cincoze

DC-1100

User Manual

Fanless Computing Solution
Compact Size Fanless Computer

Version: V1.47

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Preface

Revision

Revision	Description	Date
1.00	Manual Released	2014/09/29
1.10	New Optional Accessories Released	2015/01/13
1.20	Corrected photos shown in mirror and add chapter 5 and spec.	2016/06/06
1.30	Add E-Mark Certificated	2016/08/30
1.40	Correction Made	2018/11/20
1.41	Correction Made	2020/04/09
1.42	New Format Updated	2020/10/22
1.43	Add DC_IN1 Warning	2021/04/20
1.44	Correction Made	2021/06/28
1.45	Correction Made	2021/10/29
1.46	Correction Made	2022/05/31
1.47	Correction Made	2023/04/14

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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.

E-Mark

The "E" mark is based on ECE regulations issued by the Economic Commission for Europe. It is an organizational part of the UN and the members are EU countries and many others. Therefore, the acceptance of approved components is much broader, especially in the eastern part of Europe. It is necessary to confirm whether a particular country has accepted (signed) the application of an ECE-regulation; as the application it is not mandatory for the countries.

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 an 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 ensure 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 sent 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 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 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.

15. Equipment intended only for use in a RESTRICTED ACCESS AREA.

Package Contents

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

Item	Description	Q'ty
1	DC-1100 Embedded System	1
2	DIO Terminal Block Connector (Female)	1
3	Power Terminal Block Connector (Female)	1
4	DVI-I to VGA Adapter	1
5	Screw Pack	1
6	Wall Mount Kit	1

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

Ordering Information

Model No.	Product Description
DC-1100	Intel® Atom™ E3845 Quad Core™ Compact Size Fanless Computer and 2x Mini-PCIe Expansion

Chapter 1

Product Introductions

1.1 Overview

DC-1100 is a high performance compact size (185mm (W) x 131mm (D) x 54mm (H)) system designed with onboard Intel® Atom™ E3845 Quad Core 1.91GHz processor , rich I/O, unique expansion capability, and wide range (9-48V) DC power input. It supports the latest USB 3.0 technology.

With features including completely cable-less designed, special heat dissipation, anti-vibration, and industrial components selection, DC-1100 is a ruggedized system that can operate in harsh environments.

A build in voltage protection, reliable DC power input, and reverse power protection make DC-1100 a safety system for industrial applications.

1.2 Product pictures

Front

Rear

1.3 Key Features

- Onboard Intel® Atom™ E3845 processor Quad Core, 1.91GHz

- 1x DDR3L SO-DIMM max. up to 8GB

- Dual Independent Display from 1x DVI-I and 1x DisplayPort

- 2x Intel® I210 GbE port, support Wake-on-LAN and PXE

- 1x USB 3.0, 3x USB2.0

- 4x RS-232/422/485 port with 5V/12V power

- 4x Isolated DI, 4x Isolated DO

- 1x 2.5" SATA SSD/HDD bay, 1x CFast card and 1x SIM card socket

- 9-48VDC power input, support AT/ATX mode

- 2x Mini-PCIe slot for Wi-Fi, GSM, or I/O expansion

- Universal I/O bracket for Mini-PCIe expansion

- E13 (No.10R-0514062) Certified

1.4 Hardware Specification

Processor
• Onboard Intel® Atom™ Processor E3845 Quad Core, 1.91 GHz with AMI 64Mbit SPI BIOS.

Memory
• 1x 204-Pin DDR3L-1066/ 1333MHz SO-DIMM (un-buffered and non-ECC), Max. up to 8 GB

Graphics
Dual Display
• 1x DVI and 1x DisplayPort
• 1x DVI-D and 1x VGA (with optional split cable)
• 1x DisplayPort and 1x VGA (with DVI-I to VGA Adapter)

Expansion
• 2x Full-size Mini PCIe Socket for Wi-Fi / GSM / Expansion Module
• 1x Universal I/O Bracket

Ethernet
• 2 x Intel® I210 GbE LAN Port, Support Wake-on-LAN and PXE

Audio
• Codec: Realtek ALC888S
• 1x Mic-in and 1x Line-out

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

Storage
• 1x 2.5" SATA SSD/HDD Bay
• 1x External CFast Socket
• 1x External SIM Card Socket

I/O Ports
• 1x USB 3.0 Port
• 3x USB 2.0 Port
• 4 x DB9 for COM1~4 (Support RS-232/422/485 with Auto Flow Control)
• 8x Optical Isolated DIO (4x DI, 4x DO), 10-Pin Terminal Block, Support 9-30V
• 2x Antenna Hole
• 1x Power Switch
• 1x AT/ATX Switch

Power Requirement
• Support AT, ATX Mode
• 1x 3-pin Terminal Block Connector with Power Input 9-48VDC
• 1x Optional AC/DC 12V/5A, 60W Power Adapter

Environment
• Operating Temperature: Ambient with Air Flow: -25°C to 70°C (with Industrial Grade Peripherals)
• Storage Temperature: -30°C to 85°C
• Relative humidity: 10%~95% (non-condensing)

Physical
• Dimension (WxDxH): 185 x 131 x 54 mm
• Weight: 1.58 kg
• Construction: Extruded Aluminum with Heavy Duty Metal
• Mounting: Wall, Optional Side/VESA/DIN-Rail Mounting

Protection
• Reverse Power Input Protection
• Over Voltage Protection
 - Protection Range: 51~58V
 - Protection Type: shut down operating voltage, re-power on at the present level to recover
• Over Current Protection: 15A
• ESD Protection: +/- 8kV (air), +/- 4kV (contact)
• Surge Protection:2kV

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

Certification
• CE
• FCC Class A
• E-Mark (E13, No.10R-0514062)

1.5 System I/O

1.5.1 Front

ATX Power On/Off Switch

Press to power-on or power-off the system

Power LED

Indicates the power status of the system

HDD LED

Indicates the status of the hard drive

USB 2.0 Port

Used to connect USB 2.0/1.1 device

AT/ATX Switch

Used to select AT or ATX power mode

CFast and SIM card

Used to insert a CFast card and SIM card

COM port

COM 1 and COM 2 support RS-232/422/485 serial device

Expandable I/O bracket

Used to customized I/O output
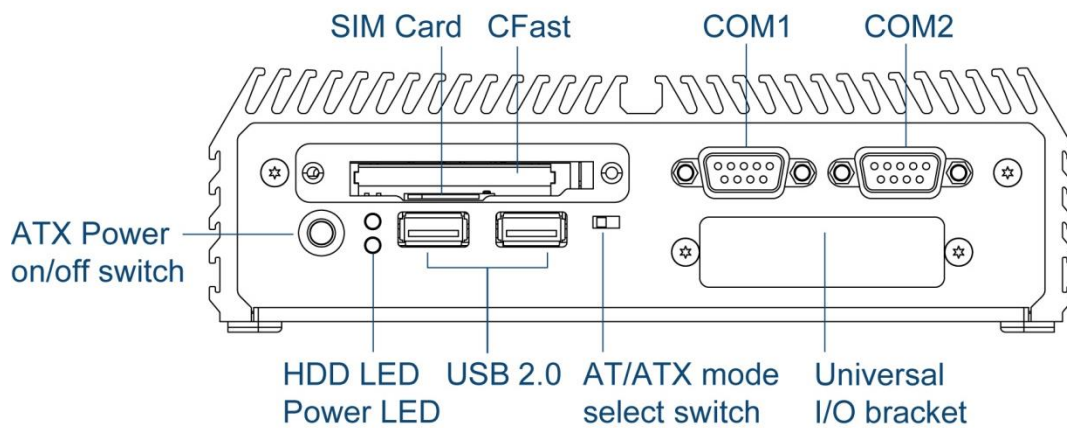
1.5.2 Rear

DC IN

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

LAN port

Used to connect the system to a local area network

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

DisplayPort

Used to connect a DisplayPort monitor

Antenna hole

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

COM port

COM 3 and COM 4 support RS232/422/485 serial device

Mic-in

Used to connect a microphone

Line-out

Used to connect a speaker

Digital I/O Terminal Block

The Digital I/O terminal block supports 4 digital input and 4 digital output
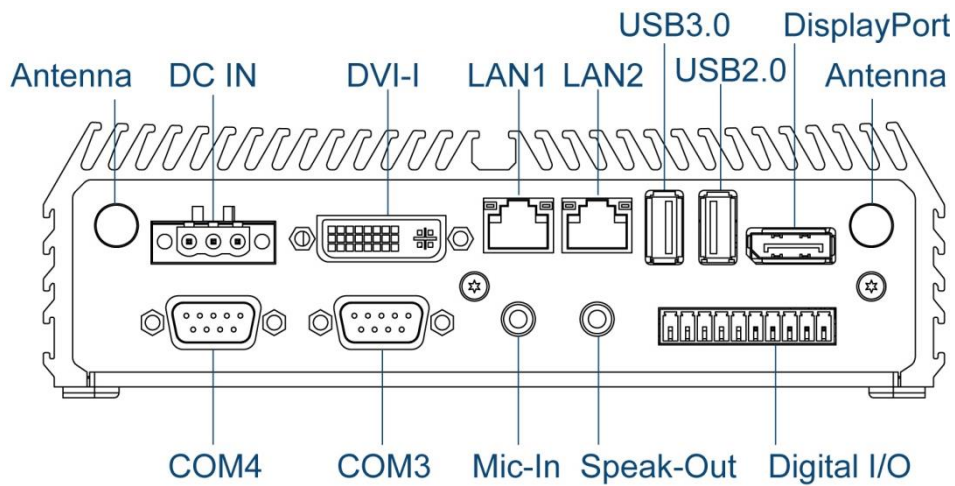
1.6 Mechanical Dimension

