cincoze

User's Manual

Fanless Computing Solution

Affordable Fanless Computer
DA-1000
DA-1000C
DA-1000D
DA-1000DP
DA-1000DV
DA-1000LPPS
DA-1000V

Contents

Chapter 3 System Setup

Chapter 4 BIOS Setup

Chapter 5 Product Application (For DA-1000D only)

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2016/03/14

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Acknowledgement

Cincoze is a registered trademark of Cincoze Co., Ltd. All registered trademarks and product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

Disclaimer

This manual is intended to be used as a practical and informative guide only and is subject to change without notice. It does not represent a commitment on the part of Cincoze. This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Declaration of Conformity

FCC

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.

CE

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Product Warranty Statement

Warranty

Cincoze products are warranted by Cincoze Co., Ltd. to be free from defect in materials and workmanship for 2 years from the date of purchase by the original purchaser.

During the warranty period, we shall, at our option, either repair or replace any product that proves to be defective under normal operation.

Defects, malfunctions, or failures of the warranted product caused by damage resulting from natural disasters (such as by lightening, flood, earthquake, etc.), environmental and atmospheric disturbances, other external forces such as power line disturbances, plugging the board in under power, or incorrect cabling, and damage caused by misuse, abuse, and unauthorized alteration or repair, and the product in question is either software, or an expendable item (such as a fuse, battery, etc.), are not warranted.

RMA

Before sending your product in, you will need to fill in Cincoze RMA Request Form and obtain a RMA number from us. Our staff is available at any time to provide you with the most friendly and immediate service.

■ RMA Instruction

- Customers must fill in Cincoze Return Merchandise Authorization (RMA) Request Form and obtain a RMA number prior to returning a defective product to Cincoze for service.

- Customers must collect all the information about the problems encountered and note anything abnormal and describe the problems on the "Cincoze Service Form" for the RMA number apply process.

- Charges may be incurred for certain repairs. Cincoze will charge for repairs to products whose warranty period has expired. Cincoze will also charge for repairs to products if the damage resulted from acts of God, environmental or atmospheric disturbances, or other external forces through misuse, abuse, or unauthorized alteration or repair. If charges will be incurred for a repair, Cincoze lists all charges, and will wait for customer's approval before performing the repair.

- Customers agree to insure the product or assume the risk of loss or damage during transit, to prepay shipping charges, and to use the original shipping container or equivalent.

- Customers can be send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the system. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, Cincoze is not responsible for the devices/parts.

- Repaired items will be shipped along with a "Repair Report" detailing the findings and actions taken.

Limitation of Liability

Cincoze' liability arising out of the manufacture, sale, or supplying of the product and its use, whether based on warranty, contract, negligence, product liability, or otherwise, shall not exceed the original selling price of the product. The remedies provided herein are the customer's sole and exclusive remedies. In no event shall Cincoze be liable for direct, indirect, special or consequential damages whether based on contract of any other legal theory.

Technical Support and Assistance

1. Visit the Cincoze website at www.cincoze.com/support.php where you can find the latest information about the product.

2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have 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

Conventions Used in this Manual

⚠️	**WARNING**	This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.
CAUTION	**CAUTION**	This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.
✓ Notes	**NOTE**	This indication provides additional information to complete a task easily.

Safety Precautions

Before installing and using this device, please note the following precautions:

1. Read these safety instructions carefully.

2. Keep this User's Manual for future reference.

3. Disconnected this equipment from any AC outlet before 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. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

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.

    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.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Package Contents

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	DA-1000 Embedded System (DA-1000/DA-1000C/DA-1000D/DA-1000DP/DA-1000DV/DA-1000LPPS/DA-1000V)	1
2	Utility DVD Driver	1
3	Power Terminal Block Connector (Male)	1
4	Screw Pack (For HDD / Mini-PCIe / Wall & VESA Mounting)	1
5	Wall Mount Kit	1
6	DVI-I to VGA Adapter	1
7	Remote Power On/Off Terminal Block Connector (Male)	1

Note: *Notify your sales representative if any of the above items are missing or damaged.*

Ordering Information

Model Name	Product Description
DA-1000	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer
DA-1000C	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 4x COMs
DA-1000D	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 8x DIOs
DA-1000DP	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 1x DisplayPort
DA-1000DV	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 1x DVI-D
DA-1000LPPS	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 1x LPT and 1x PS/2
DA-1000V	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer with 1x VGA

Optional Accessory

Model No.	Description
DA-CMI-COM	DA Series CMI Module with 2x RS232/422/485 (with +5v/12v/RI Selectable), 1x Universal Bracket
DA-CMI-DIO	DA Series CMI Module with 8x DIO (4 in/4 out), 1x Universal Bracket
DA-CMI-DP	DA Series CMI Module with 1x Display Port, 1x Universal Bracket
DA-CMI-DVI	DA Series CMI Module with 1x DVI-D Connector, 1x Universal Bracket
DA-CMI-LPT/PS2	DA Series CMI Module with 1x LPT Port, 1x PS/2, 1x Universal Bracket
DA-CMI-VGA	DA Series CMI Module with 1x VGA Port, 1x Universal Bracket
DA-MEC-2LAN	DA Series MEC Module with 2x LAN Port, 1x Universal Bracket
DA-MEC-FIR	DA Series MEC Module with 1x 1394A Port, 2x 1394B Ports, 1x Universal Bracket
DA-MEC-2USB	DA Series MEC Module with 2x USB 3.0 Ports, 1x Universal Bracket
59381560000E	MINI-DIN (M) (PS/2 KB+MS) to MINI-DIN (F) (PS/2 KB) + MINI-DIN (F) (PS/2 MS) L:10cm
SIDE-DA	DA Series Side Mounting Kit
DINRAIL-R10	DIN-Rail Kit
GSM60A12-CIN	Adapter AC/DC 12V 5A 60W with 3pin Terminal Block Plug 5.0mm Pitch

Chapter 1

Product Introductions

1.1 Overview

DA-1000 series is an ultra-compact size fanless embedded computer basing on Intel® Atom E3826 platform; it has 1.46GHz and integrated HD graphics processor. This can bring economic advantages on budget and also fulfill the needs for industrial computing tasks. The DA-1000 manages to pack a diverse array of I/O into its small form factor, with one DVI-I port, two RS-232/422/485 COM ports, dual Gb LAN ports, four USB ports and one set of Mic-in and Line-out.

DA-1000 supports Cincoze Multiple IO (CMI) interface and modules which are especially designed for flexible I/O expandability; it allows users to extend various I/Os according to their needs. CMI modules are including COMs, DIO, DisplayPort, DVI, LPT/PS2 or VGA. The rugged construction, wide temperature operating and high tolerance for shock and vibration enables DA-1000 to be easily employed for harsh environments.

1.1.1 Key Features

- Onboard Intel® Atom™ Processor E3826 Dual Core 1.46GHz
- One DDR3L SO-DIMM Socket, Support DDR3L 1066/1333 Up to 8G
- Dual Intel® I210 GbE LAN Ports, Support WoL, Teaming, Jumbo Frame, PXE
- Ultra Compact Size (150x105x56.02mm)
- Support Dual Display, Output from One DVI-I Port
- Support -25˚C~70˚C Extended Operating Temperature
- Support 9~48VDC Input, Support AT/ATX Power Mode
- CMI (Cincoze Multiple IO) Interface for I/O Module Expandability
- Various Mounting Options (VESA, DIN-Rail, Side/Wall Mounting)

1.1.2 Photo of Front Panel

1.1.3 Photo of Rear Panel

DA-1000

DA-1000**C**

DA-1000**D**

DA-1000**DP**

DA-1000**DV**

DA-1000**LPPS**

DA-1000**V**

1.2 Hardware Specification

Processor
- Onboard Intel® Atom™ Processor E3826 1MB Cache, 1.46 GHz with AMI 64Mbit SPI BIOS

Memory
- 1x 204-Pin SO-DIMM DDR3L 1333/1066MHz (Un-buffered and Non-ECC) Max. Up to 8GB

Graphics
- Intel® HD Graphics Max. 667 MHz
- Support Dual Display (with optional split cable)

Expansion
- 2x Full-size Mini-PCIe
- 1x SIM Socket (Internal)
- 1x CMI (Cincoze Multiple IO) Interface

Storage
- 1x 2.5" SATA HDD Bay (Internal)
- 1x Internal mSATA Slot (Shared by 1x Mini-PCIe socket)

External I/O Interface
- 1x DVI-I Port
- 2x GbE LAN Ports (Intel® I210, Support Wake On Lan, Teaming, Jumbo Frame, PXE)
- 4x COM Ports (DB9, RS232/RS422/RS485 with Auto Flow Control)
- 1x USB 3.0 Ports
- 3x USB 2.0 Ports
- 1x Mic-in and 1x Line-out (Codec: Realtek ALC888S)
- 1x Power On/Off Switch
- 1x AT/ATX Switch
- 1x Remote Power On/Off Connector (2-pin Terminal Block)
- 1x Universal I/O Bracket
- 2x Antenna Holes

Watchdog Timer
- Software Programmable Supports 1~255 sec. System Reset

Power Requirement
- Support AT/ATX Power Mode
- Power Input Voltage 9~48VDC
- One 3-pin Terminal Block Connector
- Optional Power Adapter AC/DC 12V/5A 60W
- Power Consumption Typical 8.3W, Max.15W

Physical
- Dimension: 150 (W) x 105 (D) x 56.02 (H) mm
- Weight: 0.86kg (Net Weight); 1.68kg (Gross Weight)
- Construction: Aluminum Chassis with Fan-less Design
- Mounting: VESA/Wall Mounting (Optional DIN-Rail/Side Mounting)
- Cable-less Design

Environment
- Operating Temperature: -25°C to 70°C (With extended temperature peripherals; Ambient with Air Flow by IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage Temperature: -40°C to 85°C
- Relative Humidity: 40°C@95% RH (Non-Condensing)
- Shock: 30 Grms (With SSD According to IEC 60068-2-27, Half Sine, 11ms Duration)
- Vibration: Random: 3 Grms (With SSD According to IEC 60068-2-64, 5~500Hz, 1 hr/axis)

Protection
- Reverse Power Input Protection Supported
- Over Voltage Protection (OVP) Up to 51V
- Over Current Protection (OCP) 120V/ 20A
- ESD Protection Air Discharge: 8 kV; Contact Discharge: 4 kV (by IEC 61000-4-2)

Certification
- CE
- FCC Class A

Operating System
- Windows® 7
- Windows® Embedded Standard 7
- Windows® 8
- Windows® Embedded Standard 8
- Windows® 10
- Linux® Ubuntu 14.04

1.3 System I/O

1.3.1 DA-1000

Front Panel

Power On/Off Switch
Press to power-on or power-off the system

AT/ATX Mode Select Switch
Used to select AT or ATX power mode

Power LED
Indicates the power status of the system

HDD LED
Indicates the status of the hard drive

Remote Power Terminal Block
Used to plug a remote power on/off switch with terminal block

USB 3.0 Port
Used to connect USB 3.0/2.0/1.1 device

USB 2.0 Port
Used to connect USB 2.0/1.1 device

LAN Port 1 & 2
Used to connect the system to a local area network

Mic-in
Used to connect a microphone

Line-out
Used to connect a speaker
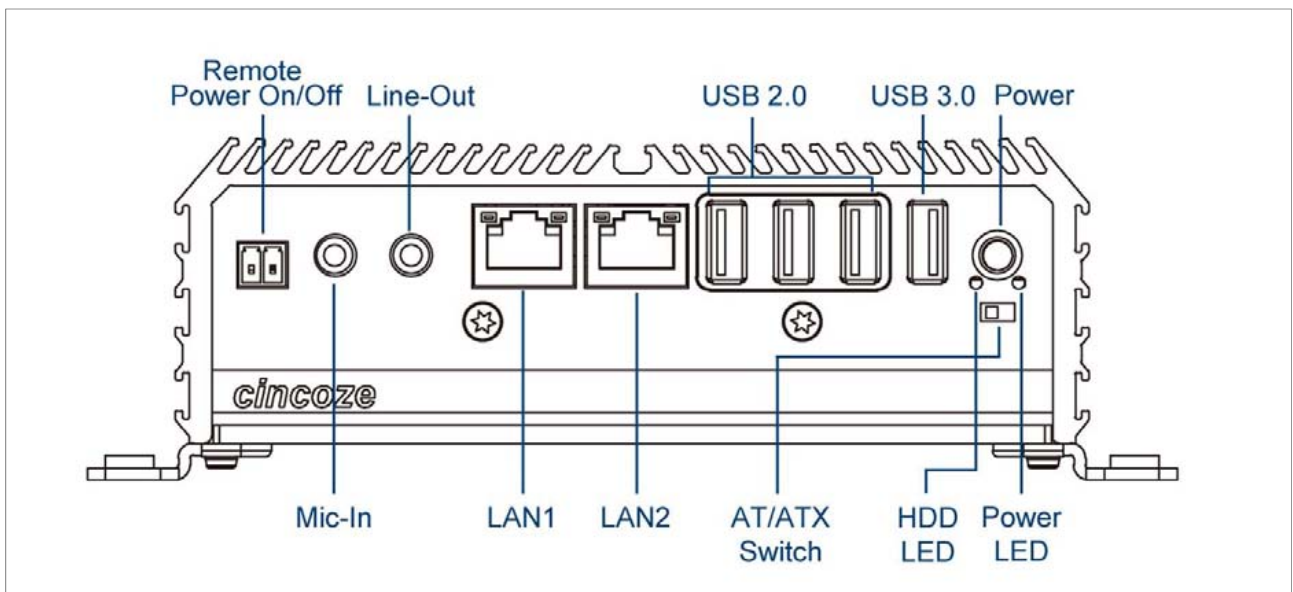
Rear Panel

DC IN Terminal Block
Used to plug a DC power input with terminal block

DVI-I Port
Used to connect a DVI monitor or connect optional split cable for dual display mode

Antenna Hole
Used to connect an antenna for optional Mini-PCIe WiFi module

COM Port
COM 1 ~ COM 2 support RS232/422/485 serial device
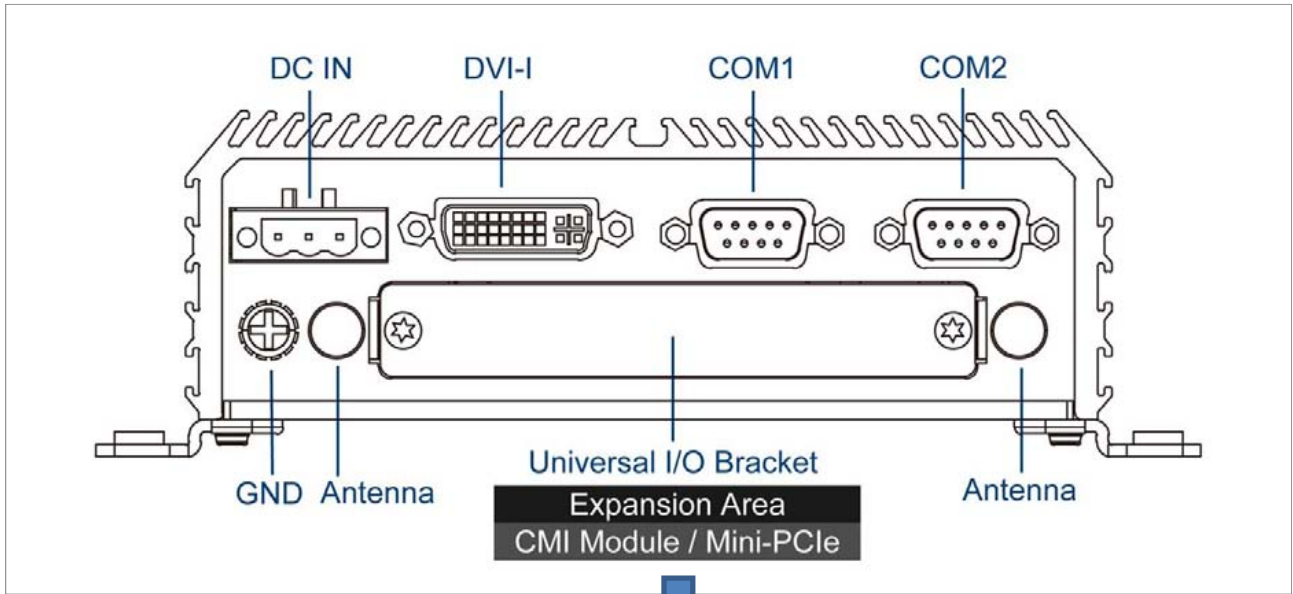
Universal I/O Bracket

This expansion area is reserved for Mini-PCIe expansion or Cincoze own pin-defined interface (CMI). CMI interface supports various type of I/O modules such as COM / DIO / DisplayPort / DVI / LPT & PS2 / VGA.

