User's Manual

Fanless Computing Solution

Superior Performance Fanless Computer
DS-1000(L/P)

Superior Performance Fanless Computer
DS-1001(L/P)

Superior Performance Fanless Computer
DS-1002(L/P)

CN-TB-QP22-44_V1.0

Contents

Chapter 5 Product Application

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2014/10/07
1.1	New DS models Released	2015/01/12
1.2	DIO PIN Define Revision	2015/04/02
1.3	MINIPCIE1 PIN Define Revision	2015/05/06
1.4	Add 1.2 support dimension of add-on card	2017/06/21
1.50	Correction Made	2018/11/20
1.51	Correction Made	2019/11/21

Copyright Notice

Acknowledgement

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 This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.

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	DS-1000(L/P) / DS-1001(L/P) / DS-1002(L/P) Embedded System	1
2	Utility DVD Driver	1
3	DIO Terminal Block Connector (Female)	2
4	Power Terminal Block Connector (Female)	1
5	Remote Power Terminal Block Connector (Female)	2
6	External Fan Terminal Block Connector (Female)	1
7	DVI-I to VGA Adapter	1
8	Screw Pack	1
9	Wall Mount Kit	1
10	Heat Sink Pack	1

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

Ordering Information

Model No.	Product Description
DS-1000	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset
DS-1000L	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset and 6x LAN
DS-1000P	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 4x PoE and 2x LAN
DS-1001-P	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset and 1x PCI Expansion
DS-1001-E	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset and 1x PCIe x16 Expansion
DS-1001L-P	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCI Expansion and 6x LAN
DS-1001L-E	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCIe x16 Expansion and 6x LAN
DS-1001P-P	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCI Expansion, 4x PoE and 2x LAN
DS-1001P-E	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCIe x16 Expansion, 4x PoE and 2x LAN
DS-1002-PP	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset and 2x PCI Expansion
DS-1002-EE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCIe x1 Expansion and 1x PCIe x16 Expansion
DS-1002-PE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCI Expansion and 1x PCIe x16 Expansion
DS-1002L-PP	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 2x PCI Expansion and 6x LAN
DS-1002L-EE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCIe x1 Expansion, 1x PCIe x16 Expansion and 6x LAN
DS-1002L-PE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCI Expansion, 1x PCIe x16 Expansion and 6x LAN
DS-1002P-PP	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 2x PCI Expansion, 4x PoE and 2x LAN
DS-1002P-EE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCIe x1 Expansion, 1x PCIe x16 Expansion, 4x PoE and 2x LAN
DS-1002P-PE	4th Gen. Intel® Core™ i3/i5/i7 Superior Performance Fanless Computer Integrate Q87 Chipset, 1x PCI Expansion, 1x PCIex16 Expansion, 4x PoE and 2x LAN

Optional Accessory

Model No.	Description
GS120A24-CIN	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug 5.0mm Pitch, GS120A24-P1M
GS220A24-CIN	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch, GS220A24-R7B
SL2-SL3	US 2 heads power cord, US B type to IEC C13, SVT 18AWG/3C Black 1.8M SL-2+SL-3
SL6-SL3	EU 2 heads power cord, EU G type to IEC C13, H05VV-F 0.75mm2/3G Black 1.8M SL-6+SL-3
QP026-SL3	UK 2 heads power cord, UK I type to IEC C13, H05VV-F 0.75mm2/3G Black 1.8M QP026+SL-3
59381560000E	MINI-DIN(M) (PS/2 KB+MS) TO MINI-DIN(F) (PS/2 KB)+MINI-DIN(F) (PS/2 MS) L:10CM, 59381560000E
N0307-140507-01	DVI-I(M) TO DVI-D(F) + VGA(F) Cable, L=200mm, N0307-140507-01

Chapter 1

Product Introductions

1.1 Overview

DS-1000(L/P) / DS-1001(L/P) / DS-1002(L/P) series is a fanless embedded system integrated with 4th generation Intel® Core™ i3/i5/i7 LGA1150 socket type processor, Intel® Q87 express chipset, rich I/O, and supports wide range (9~48V) DC power input. The front access designed provides fast change capability of hard drive, CMOS battery, CFast card and SIM card.
With flexible installation of internal or external fan, mounting kit, and various interface expansion modules make DS-1000 series a functional system meets versatile requirements and different usages.
In addition, DS-1000 series is a ruggedized and safety system features completely cable-less designed, special heat dissipation, anti-vibration, build in voltage protection, reliable DC power input, reverse power protection, and industrial components selection.
Combining superior performance and innovative mechanical design, DS-1000 series is an ideal choice for industrial applications.

DS-1000(L/P)

Front

Rear

DS-1001(L/P)

Front

Rear

DS-1002(L/P)

Front

Rear

1.1.1 Key Features

- Support 4th Gen. Intel® Core™ i3/i5/i7 Desktop Processor (LGA1150) and Intel® Q87 Chipset
- 2x DDR3 / DDR3L SO-DIMM Max. up to 16GB
- Three Independent Display from 1x DVI-I and 2x DisplayPort
- 2x Intel® GbE Port, Support Wake-on-LAN and PXE (DS-1000, DS-1001, DS-1002 Only)
- 6x Intel® GbE Port, Support Wake-on-LAN and PXE (DS-1000L, DS-1001L, DS-1002L Only)
- 6x Intel® GbE Port with 4x PoE Function, Support Wake-on-LAN and PXE (DS-1000P, DS-1001P, DS-1002P Only)
- 4x USB 3.0 and 4x USB 2.0
- 6x RS232/422/485 Port with 5V/12V Power
- 4x Isolated DI, 4x Isolated DO
- 2x 2.5" SATA SSD/HDD Bay, 2x mSATA (1x mSATA Shared by Mini-PCIe Socket) , 1x CFast Card and 1x SIM Card Socket
- 9~48V DC Power Input, Support AT/ATX Mode
- 2x Mini-PCIe Slot for Wi-Fi, GSM, or I/O Expansion
- 1x PCI or 1x PCIe x16 Expansion (DS-1001, DS-1001L, DS-1001P Only)
- 2x PCI / 1x PCIe x1 and 1x PCIe x16 / 1x PCI and 1x PCIe x16 Expansion (DS-1002, DS-1002L, DS-1002P Only)
- Power Ignition
- Compliant with EN50155 for Rail Transportation Applications

1.2 Hardware Specification

Processor System
- Support 4th Generation Intel® Core™ i3/i5/i7 LGA 1150 Processor, with AMI 128Mbit SPI BIOS
- Celeron G1820TE, Dual Core, 2.2GHz, 2M Cache
- Core™ i3-4330TE, Dual Core, 2.4GHz, 4M Cache
- Core™ i5-4570TE, Dual Core, 2.7GHz, 4M Cache
- Core™ i7-4770TE, Quad Core, 2.3 GHz, 8M Cache

Chipset
- Intel® Q87 chipset

Memory
- 2x 204-Pin DDR3/ DDR3L-1333MHz/ 1600MHz SO-DIMM (un-buffered and non-ECC), max. up to 16GB

Display
Triple Display
- 1x DVI and 2x DisplayPort
- 1x VGA (w/ DVI to VGA Adapter) and 2x DisplayPort
- 1x VGA (w/ DVI-I Split Cable), 1x DVI-D, and 1x DisplayPort

Expansion
- **DS-1001-E, DS-1001L-E, DS-1001P-E**
  - ✓ 1x PCIe x16
    Support maximum dimension of add-on card (H x L): 111.15mm x 235mm
- **DS-1001-P, DS-1001L-P, DS-1001P-P**
  - ✓ 1x PCI
    Support maximum dimension of add-on card (H x L): 111.15mm x 235mm
- **DS-1002-EE, DS-1002L-EE, DS-1002P-EE:**
  - ✓ 1x PCIe x1 and PCIe x16
    Support maximum dimension of add-on card (H x L): 111.15mm x 235mm
- **DS-1002-PE, DS-1002L-PE, DS-1002P-PE:**
  - ✓ 1x PCI and PCIe x16
    Support maximum dimension of add-on card (H x L): 111.15mm x 235mm
- **DS-1002-PP, DS-1002L-PP, DS-1002P-PP**
  - ✓ 2x PCI
    Support maximum dimension of add-on card (H x L): 111.15mm x 235mm
- 2x Full-size Mini PCIe Socket for Wi-Fi / GSM / Expansion Module
- 2x Universal I/O Bracket
- 3x Universal I/O Bracket (DS-1002, DS-1002L, DS-1002P Only)

Ethernet
- 1x Intel® 82583V GbE LAN Port, Support Wake-on-LAN and PXE (DS-1000, DS-1001, DS-1002 Only)
- 1x Intel® i217LM GbE LAN Port, Support Wake-on-LAN and PXE
- 5x Intel® 82583V GbE LAN Port, Support Wake-on-LAN and PXE (DS-1000L/P, DS-1001L/P, DS-1002L/P Only)
- 4x 802.3at Compliant PoE Port, The Maximum DC Power Delivery on Each PoE is 25W@DC 56V Input (DS-1000P, DS-1001P, DS-1002P Only)

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

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

Storage
- 2x 2.5" SATA HDD Bay (1x External Removable, 1x Internal)
- 2x Internal mSATA Slot (1x Internal mSATA Shared by Mini-PCIe Socket)
- 1x External CFast Socket
- 1x External SIM Card Socket

I/O Ports
- 4x USB 3.0 Port
- 4x USB 2.0 Port
- 8x Optical Isolated DIO (4xDI, 4xDO), 10 Pin Terminal Block Support 9~30V
- 6x DB9 for COM1~6, Support RS232/422/485 with Auto Flow Control
- 1x PS/2 Port
- 2x Antenna Hole
- 1x Power Switch
- 1x AT/ATX Switch
- 1x External Battery Holder
- 1x External Fan Connector
- 1x Remote Power Connector

Power
- Support AT, ATX Mode
- 1x 3-pin Terminal Block Connector with Power Input 9~48VDC
- 1x Optional AC/DC 24V/5A, 120W Power Adapter
- 1x Optional AC/DC 24V/9.2A, 220W Power Adapter (DS-1000P, DS-1001P, DS-1002P Only)

Environment
- Operating Temperature: Ambient with Air Flow: -10˚C to 60˚C (with Industrial Grade Peripherals)
- Storage Temperature: -20˚C to 80˚C
- Relative humidity: 10%~95% (non-condensing)

Physical
- **DS-1000(L/P)**
  - ✓ Dimension (WxDxH, mm): 227 x 261 x 86 mm
  - ✓ Weight: 4.7 kg
- **DS-1001(L/P)**
  - ✓ Dimension (WxDxH, mm): 227 x 261 x 106 mm
  - ✓ Weight: 5.22 kg
- **DS-1002(L/P)**
  - ✓ Dimension (WxDxH, mm): 227 x 261 x 126 mm
  - ✓ Weight: 5.7 kg
- Construction: Extruded Aluminum with Heavy Duty Metal
- Mounting: Wall Mounting

Operating System
- Windows® 8
- Windows® Embedded 8 Standard
- Windows® 7
- Windows® Embedded Standard 7

Certifications
- CE
- FCC Class A
- EN 50155
- EN 50121-3-2

1.3 System I/O

1.3.1 DS-1000

Front Panel

ATX 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

Temperature LED
Indicate the temperature of the system

HDD LED
Indicates the status of the hard drive

Digital I/O LED
Indicates the working status of digital input/ output

Digital I/O Terminal Block
The Digital I/O terminal block supports 4 digital input and 4 digital output

COM Port
COM 3 ~ COM 6 supports RS232/422/485 serial device

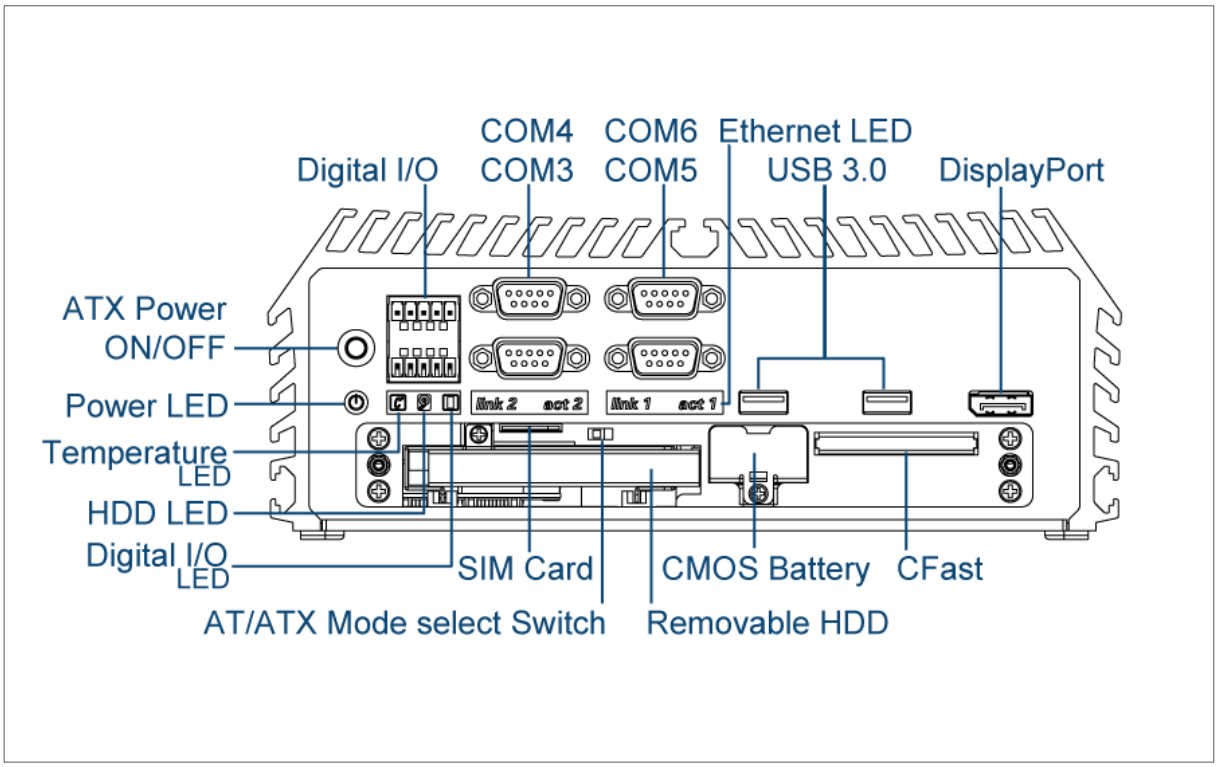
Ethernet LED
Indicates the status of the LAN ports

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 the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD



Rear Panel

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

External Fan Terminal Block
Used to plug a external fan with terminal block

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

PS/2 Port
Used to connect the PS/2 device

LAN Port
Used to connect the system to a local area network

DisplayPort
Used to connect the system with display device

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

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

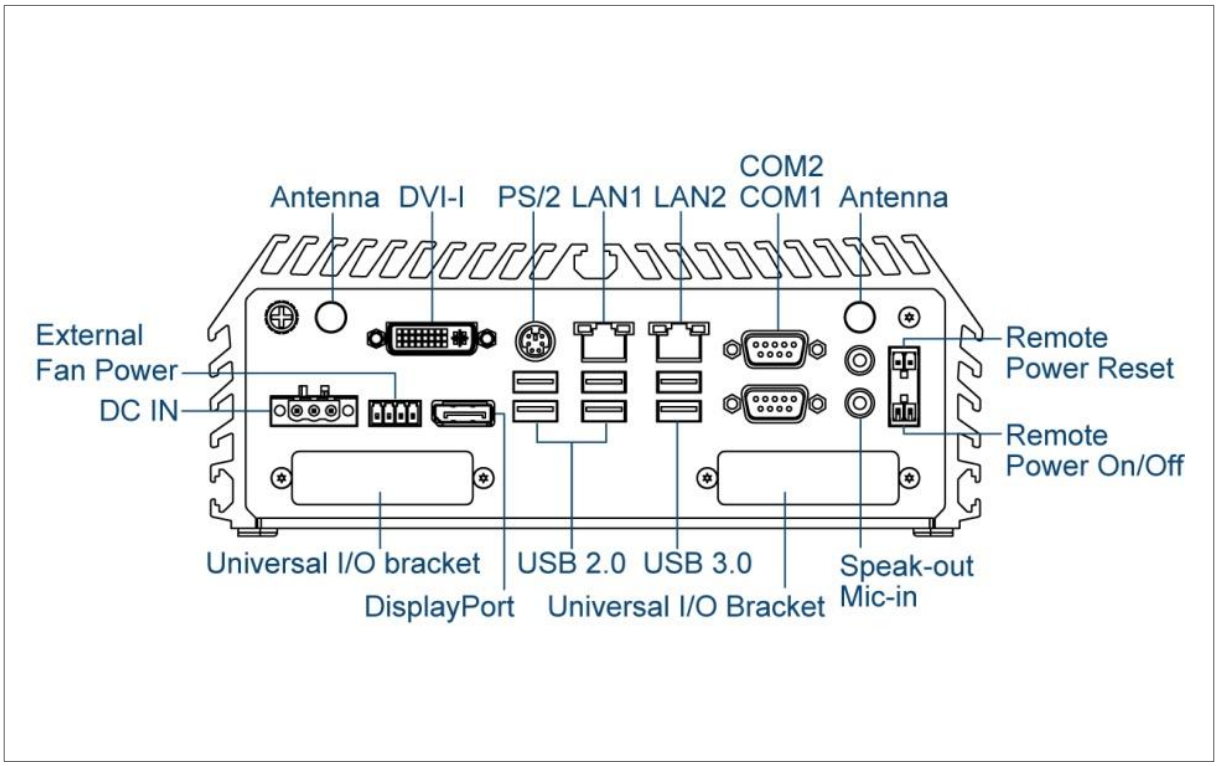
COM Port
COM 1 ~ COM 2 support RS232/422/485 serial device

Mic-in
Used to connect a microphone

Speak-out
Used to connect a speaker

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

Universal I/O Bracket
Used to customized I/O output



1.3.2 DS-1000(L/P)

Front Panel

ATX 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

Temperature LED
Indicate the temperature of the system

HDD LED
Indicates the status of the hard drive

Digital I/O LED
Indicates the working status of digital input/ output

Ethernet LED
Indicates the status of the LAN ports

Digital I/O Terminal Block
The Digital I/O terminal block supports 4 digital input and 4 digital output

COM Port
COM 3 ~ COM 6 supports RS232/422/485 serial device

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

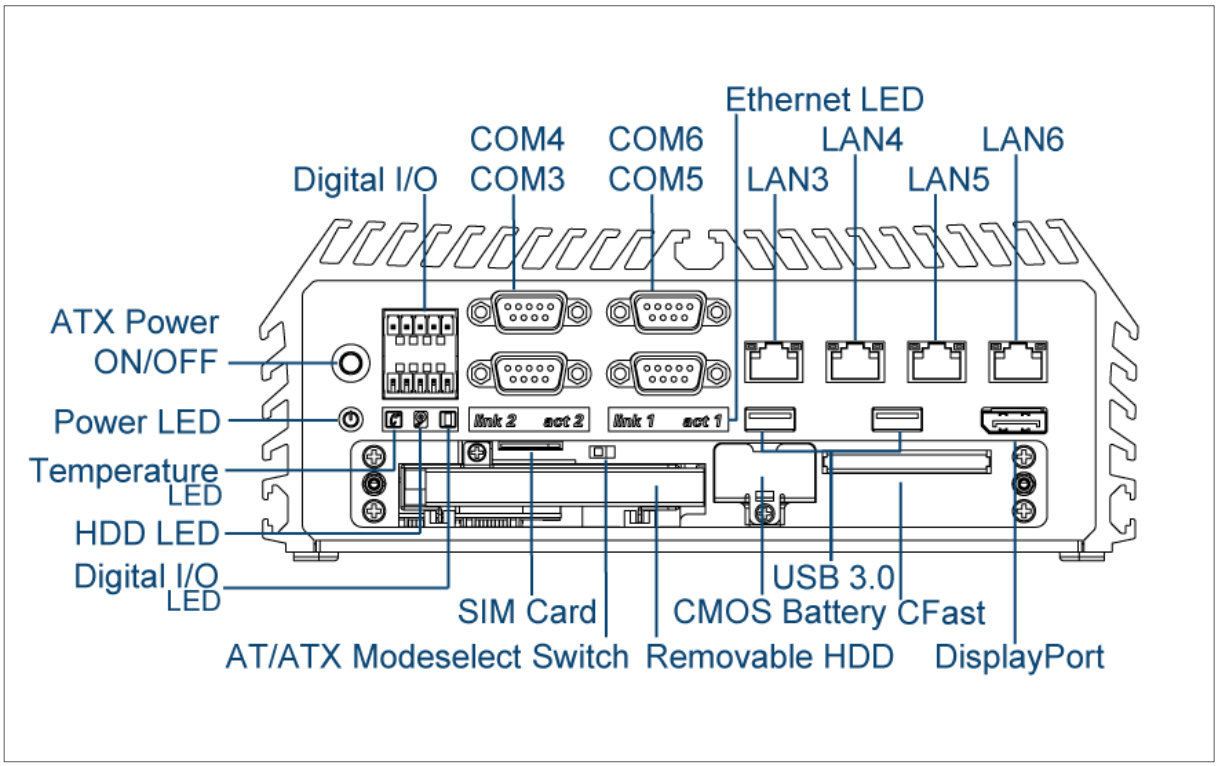
USB 2.0 Port
Used to connect USB 2.0/1.1 device

DisplayPort
Used to connect the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD

LAN Port
Used to connect the system to a local area network

PoE Port
Used to connect the system to a local area network with power over Ethernet (DS-1000P Only)



Rear Panel

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

External Fan Terminal Block
Used to plug a external fan with terminal block

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

PS/2 Port
Used to connect the PS/2 device

LAN Port
Used to connect the system to a local area network

DisplayPort
Used to connect the system with display device

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

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

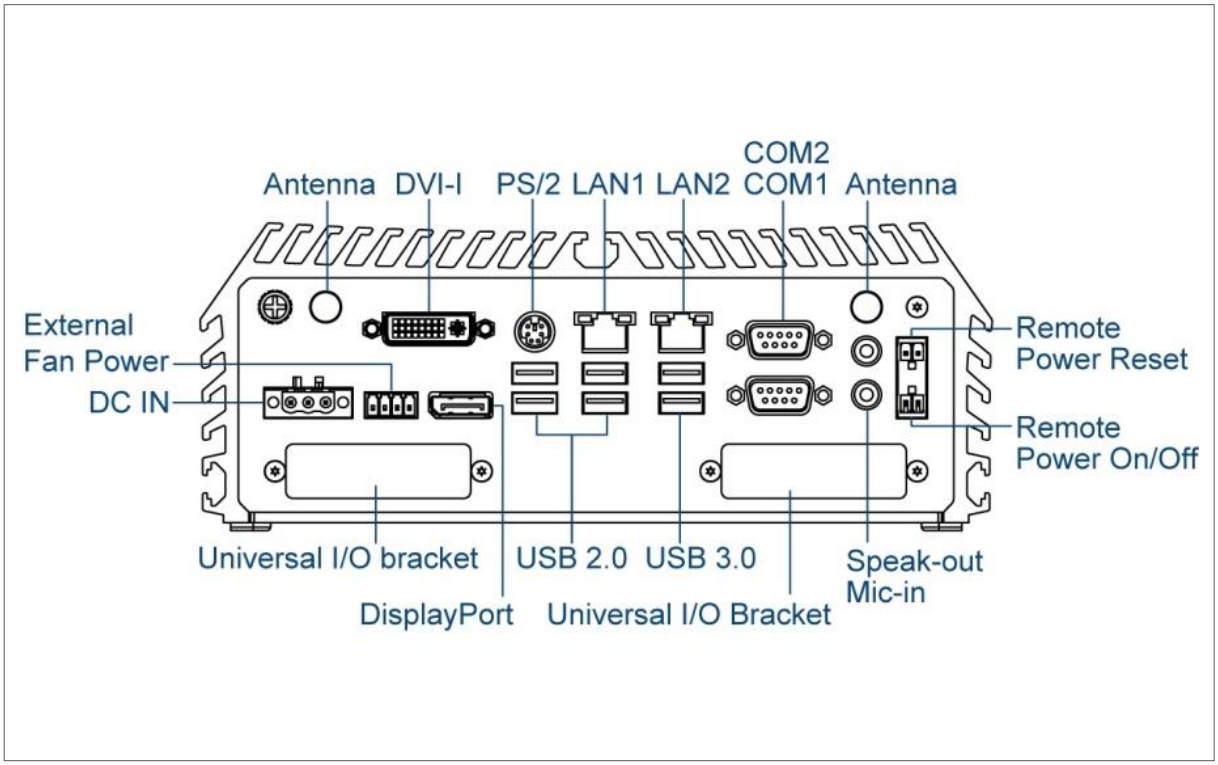
COM Port
COM 1 ~ COM 2 support RS232/422/485 serial device