Unit: mm
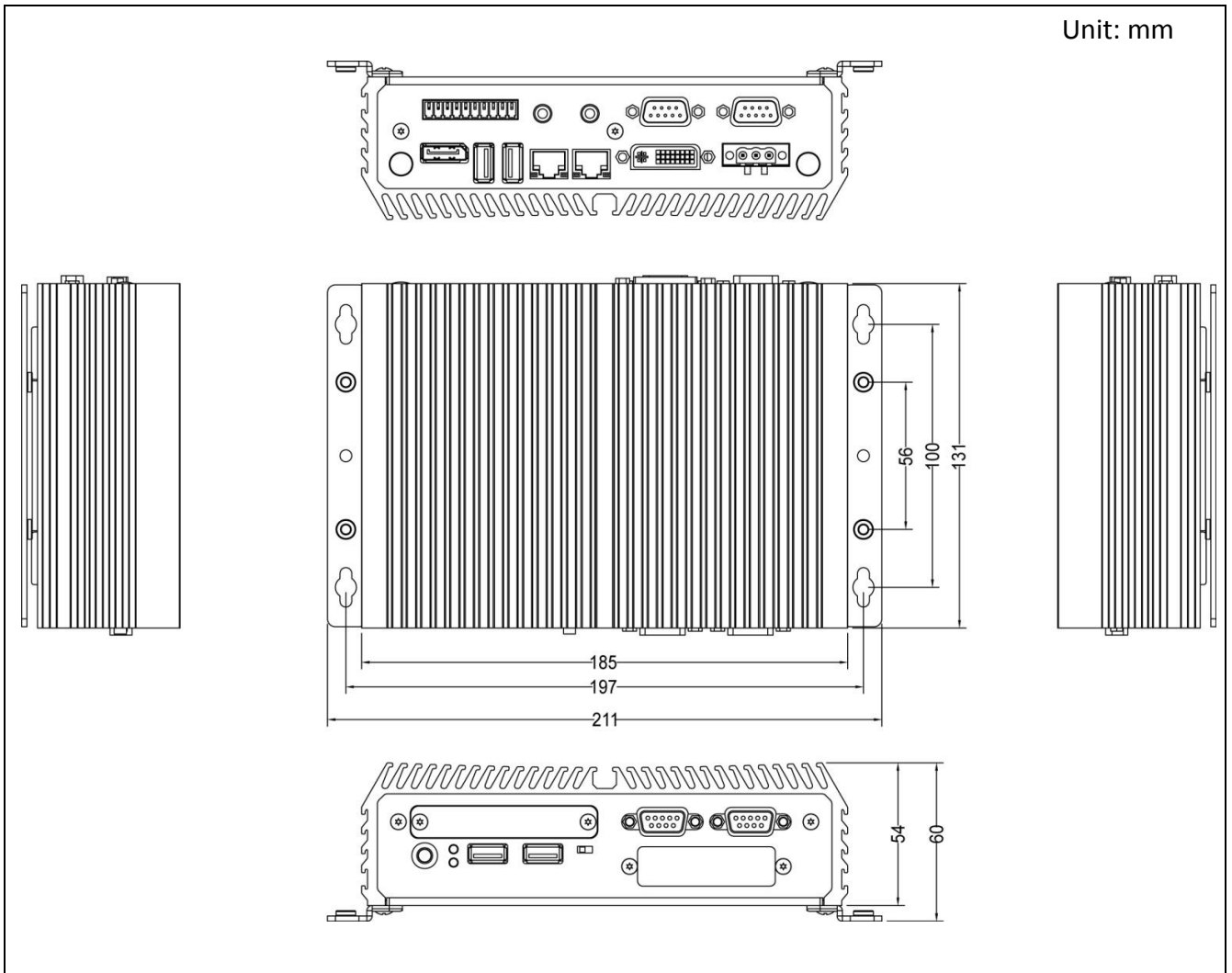
Chapter 2

Jumpers, Switches & Connectors

2.1 Jumpers Settings

When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open. Refer to below for examples of the 2-pin and 3-pin jumpers when they are short (on) and open (off).
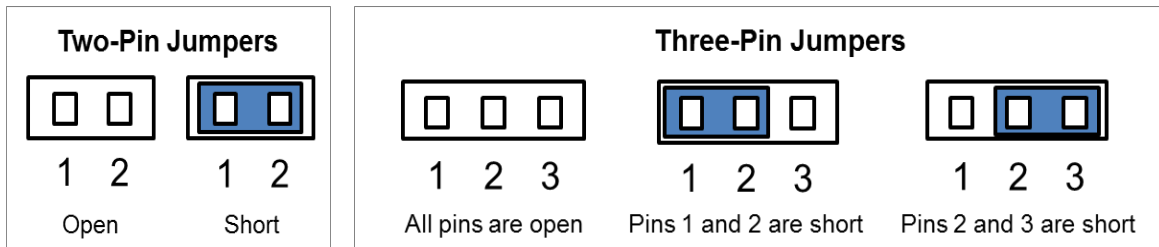
2.2 Location of Jumpers, Switches & Connectors

2.2.1 Top View
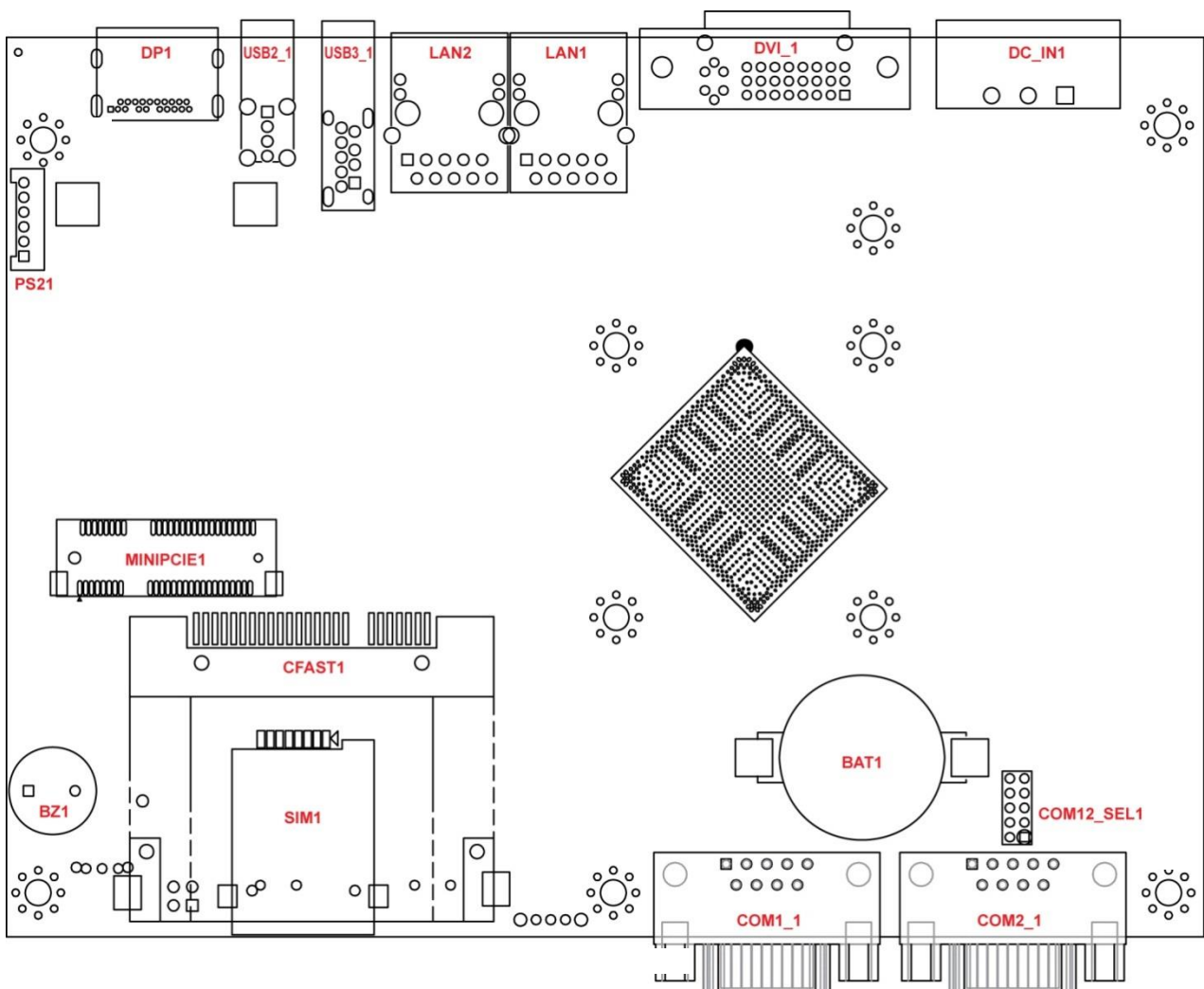
2.2.2 Bottom View
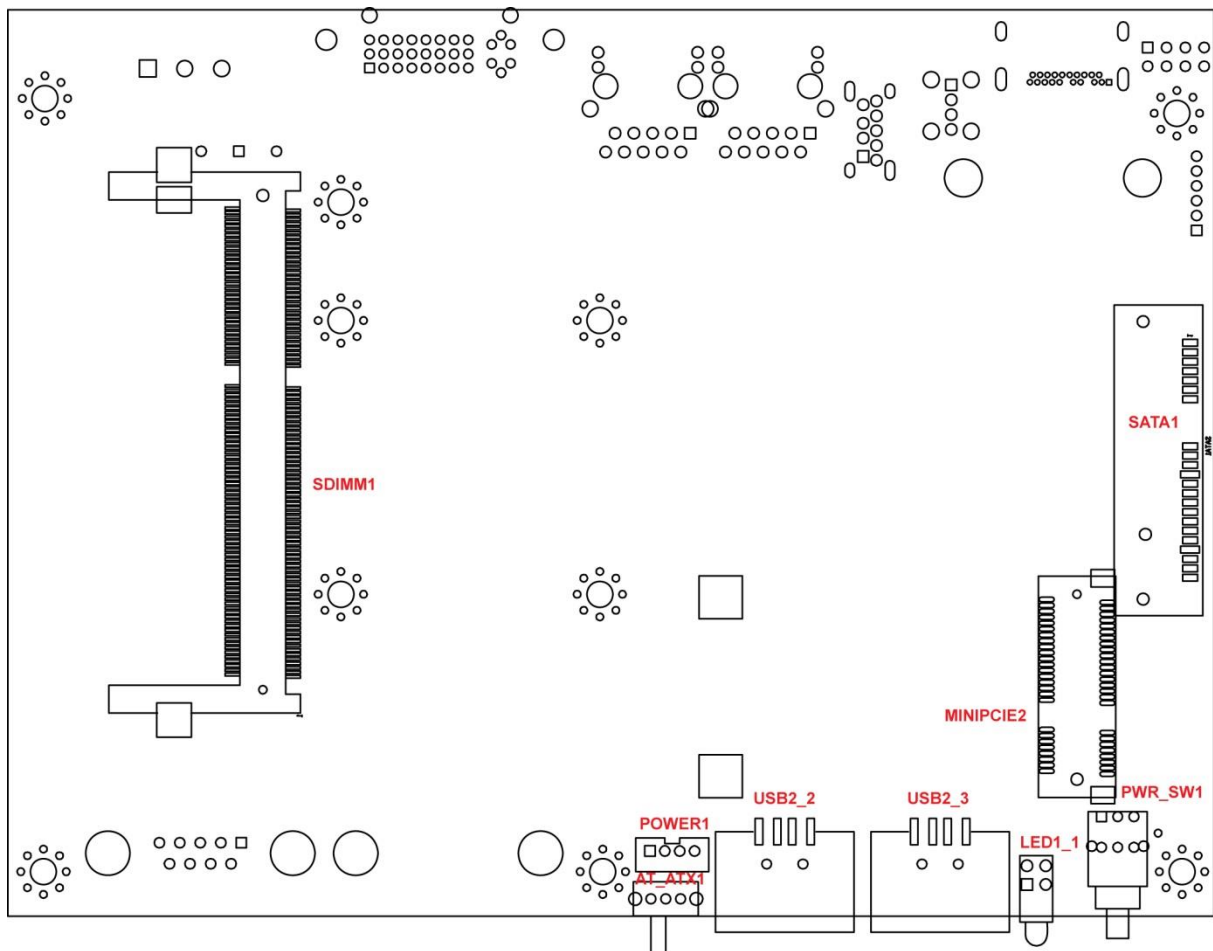
2.2.3 Daughter Board View
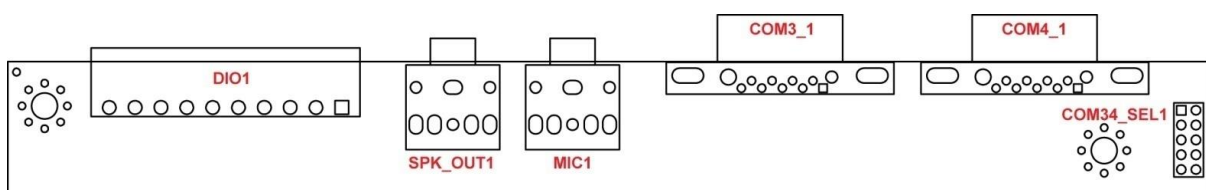
2.3 Jumpers, Switches & Connectors Definition