Do not change the CMI module by yourself, it may cause damage to your DA-1000. Please contact with your regional dealer for more information about it.
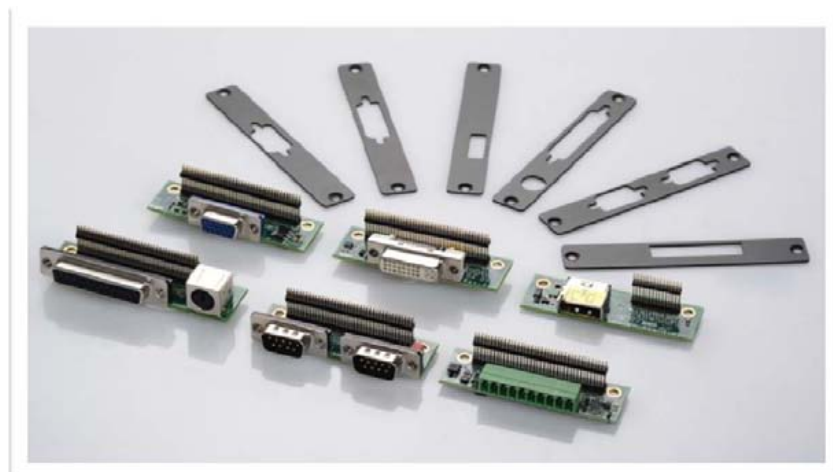
1.3.2 DA-1000C, DA-1000D, DA-1000DP, DA-10000DV, DA-1000LPPS, DA-1000V

DA-1000C

Front   Rear

DA-1000D

Front   Rear

DA-1000DP

Front   Rear

DA-1000DV

Front   Rear

DA-1000LPPS

Front   Rear

DA-1000V

Front   Rear
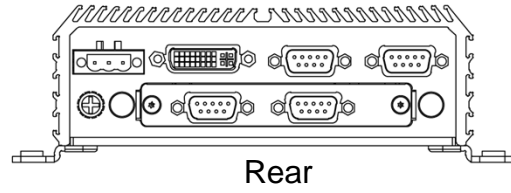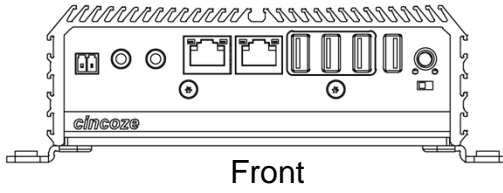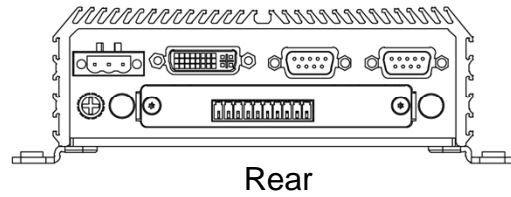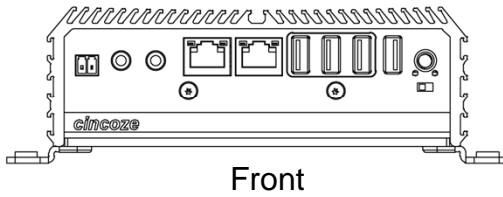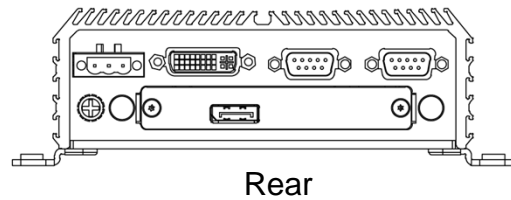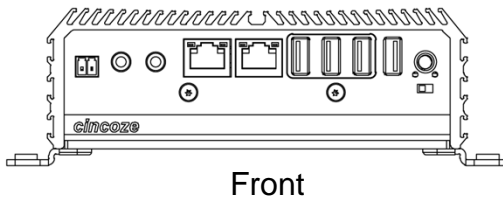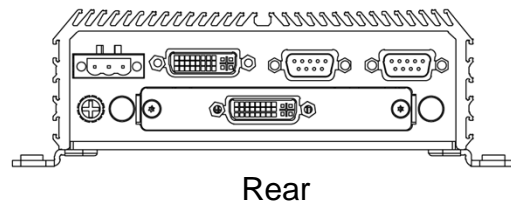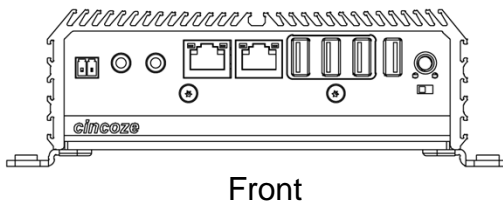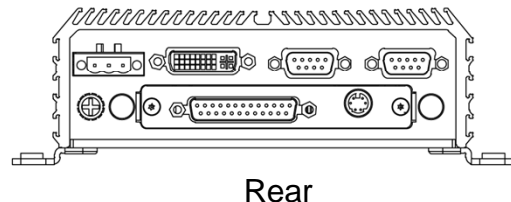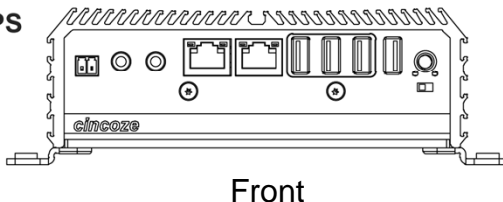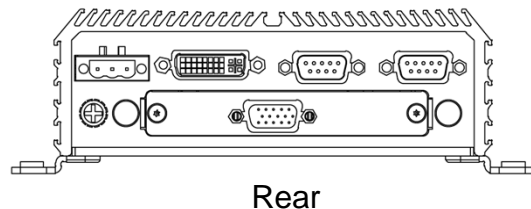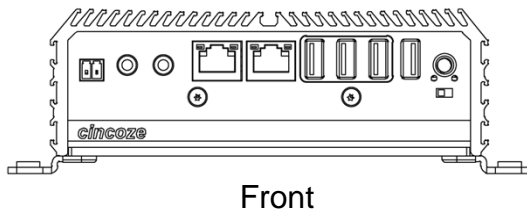
1.4 Mechanical Dimensions

Each of DA-1000 series computers has the same mechanical dimension.

Unit: mm
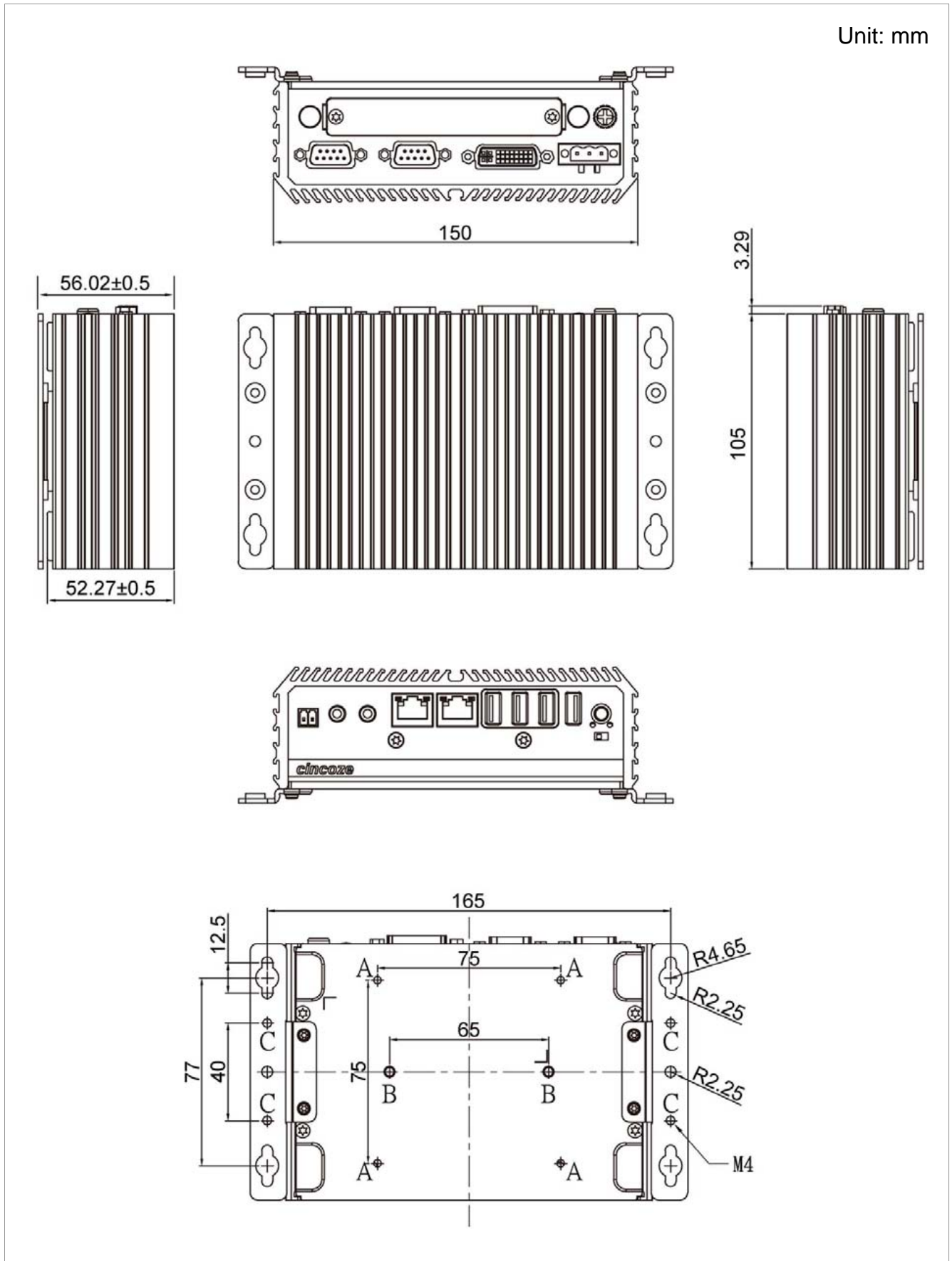
Chapter 2

Jumpers and Connectors

2.1 Jumpers Settings

DA-1000 is featured with jumper-free design.

2.2 Locations of the Switches and Connectors

2.2.1 Top View
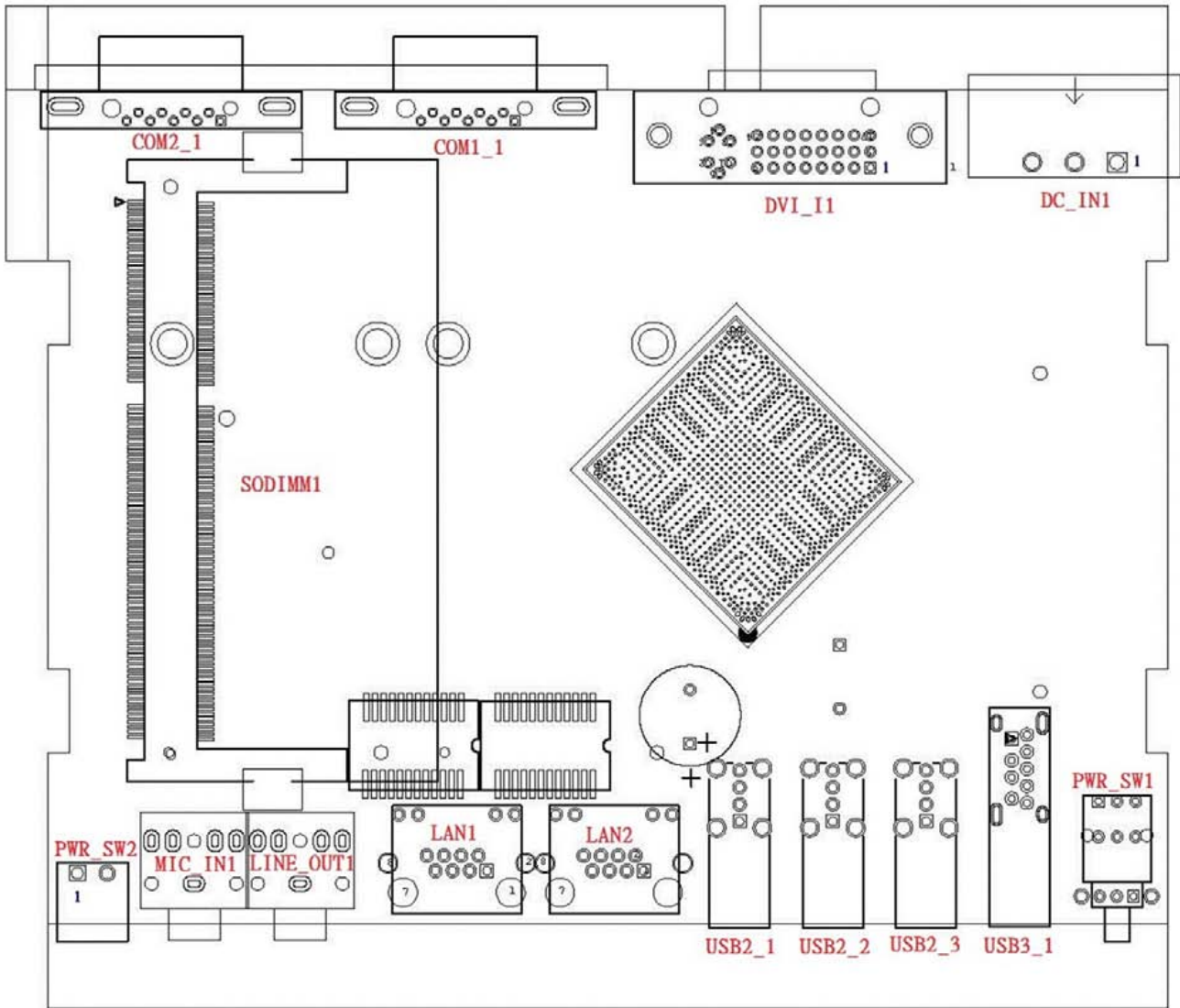
2.2.2 Bottom View
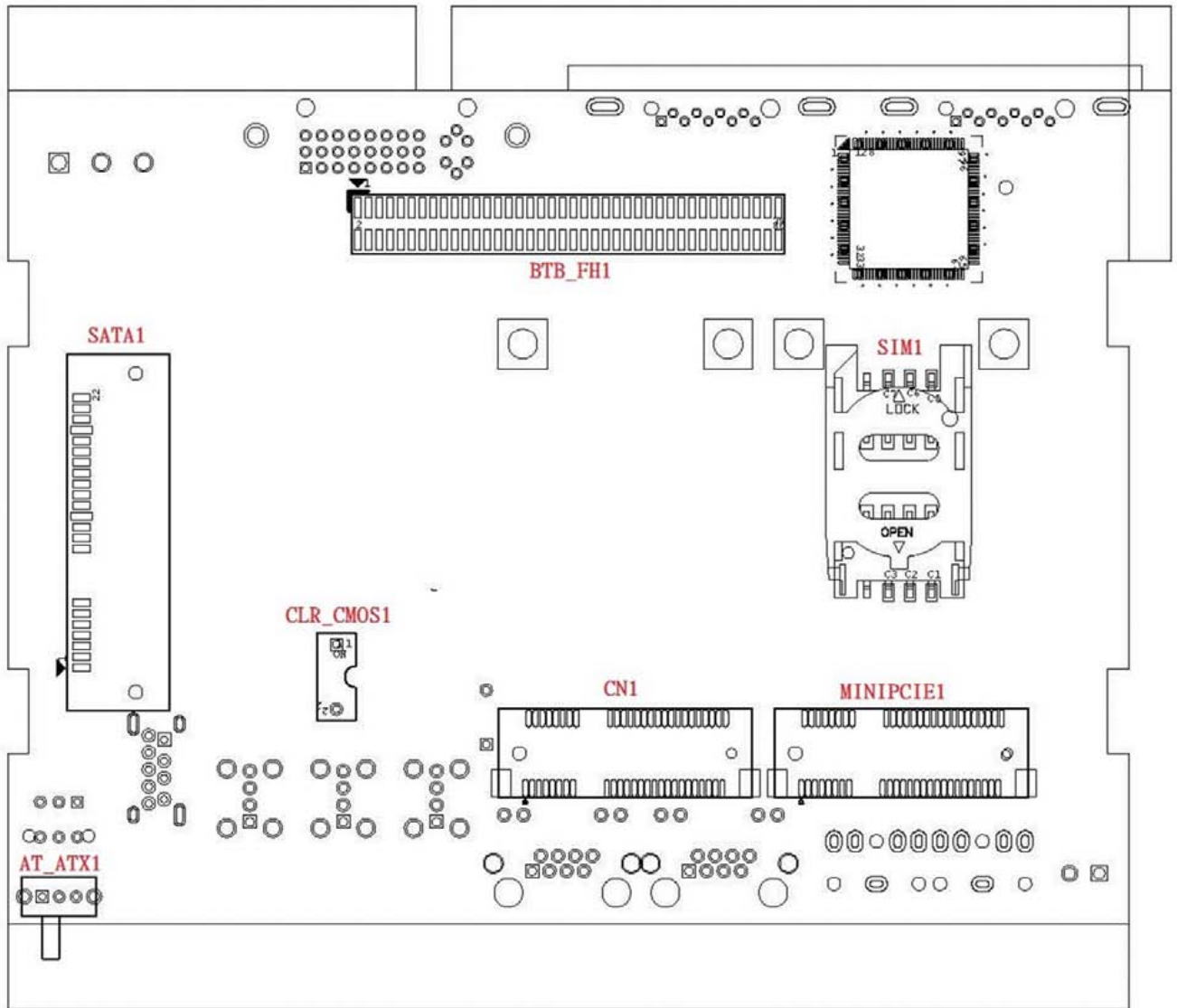
2.3 List of Switches and Connectors

List of Switches

Switches Location	Definition
AT_ATX1	AT / ATX Power Mode Switch
CLR_CMOS1	Clear CMOS Switch
PWR_SW1	Power Button

List of Connectors

Connector Location	Definition
CN1	Mini PCI-Express / mSATA Socket
COM1_1, COM2_1	RS232 / RS422 / RS485 Connector
DC_IN1	3-pin DC 9~48V Power Connector
DVI_I	DVI-I Connector
LAN1 / LAN2	RJ45 with LED Connector
LED	Power / HDD Access LED Status
LINE_OUT1	Audio Line-out Jack
MIC_IN1	Microphone-in Jack
MINIPCIE1	Mini PCI-Express Socket
PWR_SW2	External Power Connector
SATA1	SATA with Power Connector
SIM1	SIM Card Socket (apply with MINIPCIE1)
USB2_1 / USB2_2 / USB2_3	USB 2.0 Connector
USB3_1	USB 3.0 Connector

2.4 Switches Definitions

AT_ATX1：AT / ATX Power Mode Switch

Switch	Definition
Left	ATX Power Mode（Default）
Right	AT Power Mode
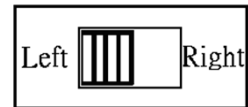
CLR_CMOS1：Clear CMOS Switch

Switch	Definition
ON	Clear CMOS
OFF	Normal Status (Default)
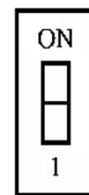
PWR_SW1：Power Switch

Pin	Definition
1	NC
2	Power Button
3	NC
4	GND
5	NC
6	GND
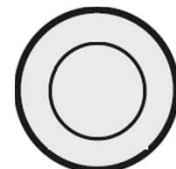
2.5 Connectors Definitions