Mic-in
Used to connect a microphone

Speak-out
Used to connect a speaker

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

Universal I/O Bracket
Used to customized I/O output



1.3.3 DS-1001

Front Panel

ATX 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

Temperature LED
Indicate the temperature of the system

HDD LED
Indicates the status of the hard drive

Digital I/O LED
Indicates the working status of digital input/ output

Ethernet LED
Indicates the status of the LAN ports

Digital I/O Terminal Block
The Digital I/O terminal block supports 4 digital input and 4 digital output

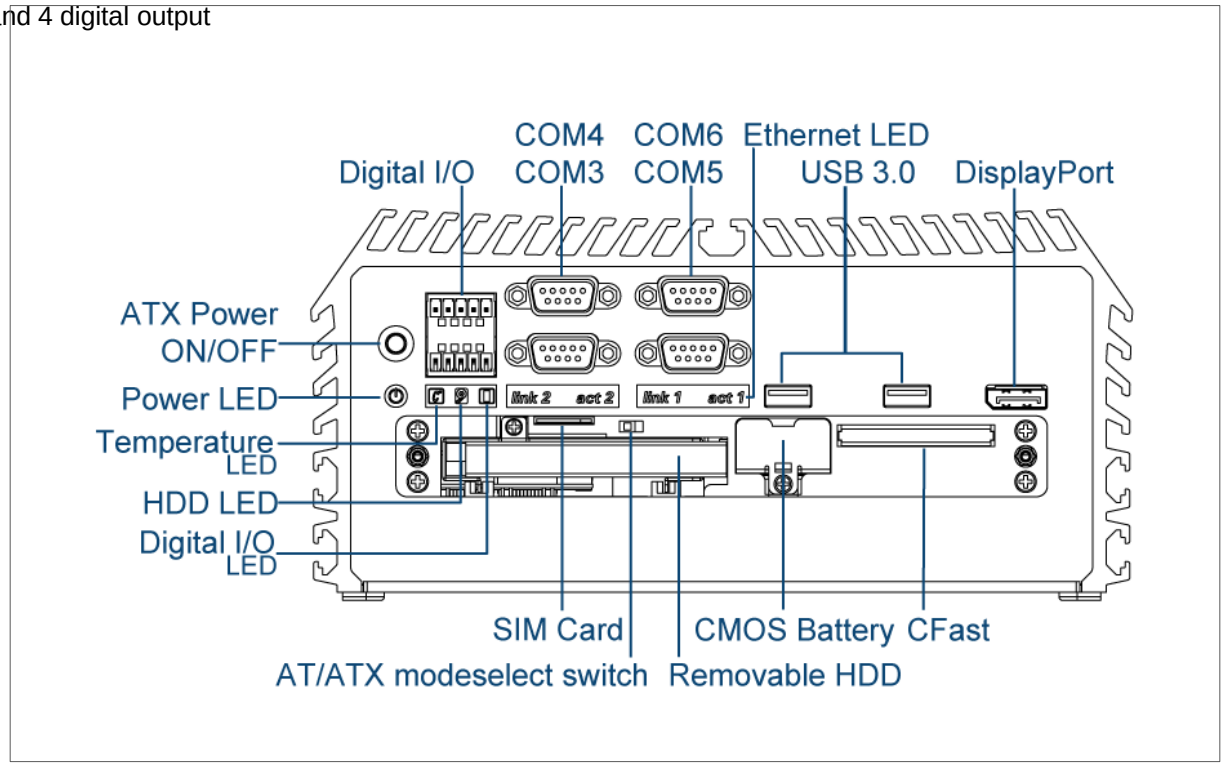
COM Port
COM 3 ~ COM 6 supports RS232/422/485 serial device

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 the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD



Rear Panel

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

External Fan Terminal Block
Used to plug a external fan with terminal block

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

PS/2 Port
Used to connect the PS/2 device

LAN Port
Used to connect the system to a local area network

DisplayPort
Used to connect the system with display device

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

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

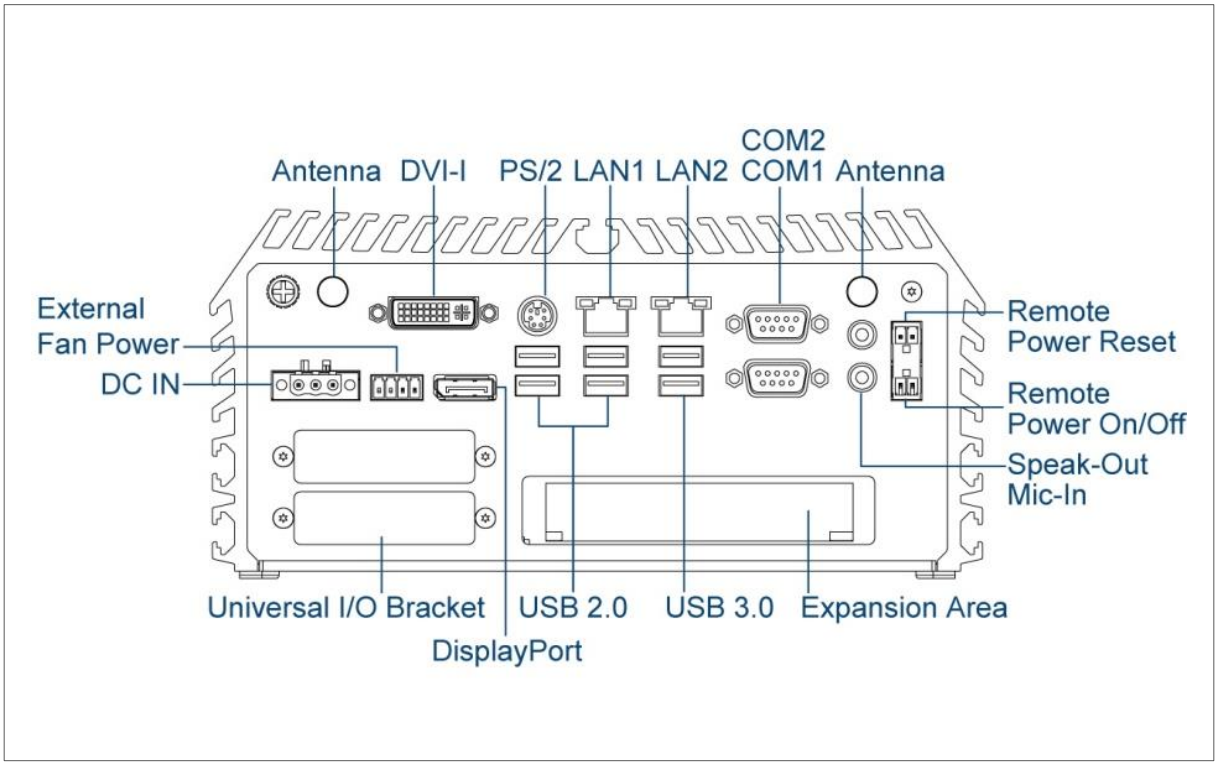
Mic-in
Used to connect a microphone

Speak-out
Used to connect a speaker

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

Universal I/O Bracket
Used to customized I/O output

Expansion Area
Used to plug PCI or PCIe Card



1.3.4 DS-1001(L/P)

Front Panel

ATX 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

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Indicate the temperature of the system

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Indicates the status of the LAN ports

Digital I/O Terminal Block
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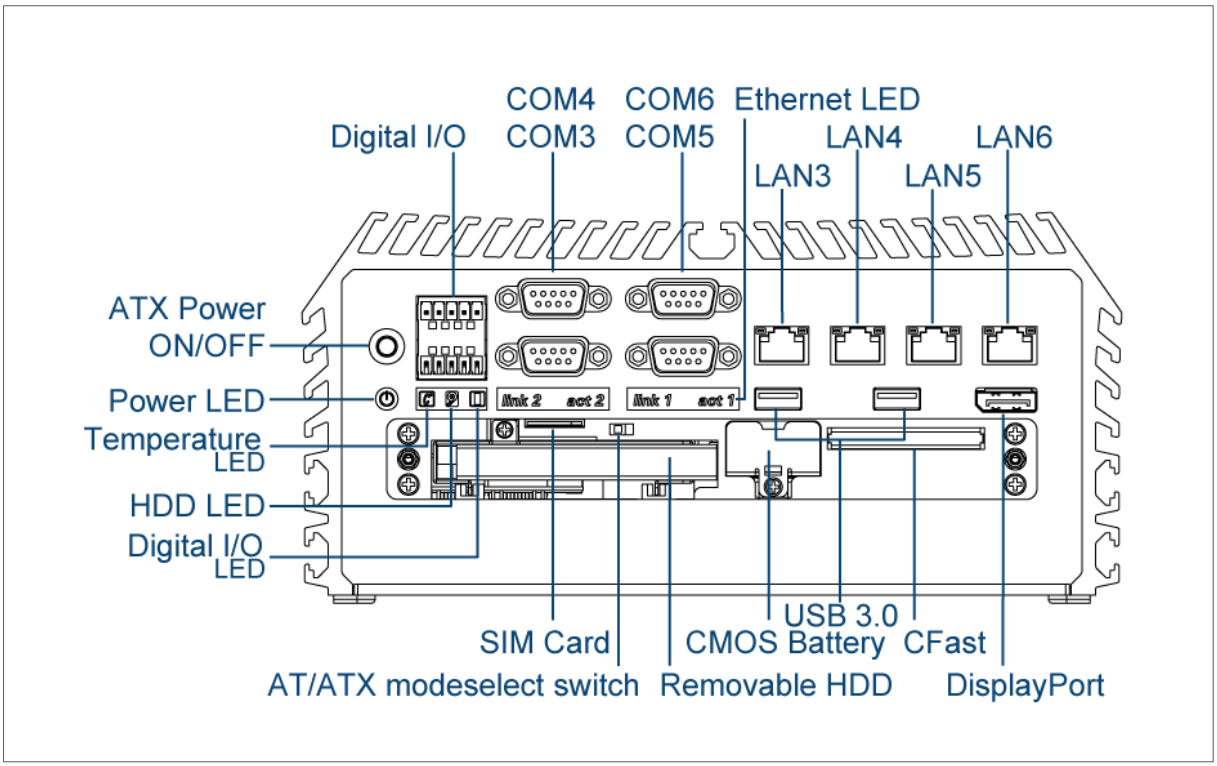
DisplayPort
Used to connect the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD

LAN Port
Used to connect the system to a local area network

PoE Port
Used to connect the system to a local area network with power over Ethernet (DS-1001P Only)



Rear Panel

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

External Fan Terminal Block
Used to plug a external fan with terminal block

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

PS/2 Port
Used to connect the PS/2 device

LAN Port
Used to connect the system to a local area network

DisplayPort
Used to connect the system with display device

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

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

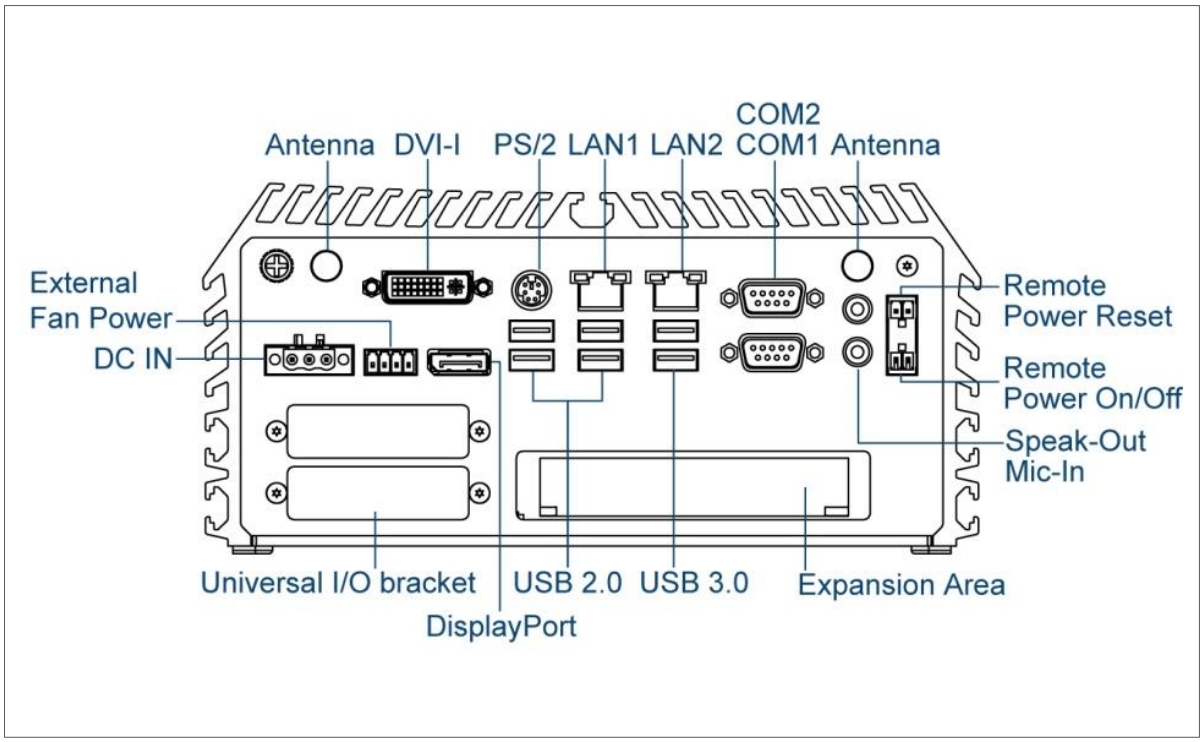
Mic-in
Used to connect a microphone

Speak-out
Used to connect a speaker

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

Universal I/O Bracket
Used to customized I/O output

Expansion Area
Used to plug PCI or PCIe Card



1.3.5 DS-1002

Front Panel

ATX 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

Temperature LED
Indicate the temperature of the system

HDD LED
Indicates the status of the hard drive

Ethernet LED
Indicates the status of the LAN ports

Digital I/O Terminal Block
The Digital I/O terminal block supports 4 digital input and 4 digital output

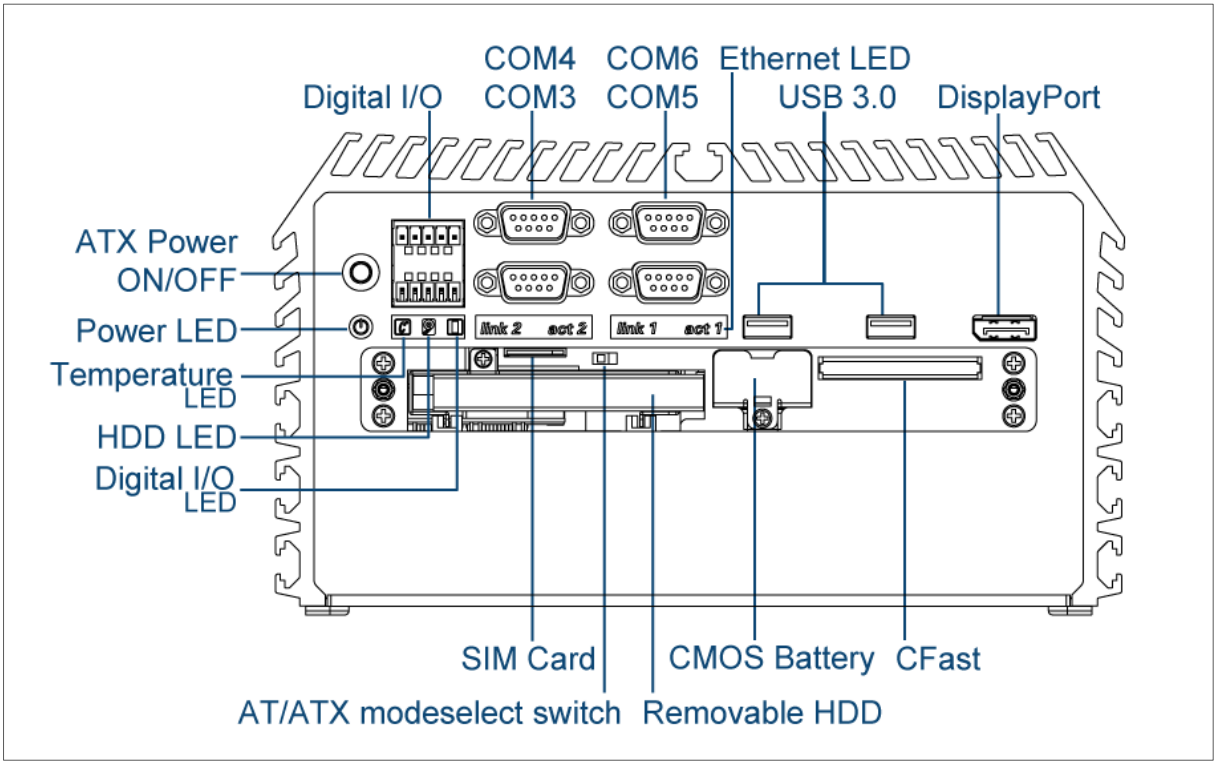
COM Port
COM 3 ~ COM 6 supports RS232/422/485 serial device

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 the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD



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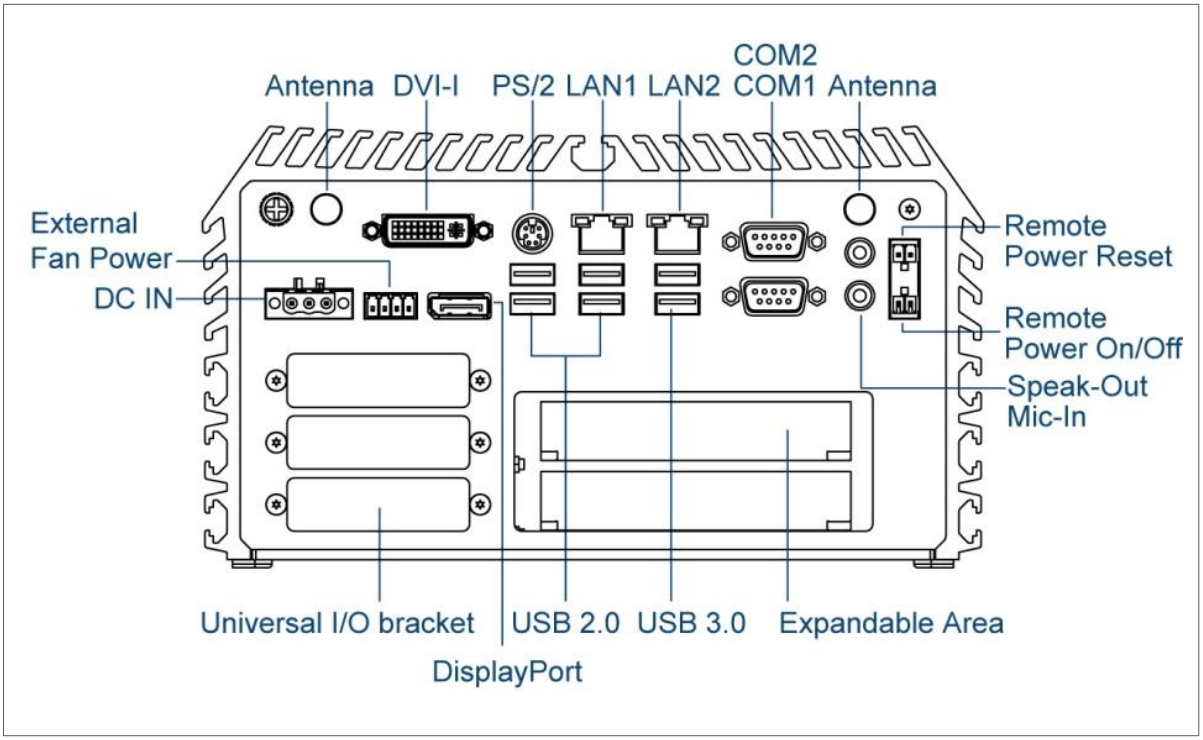


1.3.4 DS-1002(L/P)

Front Panel

ATX 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

Temperature LED
Indicate the temperature of the system

HDD LED
Indicates the status of the hard drive

Ethernet LED
Indicates the status of the LAN ports

Digital I/O Terminal Block
The Digital I/O terminal block supports 4 digital input and 4 digital output

COM Port
COM 3 ~ COM 6 supports RS232/422/485 serial device

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

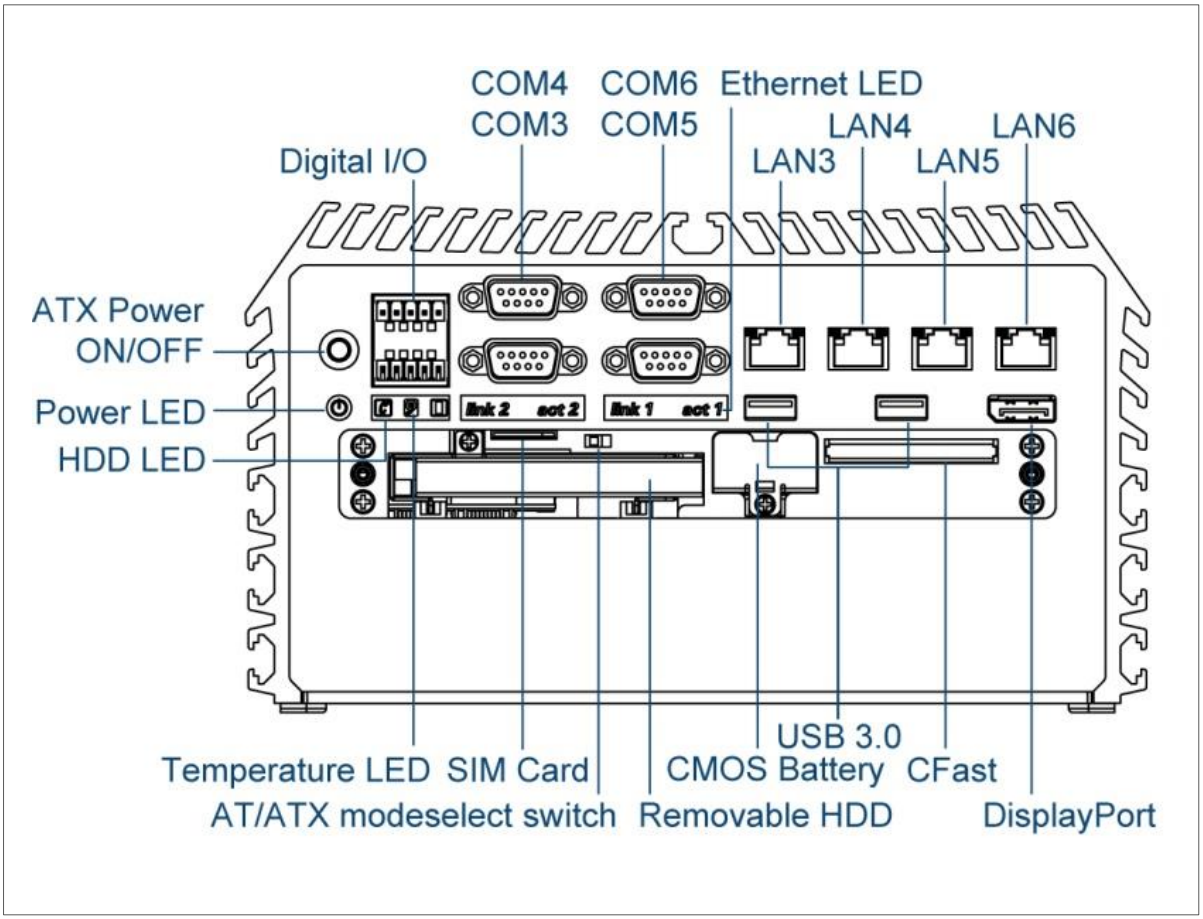
USB 2.0 Port
Used to connect USB 2.0/1.1 device

DisplayPort
Used to connect the system with display device

CFast, SIM card, CMOS Battery, and 2.5" Removable HDD Bay
Used to inserts a CFast card, SIM card, CMOS battery, and 2.5" HDD

LAN Port
Used to connect the system to a local area network

PoE Port
Used to connect the system to a local area network (DS-1002P Only)



Rear Panel

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External Fan Terminal Block
Used to plug a external fan with terminal block

