRQ 4294967286 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967287 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967288 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967289 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967290 | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft) |
| IRQ 4294967291 | Intel(R) HD Graphics 620 |
| IRQ 4294967292 | Intel(R) Ethernet Connection I219-V |

| Level | Function |
|----------------|--|
| IRQ 4294967293 | Standard SATA AHCI Controller |
| IRQ 4294967294 | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #11 - 9D1A |

C. Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

Sample Code:

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81866.H"
//-----
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//-----
int main (int argc, char *argv[])
{
    unsigned char bBuf;
    unsigned char bTime;
    char **endptr;

    char SIO;

    printf("Fintek 81866 watch dog program\n");
    SIO = Init_F81866();
    if (SIO == 0)
    {
        printf("Can not detect Fintek 81866, program abort.\n");
        return(1);
    }
    //if (SIO == 0)

    if (argc != 2)
    {
        printf("Parameter incorrect!!\n");
        return (1);
    }
}
```

```

bTime = strtol( argv[1], endptr, 10);
printf("System will reset after %d seconds\n", bTime);

if (bTime)
{
    EnableWDT(bTime); }
else
{
    DisableWDT();      }
return 0;
}
//-----
void EnableWDT(int interval)
{
    unsigned char bBuf;

    bBuf = Get_F81866_Reg(0x2B);
    bBuf &= (~0x20);
    Set_F81866_Reg(0x2B, bBuf);          //Enable WDTO

    Set_F81866_LD(0x07);                //switch to logic device 7
    Set_F81866_Reg(0x30, 0x01);        //enable timer

    bBuf = Get_F81866_Reg(0xF5);
    bBuf &= (~0x0F);
    bBuf |= 0x52;
    Set_F81866_Reg(0xF5, bBuf);        //count mode is second

    Set_F81866_Reg(0xF6, interval);    //set timer

    bBuf = Get_F81866_Reg(0xFA);
    bBuf |= 0x01;
    Set_F81866_Reg(0xFA, bBuf);        //enable WDTO output

    bBuf = Get_F81866_Reg(0xF5);
    bBuf |= 0x20;
    Set_F81866_Reg(0xF5, bBuf);        //start counting
}
//-----
void DisableWDT(void)
{
    unsigned char bBuf;

    Set_F81866_LD(0x07);                //switch to logic device 7

    bBuf = Get_F81866_Reg(0xFA);
    bBuf &= ~0x01;
    Set_F81866_Reg(0xFA, bBuf);        //disable WDTO output

    bBuf = Get_F81866_Reg(0xF5);
    bBuf &= ~0x20;
    bBuf |= 0x40;
    Set_F81866_Reg(0xF5, bBuf);        //disable WDT
}
//-----

//-----

```



```

//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include "F81866.H"
#include <dos.h>
//-----
unsigned int F81866_BASE;
void Unlock_F81866 (void);
void Lock_F81866 (void);
//-----
unsigned int Init_F81866(void)
{
    unsigned int result;
    unsigned char ucDid;

    F81866_BASE = 0x4E;
    result = F81866_BASE;

    ucDid = Get_F81866_Reg(0x20);
    if (ucDid == 0x07)                //Fintek 81866
    {
        goto Init_Finish;
    }

    F81866_BASE = 0x2E;
    result = F81866_BASE;

    ucDid = Get_F81866_Reg(0x20);
    if (ucDid == 0x07)                //Fintek 81866
    {
        goto Init_Finish;
    }

    F81866_BASE = 0x00;
    result = F81866_BASE;

Init_Finish:
    return (result);
}
//-----
void Unlock_F81866 (void)
{
    outputb(F81866_INDEX_PORT, F81866_UNLOCK);
    outputb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//-----
void Lock_F81866 (void)
{
    outputb(F81866_INDEX_PORT, F81866_LOCK);
}
//-----
void Set_F81866_LD( unsigned char LD)
{
    Unlock_F81866();
    outputb(F81866_INDEX_PORT, F81866_REG_LD);
    outputb(F81866_DATA_PORT, LD);
    Lock_F81866();
}

```

```
}
//-----
void Set_F81866_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_F81866();
    outputb(F81866_INDEX_PORT, REG);
    outputb(F81866_DATA_PORT, DATA);
    Lock_F81866();
}
//-----
unsigned char Get_F81866_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_F81866();
    outputb(F81866_INDEX_PORT, REG);
    Result = inputb(F81866_DATA_PORT);
    Lock_F81866();
    return Result;
}
//-----

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#ifndef F81866_H
#define F81866_H                1
//-----
#define F81866_INDEX_PORT      (F81866_BASE)
#define F81866_DATA_PORT       (F81866_BASE+1)
//-----
#define F81866_REG_LD          0x07
//-----
#define F81866_UNLOCK          0x87
#define F81866_LOCK            0xAA
//-----
unsigned int Init_F81866(void);
void Set_F81866_LD( unsigned char);
void Set_F81866_Reg( unsigned char,
unsigned char); unsigned char
Get_F81866_Reg( unsigned char);
//-----
#endif // F81866_H
```