2.5.1 CN1：Mini PCI-Express / mSATA Socket
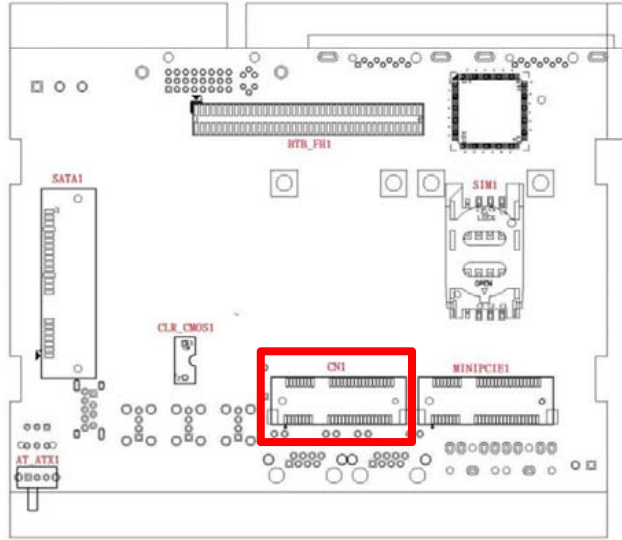
Pin	Definition	Pin	Definition
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	MINIPCIE_TXN3/SATA_TXN1
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	MINIPCIE_TXP3/SATA_TXP1
8	NC	34	GND
9	GND	35	GND
10	NC	36	USB_6N
11	MINIPCIE_CLKN3	37	GND
12	NC	38	USB_6P
13	MINIPCIE_CLKP3	39	+3.3V
14	NC	40	GND
15	GND	41	+3.3V
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	+3.3V	46	NC
21	GND	47	NC
22	MINIPCIE RST#	48	+1.5V
23	MINIPCIE_RXN3/SATA_RXP1	49	NG
24	+3.3V	50	GND
25	MINIPCIE_RXP3/SATA_RXN1	51	NC
26	GND	52	+3.3V

2.5.2 MINIPCIE1：Mini PCI-Express Socket
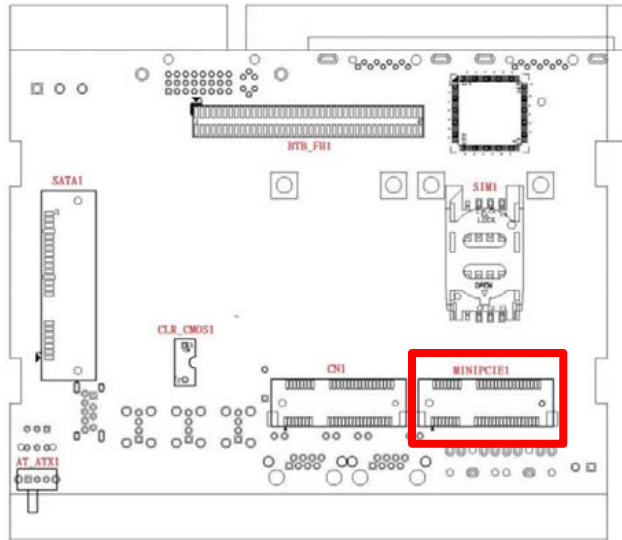
Pin	Definition	Pin	Definition
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	MINIPCIE_TXN4
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	MINIPCIE_TXP4
8	NC	34	GND
9	GND	35	GND
10	NC	36	USB_7N
11	MINIPCIE_CLKN4	37	GND
12	NC	38	USB_7P
13	MINIPCIE_CLKP4	39	+3.3V
14	NC	40	GND
15	GND	41	+3.3V
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	+3.3V	46	NC
21	GND	47	NC
22	MINIPCIE RST#	48	+1.5V
23	MINIPCIE_RXN4	49	NC
24	+3.3V	50	GND
25	MINIPCIE_RXP4	51	NC
26	GND	52	+3.3V

2.5.3 SIM1：SIM Card Socket
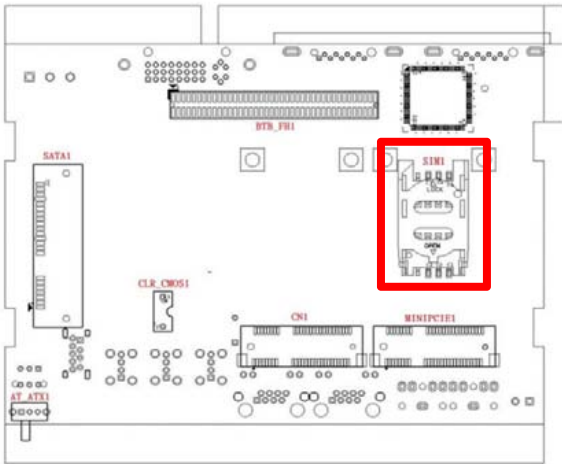
Pin	Definition
C1	UIM_PWR
C2	UIM_RESET
C3	UIM_CLK
C5	GND
C6	UIM_VPP
C7	UIM_DATA
CD	NC
COM	GND

2.5.4 DC_IN1：DC Power Input Connector (9~48V)

Connector Type：Phoenix 1X3 3-pin, 5.0mm pitch
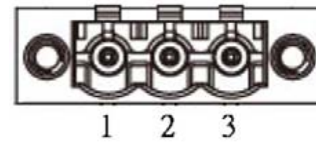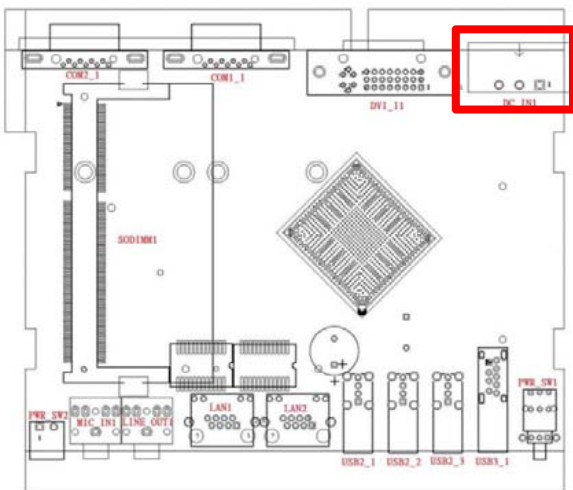
Pin	Definition
1	+9~48V IN
2	Chassis GND
3	GND

2.5.5 PWR_SW2：External remote power on/off switch

**(Note: Please do not apply power to the pins.
This port is used to apply a switch.)**
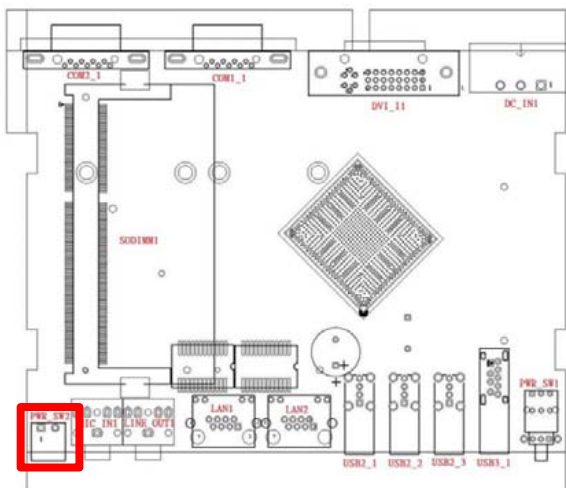
1   2

Pin	Definition
1	GND
2	PWR_ON

2.5.6 COM1_1：RS232 / RS422 / RS485 Connector
Connector Type：9-pin D-Sub
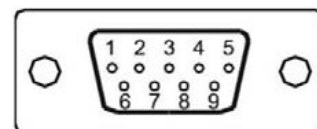
Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD1	TX1-	DATA1-
2	RxD1	TX1+	DATA1+
3	TxD1	RX1+	
4	DTR1	RX1-	
5	GND1		
6	DSR1		
7	RTS1		
8	CTS1		
9	RI1		

2.5.7 COM2_1：RS232 / RS422 / RS485 Connector
Connector Type：9-pin D-Sub
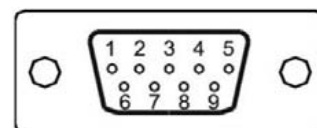
Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD2	TX2-	DATA2-
2	RxD2	TX2+	DATA2+
3	TxD2	RX2+	
4	DTR2	RX2-	
5	GND2		
6	DSR2		
7	RTS2		
8	CTS2		
9	RI2		

NOTE： (For DA-1000C Model only) The optional CMI module 2 COM ports <RS232 / RS422 / RS485> are with +5/ +12VDC for RI pin (Pin 9).

2.5.8 COM3、COM4：Voltage Select

PIN 1-3, PIN 2-4	5V
PIN 3-5, PIN 4-6	12V
PIN 7-9, PIN 8-10	RI (Default)
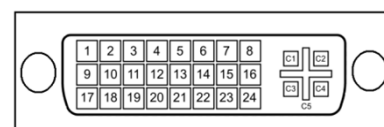
2.5.9 DVI_I1：DVI-I Connector

Pin	Definition	Pin	Definition
1	DVI_TX2-	16	DVI Hot Plug Detect
2	DVI_TX2+	17	DVI_TX0-
3	GND	18	DVI_TX0+
4	NC	19	GND
5	NC	20	NC
6	DDC_CLOCK	21	NC
7	DDC_DATA	22	GND
8	VGA VSYNC	23	DVI_TXCLK+
9	DVI_TX1-	24	DVI_TXCLK-
10	DVI_TX1+	C1	VGA_RED
11	GND	C2	VGA_GREEN
12	NC	C3	VGA_BLUE
13	NC	C4	VGA_HSYNC
14	+5V	C5	GND
15	GND		

2.5.10 LAN1：RJ45 with LED Connector

Act LED Status	Definition
Blinking Yellow	Data Activity
Off	No Activity

Link LED Status	Definition
Steady Green	1Gbps Network Link
Steady Amber	100Mbps Network Link
Off	10Mbps Network Link
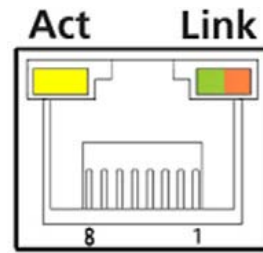
2.5.11 LAN2：RJ45 with LED Connector

Act LED Status	Definition
Blinking Yellow	Data Activity
Off	No Activity

Link LED Status	Definition
Steady Green	1Gbps Network Link
Steady Amber	100Mbps Network Link
Off	10Mbps Network Link
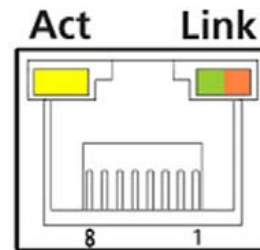
2.5.12 LED1：Power / HDD Access LED Status

Pin	Definition
1	HDD LED+
2	HDD LED-
3	POWER LED+
4	POWER LED-

LED Status	LED Color
HDD	Yellow
POWER	Green
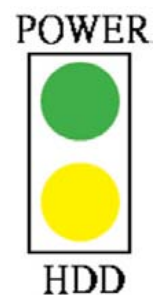
2.5.13 LINE_OUT1：
Line-out Jack (Green)
Connector Type：5-pin Phone Jack

Pin	Definition
1	GND
2	OUT_R
3	NC
4	GND
5	OUT_L

2.5.14 MIC1：
Microphone Jack (Pink)
Connector Type：5-pin Phone Jack

Pin	Definition
1	GND
2	MIC_R
3	NC
4	GND
5	MIC_L

2.5.15 SATA1：SATA Connector

Pin	Definition	Pin	Definition
1	GND	12	GND
2	TX+	13	GND
3	TX-	14	+5V
4	GND	15	+5V
5	RX-	16	+5V
6	RX+	17	GND
7	GND	18	GND
8	+3.3V	19	GND
9	+3.3V	20	+12V
10	+3.3V	21	+12V
11	GND	22	+12V
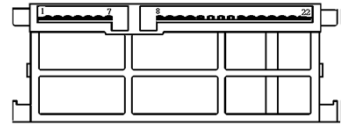
2.5.16 USB1、USB2 、 USB3：USB2.0 Connector, Type A

USB1		USB2		USB3	
Pin	Definition	Pin	Definition	Pin	Definition
1	+5V	1	+5V	1	+5V
2	USB_DATA3-	2	USB_DATA2-	2	USB_DATA1-
3	USB_DATA3+	3	USB_DATA2+	3	USB_DATA1+
4	GND	4	GND	4	GND
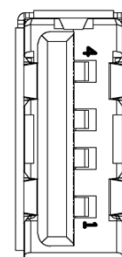
2.5.17 USB4：USB3.0 Connector, Type A

USB4	
Pin	Definition
1	+5V
2	USB_DATA0-
3	USB_DATA0+
4	GND
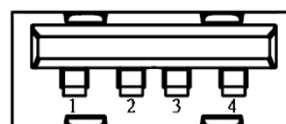
Chapter 3

System Setup

3.1 Removing the Chassis Bottom Cover

WARNING

In order to prevent electric shock or system damage, before removing the chassis cover, must turn off power and disconnect the unit from power source.

1. Turn over the unit to have the bottom side face up, loosen the 4 screws of bottom cover and place them aside.

2. Remove the cover from the chassis.

3.2 Removing the Chassis

1. Loosen the 3 screws (left picture) and remove HDD base plate. Loosen the 5 screws (right picture) as marked on photo and place them aside.
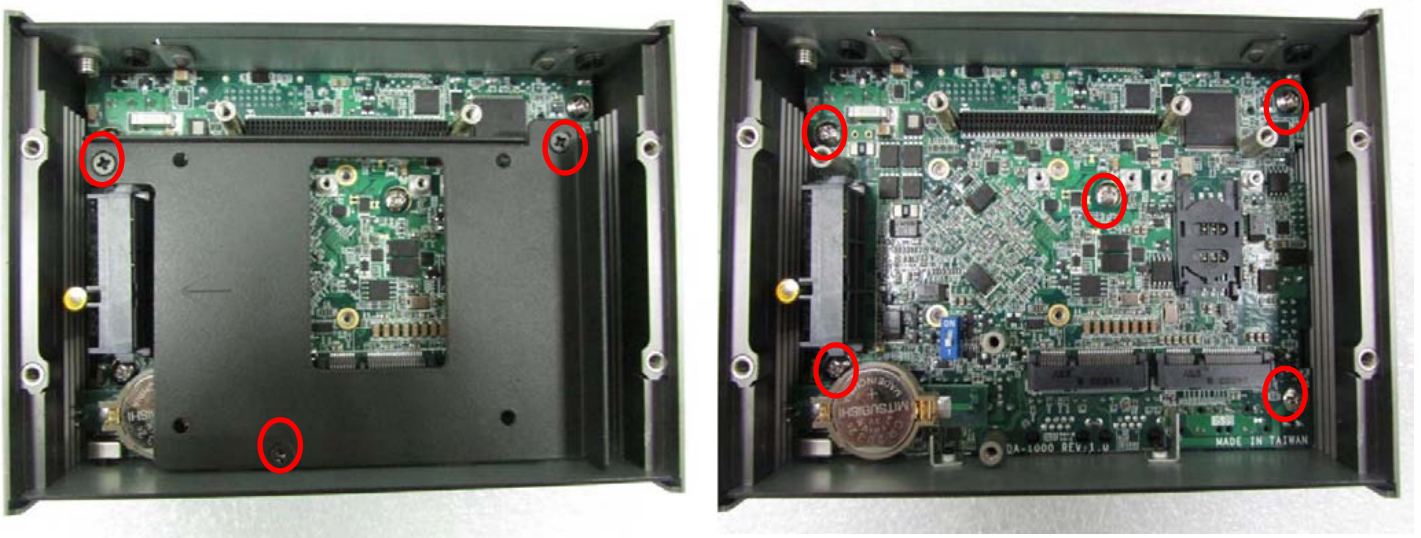
2. Hold front and rear panel and lift up the body of unit vertically.

3. Turn over the body of the unit and place it gently.
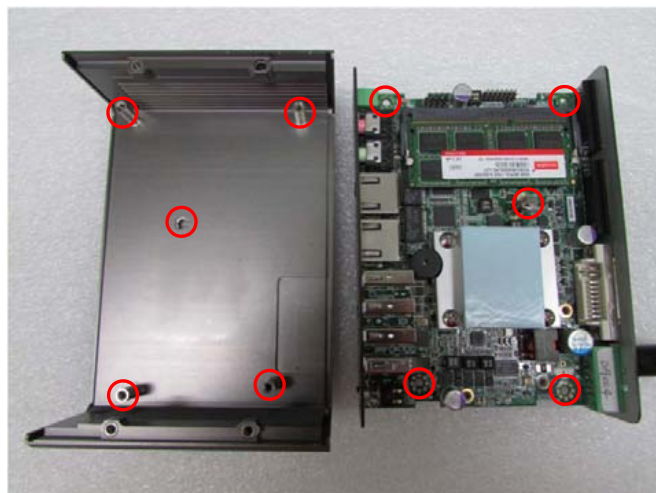
3.3 Installing the Antennas

1. Remove the antenna hole covers at back panel.

2. Have antenna jack penetrate through the hole.

3. Put on washer and fasten the nut with antenna jack.

4. Assemble the antenna and antenna jack together.

5. Attach the RF connector at another end of cable onto the module.

3.4 Installing a Full-Size Mini PCIe Card on Bottom Side, including Half-Size Mini PCIe card

1. Turn over the body of unit. Unscrew the 3 screws on HDD bracket and remove the bracket.

2. Locate the Mini PCIe slots. Please note that the left connector is shared mSATA/Mini-PCIe interface, and right connector (with SIM socket underneath) is Mini-PCIe interface.
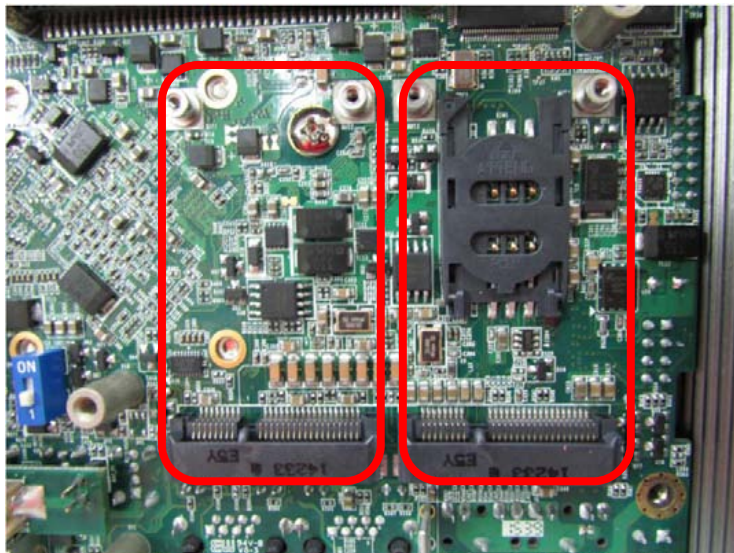
3. Tilt the Mini PCIe modules at 45 degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

4. Press down the module and use the two screws to fix the module.
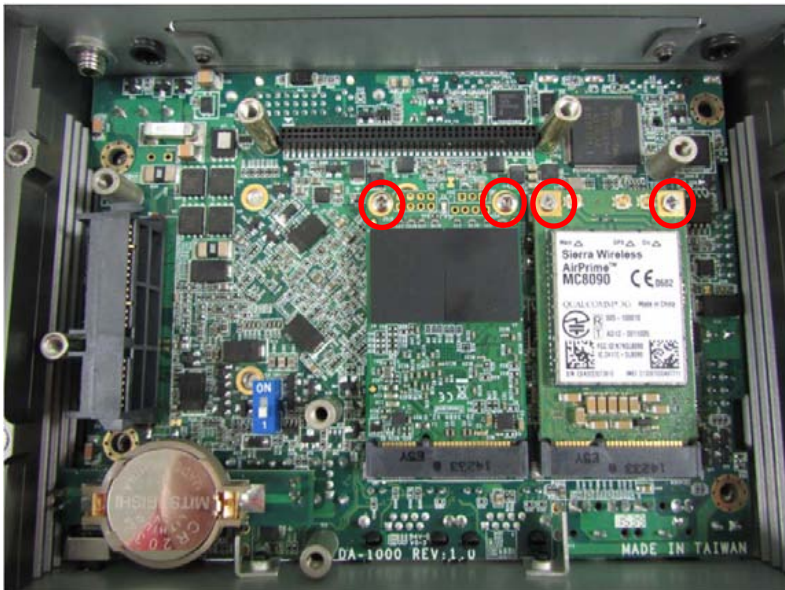
5. If you have a Half-size Mini-PCIe card, make sure use extender to make it Full-size as shown below.