DVI-I Port
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DisplayPort
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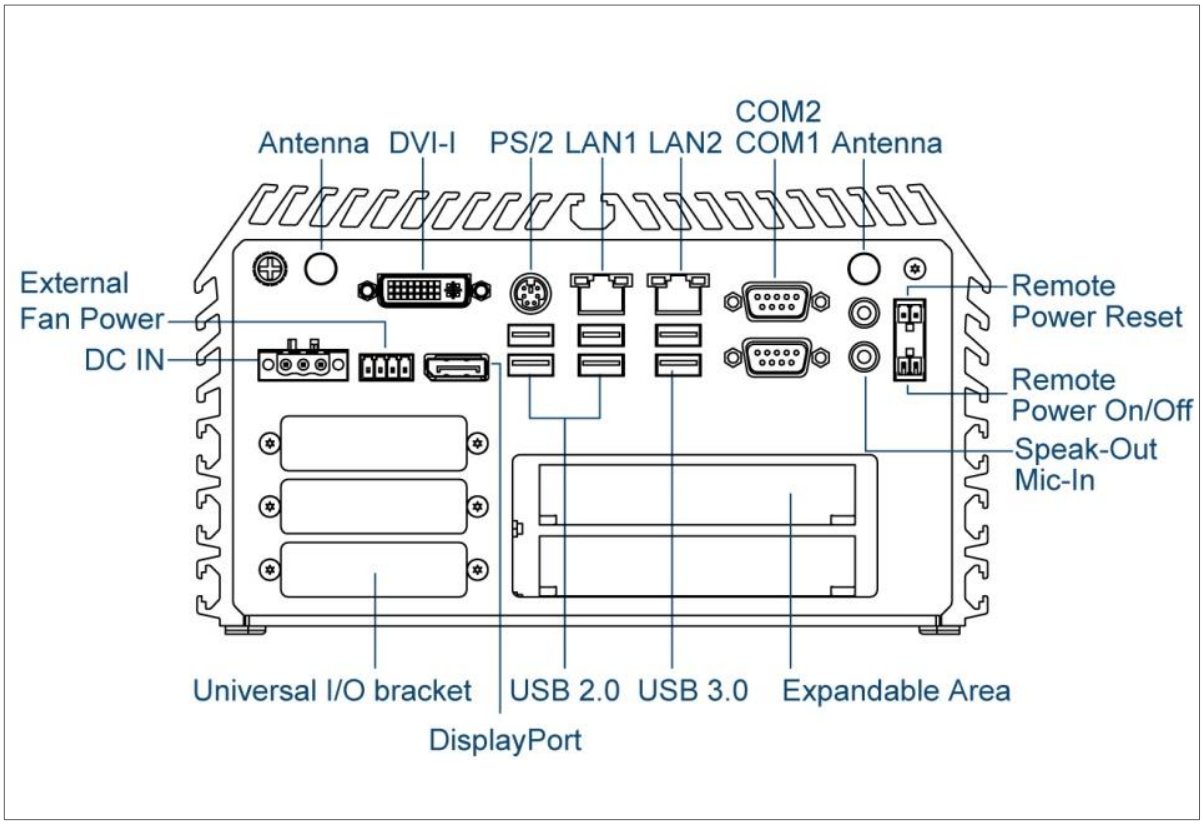
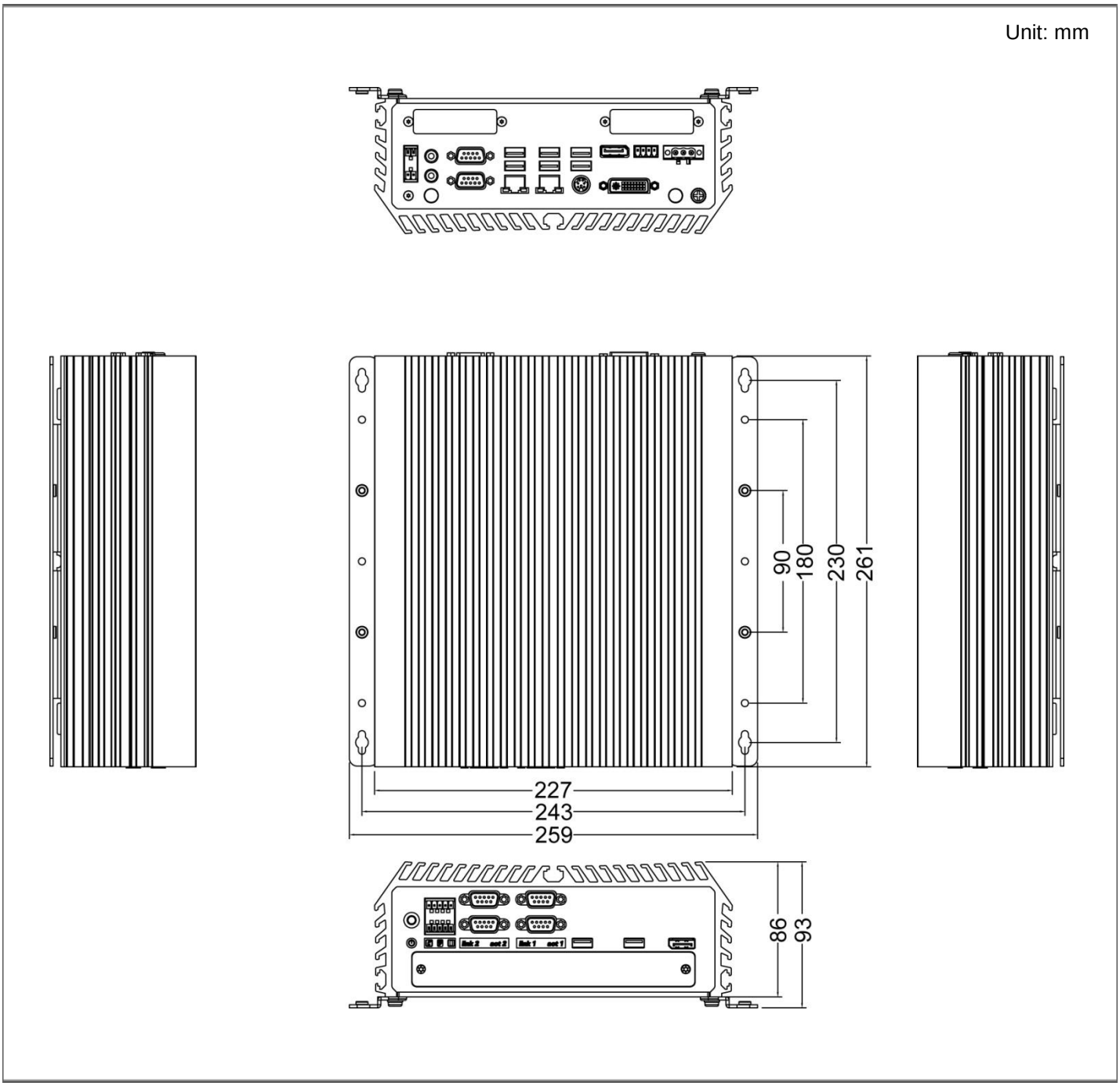


1.4 Mechanical Dimensions

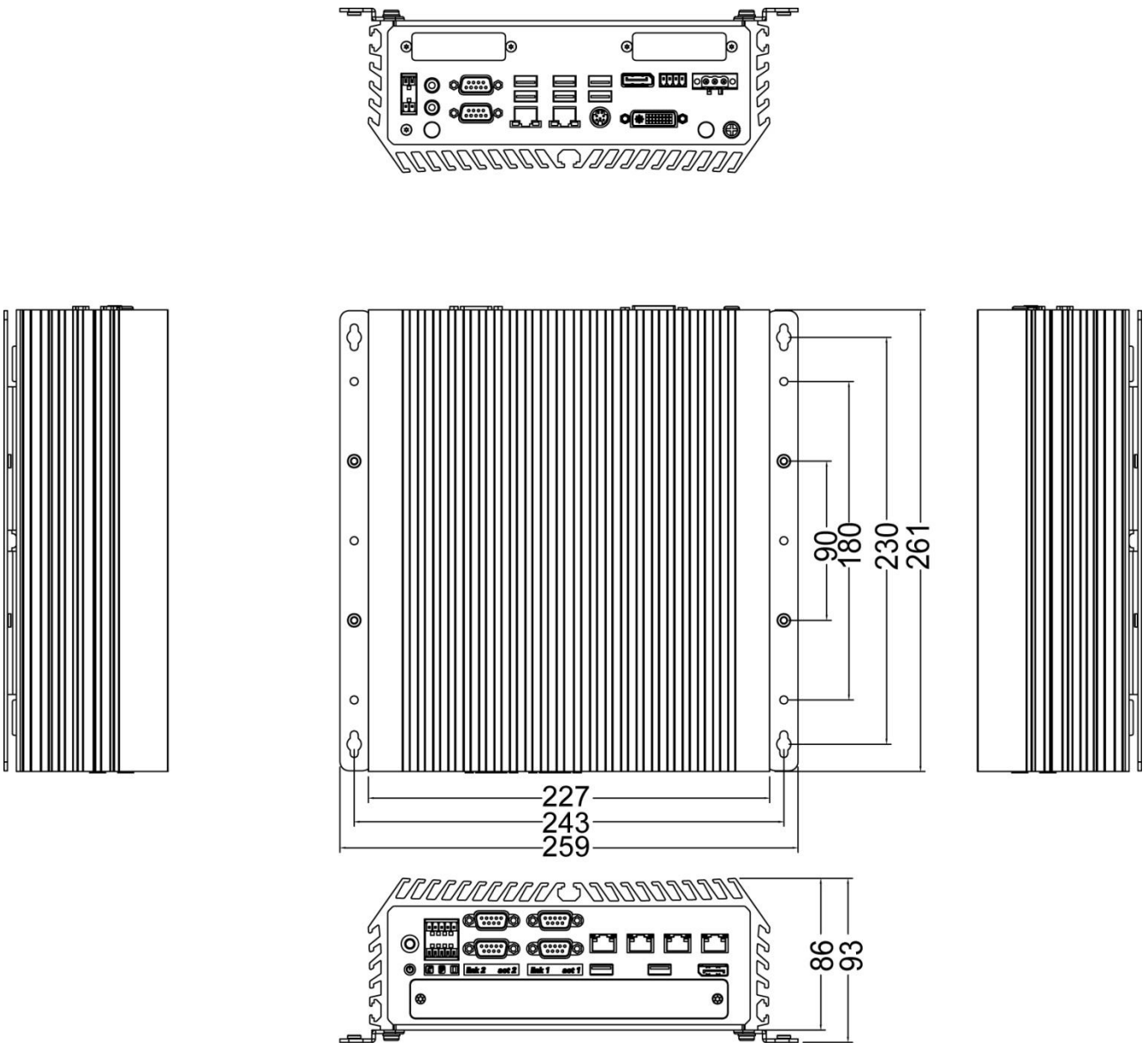
1.4.1 DS-1000

Unit: mm



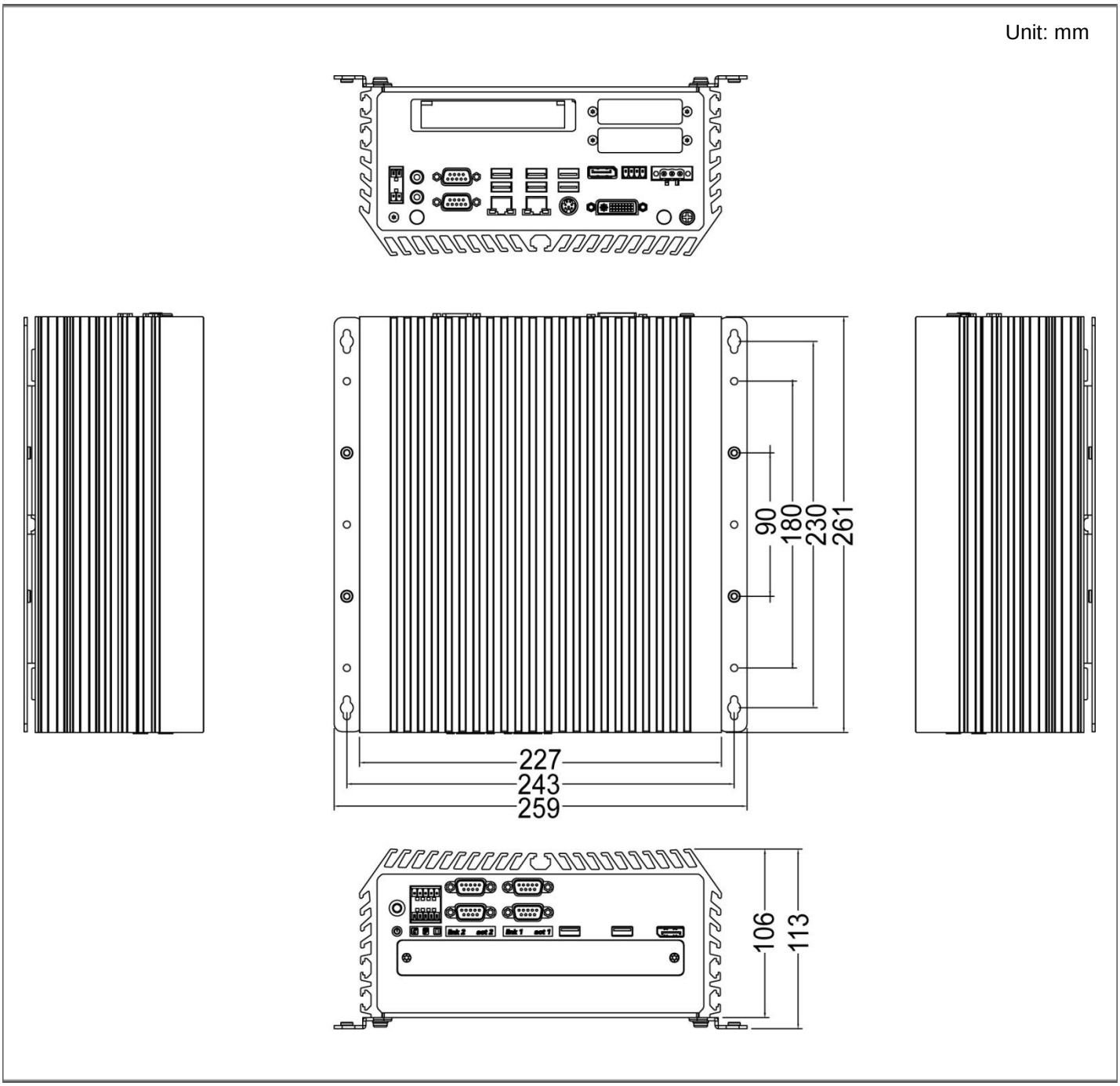
1.4.2 DS-1000(L/P)

Unit: mm



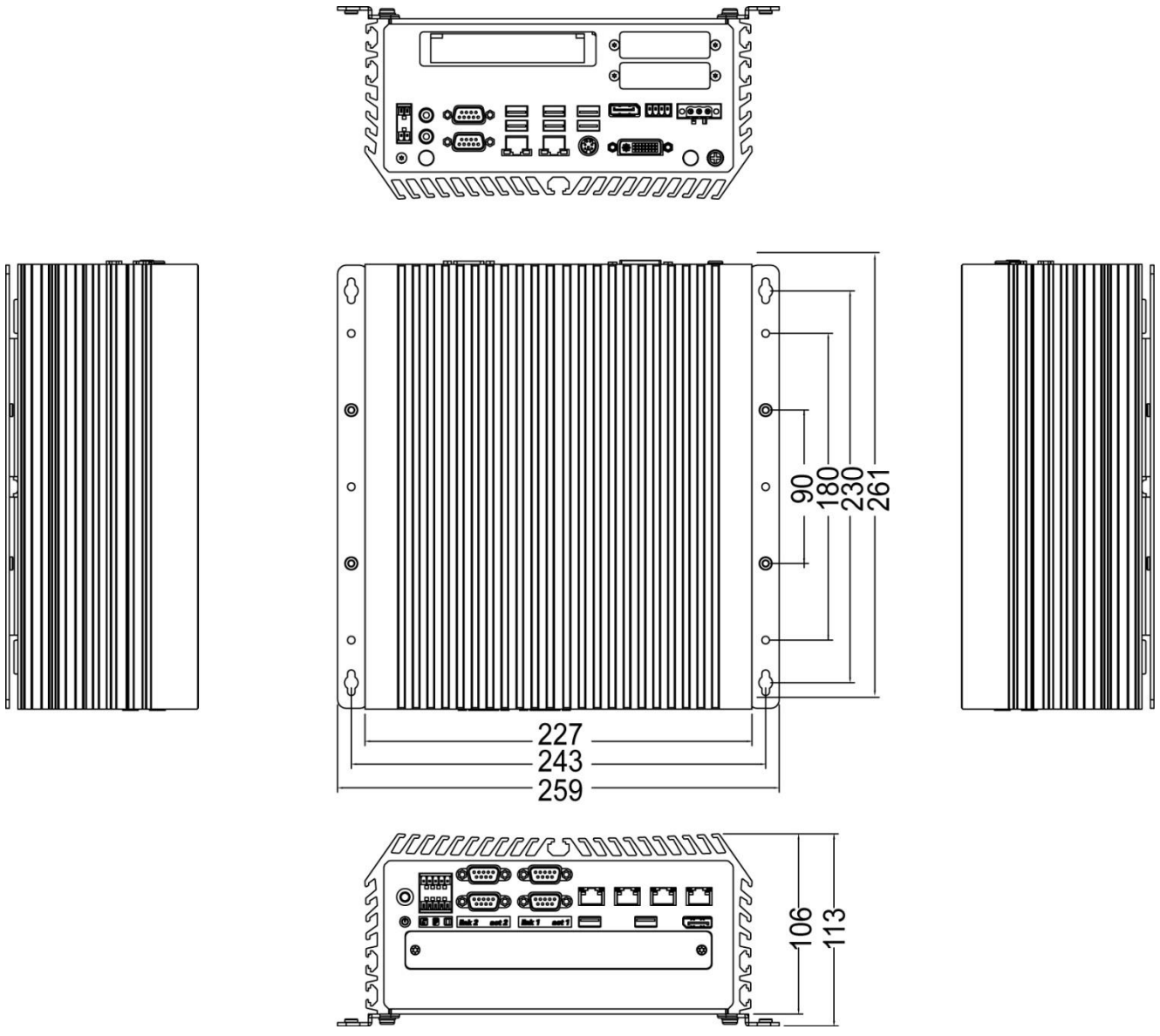
1.4.3 DS-1001

Unit: mm



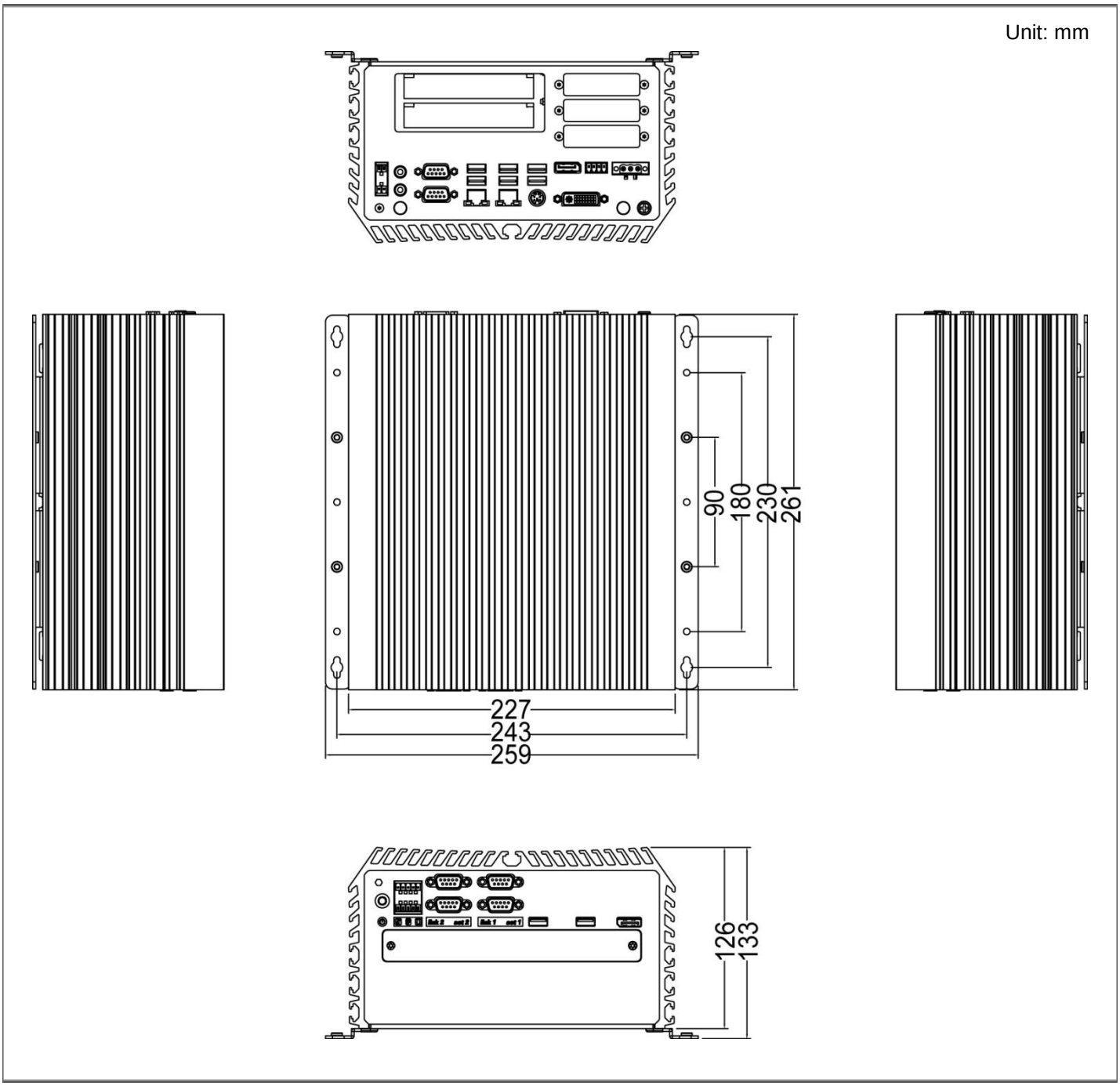
1.4.4 DS-1001(L/P)

Unit: mm



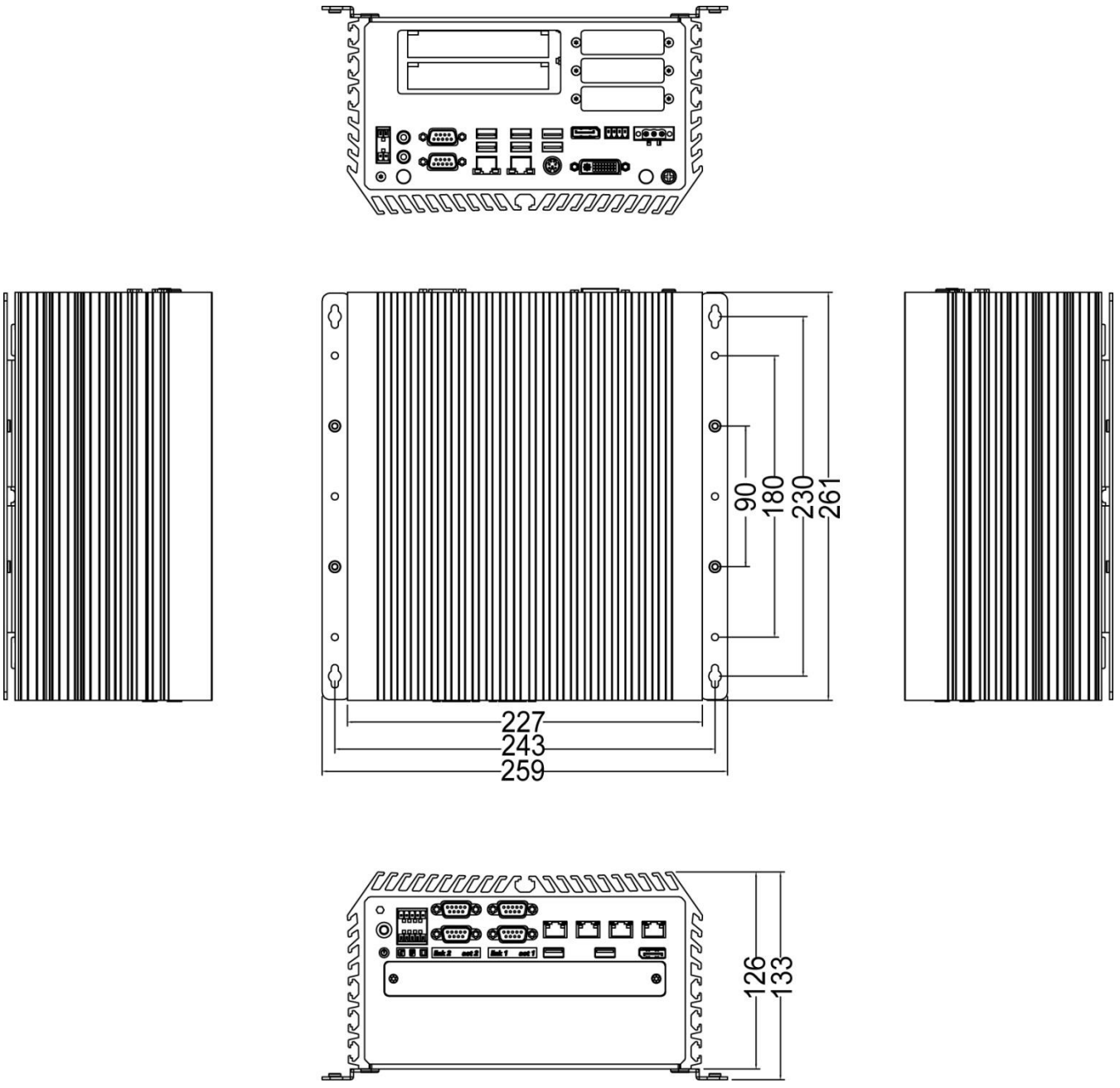
1.4.5 DS-1002

Unit: mm



1.4.6 DS-1002(L/P)

Unit: mm



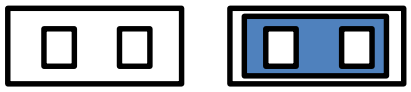
Chapter 2

Jumpers and Connectors

2.1 Jumpers Settings

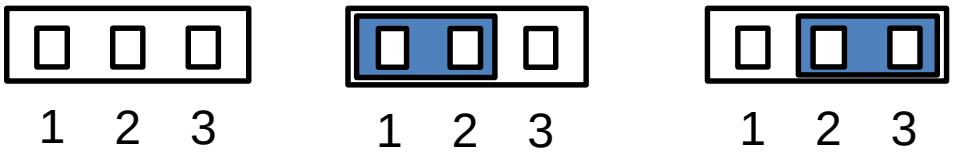
When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **short**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **open**. Refer to below for examples of the 2-pin and 3-pin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