List of Jumpers, Switches & Connectors

Location	Definition
AT_ATX1	AT / ATX Power Mode Switch
CFAST1	CFast Connector
CLR_CMOS1	Clear BIOS Switch
COM1_1, COM2_1, COM3_1, COM4_1	RS-232 / RS-422 / RS-485 Connector
COM12_SEL1, COM34_SEL1	COM1 / COM2 / COM3 / COM4 with Power Select
DC_IN1	3-pin DC 9-48V Power Input Connector
DIO1	4DI / 4DO Connector
DP1	DisplayPort Connector
DVI_I1	DVI-I Connector
LAN1, LAN2	LAN Port
LED1	Power / HDD Access LED Status
MIC1	Mic-in Jack
MINIPCIE1, MINIPCIE2	Mini PCI-Express Socket
POWER1	Power Connector
PS2_1	Keyboard / Mouse Connector
PWR_SW1	Power Switch
SATA1	SATA with Power Connector
SIM1	SIM Card Socket
SPK_OUT1	Line-out Jack
USB2_1, USB2_2, USB2_3	USB 2.0 Port
USB3_1	USB 3.0 Port

2.4 Definition of Jumpers

COM12_SEL1: COM1 / COM2 with Power Select

Connector Type: 2X5 10-pin Header, 2.0mm pitch

COM1		COM2	
Pin	Definition	Pin	Definition
1-3 On	+5V	2-4 On	+5V
3-5 On	+12V	4-6 On	+12V
7-9 On (Default)	Reserved	8-10 On (Default)	Reserved
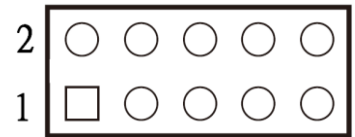
COM34_SEL1: COM3 / COM4 with Power Select

Connector Type: 2X5 10-pin Header, 2.0mm pitch

COM3		COM4	
Pin	Definition	Pin	Definition
1-3 On	+5V	2-4 On	+5V
3-5 On	+12V	4-6 On	+12V
7-9 On (Default)	Reserved	8-10 On (Default)	Reserved
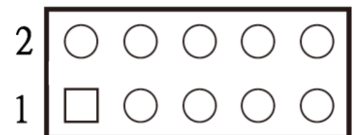
2.5 Definition of Switches

AT_ATX1: AT / ATX Power Mode Switch

Switch	Definition
1-2 (Right)	ATX Power Mode (Default)
2-3 (Left)	AT Power Mode
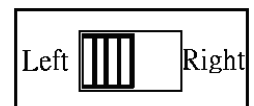
CLR_CMOS1: Clear BIOS Switch

Switch	Definition
1 (Off)	Normal Status (Default)
ON	Clear CMOS

2.6 Definition of Connectors

COM1_1/ COM2_1/ COM3_1/ COM4_1: RS232 / RS422 / RS485 Connector

Connector Type: 9-pin D-Sub

Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA -
2	RXD	TX+	DATA +
3	TXD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		
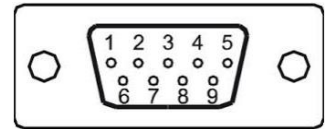
Power over Serial PIN Definitions

Pin	RS232	RS422/ 485	RS485
5	GND	GND	GND
9	0/5/12V	0/5/12V	0/5/12V

DC_IN1: DC Power Input Connector (+9-48V)

Connector Type: Terminal Block 1x3 3-pin, 5.0mm pitch

Pin	Definition
1	+9-48V IN
2	Chassis GND
3	GND
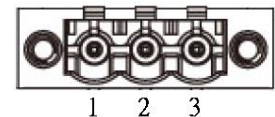
 CAUTION Please disconnect the power source before mounting the DC power cables or connecting the DC power connector to system.

DIO1: Digital Input / Output Connector

Connector Type: Terminal Block 1X10 10-pin, 3.5mm pitch

Pin	Definition	Pin	Definition
1	DC INPUT	6	DO1
2	DI1	7	DO2
3	DI2	8	DO3
4	DI3	9	DO4
5	DI4	10	GND
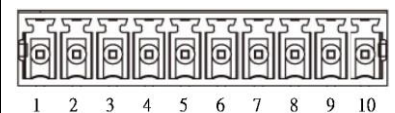
LAN1 / LAN2: LAN LED Status Definition

Act LED Status	Definition
Blinking Yellow	Data Activity
Off	No Activity

Link LED Status	Definition
Steady Green	1Gbps Network Link
Steady Orange	100Mbps Network Link
Off	10Mbps Network Link
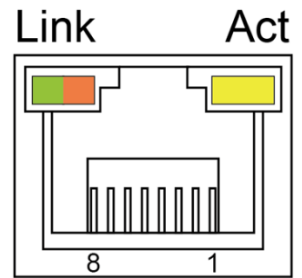
MINIPCIE1： Mini PCI-Express Socket

Pin	Definition	Pin	Definition	Pin	Definition
1	WAKE#	19	NC	37	GND
2	+3.3V	20	+3.3V	38	USB2_3P
3	NC	21	GND	39	+3.3V
4	GND	22	MINIPCIE RST#	40	GND
5	NC	23	MINIPCIE_RXN	41	+3.3V
6	+1.5V	24	+3.3V	42	NC
7	CLKREQ#	25	MINIPCIE_RXP	43	GND
8	UIM_PWR	26	GND	44	NC
9	GND	27	GND	45	NC
10	UIM_DATA	28	+1.5V	46	NC
11	MINIPCIE_CLKN	29	GND	47	NC
12	UIM_CLK	30	SMB_CLK	48	+1.5V
13	MINIPCIE_CLKP	31	MINIPCIE_TXN	49	NC
14	UIM_RESET	32	SMB_DATA	50	GND
15	GND	33	MINIPCIE_TXP	51	NC
16	UIM_VPP	34	GND	52	+3.3V
17	NC	35	GND		
18	GND	36	USB2_3N		
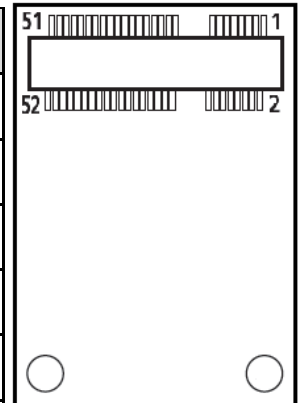
MINIPCIE2 : Mini PCI-Express Socket

Pin	Definition	Pin	Definition	Pin	Definition
1	WAKE#	19	NC	37	GND
2	+3.3V	20	+3.3V	38	USB_2P
3	NC	21	GND	39	+3.3V
4	GND	22	MINIPCIE RST#	40	GND
5	NC	23	MINIPCIE_RXN	41	+3.3V
6	+1.5V	24	+3.3V	42	NC
7	CLKREQ#	25	MINIPCIE_RXP	43	GND
8	NC	26	GND	44	NC
9	GND	27	GND	45	NC
10	NC	28	+1.5V	46	NC
11	MINIPCIE_CLKN	29	GND	47	NC
12	NC	30	SMB_CLK	48	+1.5V
13	MINIPCIE_CLKP	31	MINIPCIE_TXN	49	NC
14	NC	32	SMB_DATA	50	GND
15	GND	33	MINIPCIE_TXP	51	NC
16	NC	34	GND	52	+3.3V
17	NC	35	GND		
18	GND	36	USB_2N		
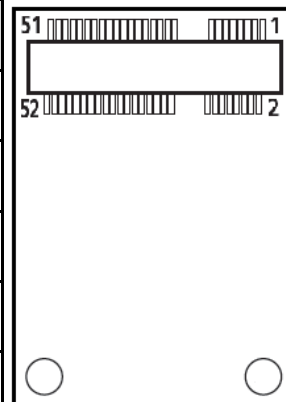
POWER1: Power Connector

Connector Type: 1x4 4-pin Wafer, 2.0mm pitch

Pin	Definition
1	+5V
2	GND
3	GND
4	+12V
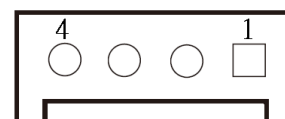
Chapter 3
System Setup

3.1 Removing the Top Cover

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 bottom cover from the chassis.

3. Loosen the 3 screws as mark on photo and place them aside.
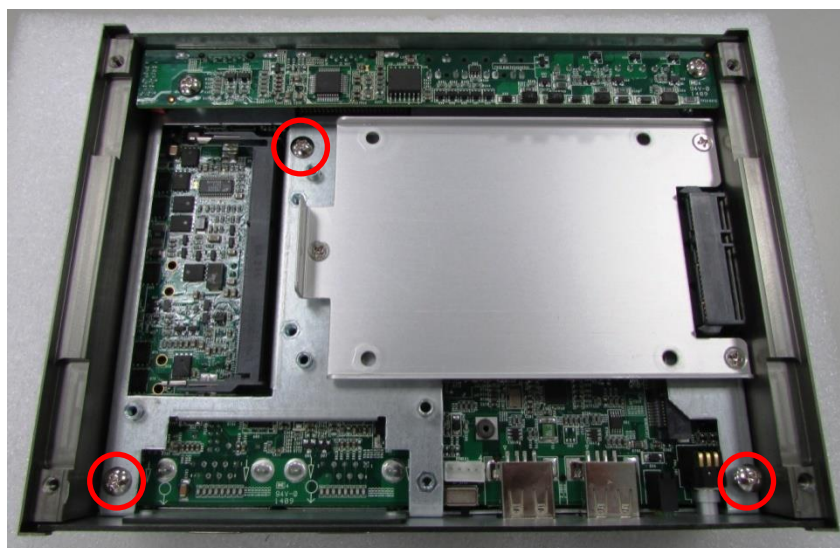
4. Hold front and rear panel and lift up the body of unit vertically.

5. Turn over the body of the unit and place it gently.

3.2 Installing SO-DIMM Memory

1. Locate the SO-DIMM socket.
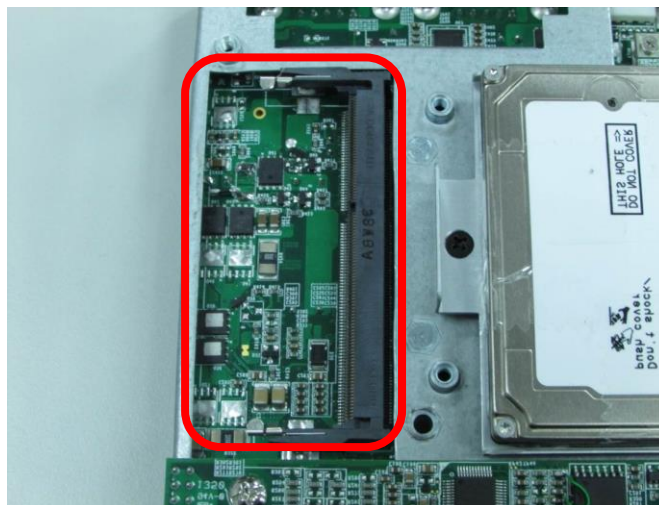
2. Tilt the SO-DIMM module at a 45-degree angle and insert it to SO-DIMM socket until the gold-pated connector of module contacted firmly with the socket.
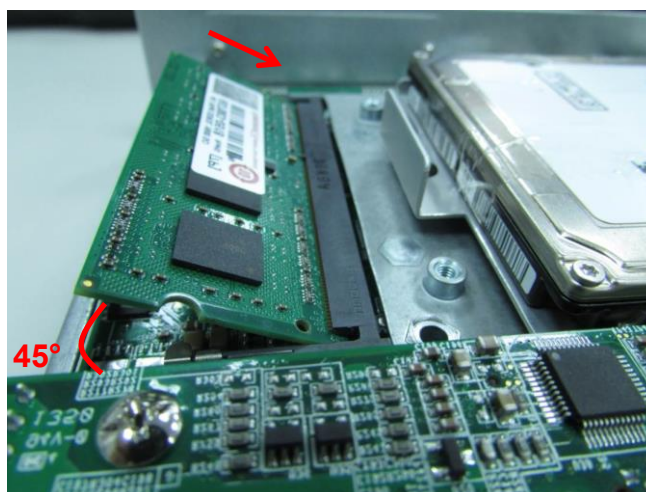
3. Press the modules down until it's fixed firmly by the two locking latches on the sides.
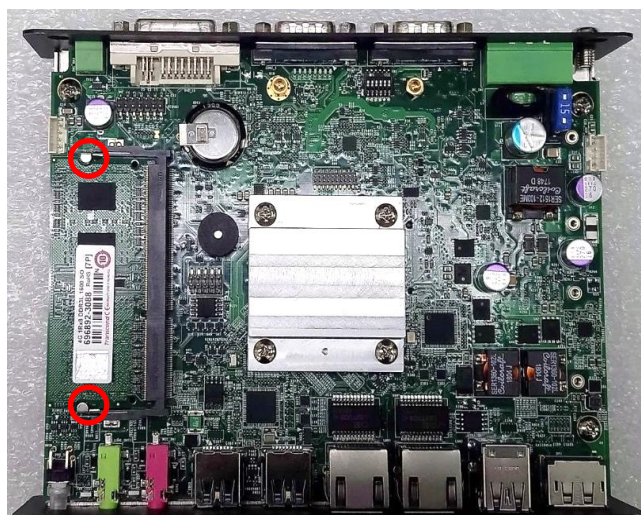
3.3 Installing Mini-PCIe Cards on Top Side