3.5 Installing a SATA Hard Drive

1. Lift up the empty HDD bracket by unscrewing the 3 screws.
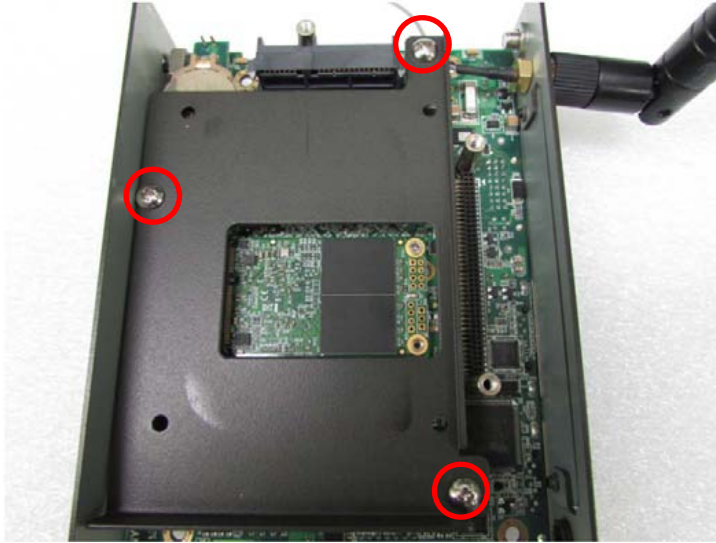
2. Make the PCB side of the HDD face up, place the HDD bracket on it. Ensure the direction of bracket is correct and use 4 provided screws to assemble HDD and HDD bracket together.

3. Turn over the HDD bracket. Connect the HDD bracket to the SATA connector of the unit and fasten the 3 screws.

3.6 Installing a SODIMM

1. Locate SODIMM socket.
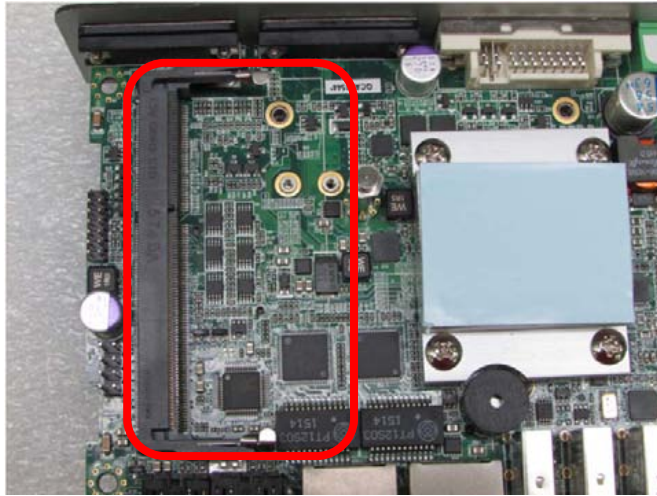
2. Tilt the SODIMM module at a 45 degree angle and insert it to SODIMM socket until the gold-pated connector of module contacted firmly with the socket.
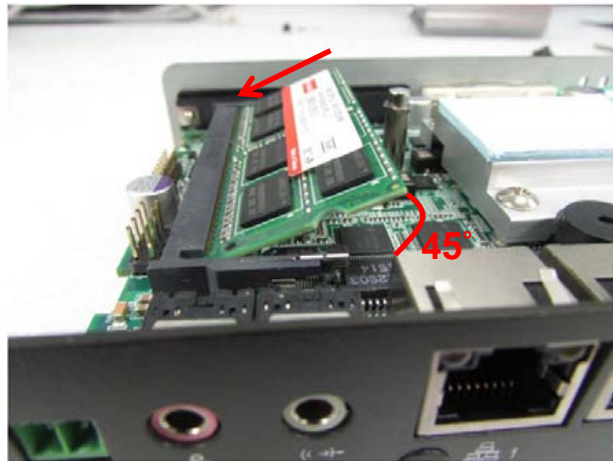
3. Press the module down until it's fixed firmly by the two locking latches on the sides.

3.7 Installing the Chassis

1. Hold the body of unit, level the 3 screw holes with the hollow studs on the chassis.
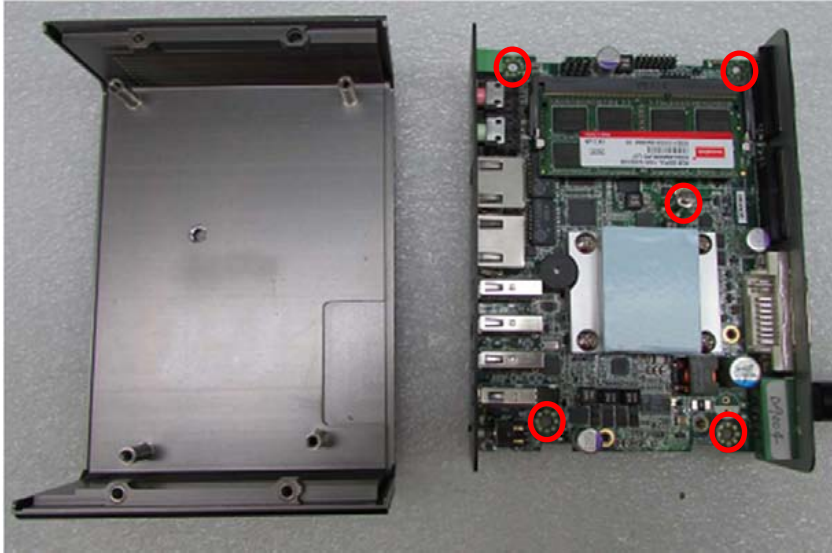
2. Make sure the either sides of front and rear panels are in the chassis grooves and insert the body of unit into Chassis. Use the 3 screws to fasten the body and chassis together.

3.8 Installing the Chassis Bottom Cover

1. Level the grooves on bottom cover with front and rear panels. Put on the cover.

2. Fasten the 4 screws to fix the cover.

3.9 Installing a SIM Card

1. Locate the SIM card socket.
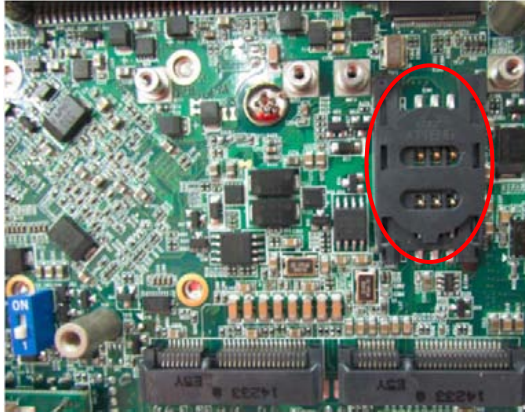
2. Insert the SIM card.

3. Press down the socket of SIM card to lock the location.

3.10 Wall Mount Brackets

DA-1000 offers Wall Mount that customers can install system on the wall in convenient and economical way.

1. The mounting holes are at the bottom of system. Use provided 4 screws to fasten the bracket with each side of system together.

2. Fasten the screws through the bracket mounting hole to mount system on the wall.

3.11 Side Mount Bracket

DA-1000 offers Side Mount that customer can install system to the right or left side of wall to create effective of space.

1. The mounting holes are at the bottom of system. Fasten the 4 screws to fix the side mount bracket with system together.
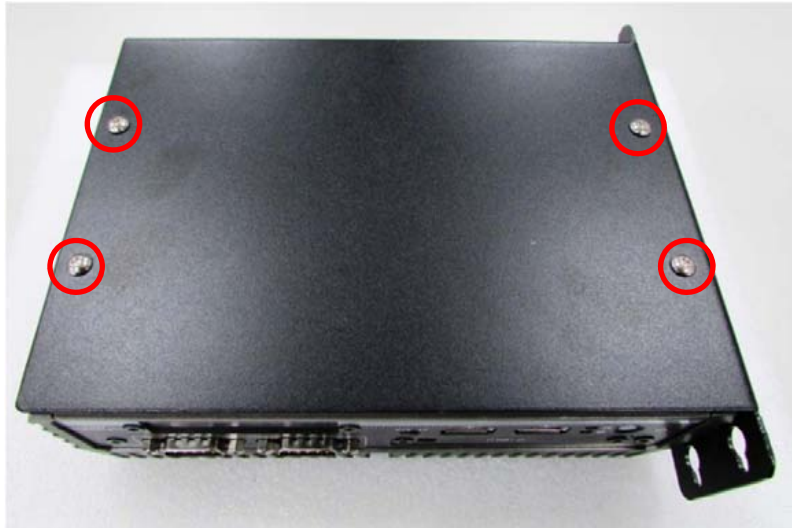
2. Fasten the screws through the bracket mounting hole to mount system on the wall.

3.13 VESA Mount Brackets

DA-1000 offers VESA Mount that customer can mount system with panel complying with VESA 75mm and 100 mm standard for various usage.

1. Provided below is the base of the system unit and screw holes specified to be mounted from VESA stand.
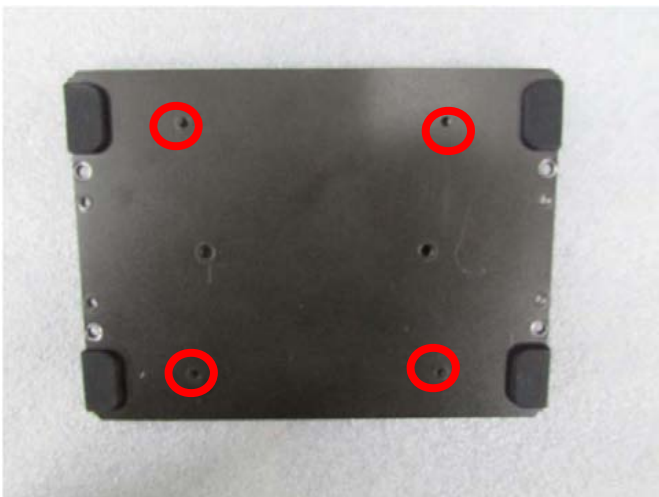
2. Provided below is mounted with VESA stand.
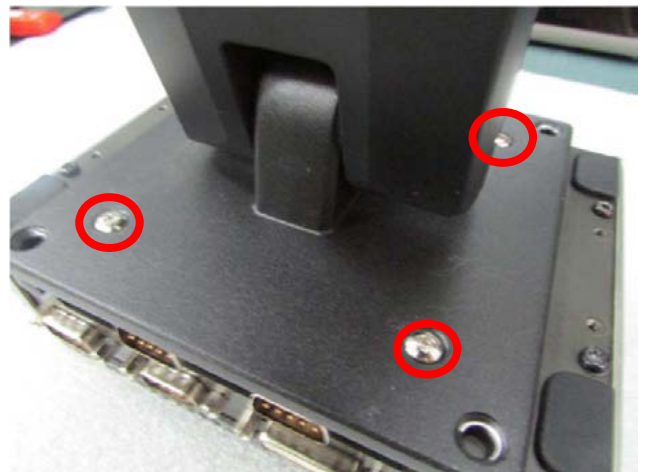
3. Provided below is completion of mounting with VESA stand.

3.14 DIN-Rail Mount Bracket

DA-1000 offers DIN-Rail Mount that customer can install system on the DIN Rail.

1. The mounting holes are at the bottom of system. Fasten the 2 screws to fix the DIN-Rail mount bracket with system together.

Chapter 4

BIOS Setup

4.1 BIOS Introduction

BIOS (Basic Input/Output System) is a program located on a Flash Memory on the motherboard. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization.

4.1.1 BIOS Setup

Power on the computer, and pressing <Del> key immediately allows you to enter BIOS Setup. If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning the system OFF and then ON, or pressing <Ctrl>+<Alt>+<Delete> keys simultaneously.

Control Keys	
<↑> <↓> <←> <→>	Move to select screen
<Enter>	Select item
<Esc>	Quit the BIOS Setup
<+>	Increases the numeric value or makes changes
<->	Decreases the numeric value or makes changes
<Tab>	Select setup fields
<F1>	General help
<F7>	Select boot device
<F9>	Load Optimized defaults
<F10>	Save configuration and Exit

4.1.2 Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen. On the upper right box there is online help for the field to be changed.

4.1.3 Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.