Two-Pin Jumpers



Open | Short

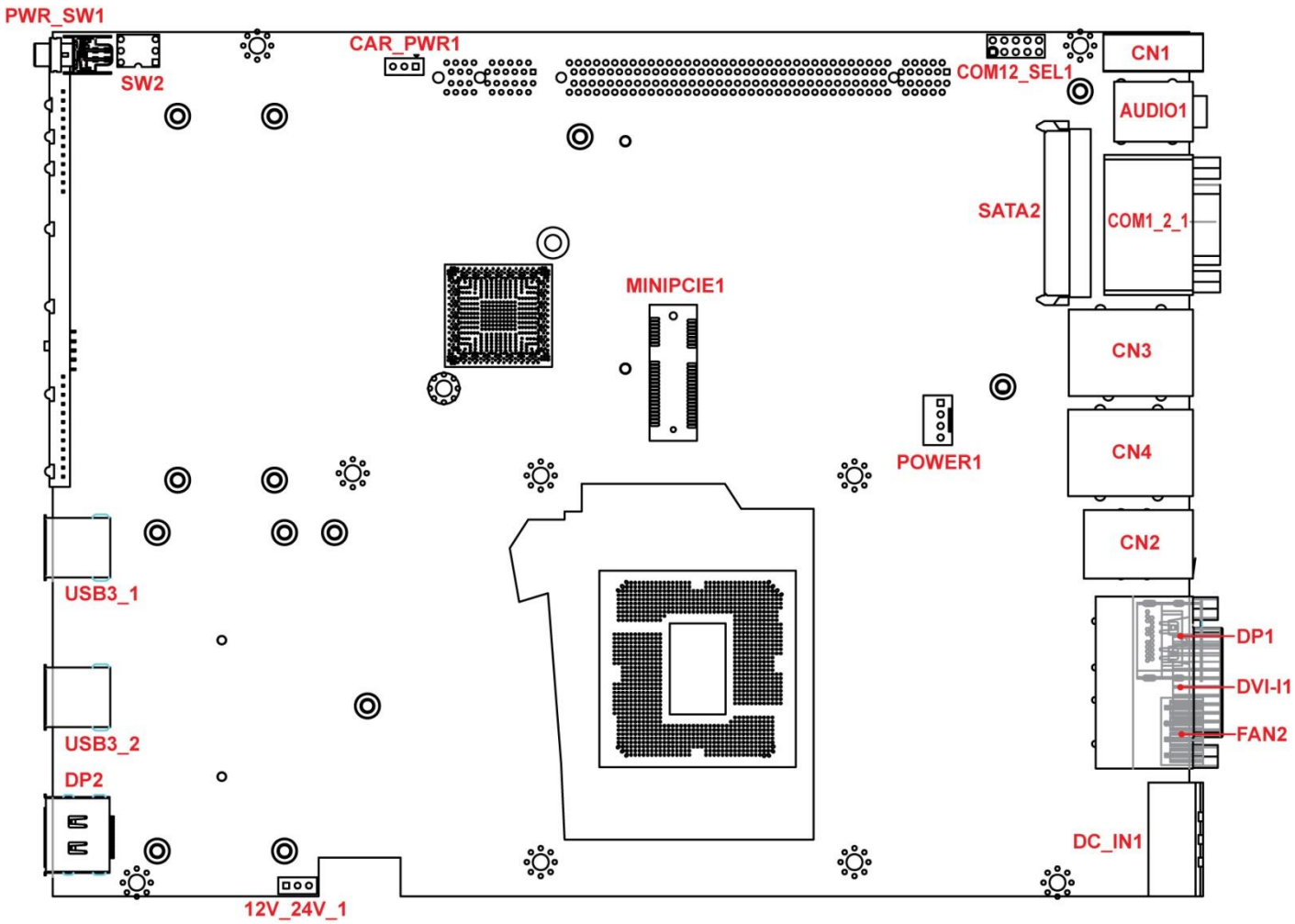
Three-Pin Jumpers



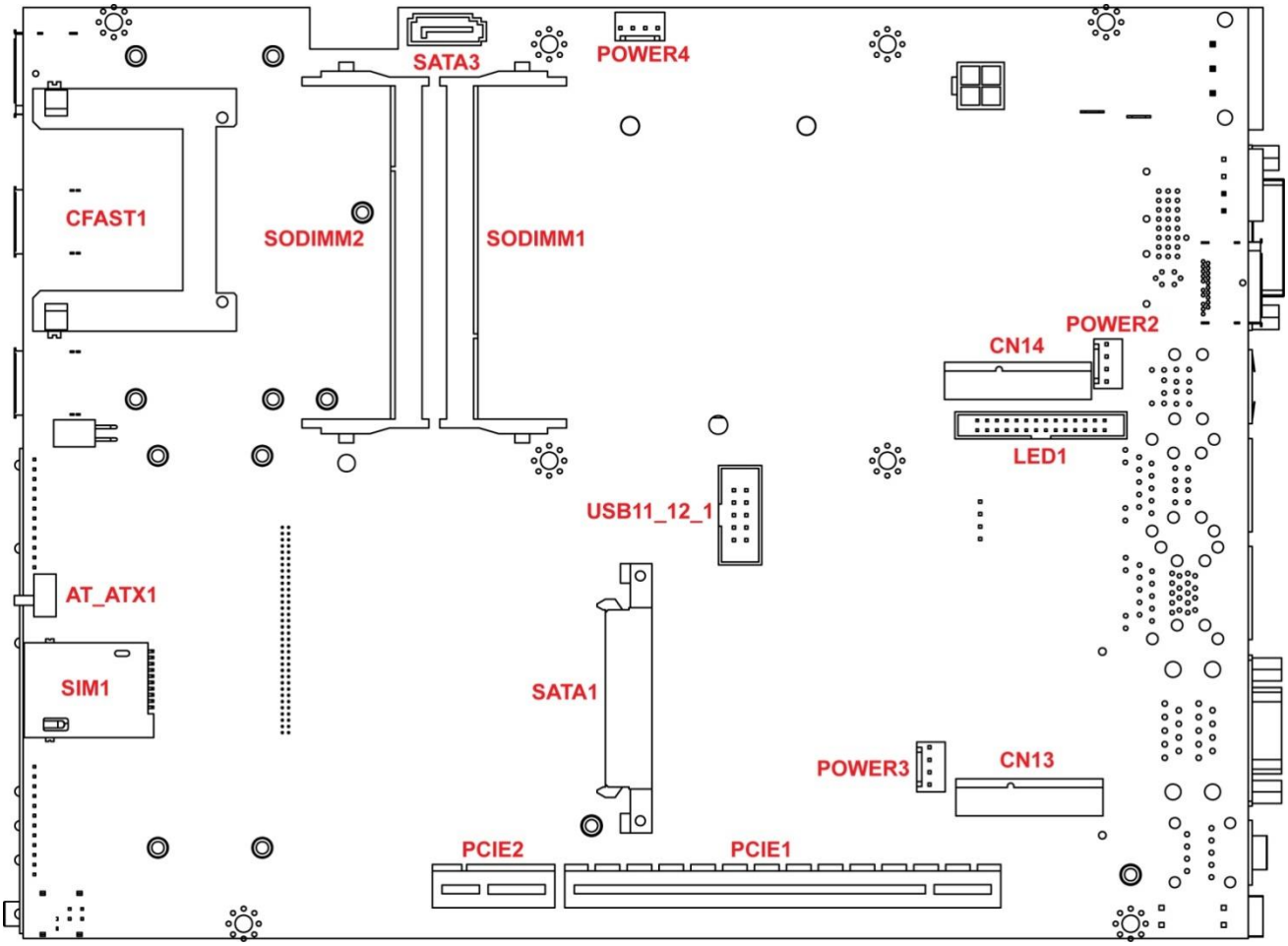
All pins are open | Pins 1 and 2 are short | Pins 2 and 3 are short

2.2 Location of the Jumpers and Connectors

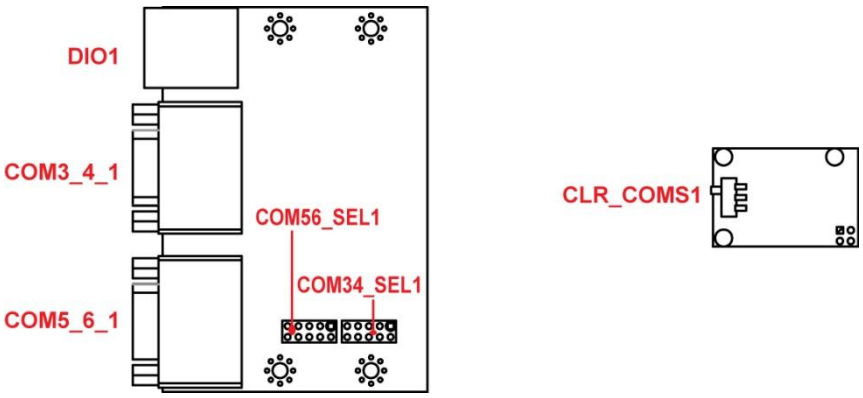
2.2.1 Top View



2.2.2 Bottom View



2.2.3 Daughter board view



2.3 Connector / Jumper / Switch Definition

List of Connector / Jumper / Switch

Connector Location	Definition
12V_24V_1	12V / 24V Car Battery Switch
AT_ATX1	AT / ATX Power Mode Switch
AUDIO1	Audio Jack
CAR_PWR1	Car Power Enable / Disable Switch
CFAST1	CFast Connector
CLR_CMOS1	Clear BIOS Switch
CN1	Remote Power on / off Switch
CN2	PS/2 and USB2.0 Ports
CN3	LAN2 and USB3.0 Ports
CN4	LAN1 and USB2.0 Ports
CN13	Mini PCI-Express / mSATA Socket
CN14	mSATA Socket
COM1_2_1, COM3_4_1, COM5_6_1	RS232 / RS422 / RS485 Connector
COM12_SEL1, COM34_SEL1, COM56_SEL1	COM1 / COM2 / COM3 / COM4 / COM5 / COM6 with Power Select
DC_IN1	3-pin DC 9~48V Power Input with Power Ignition Connector
DIO1	4DI / 4DO Connector
DP1, DP2	DisplayPort Connector
DVI_I1	DVI-I Connector
FAN2	External PWM Fna Connector
LED1	System LED Connector
MINIPCIE1	Mini PCI-Express Socket
PCIE1	PCI-Express X16 Socket
PCIE2	PCI-Express X1 Socket
POWER1, POWER2, POWER3, POWER4	Power Connector
PWR_SW1	Power Switch
SATA1, SATA2	SATA with Power Connector
SATA3	SATA Connector
SIM1	SIM Card Socket
SW2	System Power off Timing Setting
USB11_12_1	USB 2.0 Ports
USB3_1, USB3_2	USB 3.0 Ports

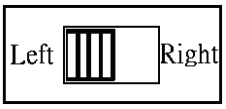
2.4 Switches Definitions

12V_24V_1: 12V / 24V Car Battery Switch

Pin	Definition
1-2	24V Car Battery Input (Default)
2-3	12V Car Battery Input

AT_ATX1: AT / ATX Power Mode Switch

Pin	Definition
1-2 (Left)	AT Power Mode
2-3 (Right)	ATX Power Mode (Default)

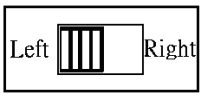


CAR_PWR1: Car Power Enable / Disable Switch

Pin	Definition
1-2	Car Power Disable (Default)
2-3	Car Power Enable

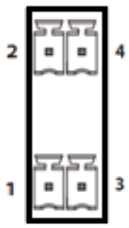
CLR_CMOS1: Clear BIOS Switch

Pin	Definition
1-2 (Left)	Normal Status (Default)
2-3 (Right)	Clear BIOS



CN1: Remote Power on / off Switch

Pin	Definition
1	PWR_SW
2	RESET_SW
3	GND
4	GND



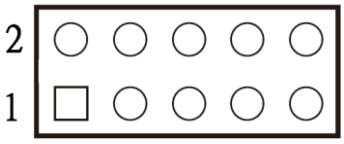
PWR_SW1: Power Switch

Switch	Definition
1	Power Button
2	NC
3	GND
4	GND
L1	NC
L2	NC
L3	NC
L4	GND

2.5 Jumpers Definitions

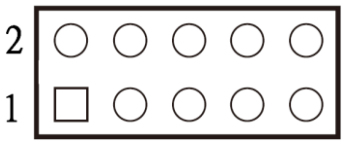
COM12_SEL1: COM1 / COM2 with Power Select
Connector Type: 2X5 10-pin Header, 2.54mm pitch

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)	RI1	8-10 On (Default)	RI2



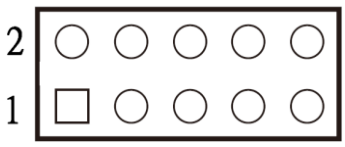
COM34_SEL1: COM3 / COM4 with Power Select
Connector Type: 2X5 10-pin Header, 2.54mm pitch

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)	RI3	8-10 On (Default)	RI4



COM56_SEL1: COM5 / COM6 with Power Select
Connector Type: 2X5 10-pin Header, 2.54mm pitch

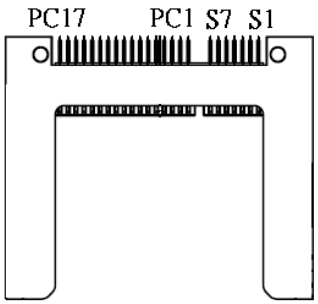
COM5		COM6	
Pin	**Definition**	**Pin**	**Definition**
1-3 On	+5V	2-4 On	+5V
3-5 On	+12V	4-6 On	+12V
7-9 On (Default)	RI5	8-10 On (Default)	RI6



2.6 Connectors Definitions

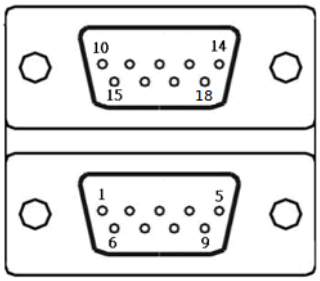
CFAST1: CFast Connector

Pin	Definition	Pin	Definition	Pin	Definition
S1	GND	PC1	NC	PC10	NC
S2	TX+	PC2	GND	PC11	NC
S3	TX-	PC3	NC	PC12	NC
S4	GND	PC4	NC	PC13	+3.3V
S5	RX-	PC5	NC	PC14	+3.3V
S6	RX+	PC6	NC	PC15	GND
S7	GND	PC7	GND	PC16	GND
		PC8	NC	PC17	NC
		PC9	NC		



COM1_2_1: RS232 / RS422 / RS485 Connector

Connector Type: 9-pin D-Sub

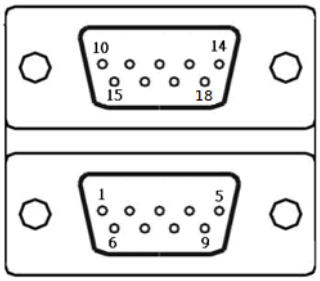


COM1			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
1	DCD1	TX1-	DATA1-
2	RxD1	TX1+	DATA1+
3	TxD1	RX1+	
4	DTR1	RX1-	
5	GND1		
6	DSR1		
7	RTS1		
8	CTS1		
9	RI1		

COM2			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
10	DCD2	TX2-	DATA2-
11	RxD2	TX2+	DATA2+
12	TxD2	RX2+	
13	DTR2	RX2-	
14	GND2		
15	DSR2		
16	RTS2		
17	CTS2		
18	RI2		

COM3_4_1: RS232 / RS422 / RS485 Connector

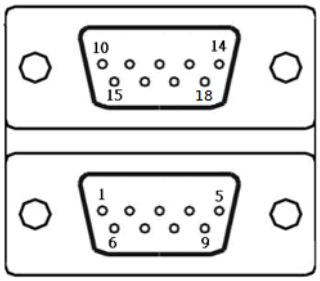
Connector Type: 9-pin D-Sub



COM3			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
1	DCD3	TX3-	DATA3-
2	RxD3	TX3+	DATA3+
3	TxD3	RX3+	
4	DTR3	RX3-	
5	GND3		
6	DSR3		
7	RTS3		
8	CTS3		
9	RI3		

COM4			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
10	DCD4	TX4-	DATA4-
11	RxD4	TX4+	DATA4+
12	TxD4	RX4+	
13	DTR4	RX4-	
14	GND4		
15	DSR4		
16	RTS4		
17	CTS4		
18	RI4		

COM5_6_1: RS232 / RS422 / RS485 Connector
Connector Type: 9-pin D-Sub



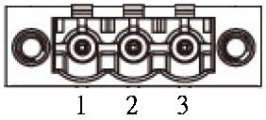
COM5			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
1	DCD5	TX5-	DATA5-
2	RxD5	TX5+	DATA5+
3	TxD5	RX5+	
4	DTR5	RX5-	
5	GND5		
6	DSR5		
7	RTS5		
8	CTS5		
9	RI5		

COM6			
Pin	**RS232 Definition**	**RS422 / 485 Full Duplex Definition**	**RS485 Half Duplex Definition**
10	DCD6	TX6-	DATA6-
11	RxD6	TX6+	DATA6+
12	TxD6	RX6+	
13	DTR6	RX6-	
14	GND6		
15	DSR6		
16	RTS6		
17	CTS6		
18	RI6		

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

Connector Type: Terminal Block 1X3 3-pin, 5.0mm pitch

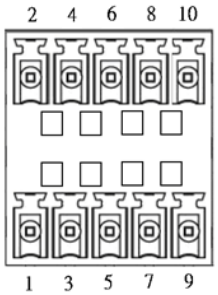
Pin	Definition
1	+9~48VIN
2	Ignition (IGN)
3	GND

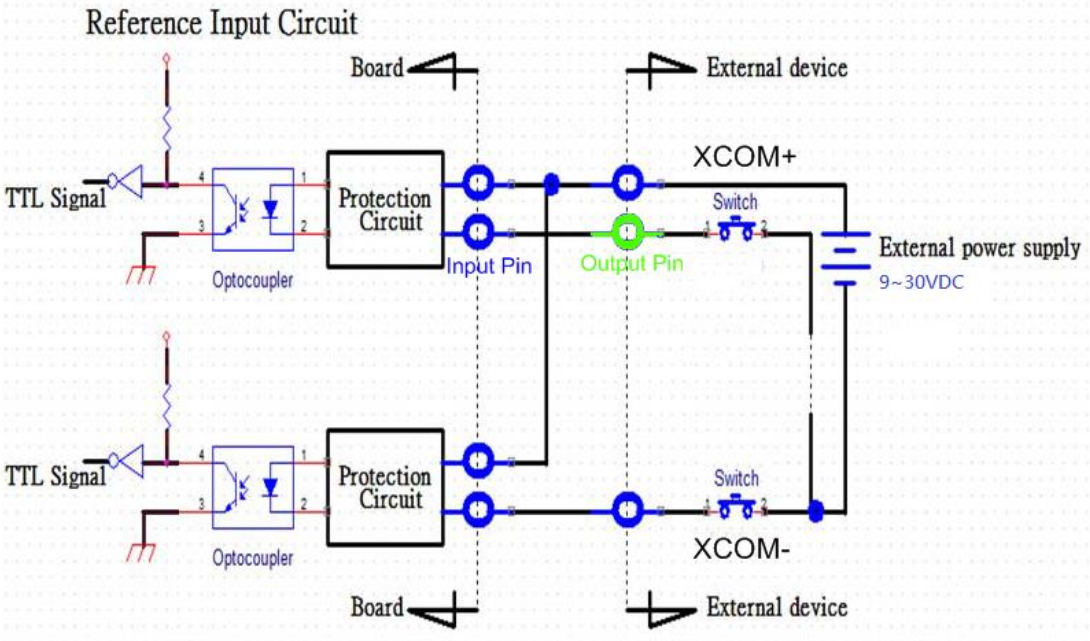


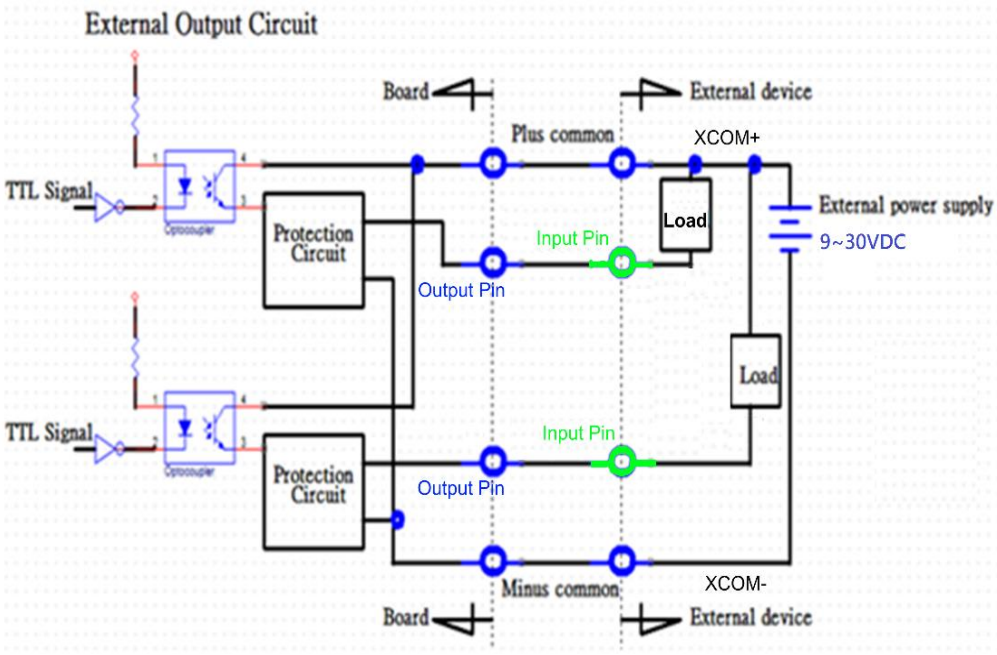
DIO1: Digital Input / Output Connector

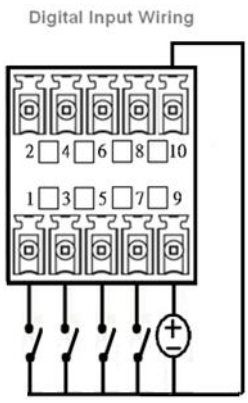
Connector Type: Terminal Block 2X5 10-pin, 3.5mm pitch

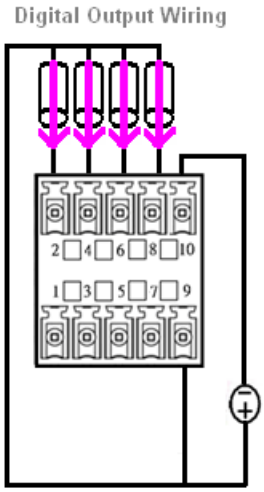
Pin	Definition	Pin	Definition
1	DI1	2	DO1
3	DI2	4	DO2
5	DI3	6	DO3
7	DI4	8	DO4
9	DC INPUT	10	GND





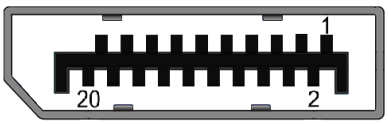






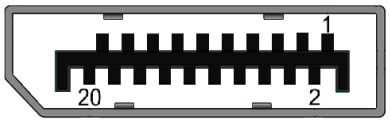
DP1: DisplayPort Connector

Pin	Definition	Pin	Definition
1	DPC_LANE0_P	11	GND
2	GND	12	DPC_LANE3_N
3	DPC_LANE0_N	13	GND
4	DPC_LANE1_P	14	GND
5	GND	15	DPC_AUX_P
6	DPC_LANE1_N	16	GND
7	DPC_LANE2_P	17	DPC_AUX_N
8	GND	18	DPC_HPD
9	DPC_LANE2_N	19	GND
10	DPC_LANE3_P	20	DPC_PWR



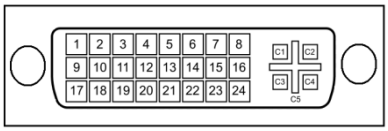
DP2: DisplayPort Connector

Pin	Definition	Pin	Definition
1	DPD_LANE0_P	11	GND
2	GND	12	DPD_LANE3_N
3	DPD_LANE0_N	13	GND
4	DPD_LANE1_P	14	GND
5	GND	15	DPD_AUX_P
6	DPD_LANE1_N	16	GND
7	DPD_LANE2_P	17	DPD_AUX_N
8	GND	18	DPD_HPD
9	DPD_LANE2_N	19	GND
10	DPD_LANE3_P	20	DPD_PWR