(Applicable for full or half size card)

1. Locate the Mini PCIe slot.
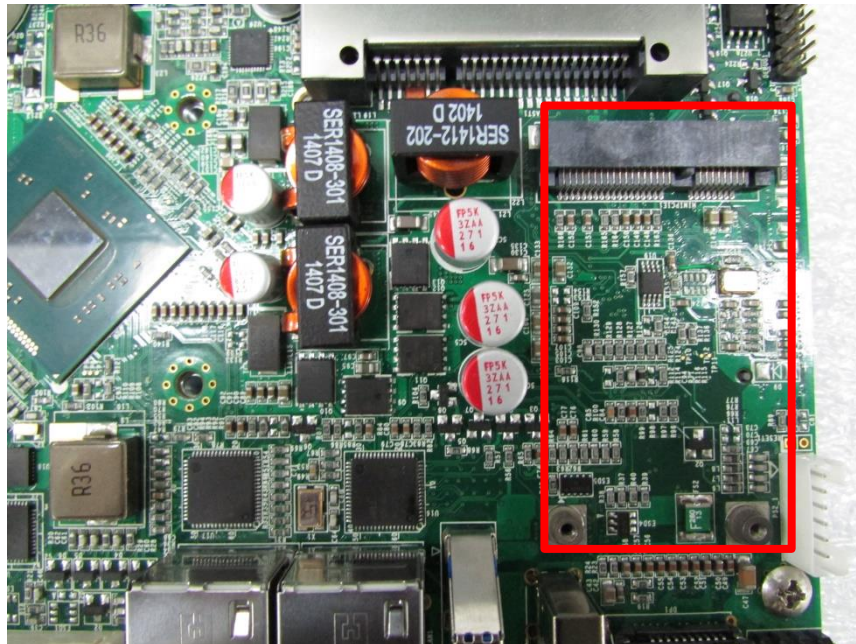
2. Insert the Mini-PCIe card at a 45-degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.
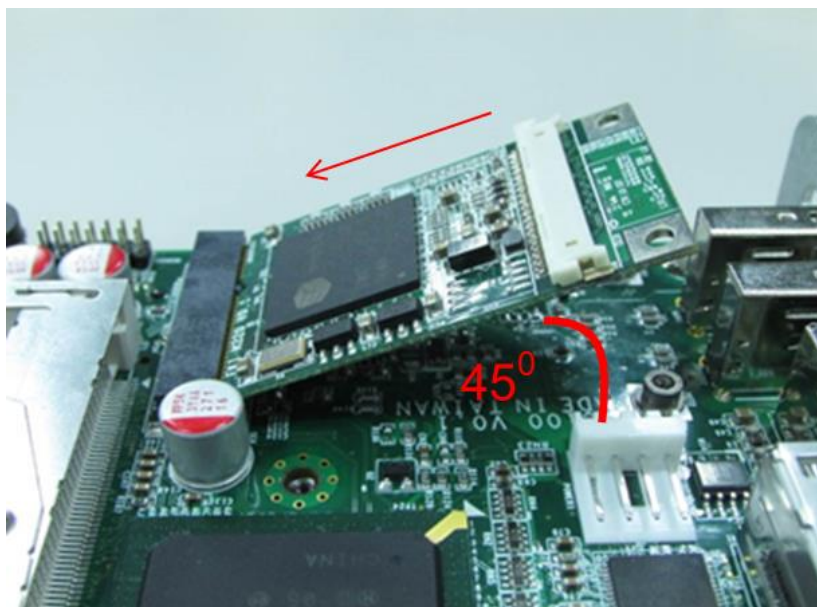
3. Press down the module and fasten two screws to secure the module.

4. If you have a Half-size Mini-PCIe card, make sure use extender to make it Full-size as shown below.

3.4 Installing Mini-PCIe Cards on Bottom Side

(Applicable for full or half size card)

1. Turn over the body of unit. Unscrew the 3 screws on HDD bracket and remove the bracket.
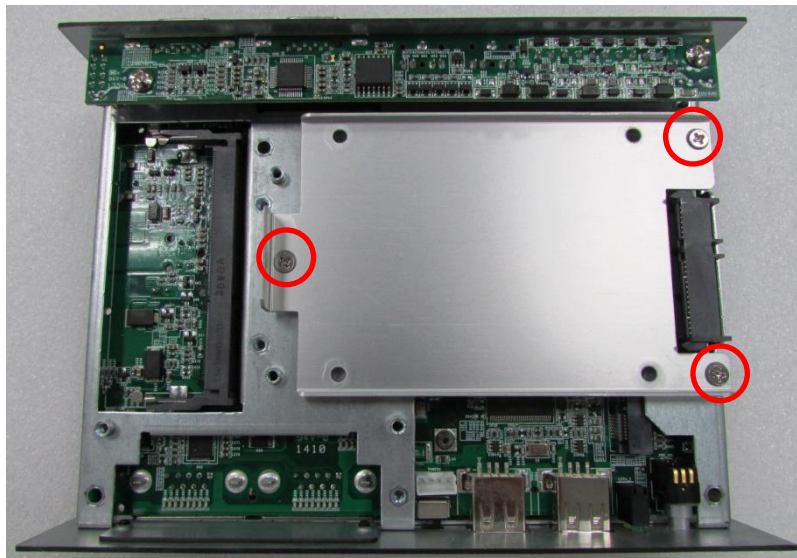
2. Locate the Mini PCIe slot.
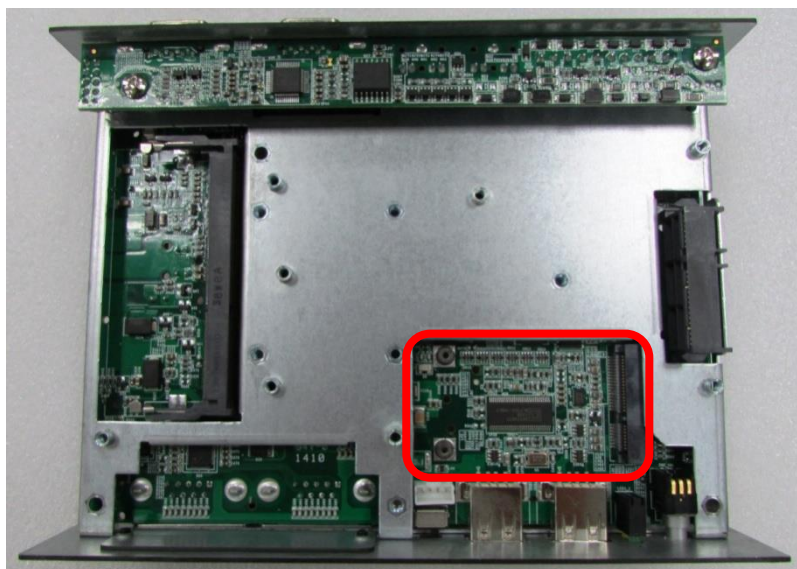
3.	Insert the Mini-PCIe card at a 45-degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.
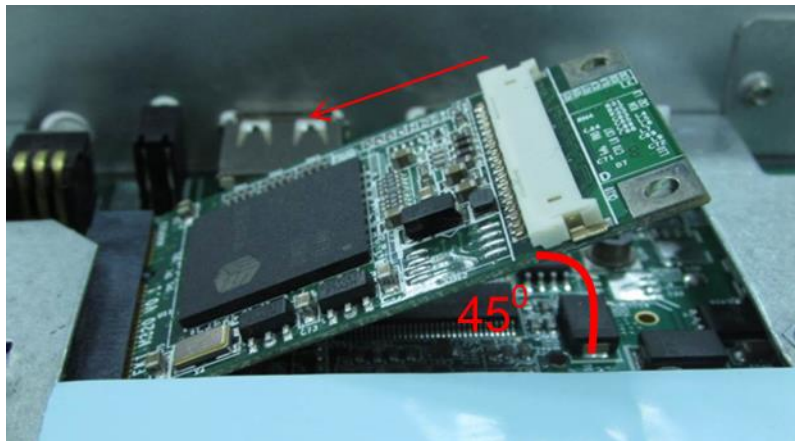
4.	Press down the module and use the two screws to fix the module.
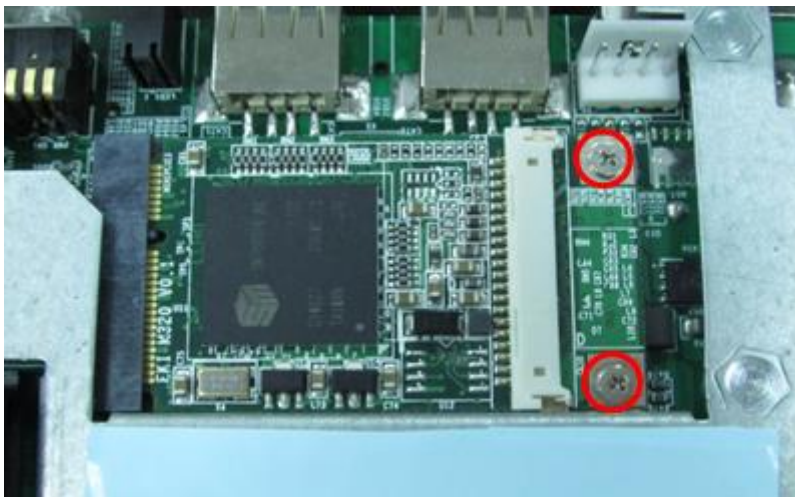
5.	If you have a Half-size Mini-PCIe card, make sure use extender to make it Full-size as shown below.