4.2 Main Setup

Press <Del> to enter BIOS CMOS Setup Utility, the Main Menu (as shown below) will appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.

```
        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             5.010
  Compliancy               UEFI 2.4; PI 1.3
  Project Version          DA-1000 Series: 0.0.2
  Build Date and Time      01/22/2016 13:10:52

  CPU Configuration
  BayTrail SoC             D0 Stepping

  System Language          [English]

  System Date              [Wed 01/27/2016]
  System Time              [14:13:51]                   ↔: Select Screen
                                                        ↑↓: Select Item
  Access Level             Administrator                Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit



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```

4.2.1 System Date

Set the date. Please use <Tab> to switch between time elements.

4.2.2 System Time

Set the time. Please use <Tab> to switch between date elements.

4.3 Advanced Setup

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus.
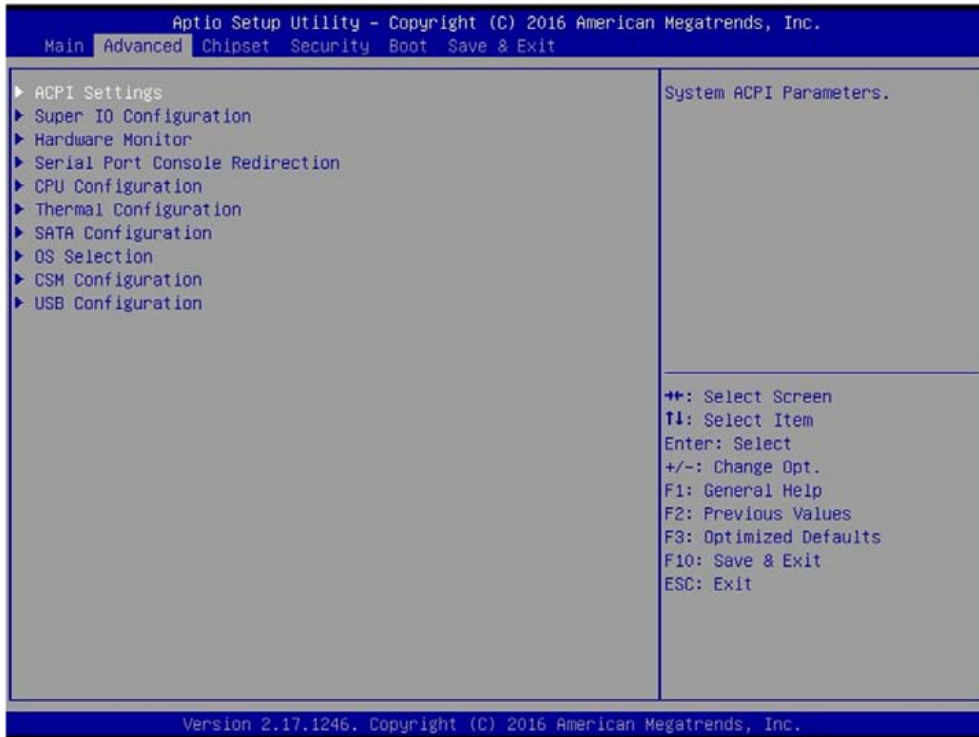
4.3.1 ACPI Settings
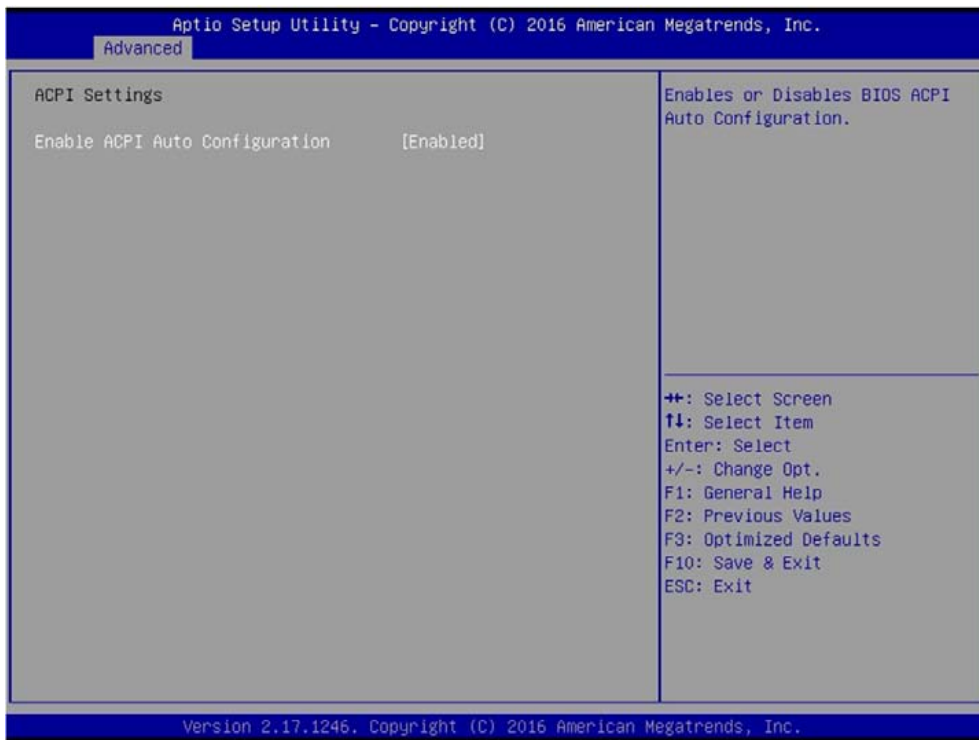
■ **Enable ACPI Auto Configuration**

This enables ACPI power management of the system.

4.3.2 Super I/O Configuration
This allows you to configure legacy ports such as serial and parallel ports. It also has watch dog function embedded in the Super I/O chip.

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

 Super IO Configuration                                  Set Parameters of Serial Port
                                                         1 (COMA)
 Super IO Chip                    F81866
 ▶ Serial Port 1 Configuration
 ▶ Serial Port 2 Configuration
 ▶ Serial Port 3 Configuration
 ▶ Serial Port 4 Configuration
 ▶ Parallel Port Configuration
   Watch dog Function
   Watch dog Mode                 [Sec]
   Watch dog Timer                0
   Watch dog count                : N/A
                                                         ▸▸: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit


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```

■ **Serial Port 1 Configuration**
  This allows you to configure serial port 1.
■ **Serial Port 2 Configuration**
  This allows you to configure serial port 2.
■ **Serial Port 3 Configuration**
  This allows you to configure serial port 3.
■ **Serial Port 4 Configuration**
  This allows you to configure serial port 4.

We'll use serial port 1 configuration as an example in the manual. Similar settings apply to other serial ports configuration.

Entering **serial port 1 configuration** allows you to enable or disable the port ,and also to configure settings and mode of operations. To avoid conflicted setting with other serial ports, default setting is recommended.
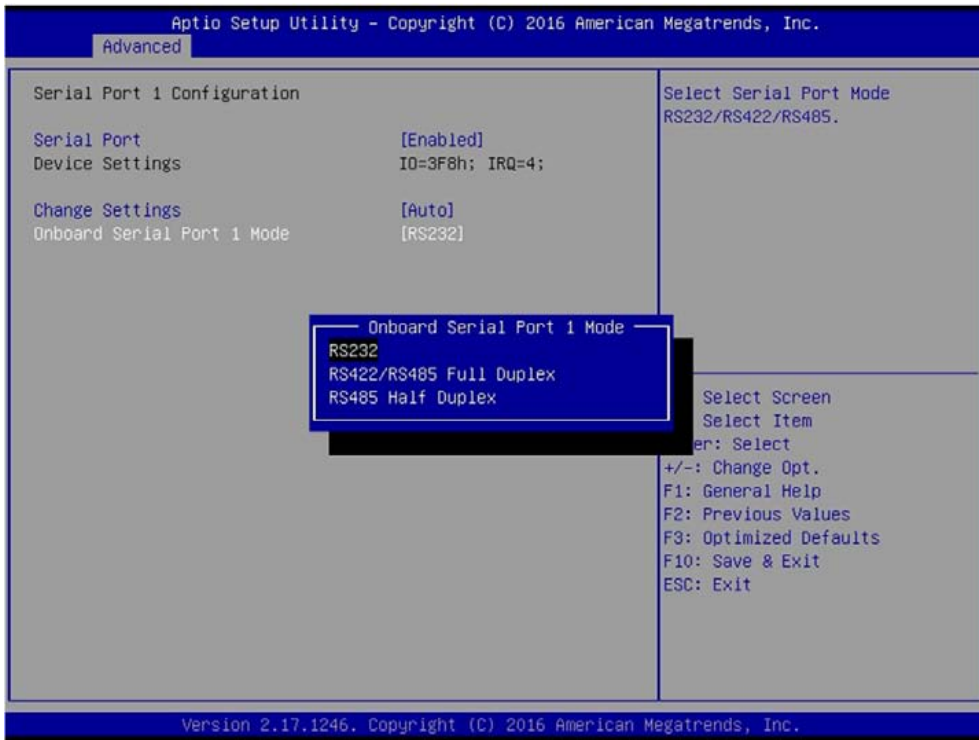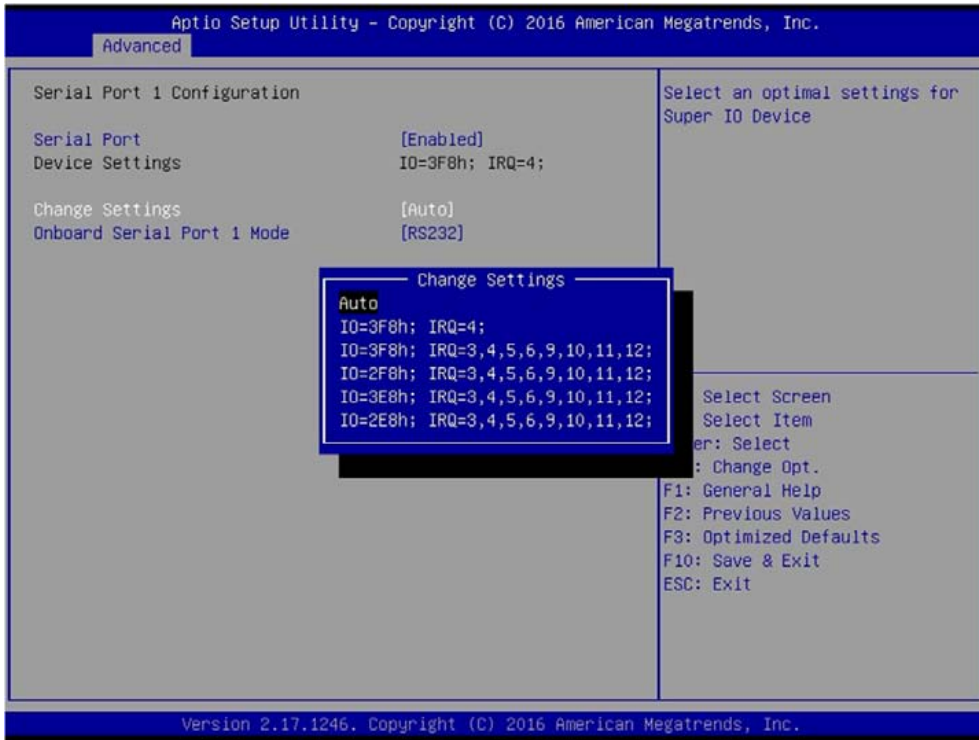
Entering **parallel port configuration** allows you to enable or disable the port ,and also to configure settings and mode of device operation. Default setting is recommended.
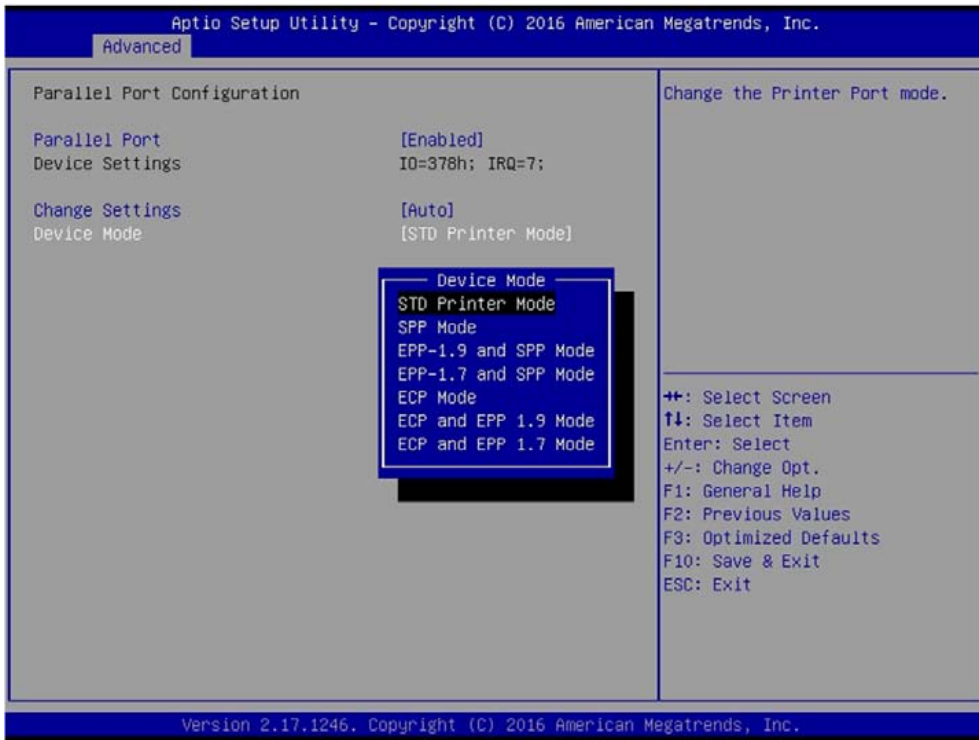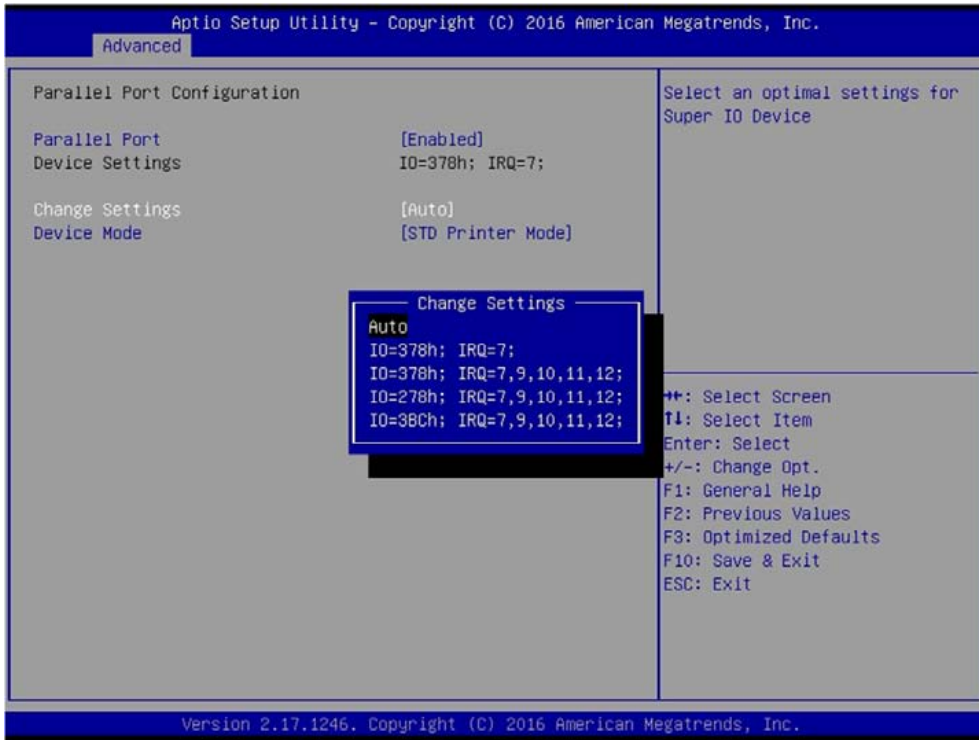
Watch dog timer allows you to set timer and count down time in seconds or minutes to reset the system via hardware. If you have set a timer value, the system will reset the system in accordance with the timer value set, regardless of existence and state of Operating System.
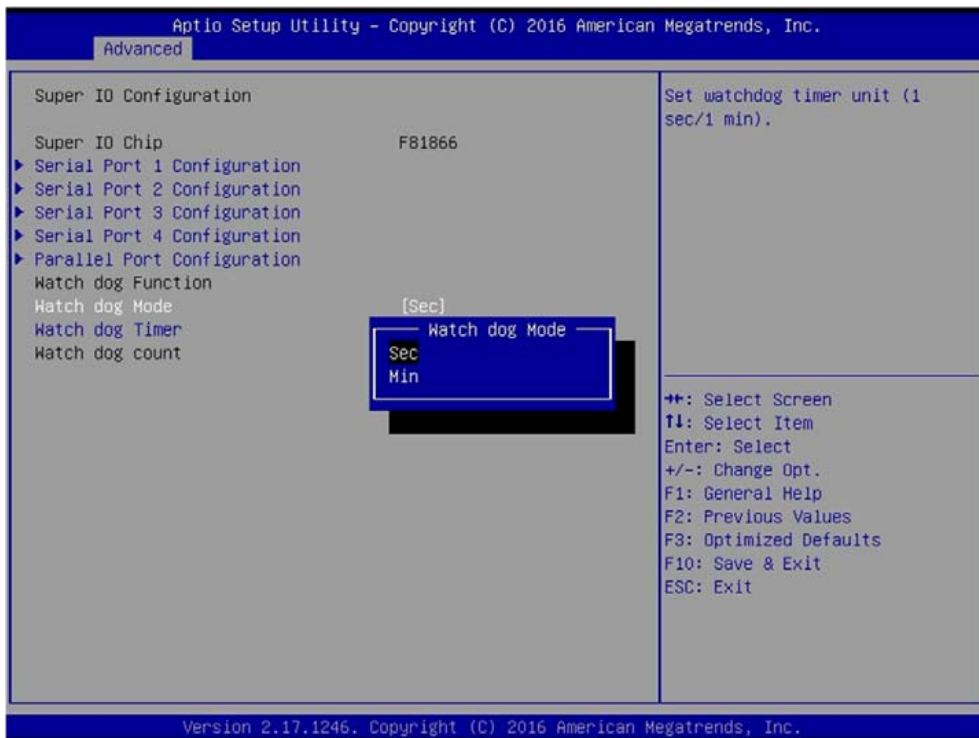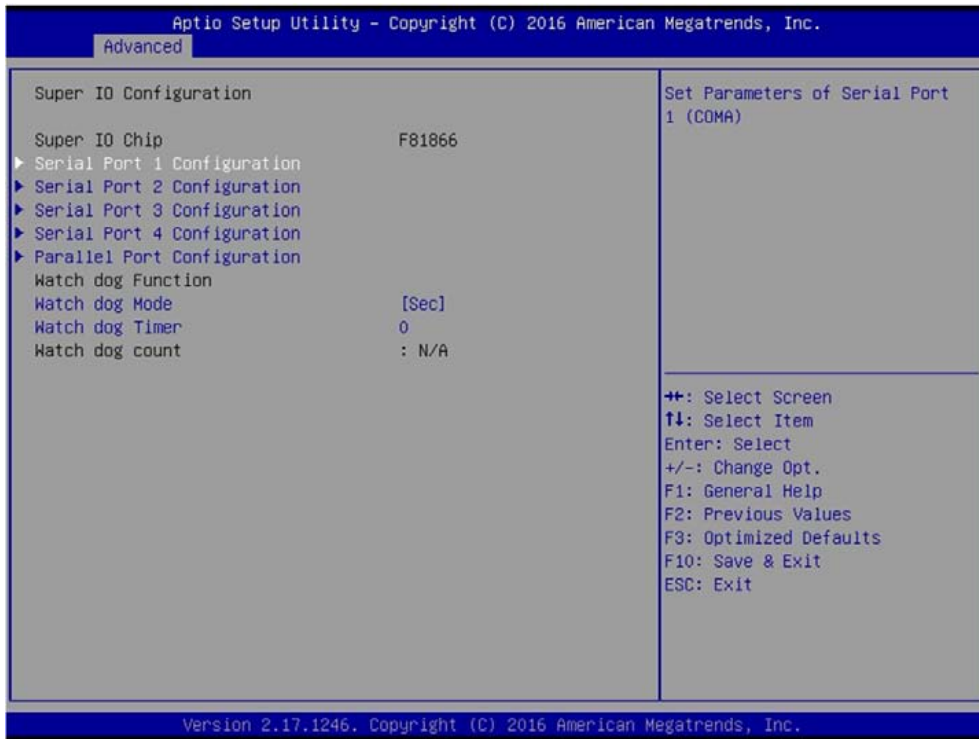
■ **Watch dog Mode**
    This allows you to set the timer unit in seconds or minutes.
■ **Watch dog Timer**
    This allows you to set between 0 and 255 in unit that was set in Watch dog Mode.

4.3.3 Hardware Monitor
This allows you to monitor system's CPU temperature and voltages.

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

  ▶ ACPI Settings                                        Monitor hardware status
  ▶ Super IO Configuration
  ▶ Hardware Monitor
  ▶ Serial Port Console Redirection
  ▶ CPU Configuration
  ▶ Thermal Configuration
  ▶ SATA Configuration
  ▶ OS Selection
  ▶ CSM Configuration
  ▶ USB Configuration


                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit



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```

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

  Pc Health Status

  CPU temperature              : +48 C
  Vcore                        : +0.744 V
  VSB5V                        : +4.992 V
  +3.3V                        : +3.328 V
  +12V                         : +12.297 V
  VBAT                         : +3.184 V




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit



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```

4.3.4 Serial Port Console Redirection

This allows you to enable and disable serial (COM) port(s) for console use. Default setting is disabled.
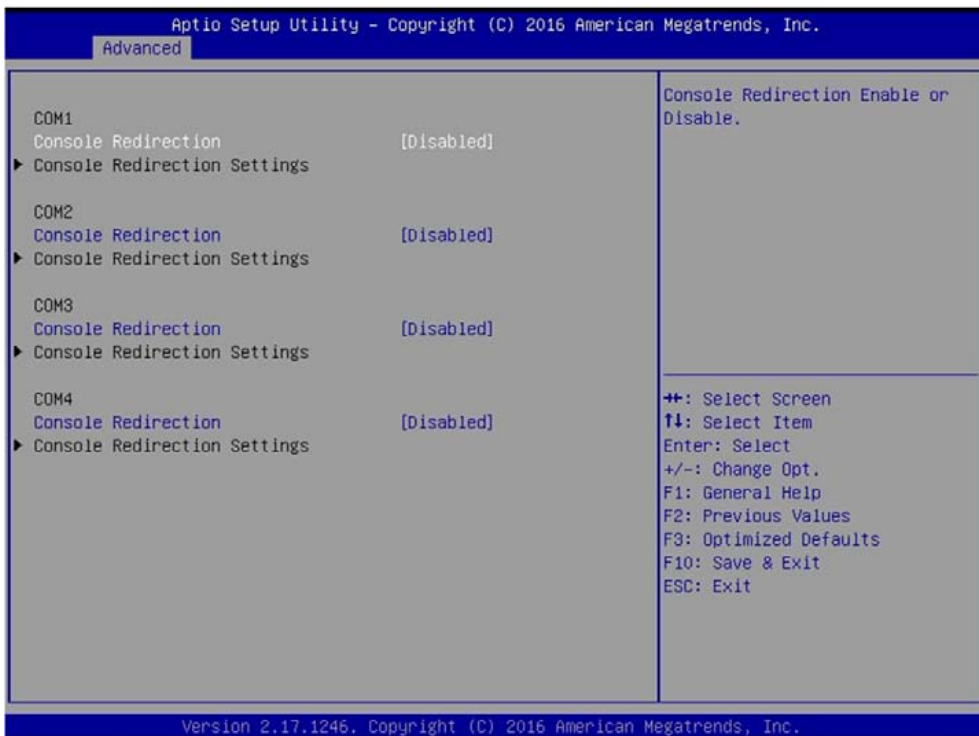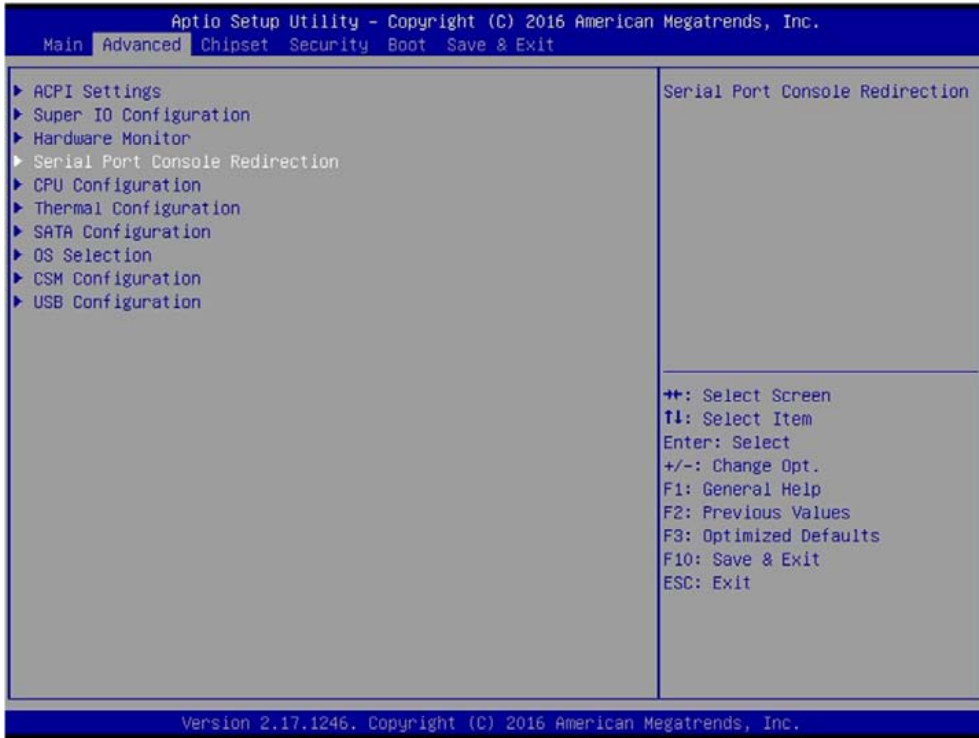
4.3.5 CPU Configuration

This allows you to configure CPU settings such as enabling or disabling of Intel virtualization technology. Use of default setting is recommended in the section.
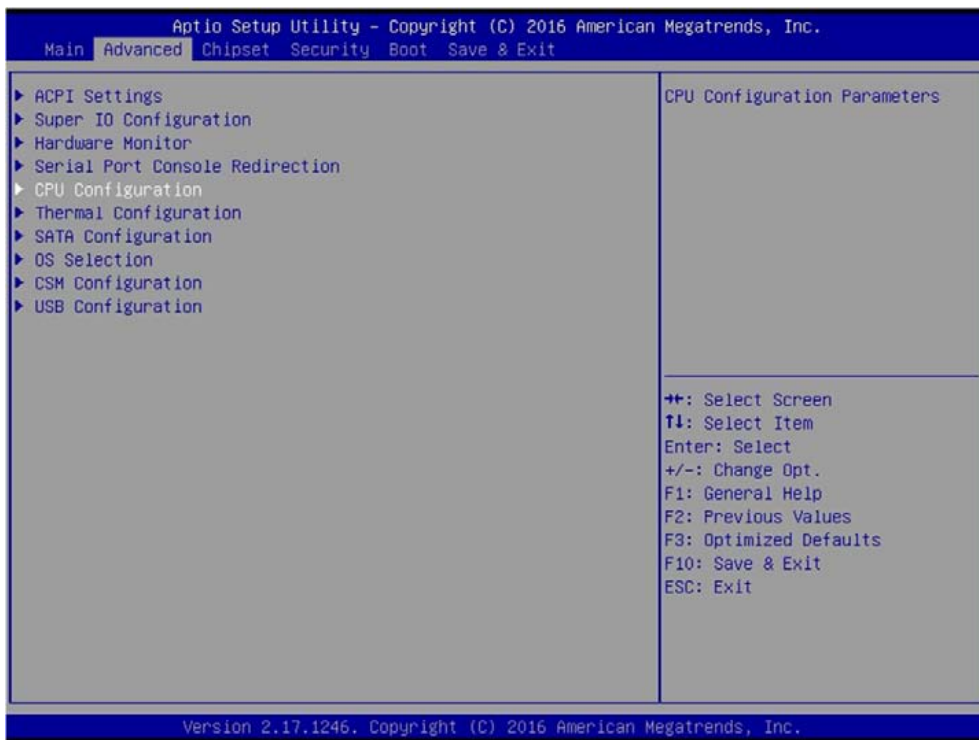
■ **Limit CPUID Maximum**

Default is Disabled.

■ **Execute Disable Bit**

Default is Enabled.

■ **Intel Virtualization Technology**

Default is Enabled.

Entering **Socket 0 CPU Information** shows CPU hardware details and supported features.

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

   CPU Configuration                                  Socket specific CPU Information

 ▶ Socket 0 CPU Information

   CPU Speed                       1467 MHz
   64-bit                          Supported

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


                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit



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```

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

   Socket 0 CPU Information

   Intel(R) Atom(TM) CPU E3826 @ 1.46GHz
   CPU Signature                   30679
   Microcode Patch                 901
   Max CPU Speed                   1460 MHz
   Min CPU Speed                   533 MHz
   Processor Cores                 2
   Intel HT Technology             Not Supported
   Intel VT-x Technology           Supported

   L1 Data Cache                   24 kB x 2
   L1 Code Cache                   32 kB x 2
   L2 Cache                        1024 kB x 1          ↔: Select Screen
   L3 Cache                        Not Present          ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit



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```

4.3.6 Thermal Configuration

This allows you to configure temperature of ACPI of OS to trip or shut down the system, or to begin throttling CPU. Use of default setting is recommended in the section.
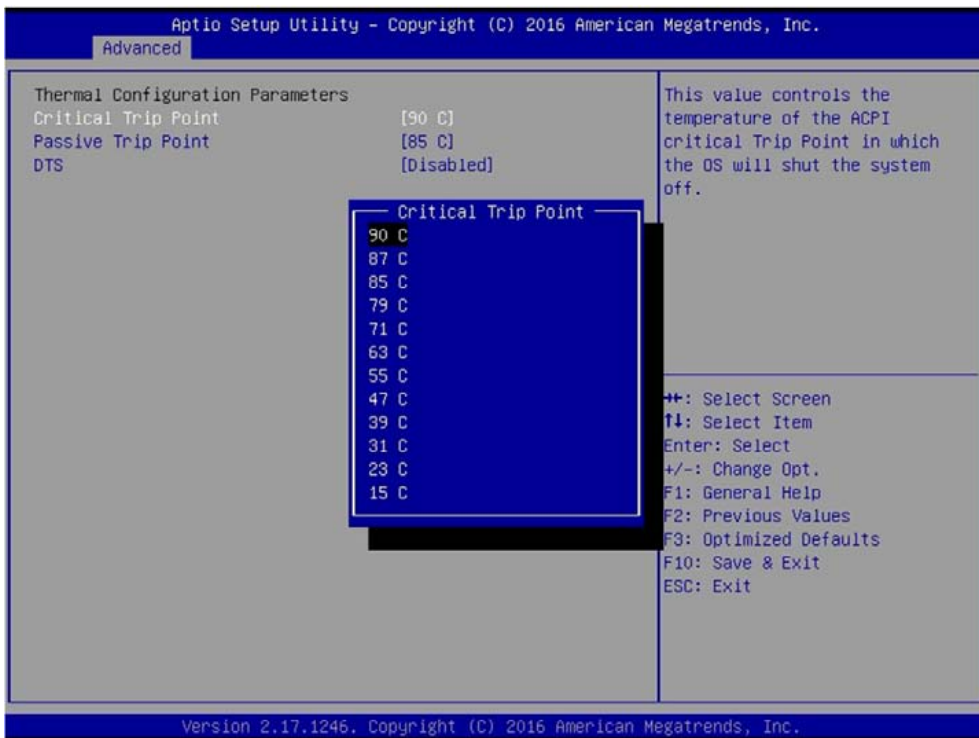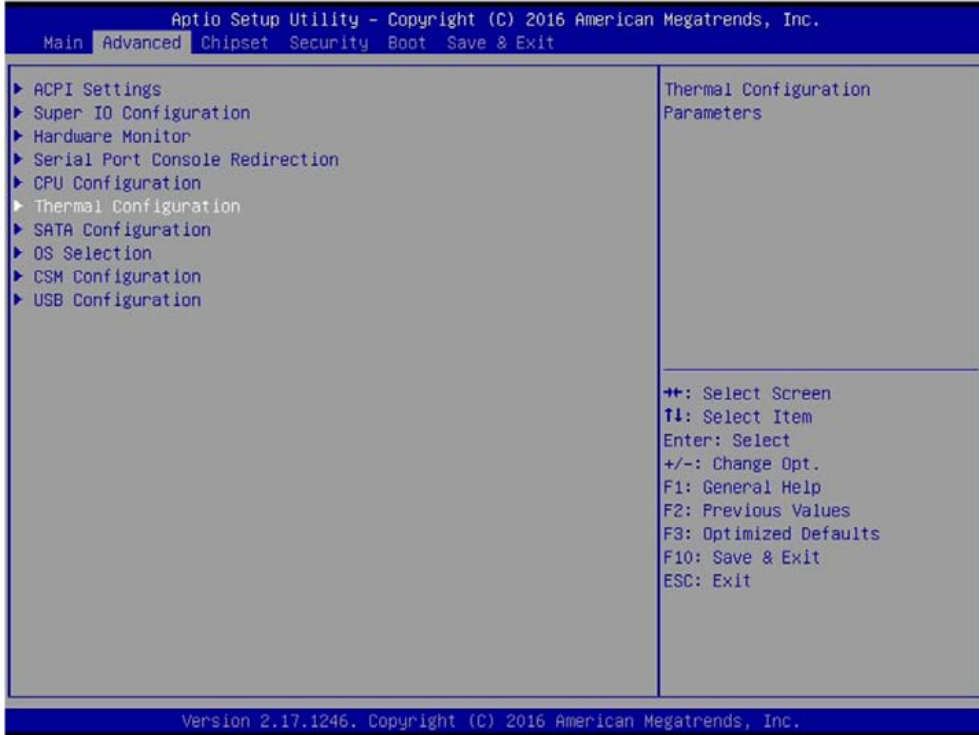
■ **Critical Trip Point**
This allows 90C (default), 87C, 85C, 79C, &1C, 63C, 55C, 47C, 39C, 31C, 23C, 15C.

■ **Passive Trip Point**
This allows 90C, 87C, 85C (default), 79C, &1C, 63C, 55C, 47C, 39C, 31C, 23C, 15C.

■ **DTS**
Default is Disabled.

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

  Thermal Configuration Parameters                     This value controls the
  Critical Trip Point             [90 C]               temperature of the ACPI
  Passive Trip Point              [85 C]               critical Trip Point - the
  DTS                             [Disabled]           point in which the OS will
                                                       begin throtting the processor.
                    ┌─── Passive Trip Point ───┐
                    │   90 C                    │
                    │   87 C                    │
                    │   85 C                    │
                    │   79 C                    │
                    │   71 C                    │
                    │   63 C                    │
                    │   55 C                    │
                    │   47 C                    │       ++: Select Screen
                    │   39 C                    │       ↑↓: Select Item
                    │   31 C                    │       Enter: Select
                    │   23 C                    │       +/-: Change Opt.
                    │   15 C                    │       F1: General Help