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		



CN2: PS/2 and USB2.0 Ports

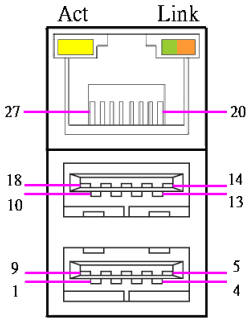
Connector Type: 6-pin Mini-DIN and dual USB 2.0 ports

Pin	Definition	Pin	Definition	Pin	Definition
1	+5V	5	+5V	9	+5V
2	USB2_D10-	6	USB2_D11-	10	MS_DATA
3	USB2_D10+	7	USB2_D11+	11	KB_DATA
4	GND	8	GND	12	GND
				13	MS_CLK
				14	KB_CLK

CN3: LAN2 and USB3.0 Ports

Connector Type: RJ45 port with LEDs and dual USB3.0 ports

Pin	Definition	Pin	Definition	Pin	Definition
1	+5V	10	+5V	20	LAN1_MDI0P
2	USB2_D4-	11	USB2_D5-	21	LAN1_MDI0N
3	USB2_D4+	12	USB2_D5+	22	LAN1_MDI1P
4	GND	13	GND	23	LAN1_MDI2P
5	USB3_RX0-	14	USB3_RX1-	24	LAN1_MDI2N
6	USB3_RX0+	15	USB3_RX1+	25	LAN1_MDI1N
7	GND	16	GND	26	LAN1_MDI3P
8	USB3_TX0-	17	USB3_TX1-	27	LAN1_MDI3N
9	USB3_TX0+	18	USB3_TX1+		

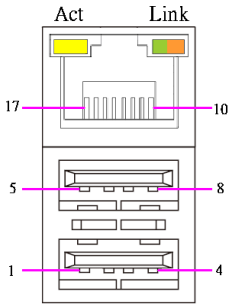


Act LED Status	Definition	Link LED Status	Definition
Blinking Yellow	Data Activity	Steady Green	1Gbps Network Link
Off	No Activity	Steady Orange	100Mbps Network Link
		Off	10Mbps Network Link

CN4: LAN1 and USB2.0 Ports

Connector Type: RJ45 port with LEDs and dual USB2.0 ports

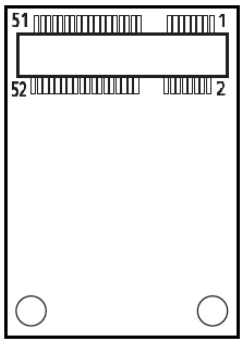
Pin	Definition	Pin	Definition
1	+5V	10	LAN2_MDI0P
2	USB2_D2-	11	LAN2_MDI0N
3	USB2_D2+	12	LAN2_MDI1P
4	GND	13	LAN2_MDI2P
5	+5V	14	LAN2_MDI2N
6	USB2_D3-	15	LAN2_MDI1N
7	USB2_D3+	16	LAN2_MDI3P
8	GND	17	LAN2_MDI3N



Act LED Status	Definition	Link LED Status	Definition
Blinking Yellow	Data Activity	Steady Green	1Gbps Network Link
Off	No Activity	Steady Orange	100Mbps Network Link
		Off	10Mbps Network Link

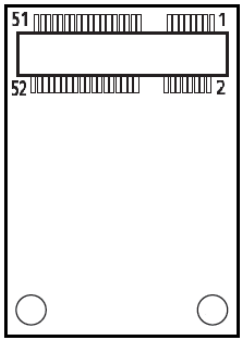
CN13: Mini PCI-Express / mSATA Socket

Pin	Definition	Pin	Definition	Pin	Definition
1	WAKE#	19	NC	37	GND
2	+3.3V	20	+3.3V	38	USB2_D9+
3	NC	21	GND	39	+3.3V
4	GND	22	MINIPCIE RST#	40	GND
5	NC	23	MINIPCIE_RXN8 / SATA_RXP4	41	+3.3V
6	+1.5V	24	+3.3V	42	NC
7	CLKREQ#	25	MINIPCIE_RXP8 / SATA_RXN4	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_TXN8 / SATA_TXN4	49	NC
14	NC	32	SMB_DATA	50	GND
15	GND	33	MINIPCIE_TXP8 / SATA_TXP4	51	NC
16	NC	34	GND	52	+3.3V
17	NC	35	GND		
18	GND	36	USB2_D9-		



CN14: mSATA Socket

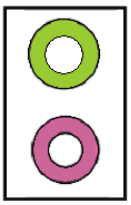
Pin	Definition	Pin	Definition	Pin	Definition
1	WAKE#	19	NC	37	GND
2	+3.3V	20	+3.3V	38	USB2_D6+
3	NC	21	GND	39	+3.3V
4	GND	22	MINIPCIE RST#	40	GND
5	NC	23	SATA_RXP5	41	+3.3V
6	+1.5V	24	+3.3V	42	NC
7	CLKREQ#	25	SATA_RXN5	43	GND
8	NC	26	GND	44	NC
9	GND	27	GND	45	NC
10	NC	28	+1.5V	46	NC
11	CLKN	29	GND	47	NC
12	NC	30	SMB_CLK	48	+1.5V
13	CLKP	31	SATA_TXN5	49	NC
14	NC	32	SMB_DATA	50	GND
15	GND	33	SATA_TXP5	51	NC
16	NC	34	GND	52	+3.3V
17	NC	35	GND		
18	GND	36	USB2_D6-		



AUDIO1: Speaker-out Jack (Green) and Microphone Jack (Pink)

Connector Type: 5-pin Phone Jack

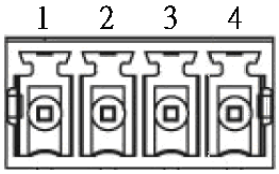
Pin	Definition	Pin	Definition
1	GND	22	OUT_L
2	MIC_L	23	GND
3	GND	24	OUT_JD
4	MIC_JD	25	OUT_R
5	MIC_R		



FAN2: External PWM Fan Connector

Connector Type: Terminal Block 1X4 4-pin, 3.5mm pitch

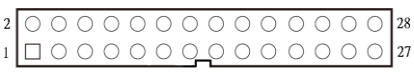
Pin	Definition
1	GND
2	+12V
3	SENSE
4	Control



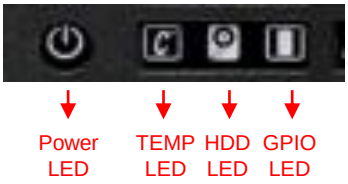
LED1: System LED Connector

Connector Type: 2X10 20-pin box header, 2.0mm pitch

Pin	Definition	Pin	Definition
1	+3.3VSB	2	Suspend LED
3	+3.3V	4	Power LED
5	+3.3V	6	GPIO LED
7	+3.3V	8	HDD LED
9	+3.3V	10	Temperature LED (Green)
11	+3.3V	12	Temperature LED (Blue)
13	+3.3V	14	Temperature LED (Red)
15	+3.3V	16	LAN1 Activity LED
17	+3.3V	18	LAN1 1Gbps Link LED
19	+3.3V	20	LAN1 100Mbps Link LED
21	+3.3VSB	22	LAN2 Activity LED
23	+3.3VSB	24	LAN2 1Gbps Link LED
25	+3.3VSB	26	LAN2 100Mbps Link LED
27	NC	28	GND

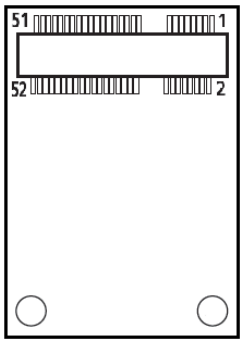


LED B1	Status	LED Color
Power LED	Power ON	Green
	Standby	Blinking Green and Blue
HDD LED	HDD Read/Write	Blinking Yellow
TEMP LED	System Temp ≤ 65˚C	Colorless
	65˚C < System Temp ≤ 70˚C	Blue
	70˚C < System Temp ≤ 75˚C	Red
	75˚C < System Temp	Blinking Red



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_D7+
3	NC	21	GND	39	+3.3V
4	GND	22	MINIPCIE RST#	40	GND
5	NC	23	MINIPCIE_RXN7	41	+3.3V
6	+1.5V	24	+3.3V	42	NC
7	CLKREQ#	25	MINIPCIE_RXP7	43	GND
8	UIM_PWR	26	GND	44	NC
9	GND	27	GND	45	CLINK_CLK
10	UIM_DATA	28	+1.5V	46	NC
11	MINIPCIE_CLKN	29	GND	47	CLINK_DATA
12	UIM_CLK	30	SMB_CLK	48	+1.5V
13	MINIPCIE_CLKP	31	MINIPCIE_TXN7	49	CLINK_RST
14	UIM_RESET	32	SMB_DATA	50	GND
15	GND	33	MINIPCIE_TXP7	51	GND
16	UIM_VPP	34	GND	52	+3.3V
17	NC	35	GND		
18	GND	36	USB2_D7-		



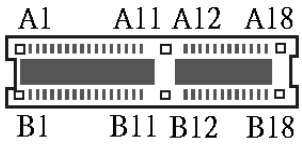
PCIE1: PCI-Express X16 Socket

Connector Type: PCI-Express X16 Slot

Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
A1	PCIE_PRSNT1	A42	GND	B1	+12V	B42	PEG_TXN6
A2	+12V	A43	PEG_RXP6	B2	+12V	B43	GND
A3	+12V	A44	PEG_RXN6	B3	+12V	B44	GND
A4	GND	A45	GND	B4	GND	B45	PEG_TXP7
A5	NC	A46	GND	B5	SMB_CLK	B46	PEG_TXN7
A6	NC	A47	PEG_RXP7	B6	SMB_DATA	B47	GND
A7	NC	A48	PEG_RXN7	B7	GND	B48	PRSNT2_3
A8	NC	A49	GND	B8	+3.3V	B49	GND
A9	+3.3V	A50	NC	B9	NC	B50	PEG_TXP8
A10	+3.3V	A51	GND	B10	+3.3VSB	B51	PEG_TXN8
A11	PCIE_RESET#	A52	PEG_RXP8	B11	PCIE_WAKE#	B52	GND
A12	GND	A53	PEG_RXN8	B12	NC	B53	GND
A13	PEG_CLK_P	A54	GND	B13	GND	B54	PEG_TXP9
A14	PEG_CLK_N	A55	GND	B14	PEG_TXP0	B55	PEG_TXN9
A15	GND	A56	PEG_RXP9	B15	PEG_TXN0	A56	GND
A16	PEG_RXP0	A57	PEG_RXN9	B16	GND	B57	GND
A17	PEG_RXN0	A58	GND	B17	PRSNT2_1	B58	PEG_TXP10
A18	GND	A59	GND	B18	GND	B59	PEG_TXN10
A19	NC	A60	PEG_RXP10	B19	PEG_TXP1	B60	GND
A20	GND	A61	PEG_RXN10	B20	PEG_TXN1	B61	GND
A21	PEG_RXP1	A62	GND	B21	GND	B62	PEG_TXP11
A22	PEG_RXN1	A63	GND	B22	GND	B63	PEG_TXN11
A23	GND	A64	PEG_RXP11	B23	PEG_TXP2	B64	GND
A24	GND	A65	PEG_RXN11	B24	PEG_TXN2	B65	GND
A25	PEG_RXP2	A66	GND	B25	GND	B66	PEG_TXP12
A26	PEG_RXN2	A67	GND	B26	GND	B67	PEG_TXN12
A27	GND	A68	PEG_RXP12	B27	PEG_TXP3	B68	GND
A28	GND	A69	PEG_RXN12	B28	PEG_TXN3	B69	GND
A29	PEG_RXP3	A70	GND	B29	GND	B70	PEG_TXP13
A30	PEG_RXN3	A71	GND	B30	NC	B71	PEG_TXN13
A31	GND	A72	PEG_RXP13	B31	PRSNT2_2	B72	GND
A32	NC	A73	PEG_RXN13	B32	GND	B73	GND
A33	NC	A74	GND	B33	PEG_TXP4	B74	PEG_TXP14
A34	GND	A75	GND	B34	PEG_TXN4	B75	PEG_TXN14
A35	PEG_RXP4	A76	PEG_RXP14	B35	GND	B76	GND
A36	PEG_RXN4	A77	PEG_RXN14	B36	GND	B77	GND
A37	GND	A78	GND	B37	PEG_TXP5	B78	PEG_TXP15
A38	GND	A79	GND	B38	PEG_TXN5	B79	PEG_TXN15
A39	PEG_RXP5	A80	PEG_RXP15	B39	GND	B80	GND
A40	PEG_RXN5	A81	PEG_RXN15	B40	GND	B81	PRSNT2_4
A41	GND	A82	GND	B41	PEG_TXP6	B82	NC

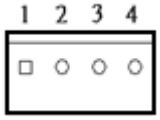
PCIE2: PCI-Express X1 Socket
Connector Type: PCI-Express X1 Slot

Pin	Definition	Pin	Definition
A1	CPUFAN_ CONTROL	B1	+12V
A2	+12V	B2	+12V
A3	+12V	B3	+12V
A4	GND	B4	GND
A5	NC	B5	SMB_CLK
A6	NC	B6	SMB_DATA
A7	NC	B7	GND
A8	NC	B8	+3.3V
A9	+3.3V	B9	NC
A10	+3.3V	B10	+3.3VSB
A11	PCIE_RESET#	B11	PCIE_WAKE#
A12	GND	B12	+12V
A13	PCIE_CLKP	B13	GND
A14	PCIE_CLKN	B14	PCIE_TXP5
A15	GND	B15	PCIE_TXN5
A16	PCIE_RXP5	B16	GND
A17	PCIE_RXN5	B17	CPUFAN_SENSE
A18	GND	B18	GND

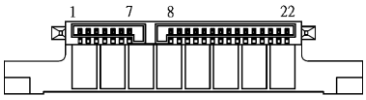


OWER1, POWER2, POWER3, POWER4: Power Connector
Connector Type: 1X4-pin Wafer, 2.54mm pitch

Pin	Definition
1	+5V
2	GND
3	GND
4	+12V

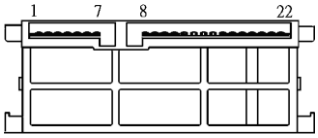


SATA1: SATA with Power Connector



Pin	Definition	Pin	Definition
1	GND	12	GND
2	TX1+	13	GND
3	TX1-	14	+5V
4	GND	15	+5V
5	RX1-	16	+5V
6	RX1+	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

SATA2: SATA with Power Connector



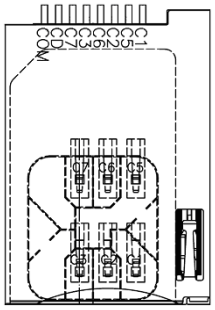
Pin	Definition	Pin	Definition
1	GND	12	GND
2	TX0+	13	GND
3	TX0-	14	+5V
4	GND	15	+5V
5	RX0-	16	+5V
6	RX0+	17	GND
7	GND	18	GND
8	+3.3V	19	GND
9	+3.3V	20	+12V
10	+3.3V	21	+12V
11	GND	22	+12V

SATA3: SATA Connector

Pin	Definition	Pin	Definition
1	GND	5	RX2-
2	TX2+	6	RX2+
3	TX2-	7	GND
4	GND		

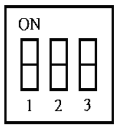
SIM1: SIM Card Socket

Pin	Definition	Pin	Definition
C1	UIM_PWR	C6	UIM_VPP
C2	UIM_RESET	C7	UIM_DATA
C3	UIM_CLK	CD	NC
C5	GND	COM	GND



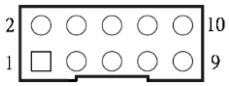
SW2: System Power Off Timing Setting

Pin 1	Pin 2	Pin 3	Time
OFF	OFF	OFF	0 sec.
ON	ON	OFF	1 min.
ON	OFF	ON	5 min.
ON	OFF	OFF	10 min.
OFF	ON	ON	30 min.
OFF	ON	OFF	1 hr
OFF	OFF	ON	2 hr
ON	ON	ON	Reserve



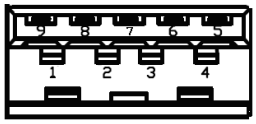
USB11_12_1: USB2.0 Ports

Connector Type: 2X5 10-pin box header, 2.54mm pitch



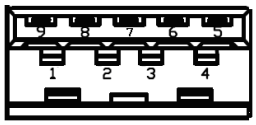
Pin	Definition	Pin	Definition
1	+5V	2	+5V
3	USB2_D0-	4	USB2_D1-
5	USB2_D0+	6	USB2_D1+
7	GND	8	GND
9	Cable Shield	10	Cable Shield

USB3_1: USB 3.0 Port



Pin	Definition	Pin	Definition
1	+5V	6	USB3_RX4+
2	USB2_D13-	7	GND
3	USB2_D13+	8	USB3_TX4-
4	GND	9	USB3_TX4+
5	USB3_RX4-		

USB3_2：USB 3.0 Port



Pin	Definition	Pin	Definition
1	+5V	6	USB3_RX5+
2	USB2_D12-	7	GND
3	USB2_D12+	8	USB3_TX5-
4	GND	9	USB3_TX5+
5	USB3_RX5-		

Chapter 3

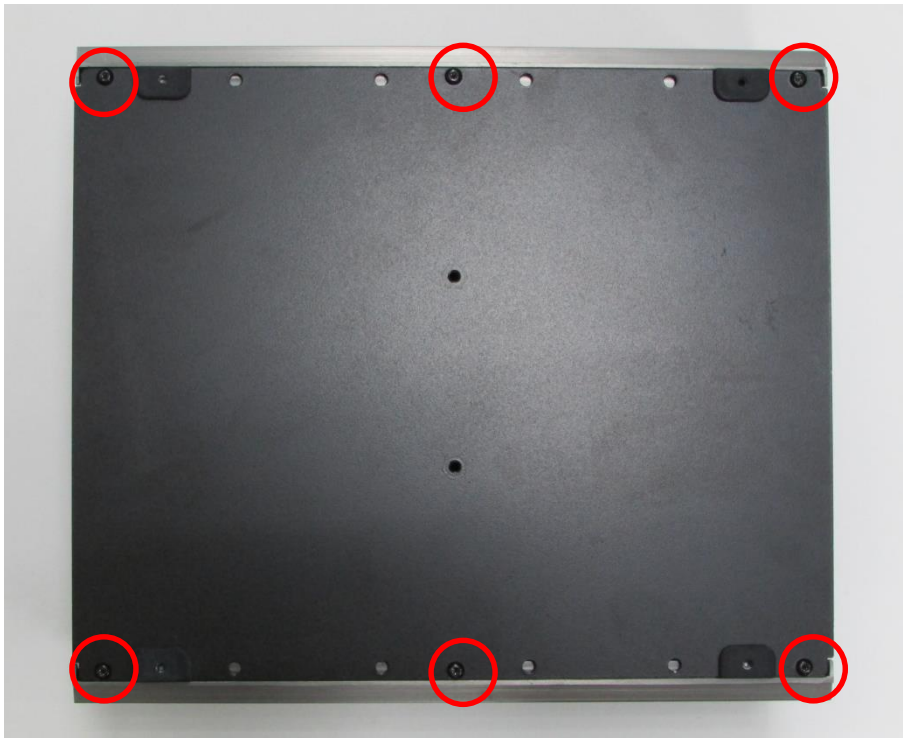
System Setup

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 6 screws of bottom cover and place them aside for later use.

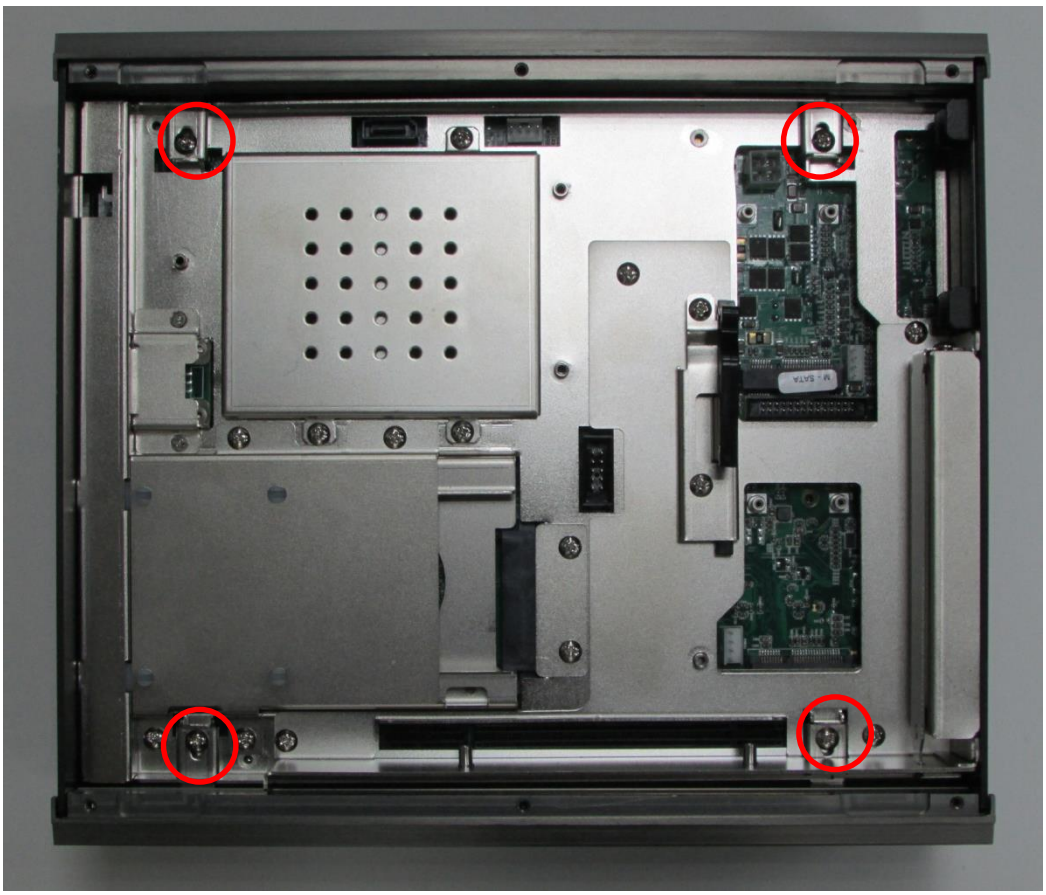


2. Remove the cover from the chassis.

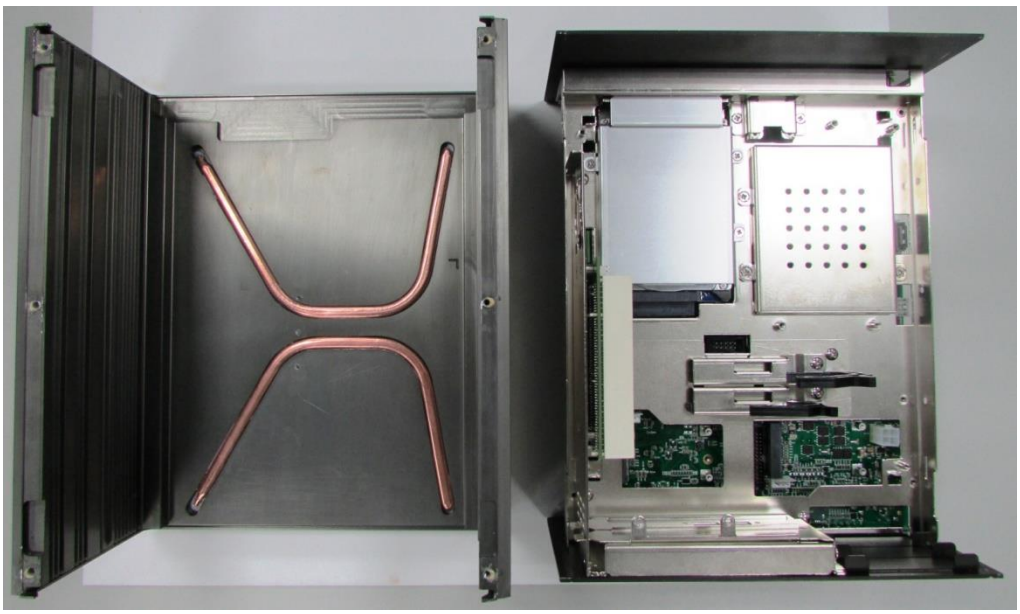
3.2 Removing the Chassis

1. Unscrew the 2 screws in back panel as marked on photo and place them aside for later use.

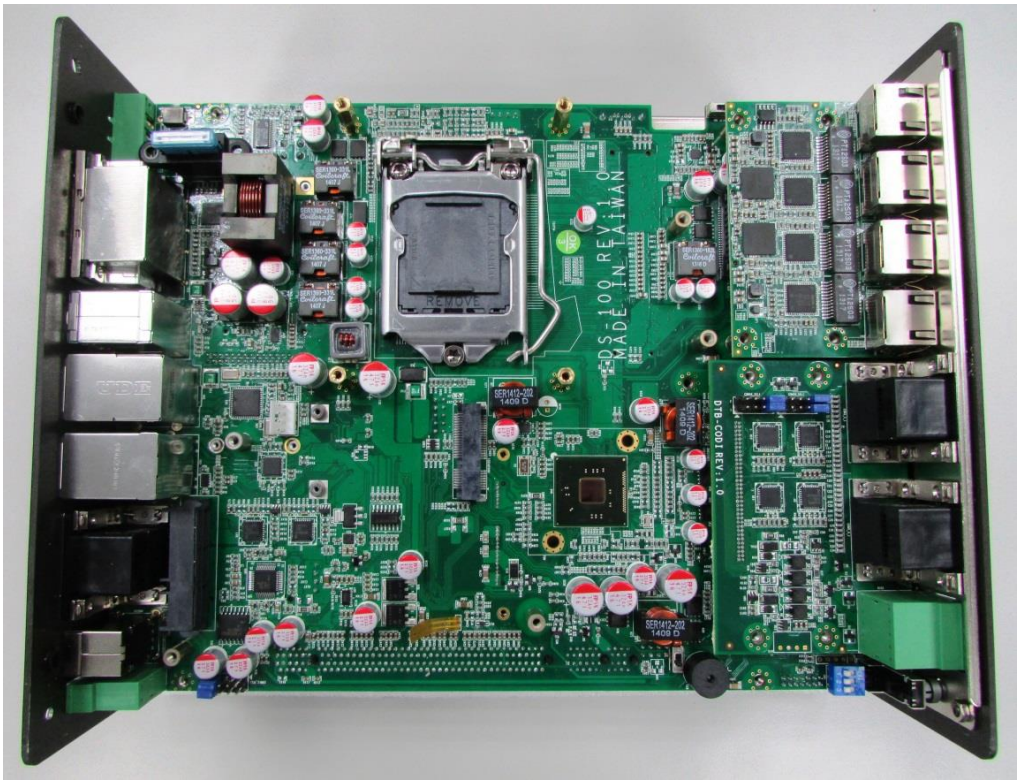
2. Unscrew the 4 screws as marked on photo, remove the base holders and place them aside for later use.