3.5 Installing a SATA Hard Drive

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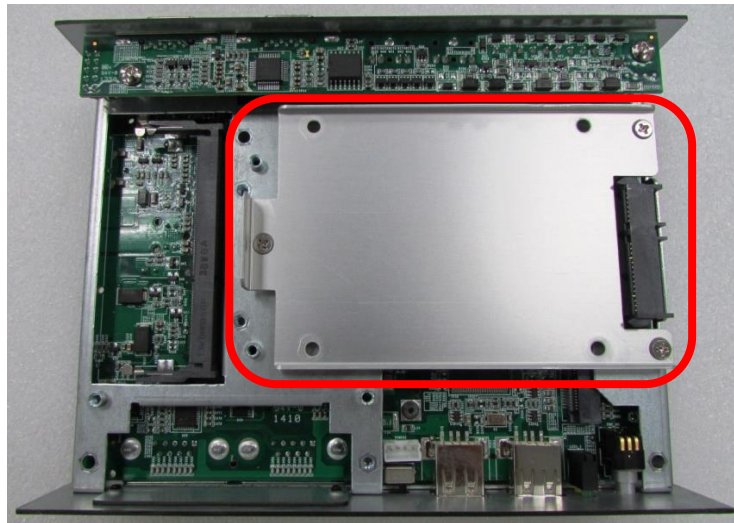
2. Make the PCB side of the HDD face up, place the HDD bracket on it. Ensure the direction of bracket is correct and use 4 provided screws to assemble HDD and HDD bracket together.
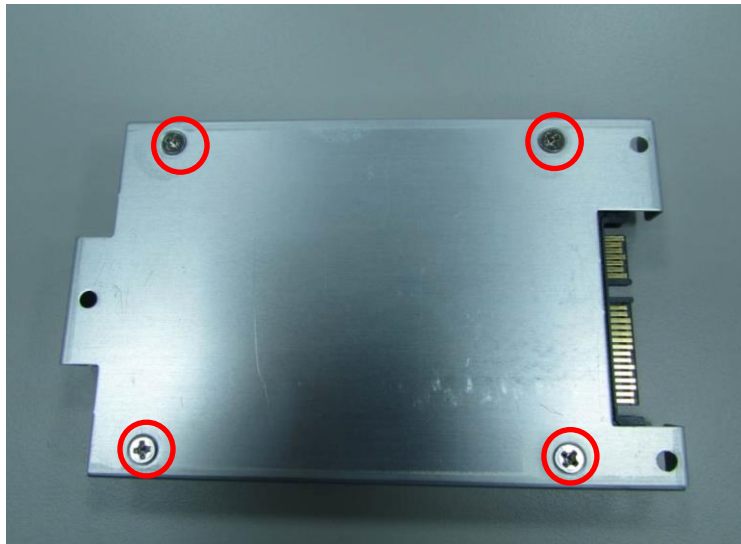
3. Turn over the HDD bracket. Connect the HDD bracket to the SATA connector of the unit and fasten the 3 screws.

3.6 Installing Antennas

1. Remove the antenna rubber covers on rear 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.

3.7 Assembling the System

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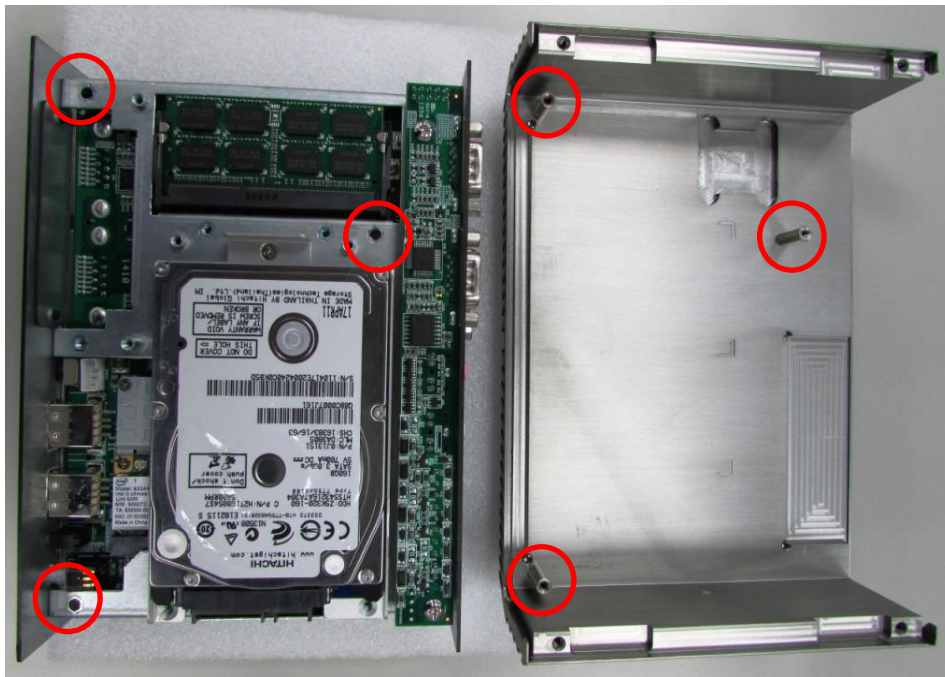
2. Make sure the either sides of front and rear panels are in the chassis grooves and insert the body of unit into Chassis. Use the 3 screws to fasten the body and chassis together.
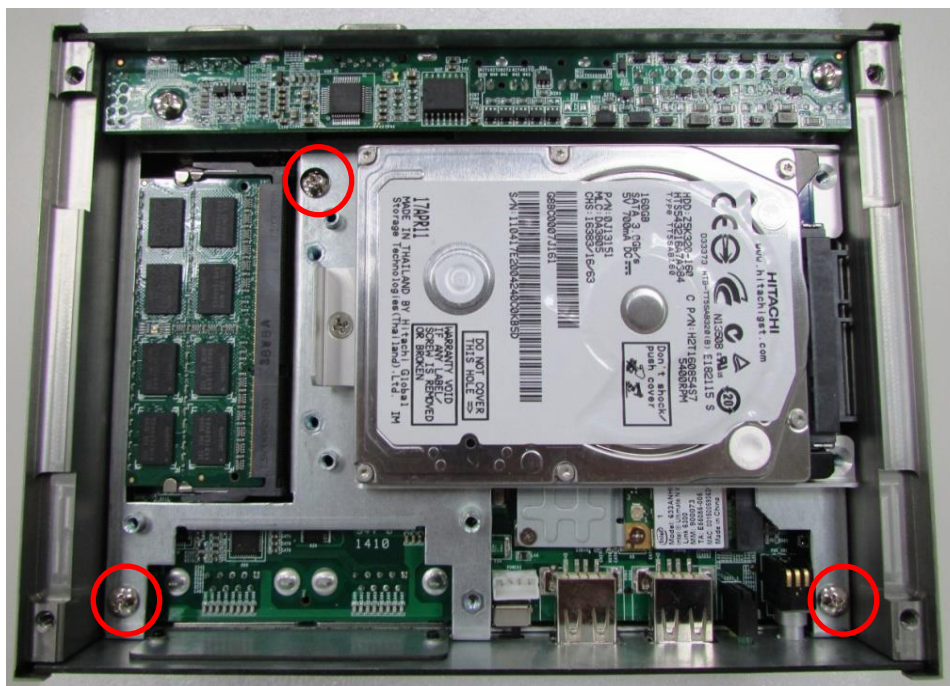
3. Level the grooves on bottom cover with front and rear panels. Put on the cover.

4. Fasten the 4 screws to fix the cover.
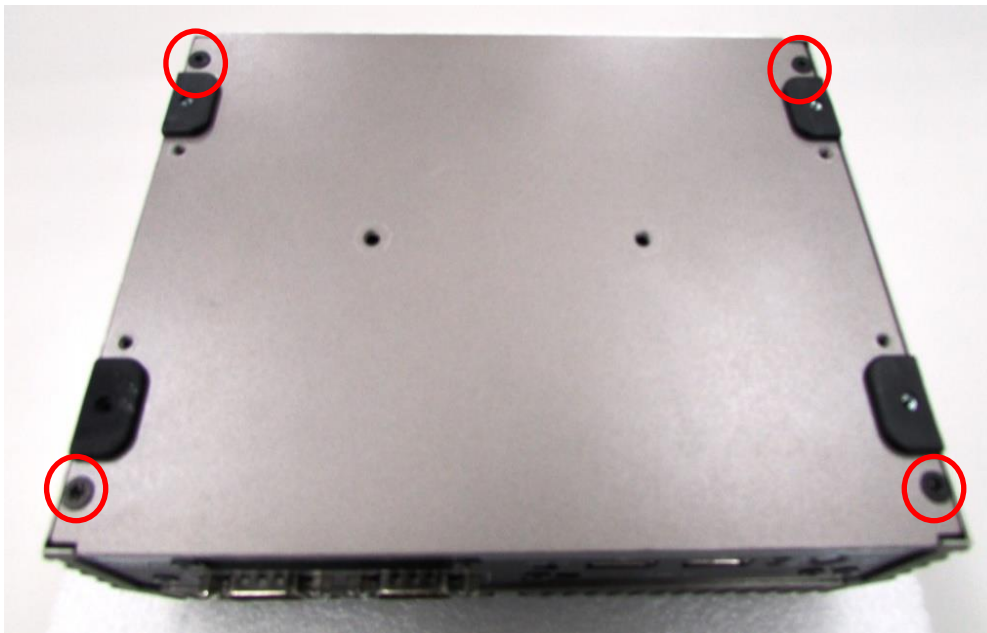
3.8 Installing a SIM Card

1. Remove the mounting cover by unscrewing the two screws.

2. Insert the SIM card.

3.9 Installing a CFast Card

1   Remove the mounting cover by unscrewing the two screws.

2. Insert the CFast card.

3.10 Wall Mount Brackets

DC-1100 offers a wall mount option so that customers can install the system on the wall in a convenient and economical ways.

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.

Chapter 4

BIOS Setup

4.1 BIOS Introduction

The 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.

BIOS Setup

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

Control Keys	
<←> <→>	Move to select screen
<↑> <↓>	Move to select item
<Esc>	Quit the BIOS Setup
<Enter>	Select item
<Page Up/+>	Increases the numeric value or makes changes
<Page Down/->	Decreases the numeric value or makes changes
<Tab>	Select setup fields
<F1>	General help
<F2>	Previous value
<F3>	Load Optimized defaults
<F10>	Save configuration and Exit

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.

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) 2013 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

      BIOS Information                                        Set the Date. Use Tab to
      BIOS Vendor                   American Megatrends       switch between Date elements.
      Core Version                  5.009
      Compliancy                    UEFI 2.3; PI 1.2
      Project Version               DC110006
      Build Date and Time           07/09/2014 00:02:59

      System Date                   [Wed 02/12/2014]
      System Time                   [10:06:02]

      Access Level                  Administrator

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

               Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.2.1 System Date

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

4.2.2 System Time

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

4.3 Advanced Setup

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) 2013 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ ACPI Settings                                          System ACPI Parameters.
  ▶ Super IO Configuration
  ▶ Hardware Monitor
  ▶ Serial Port Console Redirection
  ▶ CPU Configuration
  ▶ PPM Configuration
  ▶ Thermal Configuration
  ▶ IDE Configuration
  ▶ 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 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.3.1 ACPI Settings

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

  ACPI Settings                                            Enables or Disables BIOS ACPI
                                                           Auto Configuration.
  Enable ACPI Auto Configuration        [Enabled]

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

              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Enable ACPI Auto Configuration   [Disabled]**

Enables or disables BIOS Advanced Configuration Power Interface® (ACPI) auto configuration.