                    └───────────────────────────┘      F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit

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

4.3.7 SATA Configuration

This allows you to configure mode of operation and to enable or disable for the SATA interfaces. Use of default setting is recommended in the section.

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

     ▶ ACPI Settings                                    IDE Devices Configuration
     ▶ Super IO Configuration
     ▶ Hardware Monitor
     ▶ Serial Port Console Redirection
     ▶ CPU Configuration
     ▶ Thermal Configuration
     ▶ SATA Configuration
     ▶ OS Selection
     ▶ CSM Configuration
     ▶ USB Configuration


                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


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

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

     SATA Configuration                                 Select IDE / AHCI

     Serial-ATA (SATA)            [Enabled]

     SATA Mode                    [AHCI Mode]

     Serial-ATA Port 0            [Enabled]

     Serial-ATA Port 1            [Enabled]

     SATA Port0              ┌──── SATA Mode ────┐
     Not Present             │ IDE Mode          │
                             │ AHCI Mode         │
     SATA Port1              └───────────────────┘       ↔: Select Screen
     Not Present                                         ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


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```

■ **SATA Mode**

This allows to set AHCI mode (default) or IDE mode.

■ **Serial-ATA Port 0**

Default is Enabled.

■ **Serial-ATA Port 1**

Default is Enabled.

4.3.8 OS Selection

This allows you to configure Windows OS version to install. The purpose of this is to enable USB 3.0 controller interface. If you set Windows 7 and install the OS, you will need to install USB 3.0 driver at the OS level to fully support USB 3.0 interfaces. If you set Windows 8.x and install it or later OS, the Windows OS will easily support USB 3.0 interfaces.
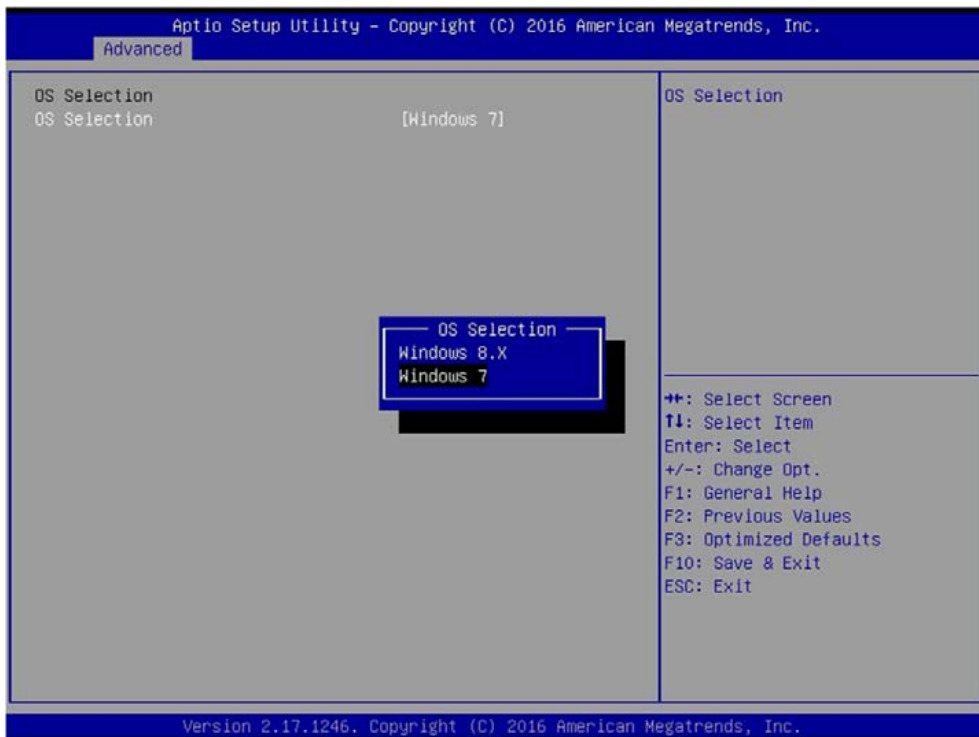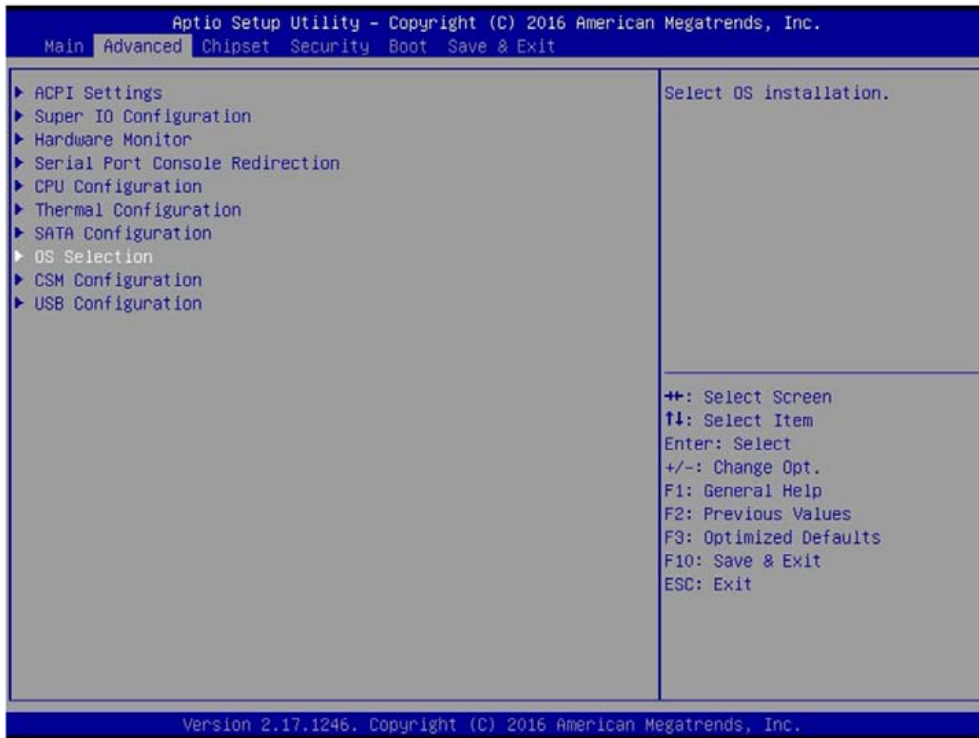
■ **OS Selection**

This allows to set Windows 8.x or Windows 7 (default).

4.3.9 CSM (Compatibility Support Module) Configuration

Following shows default settings.
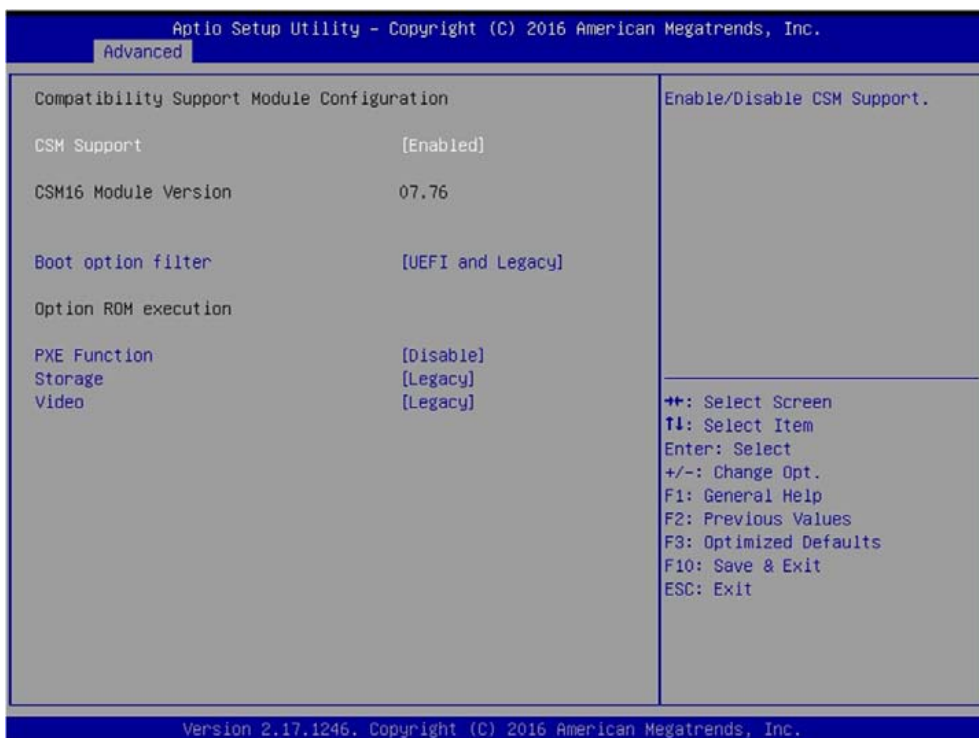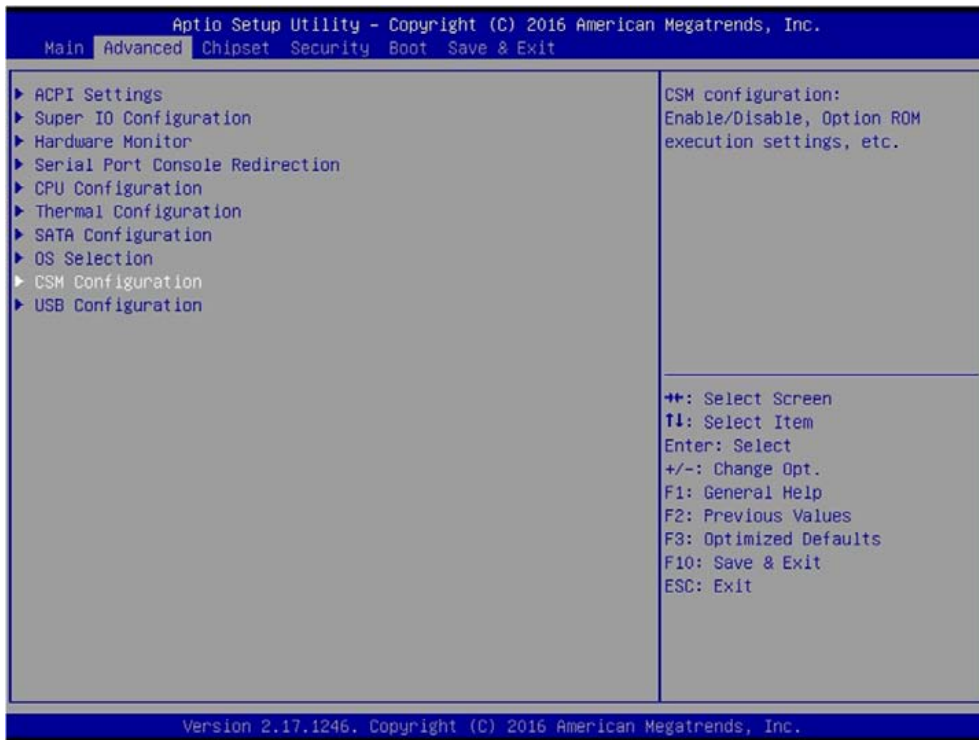
■ **CSM Support**
Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

■ **Boot option filter**
Allows user to select which type of operating system to boot.
UEFI and Legacy: Allows booting from operating systems that support legacy option ROM or UEFI option ROM.
Legacy only: Allows booting from operating systems that only support legacy option ROM.
UEFI only: Allows booting from operating systems that only support UEFI option ROM.
This item is configurable only when CSM Support is set to Enabled.

■ **PXE Function**
This item will allow users to enable or disable PXE function. Default is disabled.

■ **Storage**
Allows user to select whether to enable the UEFI or legacy option ROM for the storage device controller.
Do not launch: Disables option ROM.
UEFI: Enables UEFI option ROM only.
Legacy: Enables legacy option ROM only.

■ **Video**
Allows user to select whether to enable the UEFI or legacy option ROM for the storage device controller.
Do not launch: Disables option ROM.
UEFI: Enables UEFI option ROM only.
Legacy: Enables legacy option ROM only.

4.3.10 USB Configuration
Following shows default settings.
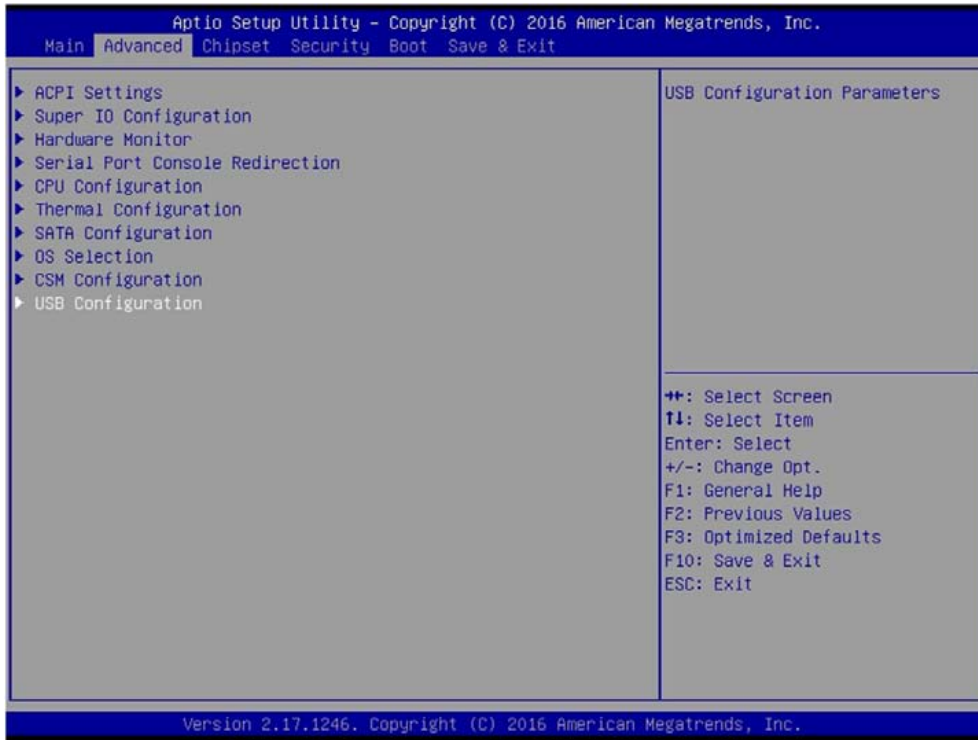
■ **Legacy USB Support**
  Allows USB keyboard/ mouse to be used in MS-DOS.

■ **XHCI Hand-off**
  Determines whether to enable XHCI (USB3.0) Hand-off feature for an operating system without XHCI (USB3.0) Hand-off support.

■ **EHCI Hand-off**
  Determines whether to enable EHCI Hand-off feature for an operating system without EHCI Hand-off support.

■ **USB Mass Storage Driver Support**
  Enables or disables support for USB storage devices.

4.4 Chipset

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus.
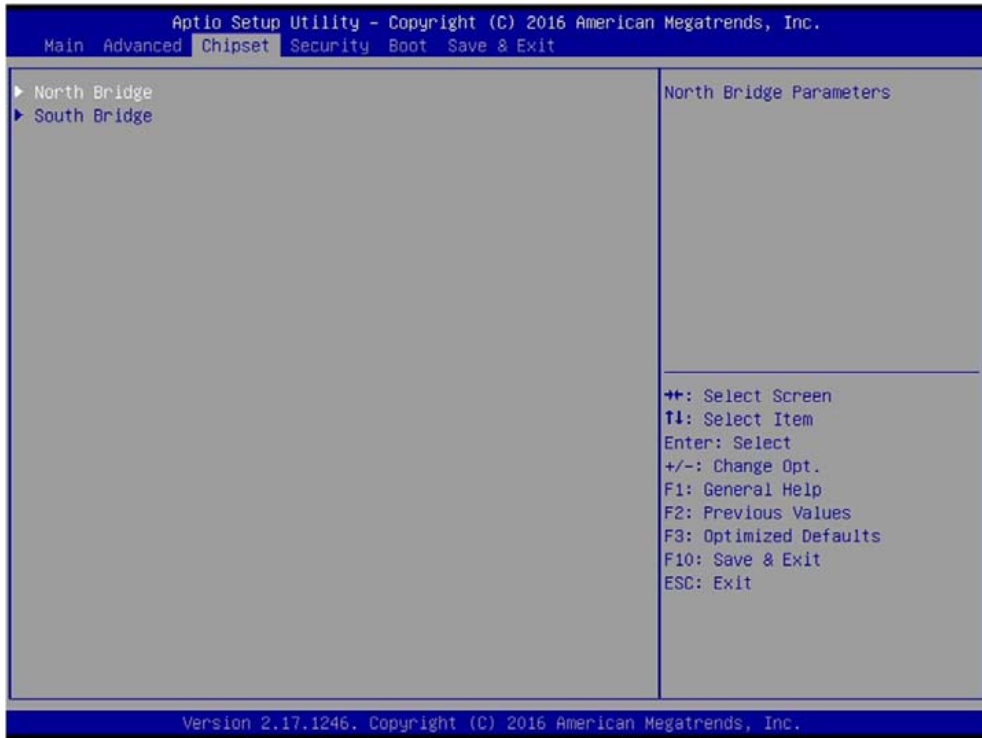
4.4.1 North Bridge

This section provides information on the installed memory size and memory/onboard graphics-related configuration options.
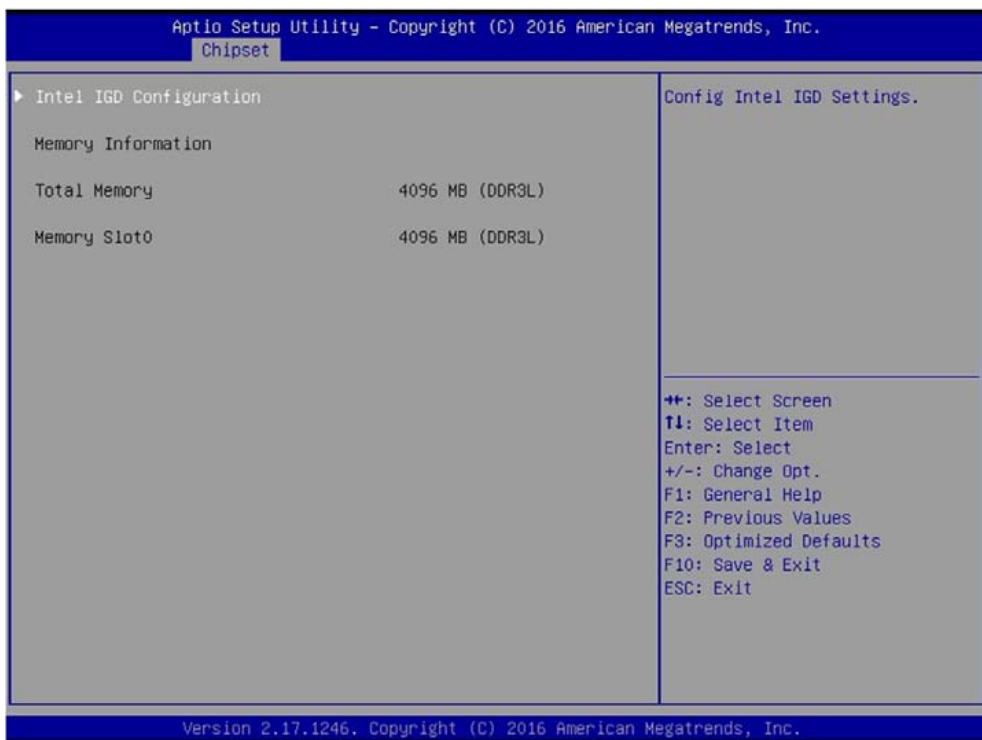
■ **Intel IGD Configuration**
This section provides onboard graphics-related configuration options. Following is default setting.

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

  GOP Configuration                                         Enable GOP Driver will unload
  GOP Driver                        [Enabled]               VBIOS; Disbale it will load
                                                            VBIOS
  Intel IGD Configuration

  Integrated Graphics Device        [Enabled]

  IGD Turbo Enable                  [Enabled]
  Primary Display                   [IGD]
  GFX Boost                         [Disabled]
  PAVC                              [LITE Mode]
  Aperture Size                     [256MB]
  DOP CG                            [Enabled]               ++: Select Screen
  GTT Size                          [2MB]                   ↑↓: Select Item
  IGD Thermal                       [Disabled]              Enter: Select
                                                            +/-: Change Opt.
  Vcc, Vnn Configuration for Power state2:                  F1: General Help
  Vcc_Vnn Config for Power state2   [Disabled]              F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit



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

❑ **GOP Driver**
This item will allow users to enable or disable GOP Driver.

❑ **Integrated Graphics Device**
This item will allow users to enable or disable Integrated Graphics Device.

❑ **IGD Turbo Enable**
This item will allow users to enable or disable IGD Turbo.

❑ **Primary Display**
"Auto or IGFX or PEG or PCIE or SG" optimal to Primary Display.

❑ **GFX Boost**
This item will allow users to enable or disable GFX Boost.

❑ **Aperture Size**
Aperture size optimal between 128MB, 256MB, or 512MB.

❑ **DOP CG**
This item will allow users to enable or disable DOP CG.

❑ **GTT Size**
GTT size optimal between 1MB or 2MB.

❑ **IGD Thermal**
This item will allow users to enable or disable IGD Thermal.

4.4.2 South Bridge

Following shows default settings.
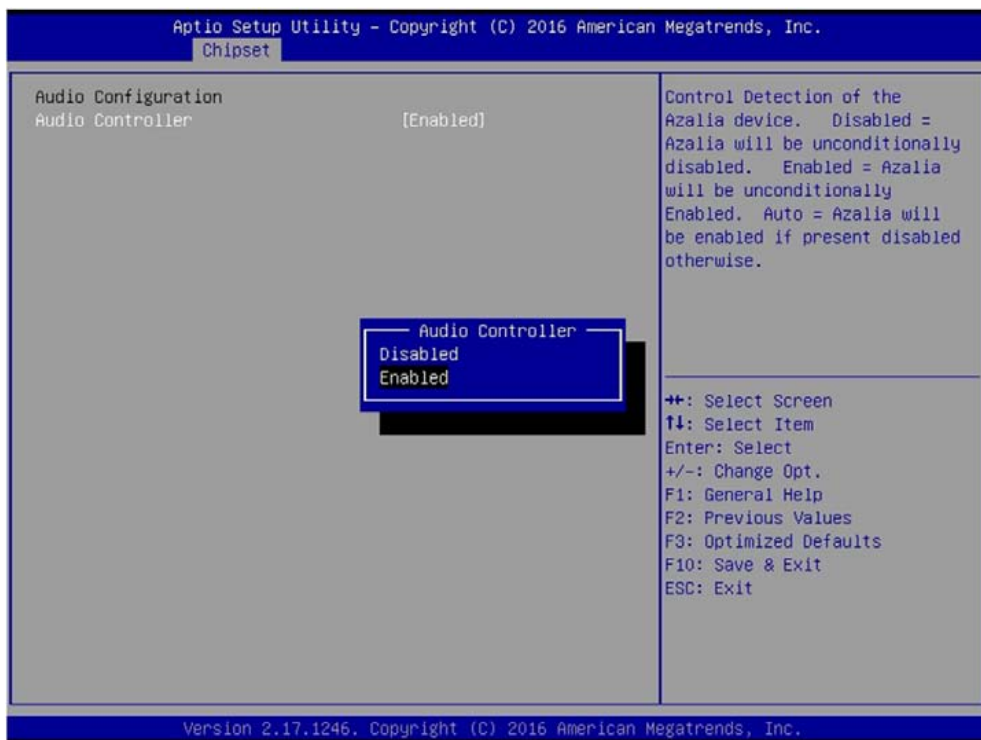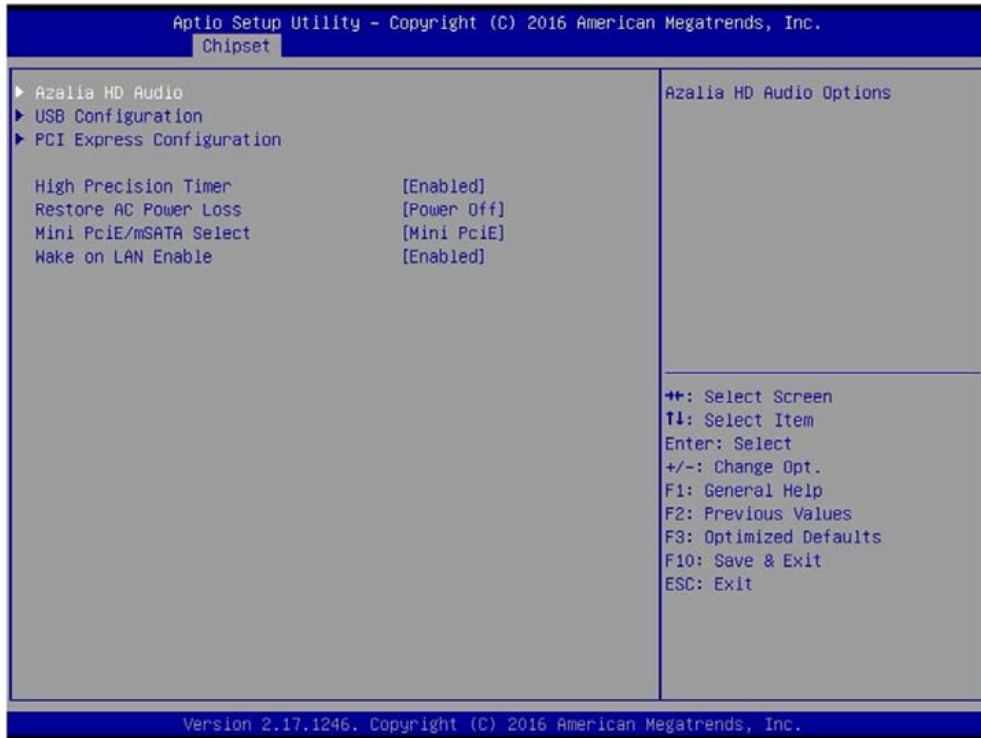
■ **Azalia HD Audio**

Control detection of the Azaliadevice.

❑ **Audio Controller**

Enabled: Azalia will be unconditionally enabled. Default is Enabled.

Disabled: Azalia will be unconditionally disabled.

■ **USB Configuration**

❑ **XHCI Mode**

This setting disables/enables the USB XHCI controller. The eXtensible Host Controller Interface (XHCI) is a computer interface specification that defines a register-level description of a Host Controller for Universal Serial Bus (USB), which is capable of interfacing to USB 1.0, 2.0, and 3.0 compatible devices. The specification is also referred to as the USB 3.0 Host Controller specification.

❑ **USB 2.0 (EHCI) Support**

This setting disables/enables the USB EHCI controller. The Enhanced Host Controller Interface (EHCI) specification describes the register-level interface for a Host Controller for the Universal Serial Bus (USB) Revision 2.0.

❑ **USB Port 0**

This item will allow users to enable or disable USB Port 0.

❑ **USB Port 1**

This item will allow users to enable or disable USB Port 1.

❑ **USB Port 2**

This item will allow users to enable or disable USB Port 2.

❑ **USB Port 3**

This item will allow users to enable or disable USB Port 3.

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

PCI Express Configuration                        Enable or Disable the PCI
PCI Express Port 0           [Enabled]           Express Port 0 in the Chipset.
  Speed                      [Auto]

PCI Express Port 1           [Enabled]
  Speed                      [Auto]

PCI Express Port 2           [Enabled]
  Speed                      [Auto]

PCI Express Port 3           [Enabled]
  Speed                      [Auto]

                                                 ++: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F10: Save & Exit
                                                 ESC: Exit

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