3. Lift up the body of unit vertically by holding the front and rear panel.

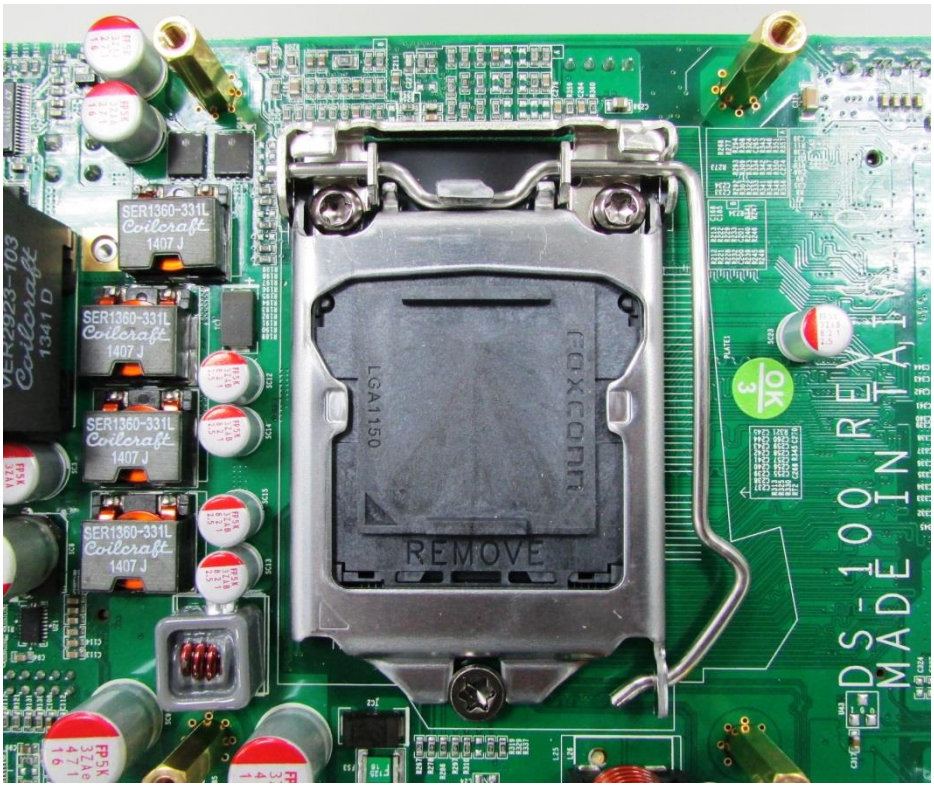


4. Turn over the body of the unit and place it gently.

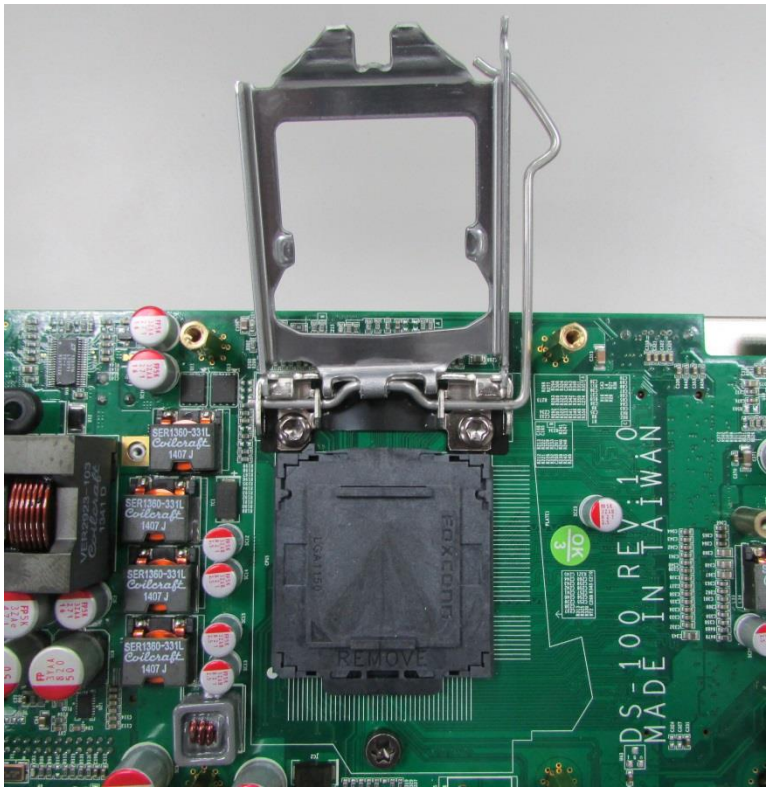


3.3 Installing the CPU

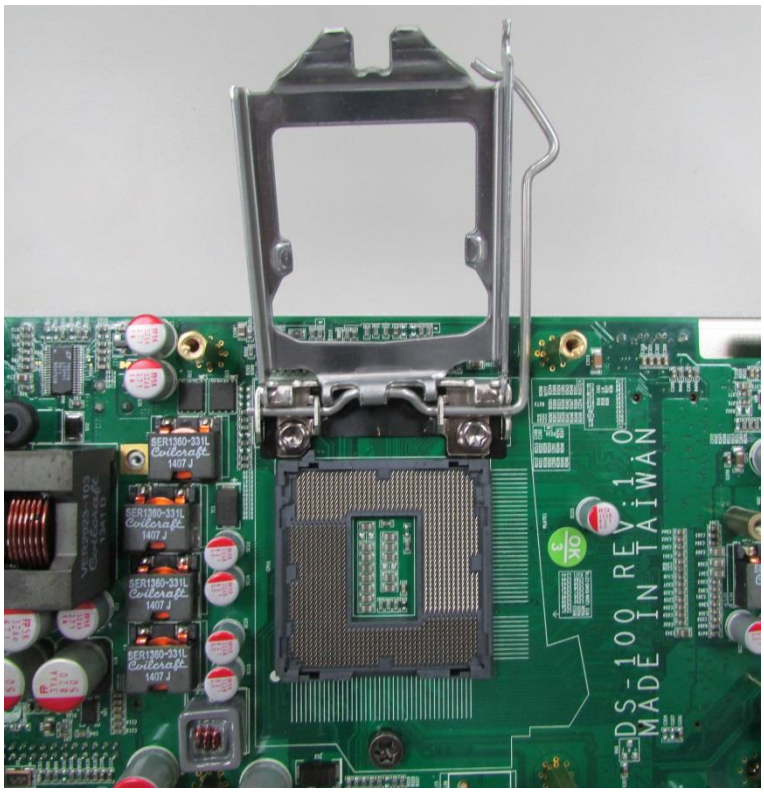
1. Locate the CPU socket.



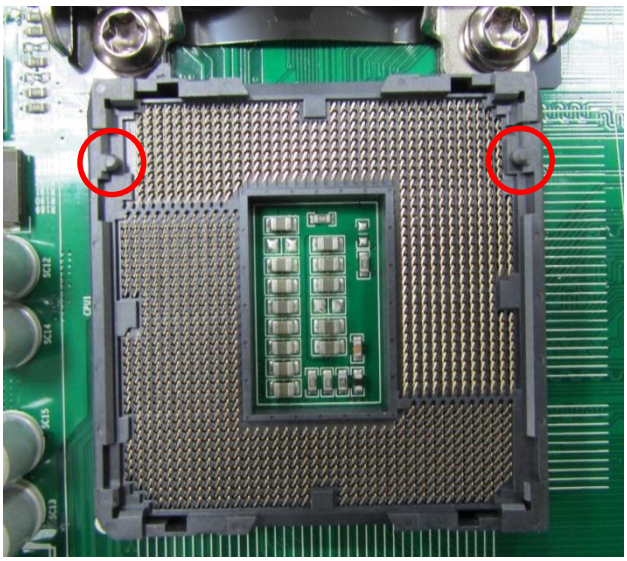
2. Press the metal lever and away from the socket to release it. Pull back the lever to expose the protective cover and socket.



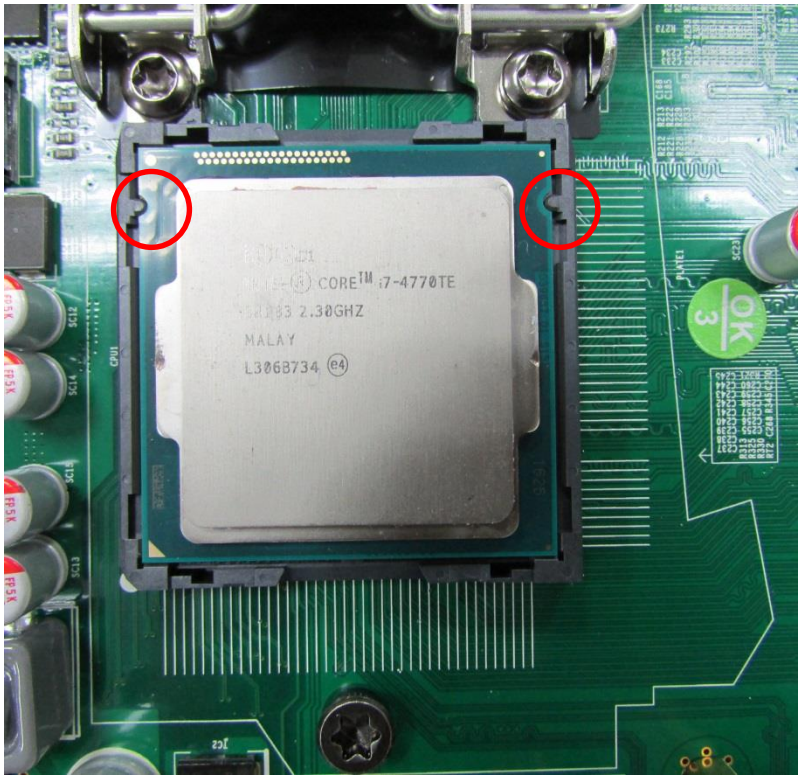
3. Remove the protective cover.



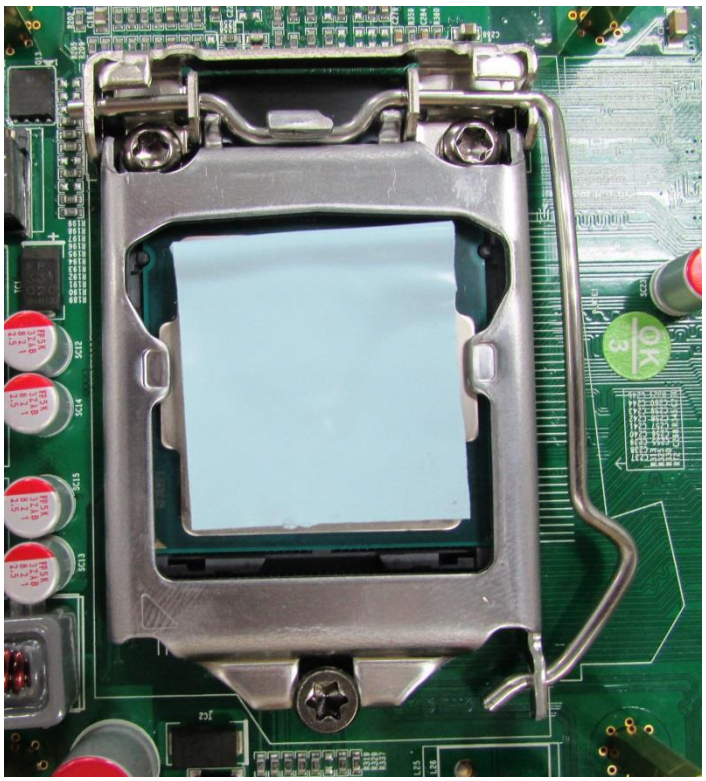
4. Align the notches on CPU with the alignment post on socket.



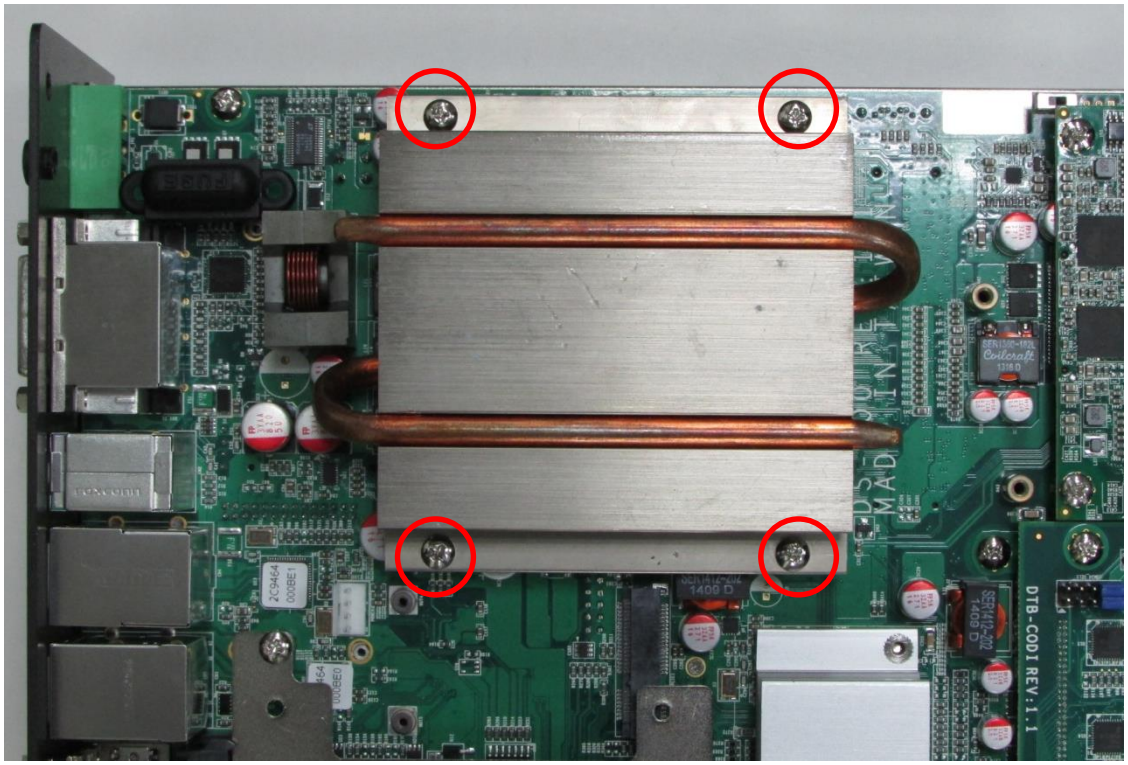
5. The notches of socket provide the space for fingers while lowering the CPU, hold the CPU by the edges toward the notches and insert the CPU gently.



6. Place the thermal pad on the CPU.

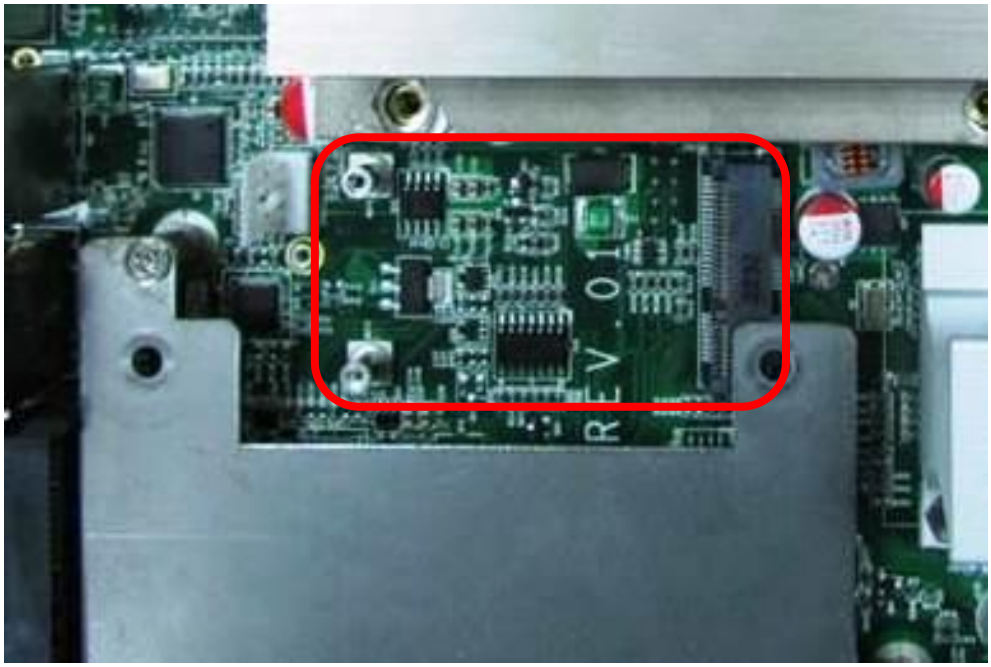


7. Align mounting holes of heat sink with the nut studs and fasten the heat sink with provided 4 screws.



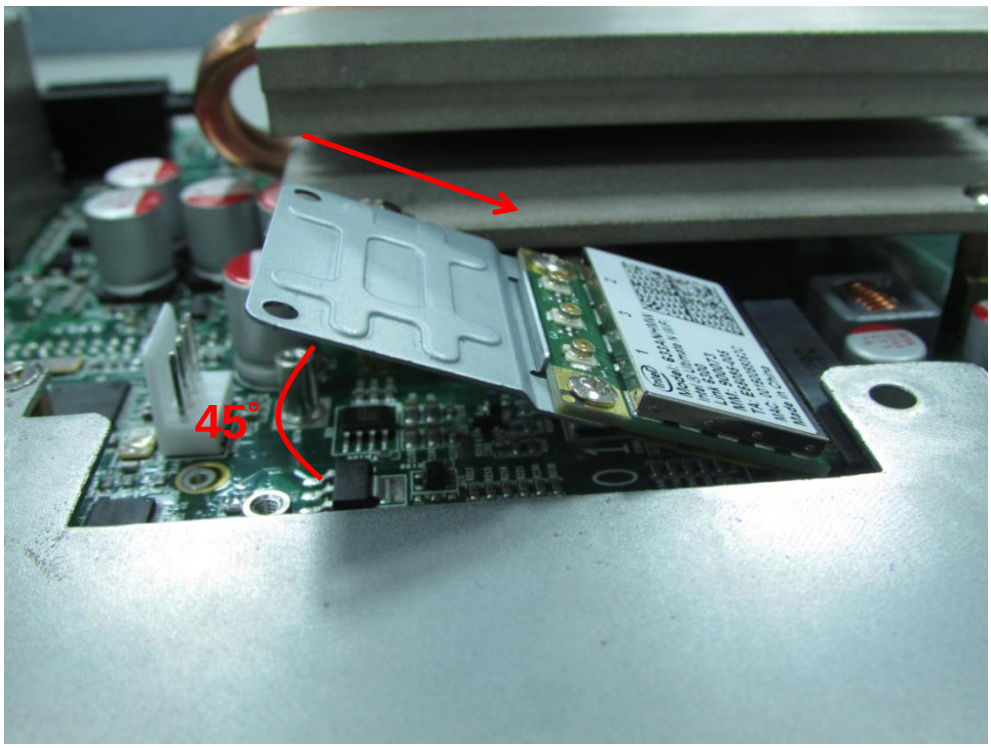
3.4 Installing a Half Size Mini PCIe Card on Top Side

1. Locate the Mini PCIe slot.

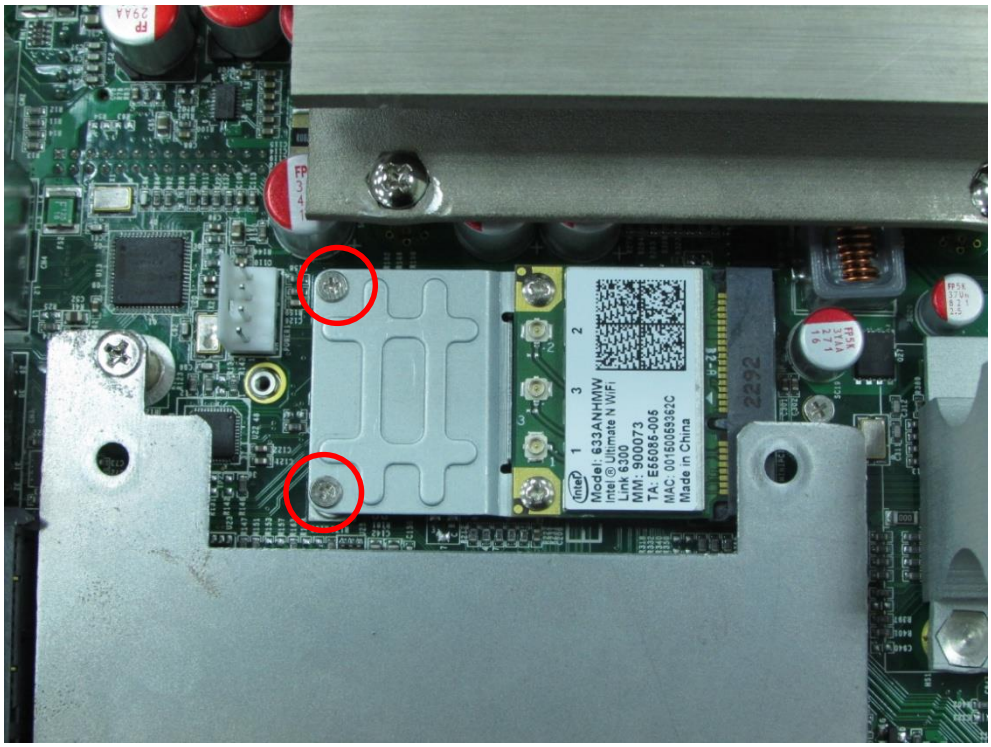


2. Use provided two screws on bracket to fasten the module and bracket together.

3. Tilt the Mini PCIe module at 45 degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

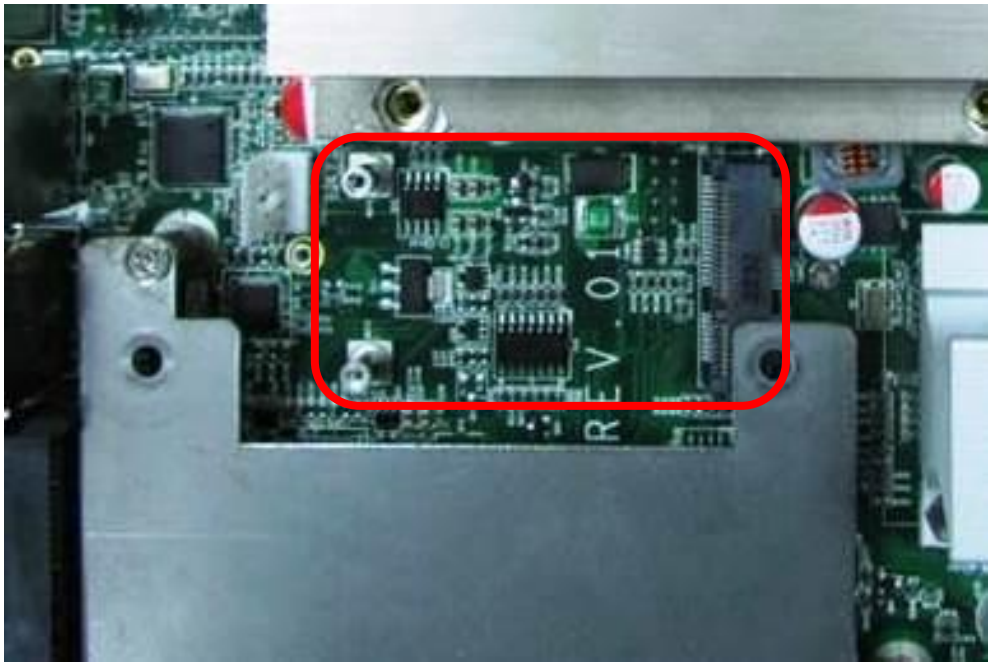


4. Press down the module and use previous two screws to fix the module.

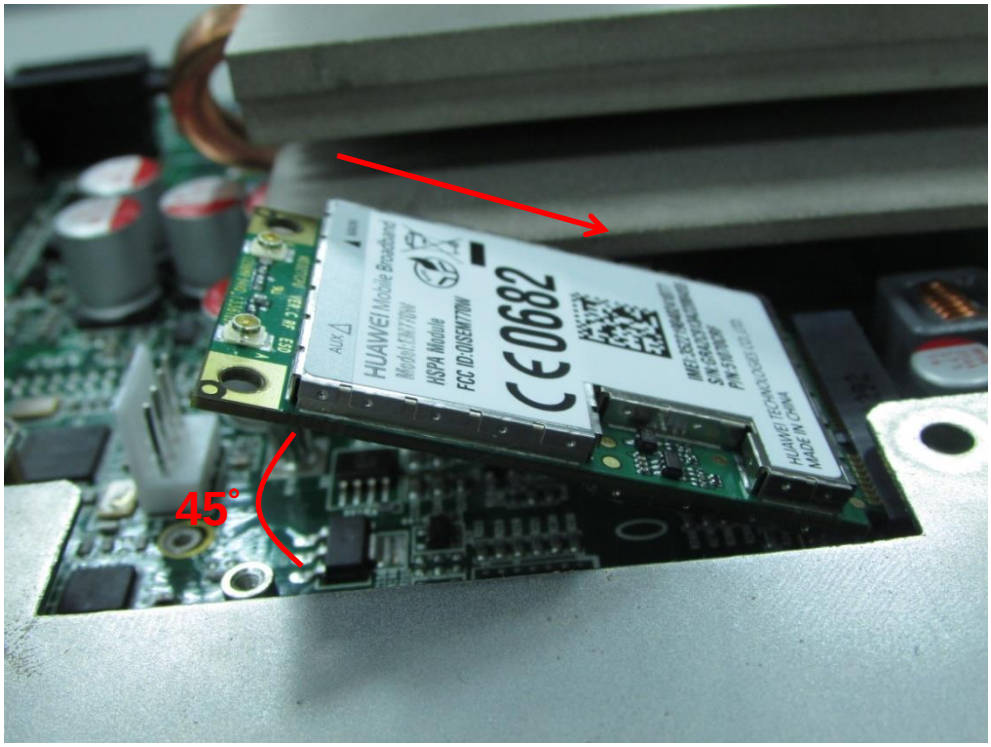


3.5 Installing a Full Size Mini PCIe Card on Top Side

1. Locate the Mini PCIe slot.



2. Tilt the Mini PCIe module at 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 use previous two screws to fix the module.