4.3.2 Super IO Configuration

You can use this screen to select options for the Super IO Configuration, and change the value of the selected option.

```
                 Aptio Setup Utility - Copyright (C) 2013 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
     Watch Dog Function
     Watch dog Mode                    [Sec]
     Watch dog Timer                   0
     Watch dog count                   : 255

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

                 Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Serial Port 1~6 Configuration.**

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

     Serial Port 1 Configuration                            Enable or Disable Serial Port
                                                            (COM)
     Serial Port                       [Enabled]
     Device Settings                   Reset Required
     COM1 Mode Select                  [RS232]

     Change Settings                   [Auto]

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

                 Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

❑ **Serial Port**

Enables or disables serial port.

❑ **COM1 Mode Select**

Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

❑ **Change Settings**

This setting is used to change the address & IRQ settings of the specified serial port.

■ **Watch Dog Mode [Sec]**

Allows to set watchdog timer unit <Sec> or <Min>.

■ **Watch Dog Timer [0]**

Allows you to set watchdog timer's value in the range of 0 to 255.

4.3.3 Hardware Monitor

These items display the current status of all monitored hardware devices/ components such as voltages and temperatures.

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

 Pc Health Status

 CPU temperature                  : +55 C
 System temperature               : +55 C
 Vcore                            : +2.040 V
 +5V                              : +10.720 V
 +3.3V                            : +10.720 V
 +12V                             : +22.440 V


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


          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.3.4 Serial Port Console Redirection

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


 COM1 (Disabled)
 Console Redirection           Port Is Disabled

 COM2 (Disabled)
 Console Redirection           Port Is Disabled

 COM3 (Disabled)
 Console Redirection           Port Is Disabled

 COM4 (Disabled)
 Console Redirection           Port Is Disabled

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


          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Console Redirection**

This item allows users to enable or disable console redirection.

4.3.5 CPU Configuration

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

     CPU Configuration                                       Socket specific CPU Information
  ▶ Socket 0 CPU Information

     CPU Speed                      1918 MHz
     64-bit                         Supported

     Active Processor Cores         [All]
     Limit CPUID Maximum            [Disabled]
     Execute Disable Bit            [Enabled]
     Hardware Prefetcher            [Enabled]
     Adjacent Cache Line Prefetch   [Enabled]
     Intel Virtualization Technology [Enabled]
     Power Technology               [Energy Efficient]      →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit

              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Socket 0 CPU Information**

This section provides information on your CPU, frequency, and cache memory.

■ **Active Processor Cores**

Change the active processor cores. Select <All> or <1> mode.

■ **Limit CPUID Maximum**

Allows user to determine whether to limit CPUID maximum value. Set this item to

Disabled: For Windows XP operating system.

Enabled: For legacy operating system such as Windows NT4.0. (Default: Disabled)

■ **Execute Disable Bit**

Enables or disables Intel Execute Disable Bit function.

■ **Hardware Prefetcher**

Enables or disables L2 Cache Hardware Prefetcher.

■ **Adjacent Cache Line Prefetch**

Enables or disables L2 prefetching of adjacent cache lines.

■ **Intel Virtualization Technology**

Enables or disables Intel Virtualization Technology. Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

■ **Power Technology**

Allows user to configure Intel power management features.

4.3.6 PPM Configuration

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

     PPM Configuration                                              Enable/Disable Intel SpeedStep

     EIST                                 [Enabled]
     CPU C state Report                   [Enabled]
       Enhanced C state                   [Enabled]
     Max CPU C-state                      [ C7]




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



                 Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **EIST**

Enable or disable Intel SpeedStep.

■ **CPU C state Report**

Enables or disables support for CPU's power-saving functions.

■ **Enhanced C state**

Enables or disables Intel CPU Enhanced Halt (C1E) function, a CPU power-saving function in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. This item is configurable only when CPU C state Report is enabled.

■ **Max CPU C-state**

Allows user to determine the maximum C state that the CPU will support.

4.3.7 Thermal Configuration

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

     Thermal Configuration Parameters                              This value controls the
     Critical Trip Point                  [100 C]                  temperature of the ACPI
     Passive Trip Point                   [85 C]                   critical Trip Point in which
     DTS                                  [Disabled]               the OS will shut the system
                                                                   off.




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



                 Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Critical Trip Point**

Allows user to set the CPU temperature threshold. If the CPU temperature reaches this value, the operating system will shut down the system. This item is configurable only when DTS is enabled.

■ **Passive Trip Point**

Allows user to set the CPU temperature threshold. If the CPU temperature reaches this value, the CPU frequency will be automatically reduced. This item is configurable only when DTS is enabled.

■ **DTS**

Enables or disables the CPU overheating protection function. (Default: Disabled)

4.3.8 IDE Configuration

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

     IDE Configuration                                    Enable / Disable Serial ATA

     Serial-ATA (SATA)                [Enabled]

     SATA Mode                        [AHCI Mode]

     Serial-ATA Port 0               [Enabled]

     Serial-ATA Port 1               [Enabled]

     SATA Port0
     Not Present

     SATA Port1
     Not Present                                          ➔←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit


                Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
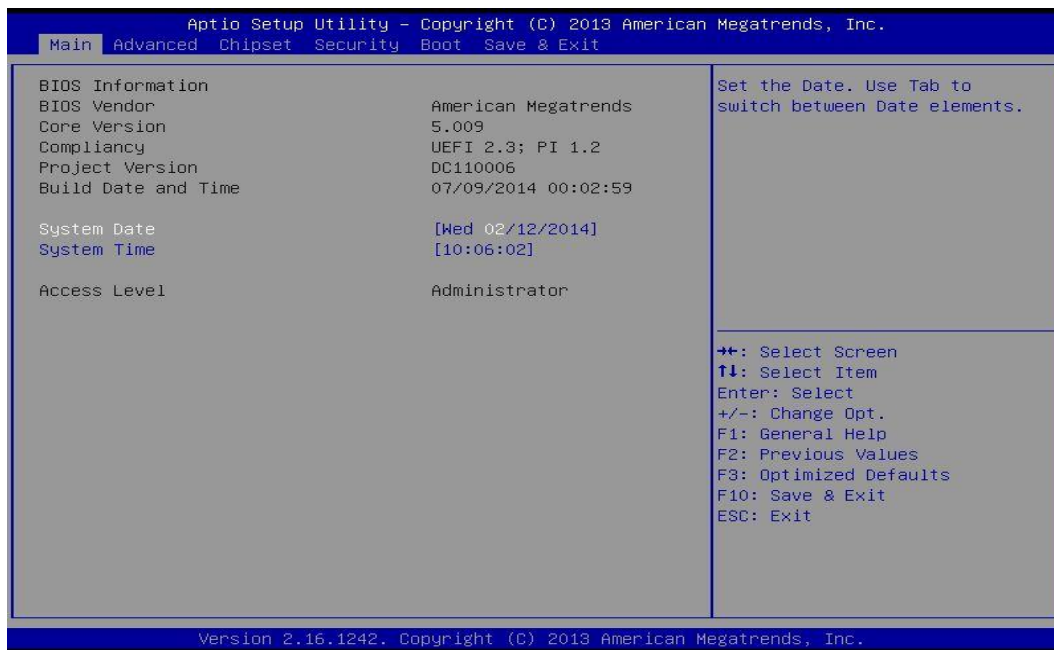
■ **Serial-ATA (SATA)**

This item will allow users to enable or disable Serial ATA.

■ **SATA Mode**

This item will allow users to select IDE or AHCI Mode.

■ **Serial – ATA Port 0**

This item will allow users to enable or disable Serial-ATA Port 0.

■ **Serial – ATA Port 1**

This item will allow users to enable or disable Serial-ATA Port 1.

4.3.9 Compatibility Support Module Configuration

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

    Compatibility Support Module Configuration                    Enable/Disable CSM Support.

    CSM Support                         [Enabled]

    CSM16 Module Version                07.71


    Boot option filter                  [UEFI and Legacy]

    Option ROM execution order

    Wake on LAN                         [Enabled]
    PXE Function                        [Disabled]
    Storage                             [Legacy only]          ↔: Select Screen
    Video                               [Legacy only]          ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F10: Save & Exit
                                                               ESC: Exit



              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ 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.

■ Wake on LAN

This item will allow users to enable or disable wake on LAN function.

■ PXE Function

This item will allow users to enable or disable PXE function.

■ 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 only: Enables UEFI option ROM only.

Legacy only: 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 only: Enables UEFI option ROM only.

Legacy only: Enables legacy option ROM only.

4.3.10 USB Configuration

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

   USB Configuration                                        Enables Legacy USB support.
                                                            AUTO option disables legacy
   USB Module Version              8.11.01                  support if no USB devices are
                                                            connected. DISABLE option will
   USB Devices:                                             keep USB devices available
        1 Keyboard, 2 Hubs                                  only for EFI applications.

   Legacy USB Support             [Enabled]
   XHCI Hand-off                  [Enabled]
   EHCI Hand-off                  [Disabled]
   USB Mass Storage Driver Support    [Enabled]


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



              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **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 Setup

This section allows you to configure chipset related settings according to user's preference.

```
           Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ North Bridge                                          North Bridge Parameters
   ▶ South Bridge




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



           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.4.1 North Bridge

This section provides information on the installed memory size and memory/onboard graphics-related configuration options.

```
           Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
           Chipset

   ▶ Intel IGD Configuration                              Config Intel IGD Settings.

     Memory Information

     Total Memory                     8192 MB (LPDDR3)

     Memory Slot0                     8192 MB (LPDDR3)




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



           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
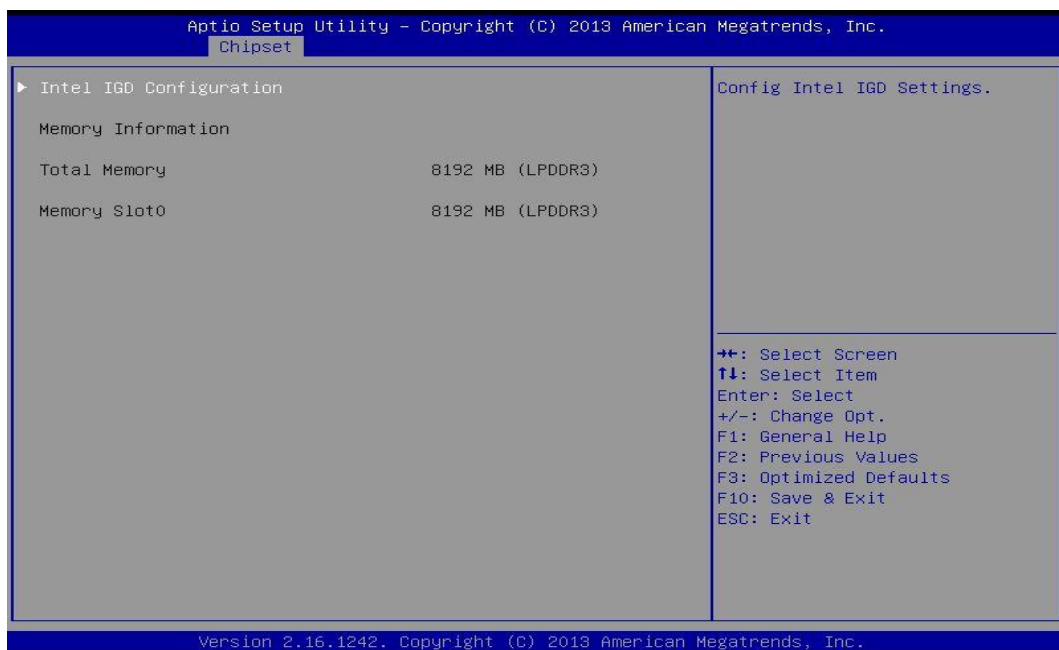
■ Intel IGD Configuration

This section provides onboard graphics-related configuration options.