■ PCI Express Configuration

❑ PCI Express Port 0
This item will allow users to enable or disable PCI Express Port 0.

❑ Speed
Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 1
This item will allow users to enable or disable PCI Express Port 1.

❑ Speed
Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 2
This item will allow users to enable or disable PCI Express Port 2.

❑ Speed
Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 3
This item will allow users to enable or disable PCI Express Port 3.

❑ Speed
Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

■ **High Precision Timer**
Enable (default) or disable High Precision Event Timer (HPET) in the operating system.

■ **Restore AC Power Loss**
This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:
Power Off: Leave the computer in the power off state. This is the default setting.
Power On: Leave the computer in the power on state.
Last State: Restore the system to the previous status before power failure or interrupt occurred.

■ **Mini PCIe/mSATA Select**
This allows to set shared Mini PCIe slot for use as either Mini PCIe (default) or mSATA interface.

■ **Wake on LAN Enable**
This enables or disables Wake on LAN feature. Default is Enabled.

4.5 Security

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

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

   Password Description                           Set Administrator Password

   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                    3
   Maximum length                    20
                                                 ++: Select Screen
                                                 ↑↓: Select Item
   Administrator Password                        Enter: Select
   User Password                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F10: Save & Exit
                                                 ESC: Exit


           Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
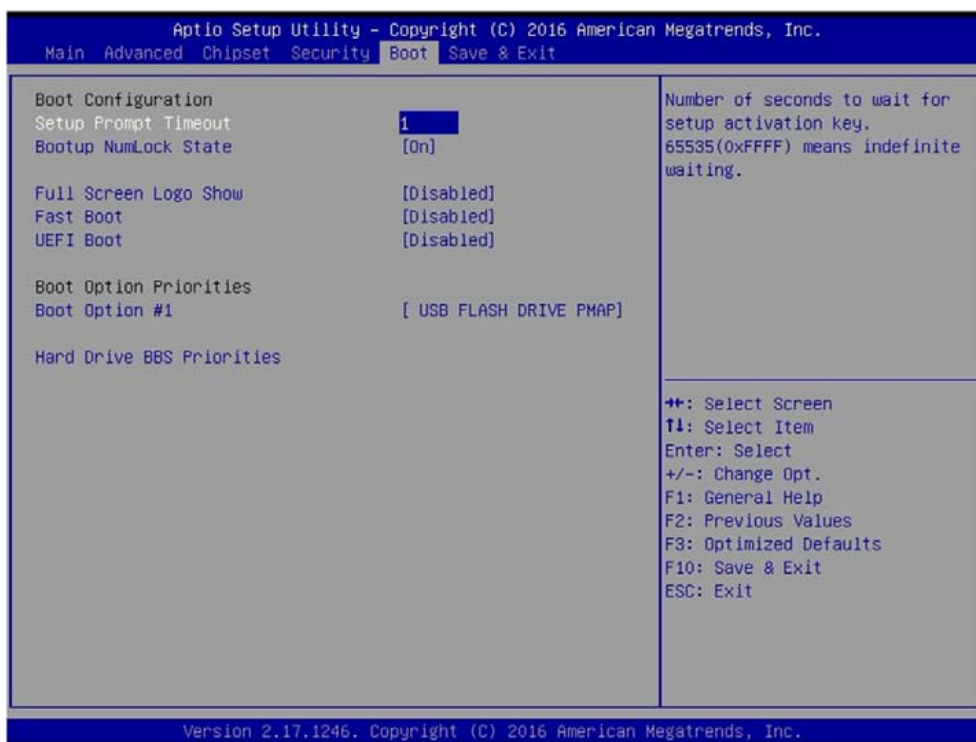
4.5.1 Administrator Password
Administrator Password controls access to the BIOS Setup utility.

4.5.2 User Password
User Password controls access to the system at boot and to the BIOS Setup utility.

4.6 Boot

This section allows you to configure the boot settings. Following is the default settings.

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

  Boot Configuration                                    Number of seconds to wait for
  Setup Prompt Timeout              1                   setup activation key.
  Bootup NumLock State              [On]                65535(0xFFFF) means indefinite
                                                        waiting.
  Full Screen Logo Show             [Disabled]
  Fast Boot                         [Disabled]
  UEFI Boot                         [Disabled]

  Boot Option Priorities
  Boot Option #1                    [ USB FLASH DRIVE PMAP]

  Hard Drive BBS Priorities
                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit



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```

4.6.1 Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

4.6.2 Bootup NumLock State

Select the Power-on state for NumLock key.

4.6.3 Full Screen Logo Show

This item allows user to enable or disable full screen logo show.
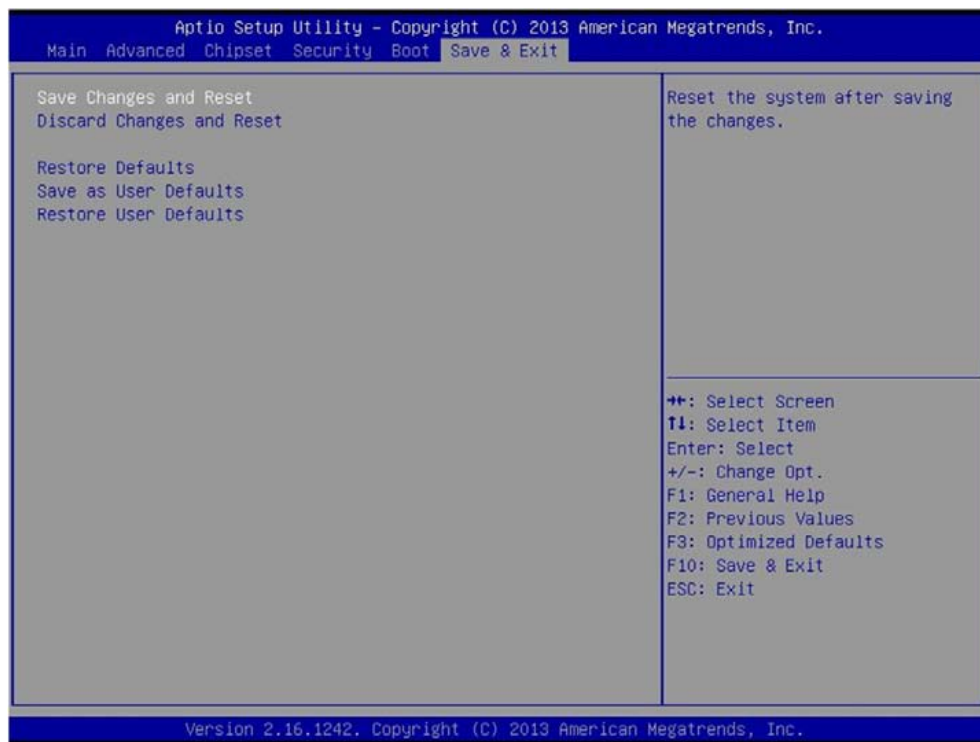
4.6.4 Fast Boot

This item allows user to enable or disable Fast Boot option.

4.6.5 UEFI Boot

This allows to boot device with UEFI-based (not legacy) OS.

4.7 Save & Exit

This section allows you to configure the boot settings.

4.7.1 Save Changes and Reset

This item allows user to reset system setup after saving changes.

4.7.2 Discard Changes and Reset

This item allows user to reset system setup without saving any changes.

4.7.3 Restore Defaults

This item allows user to restore/ load default values for all the options.

4.7.4 Save as User Defaults

This item allows user to save the changes done so far as user defaults.

4.7.5 Restore User Defaults

This item allows user to restore the user defaults to all the options.

Chapter 5

Product Application
(For DA-1000D only)

This chapter descripts the DIO applications for **DA-1000D** only.

5.1 Digital I/O (DIO) application

This section describes DIO application of the product. The content and application development are better understood and implemented by well experienced professionals or developers.

5.1.1 Digital I/O Programming Guide

5.1.1.1 Pins for Digital I/O for Cincoze DA series product

Item	Standard
GPIO54 (Pin13)	DI
GPIO55 (Pin14)	
GPIO56 (Pin15)	
GPIO57 (Pin16)	
GPIO60 (Pin17)	DO
GPIO61 (Pin18)	
GPIO62 (Pin19)	
GPIO63 (Pin20)	

5.1.1.2 Programming Guide

To program the Super I/O chip F81866A configuration registers, the following configuration procedures must be followed in sequence:

(1) Enter the Extended Function Mode
(2) Configure the configuration registers
(3) Exit the Extended Function Mode

The configuration register is used to control the behavior of the corresponding devices. To configure the register, use the index port to select the index and then write data port to alter the parameters. The default index port and data port are 0x4E and 0x4F respectively. **Pull down the SOUT1 pin to change the default value to 0x2E/ 0x2F. To enable configuration, the entry key 0x87 must be written to the index port. To disable configuration, write exit entry key 0xAA to the index port.** Following is an example to enable configuration and to disable configuration by using debug.
-o 4e 87
-o 4e 87 (enable configuration)
-o 4e aa (disable configuration)

5.1.1.3 Relative Registers

To program the F81866A configuration registers, the following configuration procedures.

Logic Device Number Register (LDN) — Index 07h

Bit	Name	R/W	Reset	Default	Description
7-0	LDN	R/W	LRESET#	00h	00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 05h: Select KBC device configuration registers. 06h: Select GPIO device configuration registers. 07h: Select WDT device configuration registers. 0Ah: Select PME, ACPI and ERP device configuration registers. 10h: Select UART1 device configuration registers. 11h: Select UART2 device configuration registers. 12h: Select UART3 device configuration registers. 13h: Select UART4 device configuration registers. 14h: Select UART5 device configuration registers. 15h: Select UART6 device configuration registers. Otherwise: Reserved.

7.7.9.1 GPIO5 Output Enable Register — Index A0h

Bit	Name	R/W	Reset	Default	Description
7	GPIO57_OE	R/W	LRESET#	0	0: GPIO57 is in input mode. 1: GPIO57 is in output mode.
6	GPIO56_OE	R/W	LRESET#	0	0: GPIO56 is in input mode. 1: GPIO56 is in output mode.
5	GPIO55_OE	R/W	LRESET#	0	0: GPIO55 is in input mode. 1: GPIO55 is in output mode.
4	GPIO54_OE	R/W	LRESET#	0	0: GPIO54 is in input mode. 1: GPIO54 is in output mode.

7.7.9.2 GPIO5 Output Data Register — Index A1h (This byte could be also written by base address + 5)

Bit	Name	R/W	Reset	Default	Description
7	GPIO57_DATA	R/W	LRESET#	1	0: GPIO57 outputs 0 when in output mode. 1: GPIO57 outputs 1 when in output mode.
6	GPIO56_DATA	R/W	LRESET#	1	0: GPIO56 outputs 0 when in output mode. 1: GPIO56 outputs 1 when in output mode.
5	GPIO55_DATA	R/W	LRESET#	1	0: GPIO55 outputs 0 when in output mode. 1: GPIO55 outputs 1 when in output mode.
4	GPIO54_DATA	R/W	LRESET#	1	0: GPIO54 outputs 0 when in output mode. 1: GPIO54 outputs 1 when in output mode.

7.7.10.1 GPIO6 Output Enable Register — Index 90h

3	GPIO63_OE	R/W	LRESET#	0	0: GPIO63 is in input mode. 1: GPIO63 is in output mode.
2	GPIO62_OE	R/W	LRESET#	0	0: GPIO62 is in input mode. 1: GPIO62 is in output mode.
1	GPIO61_OE	R/W	LRESET#	0	0: GPIO61 is in input mode. 1: GPIO61 is in output mode.
0	GPIO60_OE	R/W	LRESET#	0	0: GPIO60 is in input mode. 1: GPIO60 is in output mode.

7.7.10.2 GPIO6 Output Data Register — Index 91h (This byte could be also written by base address + 4)

3	GPIO63_VAL	R/W	LRESET#	1	0: GPIO63 outputs 0 when in output mode. 1: GPIO63 outputs 1 when in output mode.
2	GPIO62_VAL	R/W	LRESET#	1	0: GPIO62 outputs 0 when in output mode. 1: GPIO62 outputs 1 when in output mode.
1	GPIO61_VAL	R/W	LRESET#	1	0: GPIO61 outputs 0 when in output mode. 1: GPIO61 outputs 1 when in output mode.
0	GPIO60_VAL	R/W	LRESET#	1	0: GPIO60 outputs 0 when in output mode. 1: GPIO60 outputs 1 when in output mode.

5.1.1.4 Sample Code in C Language

5.1.1.4 .1 Control of GP54 to GP57