3.6 Installing Antenna

CAUTION

Please installing a Mini PCIe Wireless Lan Card on top side before you put on washer and fasten the nut with antenna jack.

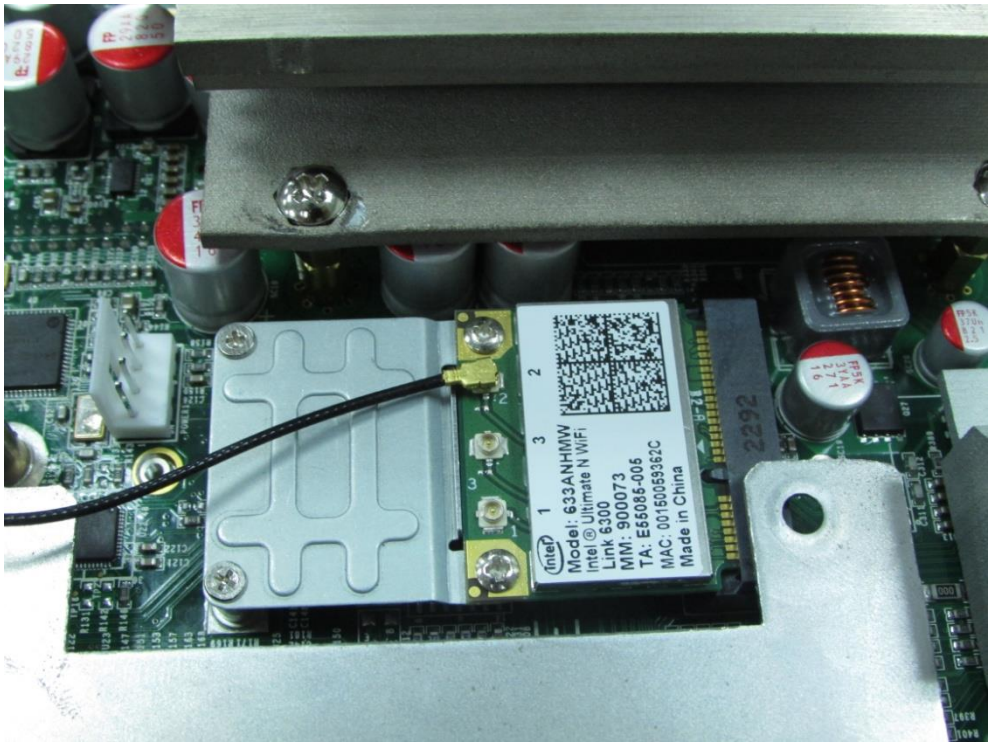
1. Remove the antenna hole covers at rear panel.

2. Have antenna jack penetrate through the hole.

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

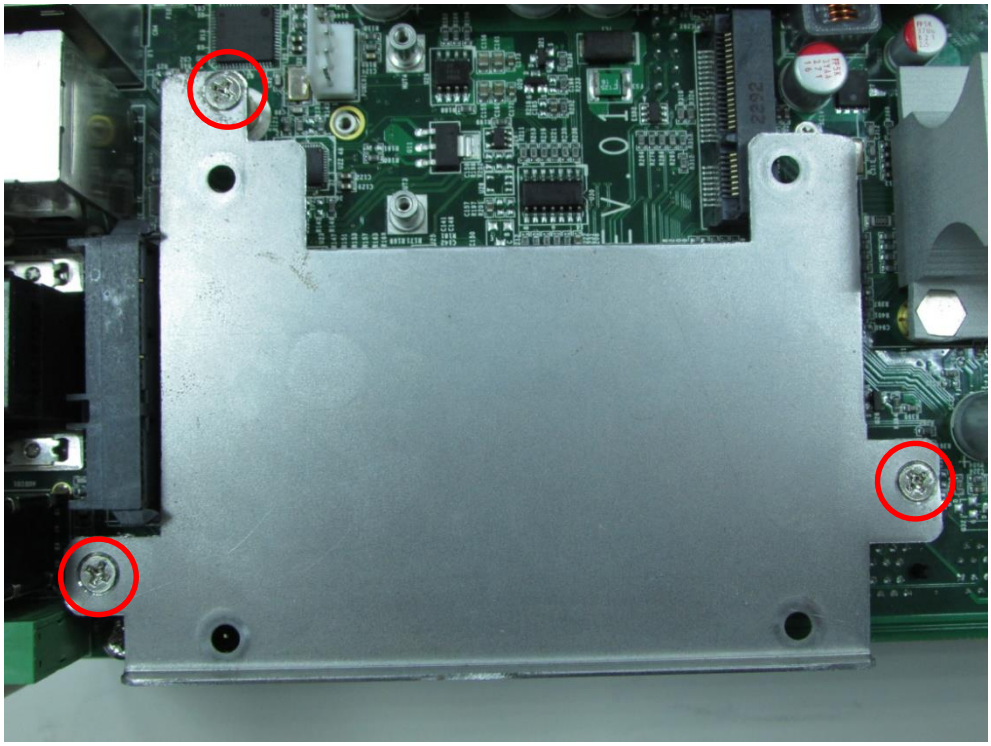
4. Assemble the antenna and antenna jack together.

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

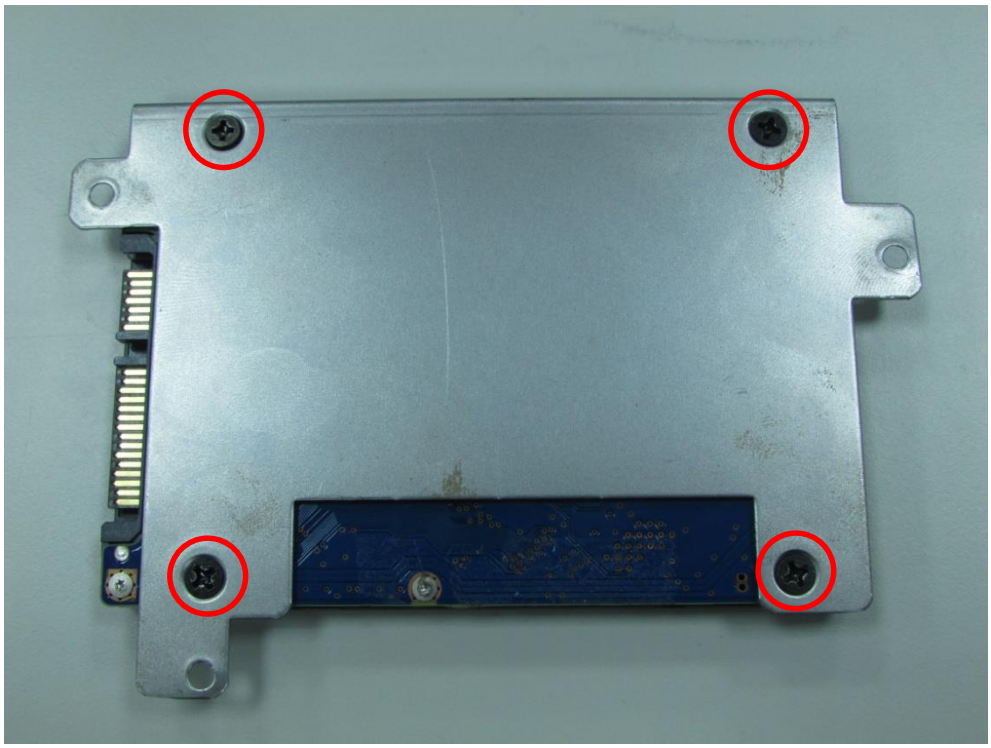


3.7 Installing a SATA Hard Drive on Top Side

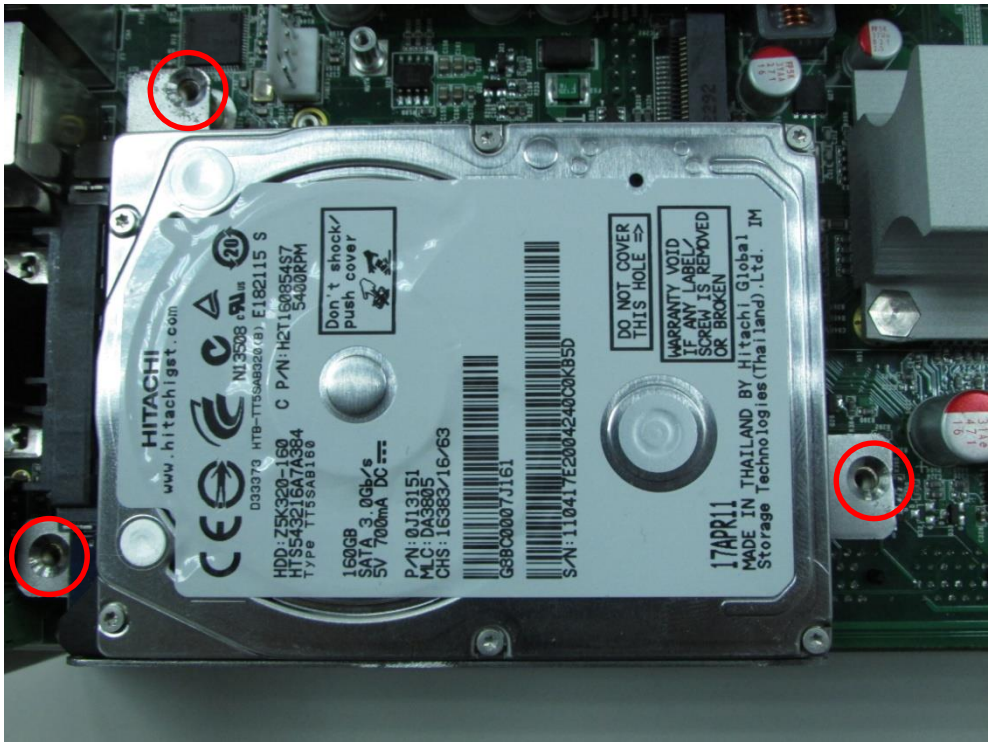
1. Loosen the 3 screws on HDD bracket and remove the bracket.



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.

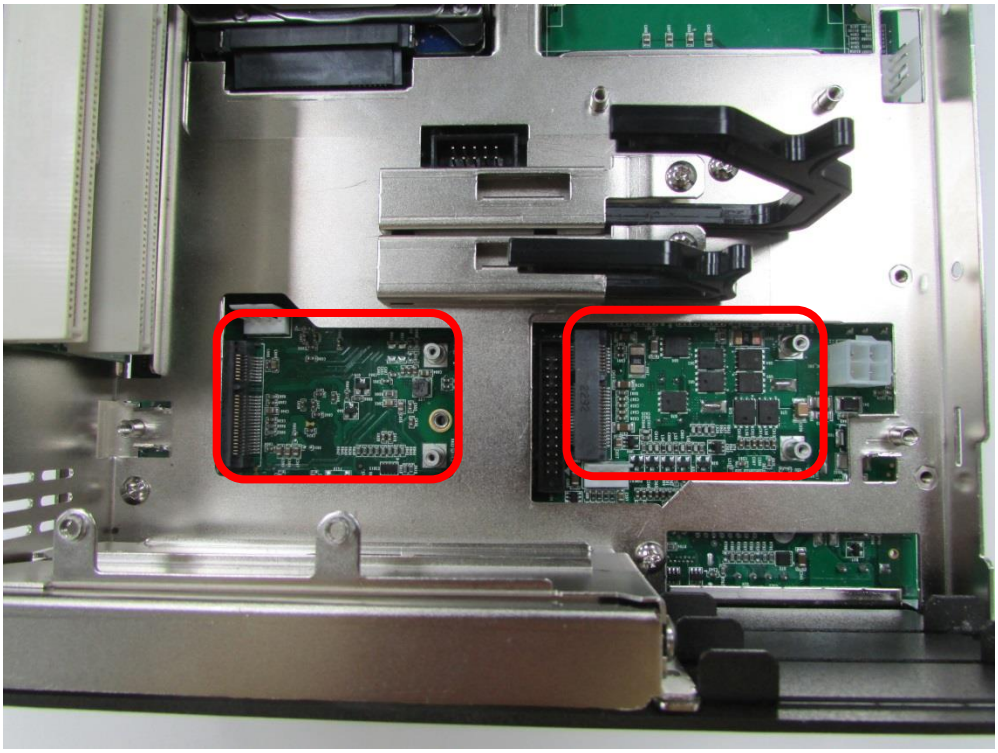


3. Turn over the HDD bracket. Connect the HDD bracket to the SATA connector and fasten the 3 screws .



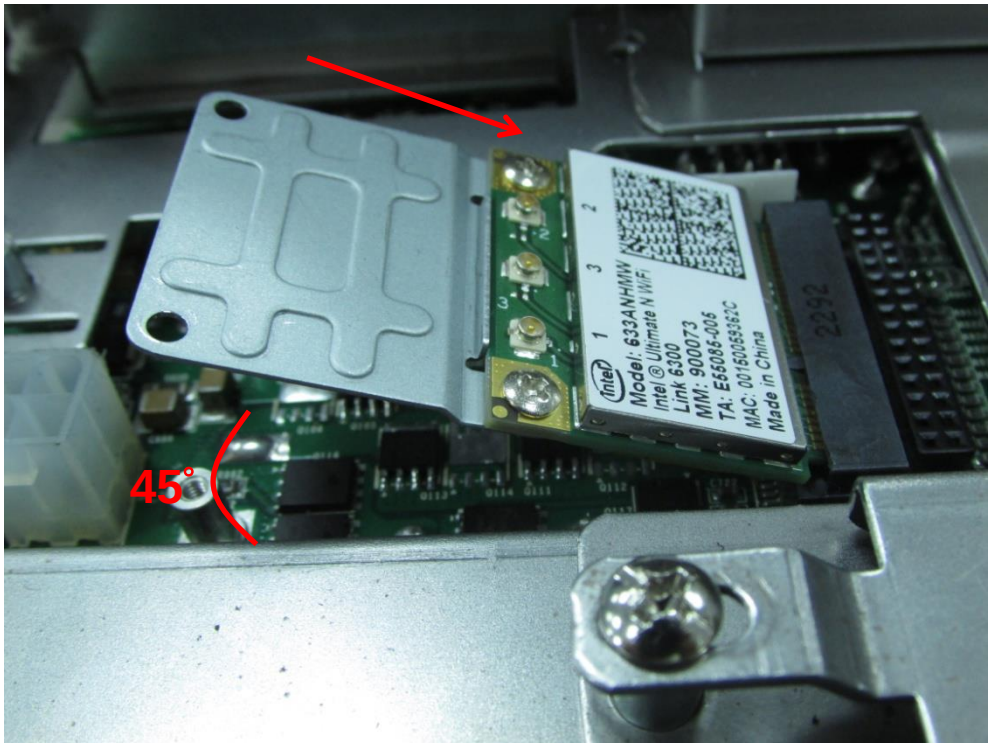
3.8 Installing Half Size Mini PCIe Cards at the Bottom

1. Turn over the body of the unit. Locate a Mini PCIe and a mSATA slots at the bottom.

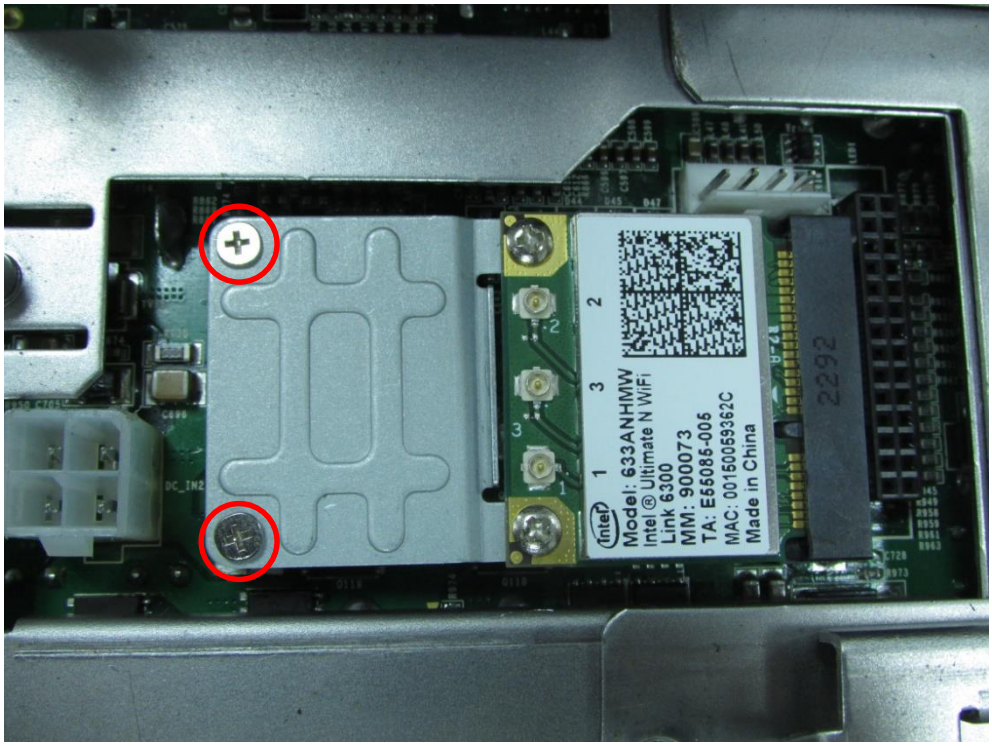


2. Use provided two screws on bracket to fasten the module and bracket together.

3. Tilt the Mini PCIe module at 45 degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

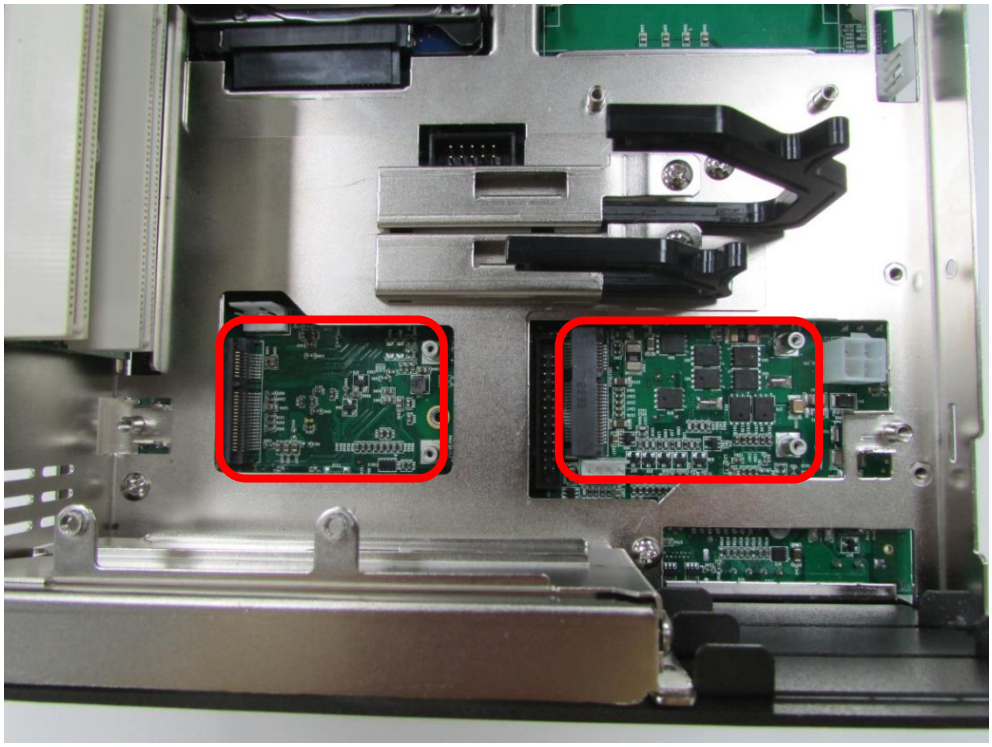


4. Press down the module and use previous two screws to fix the module.

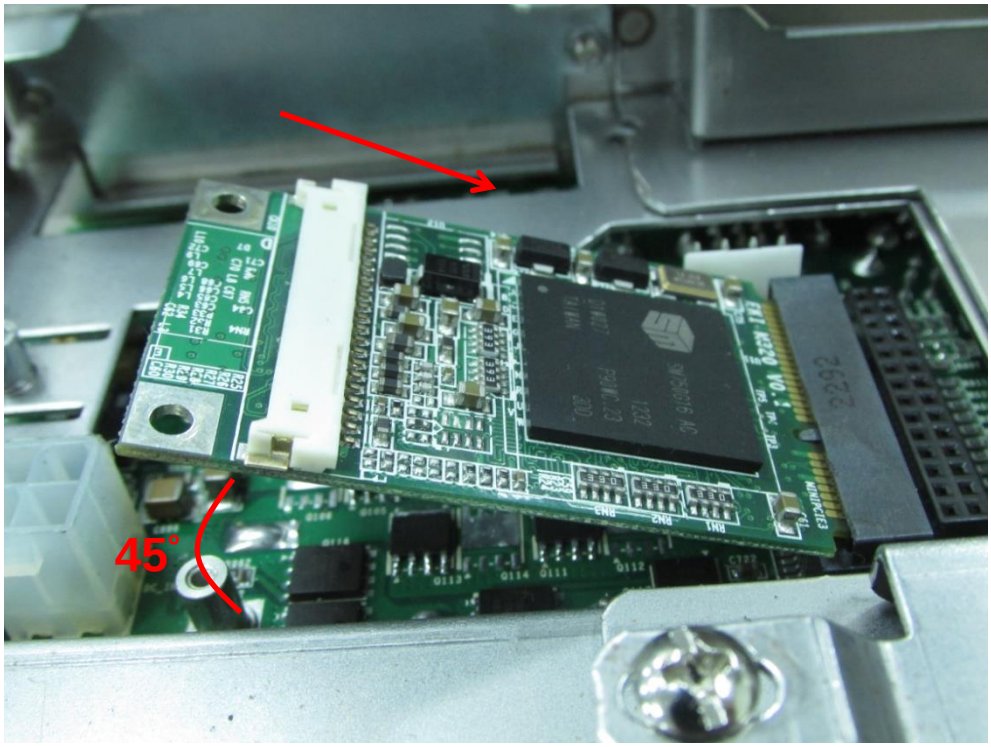


3.9 Installing Full Size Mini PCIe Cards at the Bottom

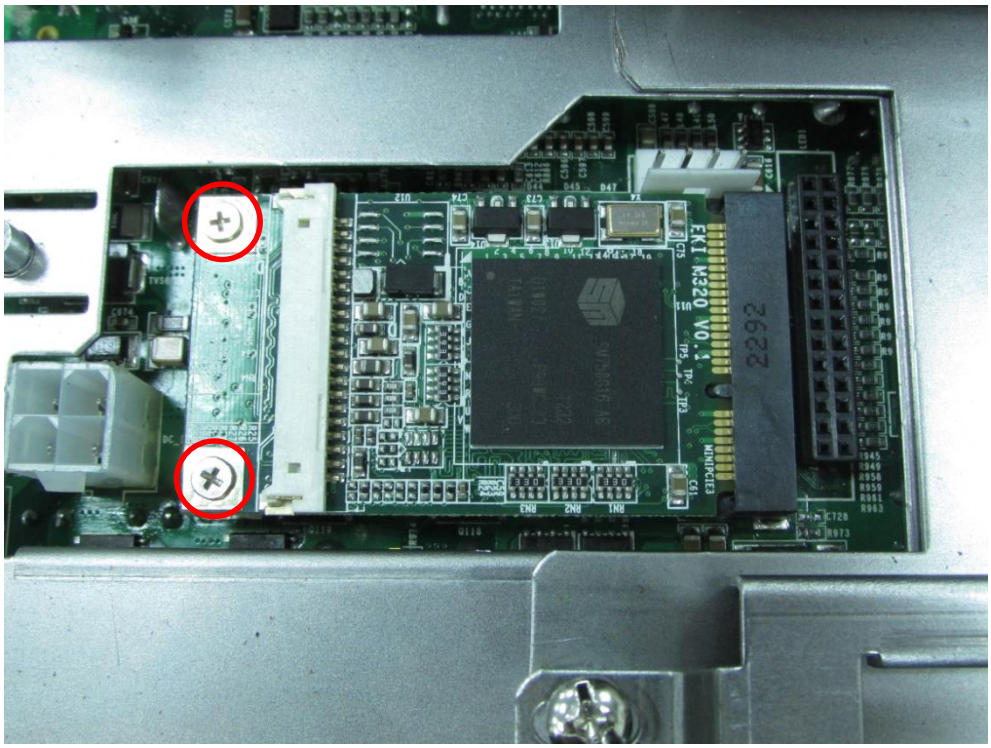
1. Turn over the body of the unit. Locate a Mini PCIe and a mSATA slots at the bottom.