```
            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]
    GTT Size                          [2MB]                    ──────────────────────────────
    IGD Thermal                       [Disabled]               ➡⬅: Select Screen
                                                               ⬆⬇: Select Item
    Vcc, Vnn Configuration for Power state2:                   Enter: Select
    Vcc_Vnn Config for Power state2   [Disabled]               +/-: 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.
```

❑ **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.
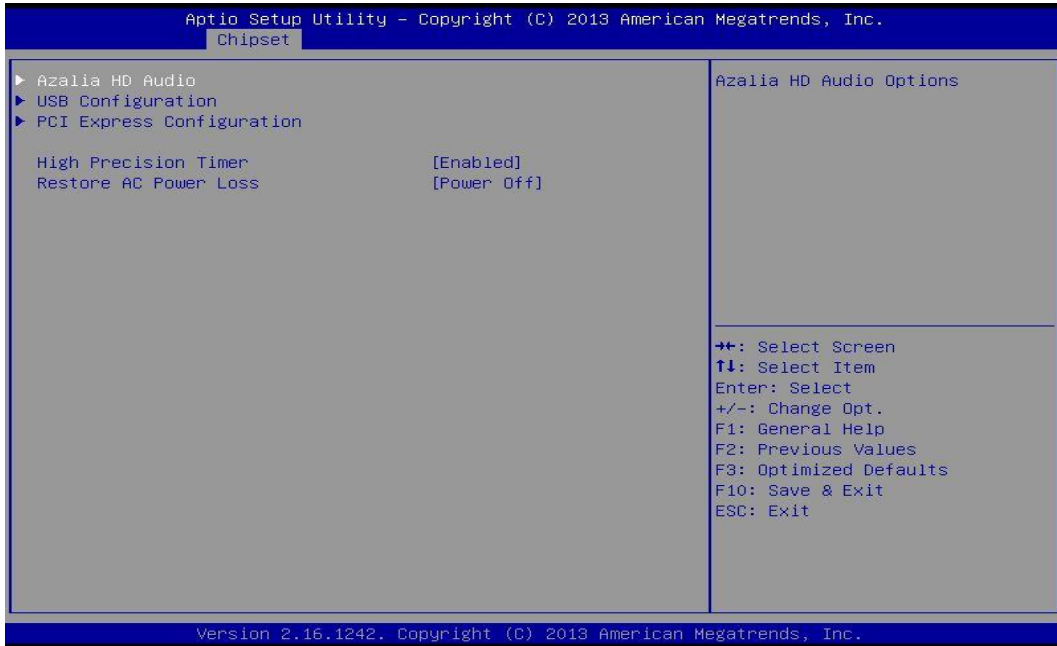
❑ **GTT Size**

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

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

 ▶ Azalia HD Audio                                  Azalia HD Audio Options
 ▶ USB Configuration
 ▶ PCI Express Configuration

   High Precision Timer               [Enabled]
   Restore AC Power Loss              [Power Off]




                                                   →←: 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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```

■ Azalia HD Audio

Control detection of the Azaliadevice.

❏ Audio Controller

Enabled: Azalia will be unconditionally 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 RMH Mode

This item will allow users to enable or disable USB RMH Mode.

❏ USB Port 0

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

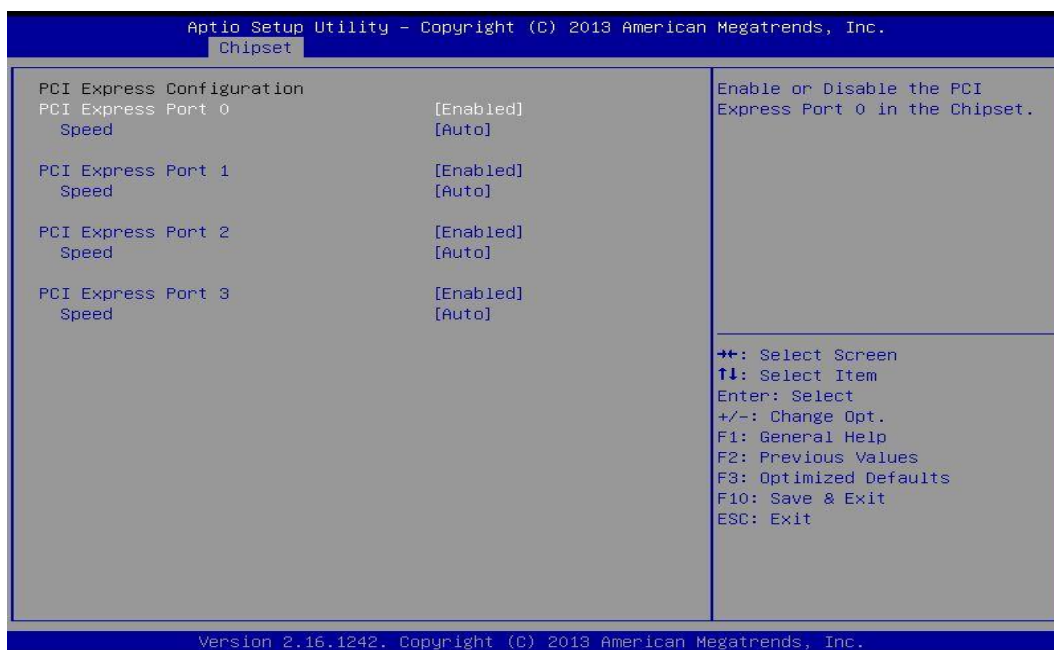#### ❏ USB Port 1

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) 2013 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 2.16.1242. Copyright (C) 2013 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 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.

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.

4.5 Security Setup

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) 2013 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
                                                          Enter: Select
   Administrator Password                                 +/-: Change Opt.
   User Password                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit


               Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
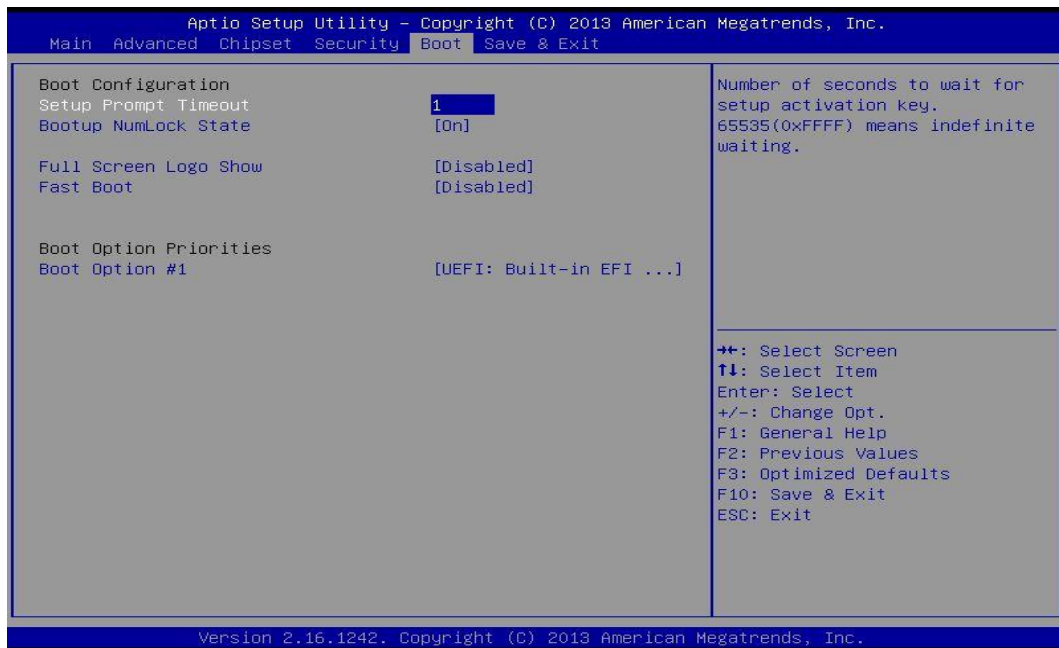
4.5.1 Administrator Password

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 Setup

This section allows you to configure Boot settings.

```
              Aptio Setup Utility - Copyright (C) 2013 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]


       Boot Option Priorities
       Boot Option #1                  [UEFI: Built-in EFI ...]


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


              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Setup Prompt Timeout**

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

■ **Bootup NumLock State**

Select the Power-on state for Numlock.

■ **Full Screen Logo Show**

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

■ **Fast Boot**

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

4.7 Save & Exit

```
                Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

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

   Restore Defaults
   Save as User Defaults
   Restore User Defaults




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



                Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

■ **Save Changes and Reset**

This item allows you to reset the system after saving changes.

■ **Discard Changes and Reset**

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

■ **Restore Defaults**

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

■ **Save as User Defaults**

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

■ **Restore User Defaults**

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

Chapter 5
Product Application

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

Item	Standard
GPIO74 (Pin107)	DI
GPIO75 (Pin108)	
GPIO76 (Pin109)	
GPIO77 (Pin110)	
GPIO80 (Pin111)	DO
GPIO81 (Pin112)	
GPIO82 (Pin113)	
GPIO83 (Pin114)	

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, see 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.

7.7.11.1GPIO7 Output Enable Register — Index 80h

Bit	Name	R/W	Reset	Default	Description
7	GPIO77_OE	R/W	LRESET#	0	0: GPIO77 is in input mode. 1: GPIO77 is in output mode.
6	GPIO76_OE	R/W	LRESET#	0	0: GPIO76 is in input mode. 1: GPIO75 is in output mode.
5	GPIO75_OE	R/W	LRESET#	0	0: GPIO75 is in input mode. 1: GPIO75 is in output mode.
4	GPIO74_OE	R/W	LRESET#	0	0: GPIO74 is in input mode. 1: GPIO74 is in output mode.

7.7.11.3 GPIO7 Pin Status Register — Index 82h (This byte could be also read by base address + 3)

Bit	Name	R/W	Reset	Default	Description
7	GPIO77_IN	R	-	-	The pin status of GPIO77/STB#.
6	GPIO76_IN	R	-	-	The pin status of GPIO76/AFD#.
5	GPIO75_IN	R	-	-	The pin status of GPIO75/ERR#.
4	GPIO74_IN	R	-	-	The pin status of GPIO74/INIT#.

7.7.12.1 GPIO8 Output Enable Register — Index 88h

3	GPIO83_OE	R/W	LRESET#	1	0: GPIO83 is in input mode. 1: GPIO83 is in output mode.
2	GPIO82_OE	R/W	LRESET#	1	0: GPIO82 is in input mode. 1: GPIO82 is in output mode.
1	GPIO81_OE	R/W	LRESET#	1	0: GPIO81 is in input mode. 1: GPIO81 is in output mode.
0	GPIO80_OE	R/W	LRESET#	1	0: GPIO80 is in input mode. 1: GPIO80 is in output mode.

7.7.12.2 GPIO8 Output Data Register — Index 89h (This byte could be also written by base address + 2)

3	GPIO83_VAL	R/W	LRESET#	1	0: GPIO83 outputs 0 when in output mode. 1: GPIO83 outputs 1 when in output mode.
2	GPIO82_VAL	R/W	LRESET#	1	0: GPIO82 outputs 0 when in output mode. 1: GPIO82 outputs 1 when in output mode.
1	GPIO81_VAL	R/W	LRESET#	1	0: GPIO81 outputs 0 when in output mode. 1: GPIO81 outputs 1 when in output mode.
0	GPIO80_VAL	R/W	LRESET#	1	0: GPIO80 outputs 0 when in output mode. 1: GPIO80 outputs 1 when in output mode.

5.1.1.4 Sample Code in C Language

5.1.1.4.1 Control of GP74 to GP77 (DI1 ~ DI4)

```
#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 GP74 to GP77 input Mode
WriteByte(AddrPort, 0x80)         // Select configuration register 80h
WriteByte(DataPort, 0x0X)         // Set (bit 4~7) = 0 to select GP 74~77 as Input mode.