```
#define AddrPort 0x4E
#define DataPort 0x4F

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(dataPort, 0x06)
//Select logic device 06h

<Output/Input Mode Selection> // Set GP54 to GP57 input Mode
WriteByte(AddrPort, 0xA0) // Select configuration register A0h
WriteByte(DataPort, (ReadByte(DataPort) | 0x0X))
// Set (bit 4~7) = 0 to select GP 54~57 as Input mode.

<Input Value>
WriteByte(AddrPort, 0xA1) // Select configuration register A1h
ReadByte(DataPort, Value) // Read bit 4~7 (0xFx)= GP54 ~57
as High.

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)
```

5.1.1.4 .2 Control of GP60 to GP63
 #define AddrPort 0x4E
#define DataPort 0x4F

<Enter the Extended Function Mode>

WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(DataPort, 0x06)
// Select logic device 06h

<Output/Input Mode Selection> // Set GP60 to GP63 output Mode
WriteByte(AddrPort, 0x90) // Select configuration register 90h
WriteByte(DataPort, (ReadByte(DataPort) & 0xXF))
// Set (bit 0~3) = 1 to select GP 60 ~63 as Output mode.

<Output Value>
WriteByte(AddrPort, 0x91) // Select configuration register 91h
WriteByte(DataPort, Value) // Set bit 0~3=(0/1) to output GP 60~63
as Low or High

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)

5.1.1.5 Change base address
<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(dataPort, 0x06)
// Select logic device 06h

WriteByte(AddrPort, 0x60) // Select configuration register 60h
WriteByte(DataPort, (ReadByte(DataPort) | 0x03))

WriteByte(AddrPort, 0x61) // Select configuration register 61h
WriteByte(DataPort, (ReadByte(DataPort) | 0x20))

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)

GPIO Port base address 0x0320/h

5.1.1.6 DATA Bit Table (DIO)

7	6	5	4	3	2	1	0	bit
0	0	0	1	-	-	-	-	value
	1				X			/h

= DI1

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	0	0	1	value
	X				1			/h

= DO1

7	6	5	4	3	2	1	0	bit
0	0	1	0	-	-	-	-	value
	2				X			/h

= DI2

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	0	1	0	value
	X				2			/h

= DO2

7	6	5	4	3	2	1	0	bit
0	1	0	0	-	-	-	-	value
	4				X			/h

= DI3

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	1	0	0	value
	X				4			/h

= DO3

7	6	5	4	3	2	1	0	bit
1	0	0	0	-	-	-	-	value
	8				X			/h

= DI4

7	6	5	4	3	2	1	0	bit
-	-	-	-	1	0	0	0	value
	X				8			/h

= DO4

5.1.1.7 DIO I/O Port Address

DI4	DI3	DI2	DI1	DO4	DO3	DO2	DO1	Pin Definition
7	6	5	4	3	2	1	0	Data Bits
DI				DO				DIO
0xA05				0xA03				I/O Port address

5.2 DA-1000D Digital I/O (DIO) Hardware Specification

- 4x Digital Input (Source Type)

- Input Voltage (Dry Contact)
  - Logic 0: Close to GND
  - Logic 1: Open

- Input Voltage:
  - Logic 0: -3V (Min/D1 to COM+)

- 4x Digital Output
  - Supply Voltage: 5~48V
  - Sink Current: 1A (Max)
  - DIO Max: 48V

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