<Input Value>
WriteByte(AddrPort, 0x82)         // Select configuration register 82h
ReadByte(DataPort, Value)         // Read bit 4~7 (0xFx)= GP74 ~77 as High.


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

5.1.1.4.2 Control of GP80 to GP83 (DO1 ~ DO4)

```
#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 GP80 to GP83 output Mode
WriteByte(AddrPort, 0x88)         // Select configuration register 88h
WriteByte(DataPort, 0xXF))        // Set (bit 0~3) = 1 to select GP 80 ~83 as Output mode.

<Output Value>
```

```
WriteByte(AddrPort, 0x89)          // Select configuration register 89h
WriteByte(DataPort, Value)         // Set bit 0~3=(0/1) to output GP 80~83 as Low or High
```

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

5.1.1.5 Change base address- DIO base address (Cincoze default 0xA00)

\<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 (High Byte address)
WriteByte(DataPort, (0x0A))
```

```
WriteByte(AddrPort, 0x61)          // Select configuration register 61h (Low Byte address)
WriteByte(DataPort, (0x00))
```

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

Cincoze default DIO Port base address is set to 0x0A00h

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 (Base address +3) (0xA03)

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

= DO1 (Base address +2) (0xA02)

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

= DI2 (Base address +3) (0xA03)

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

= DO2 Base address +2) (0xA02)

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

= DI3 (Base address +3) (0xA03)

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

= DO3 Base address +2) (0xA02)

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

= DI4 (Base address +3) (0xA03)

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

= DO4 Base address +2) (0xA02)

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
0xA03				0xA02				I/O Port address

5.2 DIO Hardware Specification

- XCOM+: Isolated power in V+

- XCOM- : Isolated power in V-

- Isolated power in DC voltage: 9-30V

- 4x Digital Input (Source Type)

- Input Signal Voltage Level

    - Signal Logic 0: XCOM+ = 9V, Signal Low - V- < 1V

        XCOM+ > 9V, V+ - Signal Low > 8V

    - Signal Logic 1: > XCOM+ - 3V

- Input Driving Sink Current:

    - Minimal: 1 mA

    - Normal: 5 mA

- 4x Digital Output (Open Drain)

    - DO Signal have to pull up resistor to XCOM+ for external device, the resistance will affect the pull up current

    - Signal High Level: Pull up resistor to XCOM+

    - Signal Low Level: = XCOM-

    - Sink Current: 1A (Max)

Chapter 6

Optional Modules and Accessories

Pin Definitions and Settings

6.1 Installing a MEC-LAN Module

Model No.	Description
MEC-LAN-M102-15/UB0111	Mini-PCIe Module with 2x LAN Ports, 2x 15cm cable, 1x Universal Bracket with 2x RJ45 Cutout for DC-1100

Notes	NOTE	**MEC-LAN module installation is only compatible with CFast installation.**

1. Loosen the 2 screws on the cover plate and then remove it.

2. Attach the MEC-LAN bracket, and fasten the 2 screws to fix it as indicated.

3. Turn over the body of unit. Unscrew the 3 screws on HDD bracket and remove the bracket.
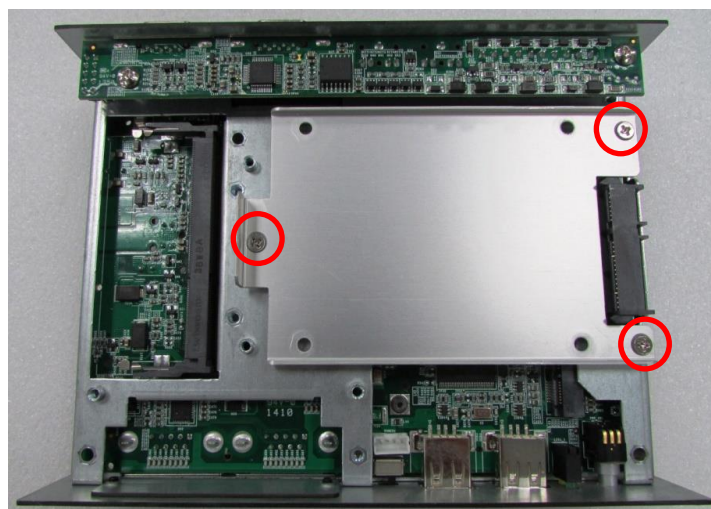
4. Locate the Mini PCIe slot.
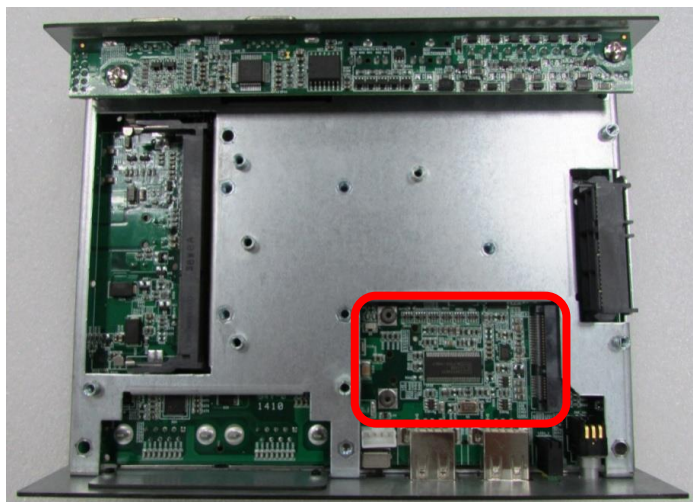
5. Insert the Mini-PCIe card at a 45-degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

6. Press down the module and use the two screws to fix the module.
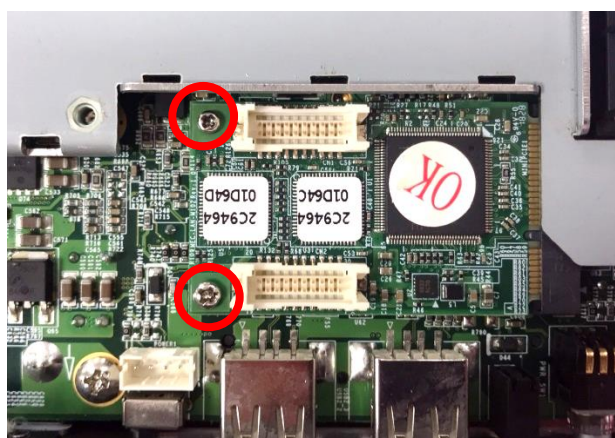
7. Connect the wire to the LAN board as indicated.
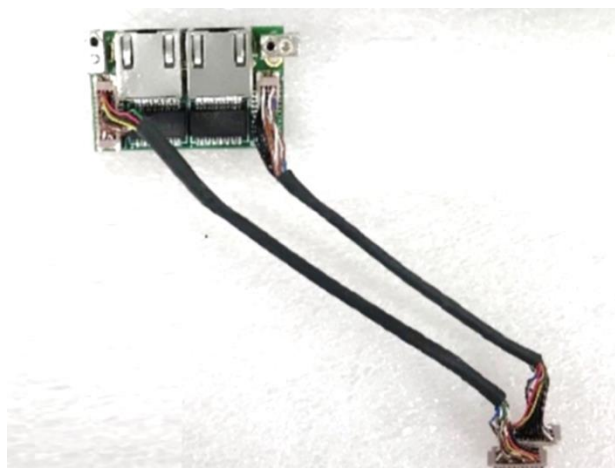
8. Attach the LAN board onto the back side of the cover plate, and then fasten the two screws to secure the module.
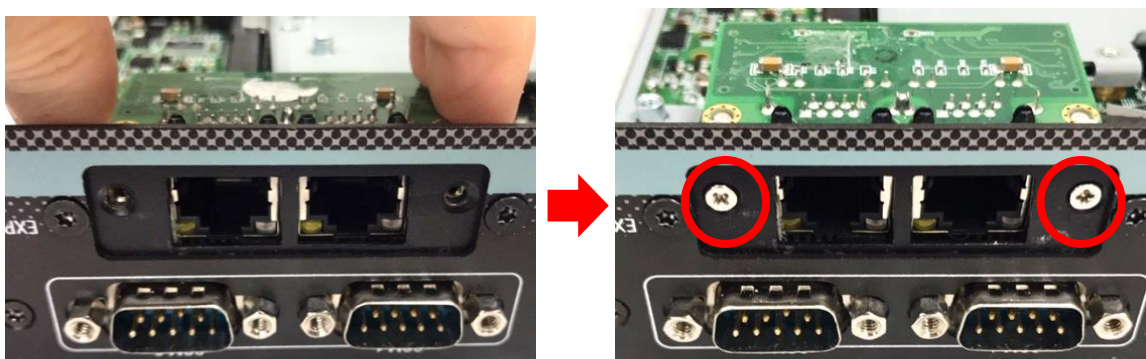
9. Connect the other end of the wire to the Mini PCIe board as indicated.

6.2 Side Mount Bracket

Model No.	Description
SIDE-DC	DC series SIDE Mount Kit
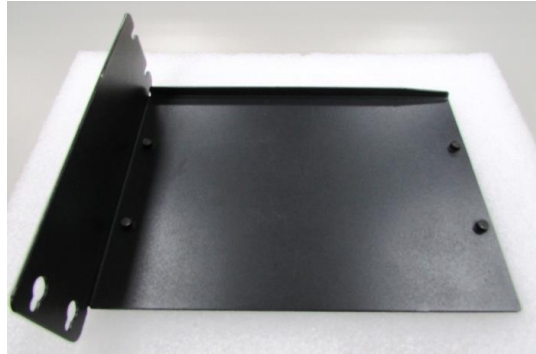
1. The mounting holes are at the bottom of system. Fasten the 4 screws to fix the side mount bracket with system together.
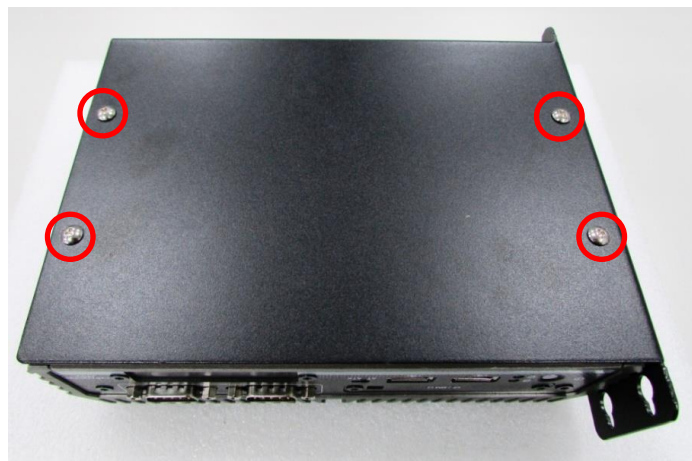
2. Fasten the screws through the bracket mounting hole to mount system on the wall.

6.2 VESA Mount Brackets

DC-1100 offers a VESA mount option so that customers can mount system with panel complying with VESA 75mm and 100 mm standard for various usage.

Model No.	Description
VESA-DC	DC series VESA Mount Kit

1. The mounting holes are at the bottom of system. Fasten the 4 screws to fix the first bracket with system.

2. Fasten the 4 screws through the second bracket mounting holes with panel.

3. Hang the system on the back of panel by using the hooks on second bracket.

6.3 DIN-Rail Mount Bracket

Model No.	Description
DINRAIL-R10	Diamond series DIN-RAIL Mount Kit

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

cincoze