2. Tilt the Mini PCIe or mSATA module at 45 degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

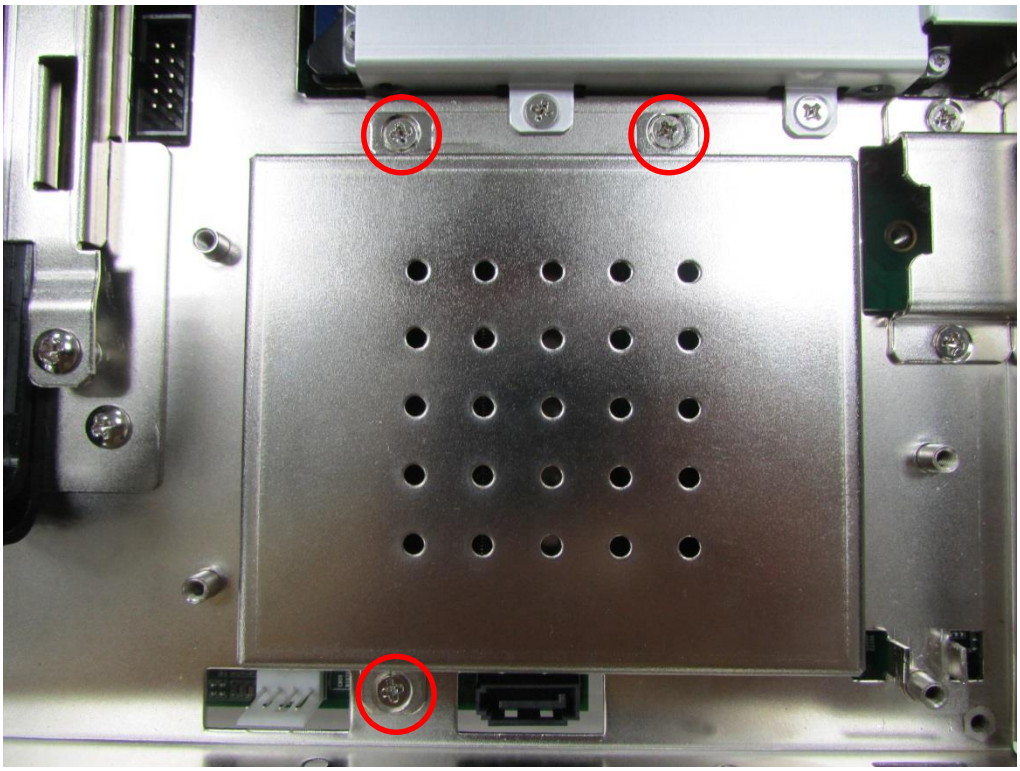


3. Press down the module and fix the module with screws.

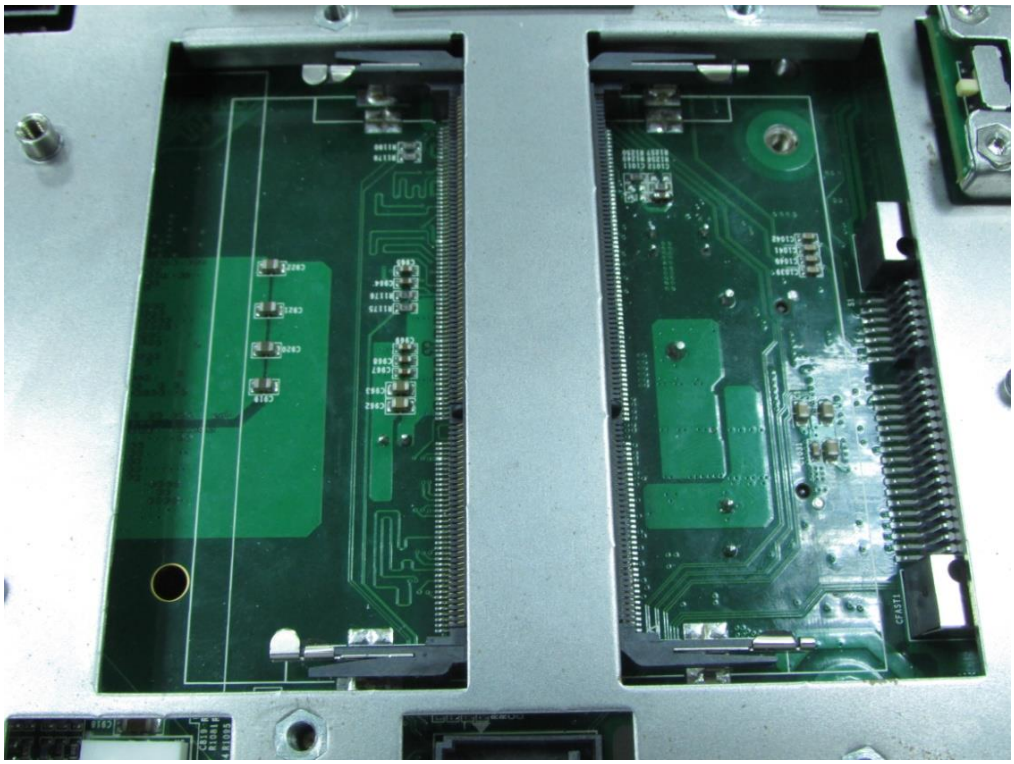


3.10 Installing SO-DIMM

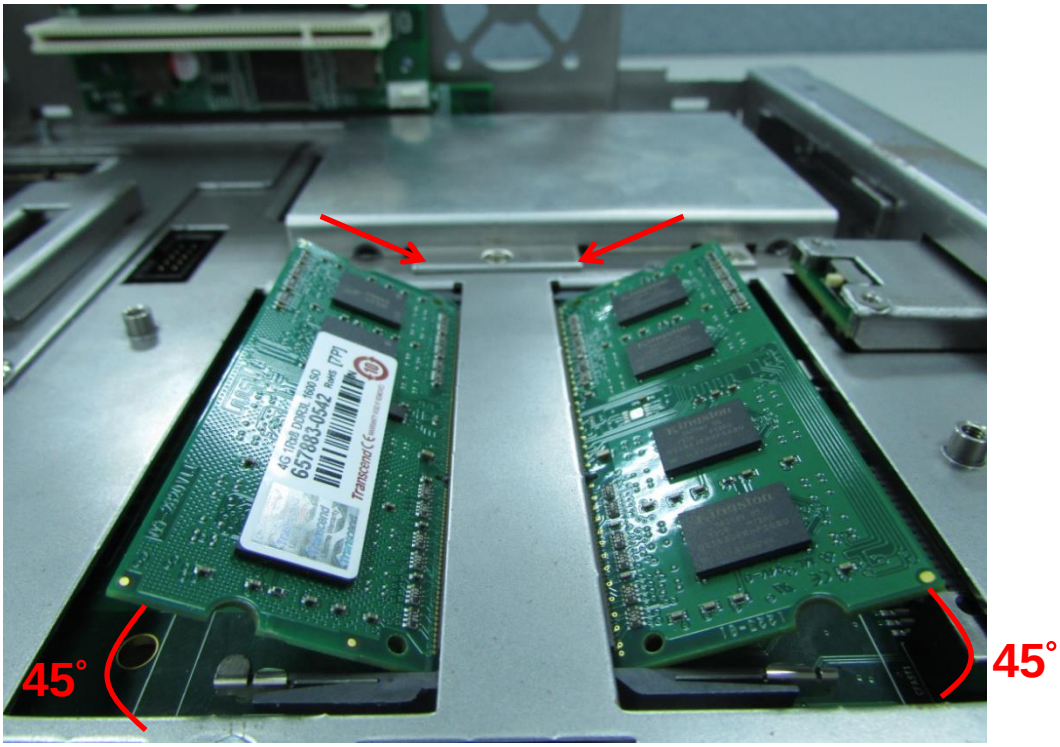
1. Locate the SO-DIMM sockets at the bottom side. Unscrews the 3 screws and remove the cover.



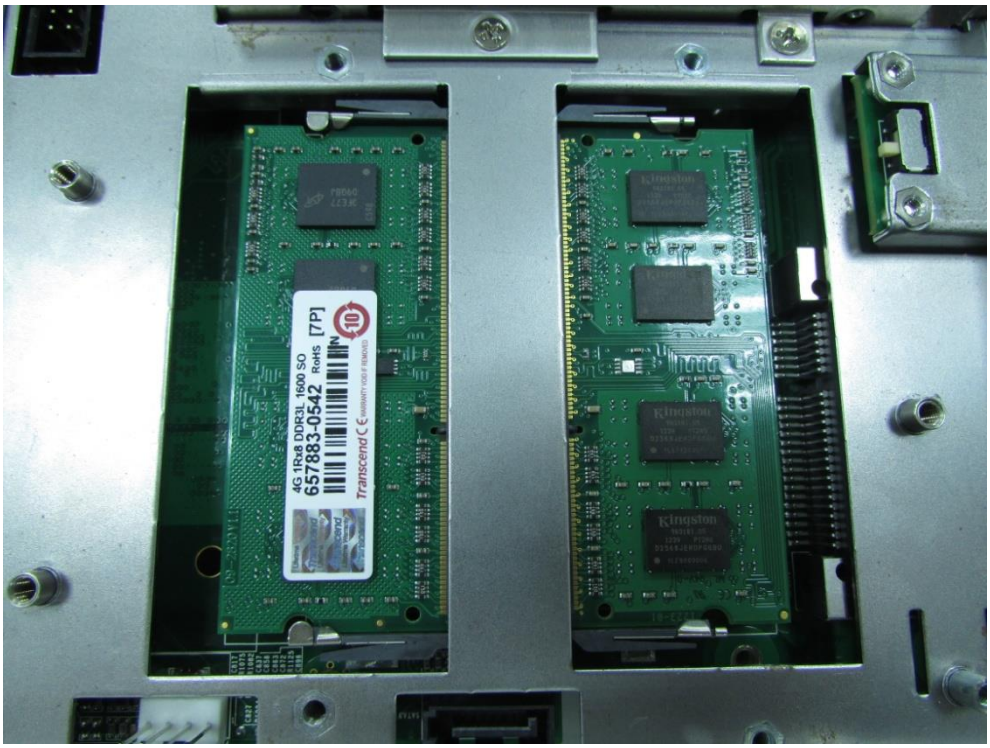
2. Locate two SO-DIMM sockets at the bottom.



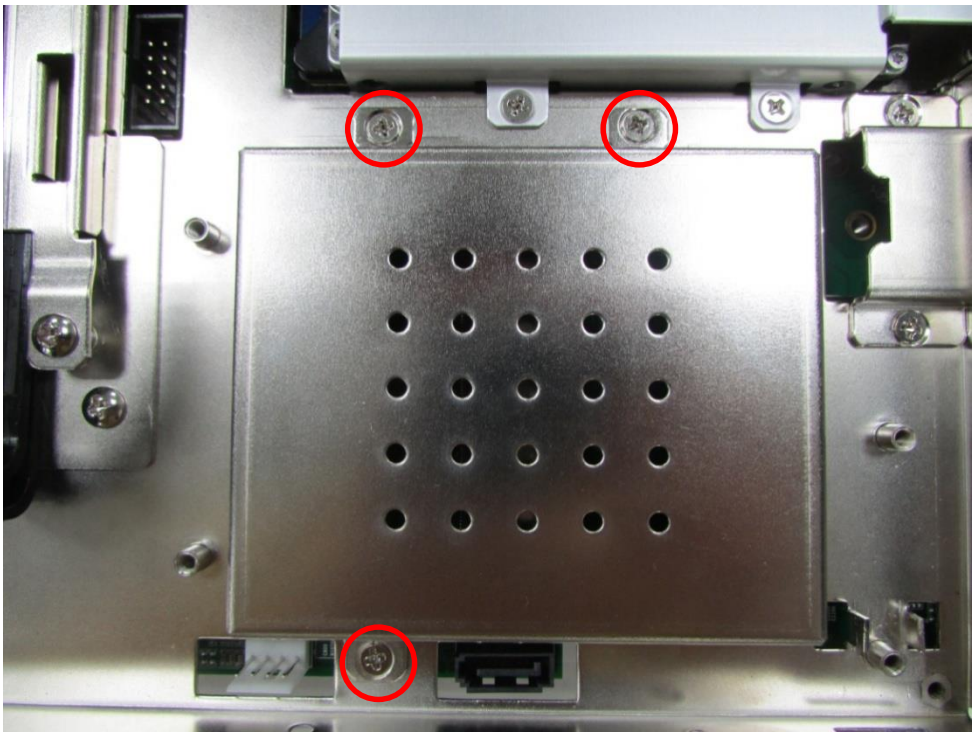
3. Tilt the SO-DIMM module at a 45 degree angle and insert it to SO-DIMM socket until the gold-pated connector of module contacted firmly with the socket.



4. Press the module down until its fixed firmly by the two locking latches on the sides.

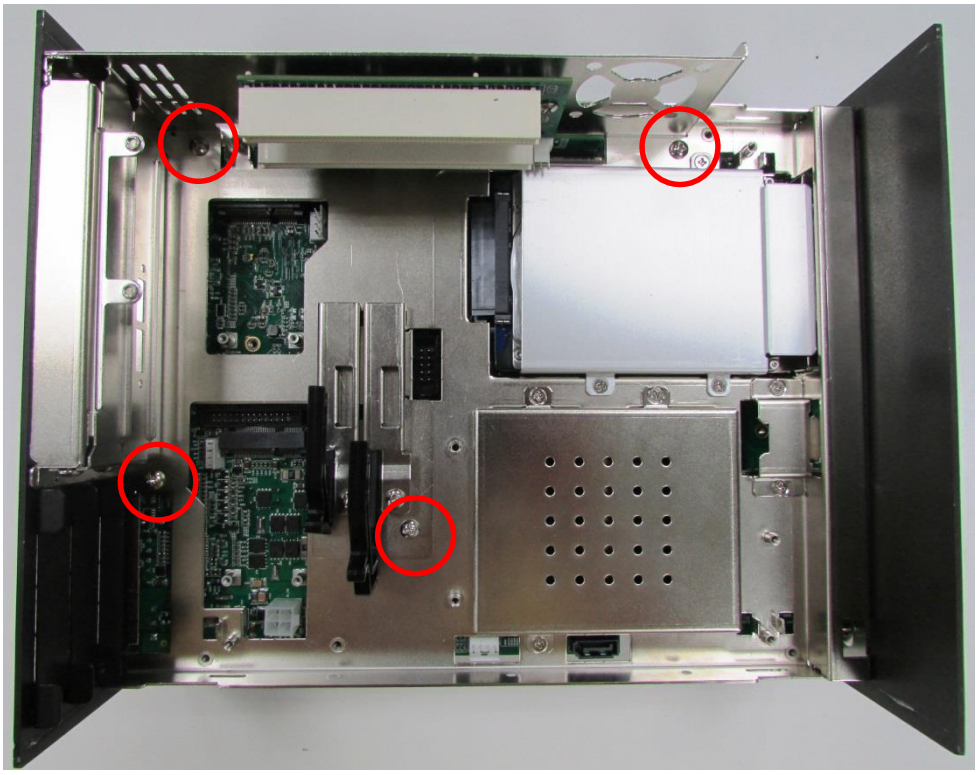


5. Put the cover back and fix the cover with screws.

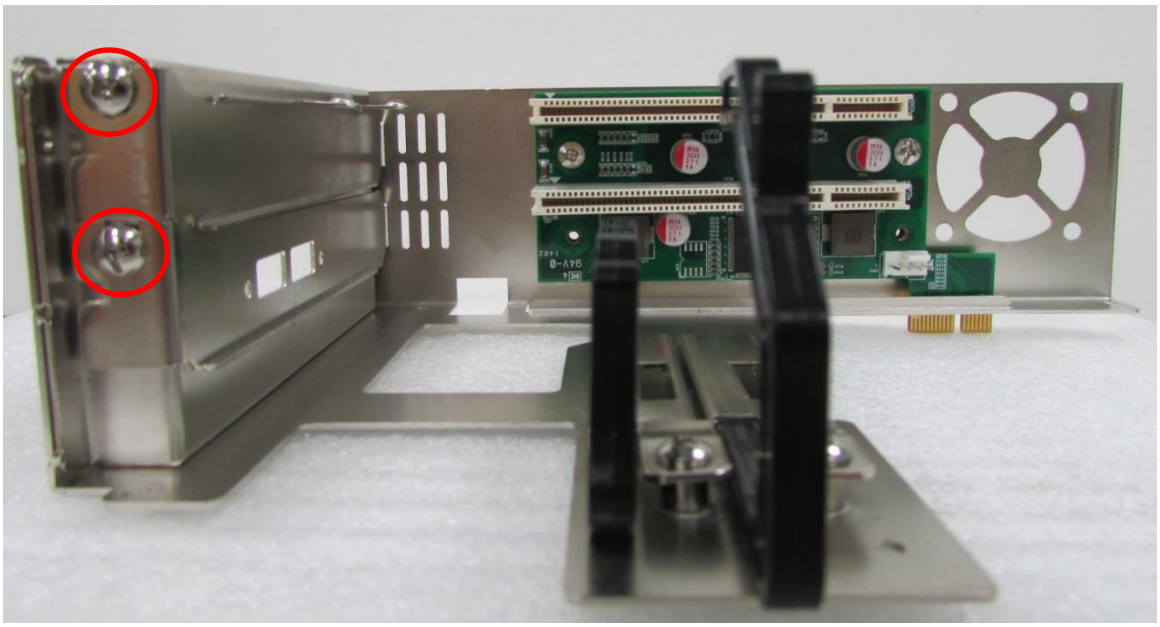


3.11 Installing the PCI/PCIe Cards on Expansion Module (DS-1001 and DS-1002 Only)

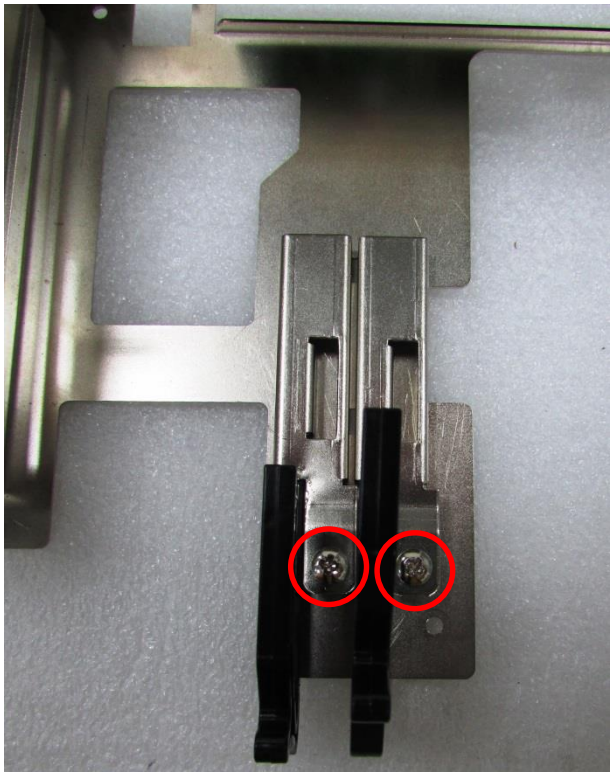
1. Locate the PCI/ PCIe expansion module. Loosen screws and take expansion module out of system. (We take DS-1002 as a photo example.)



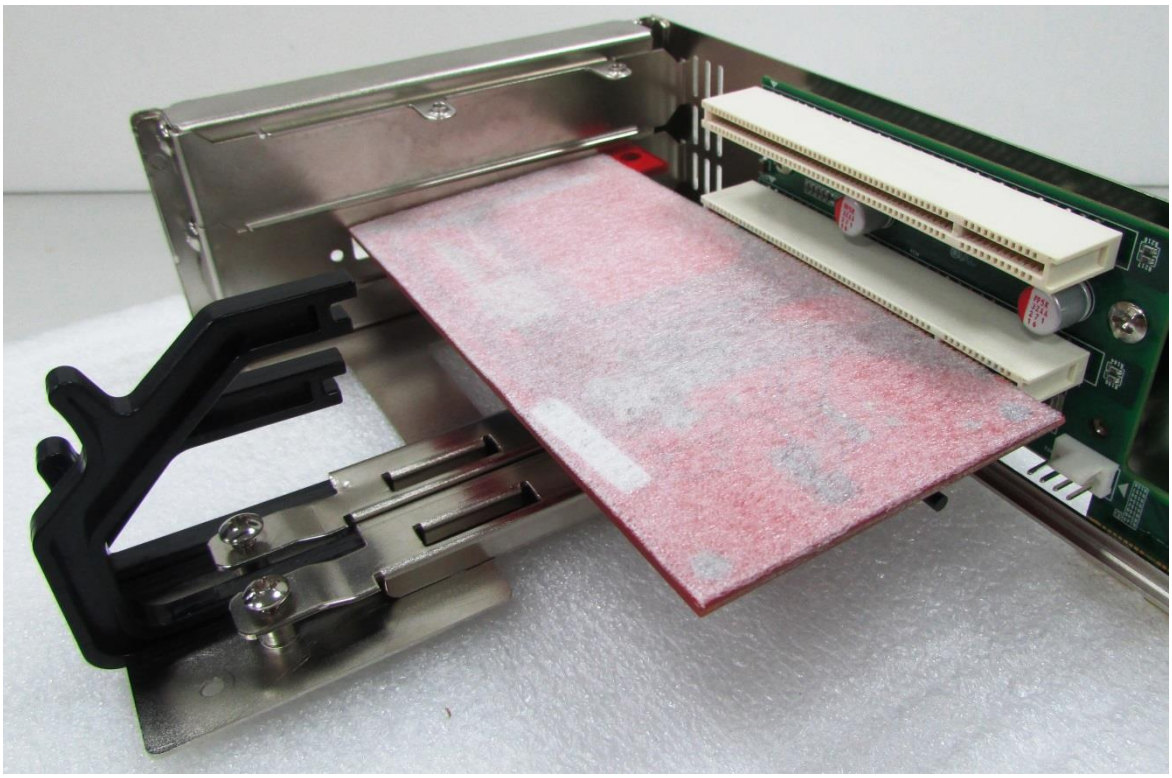
2. Loosen the screws on PCI bracket and remove the bracket.



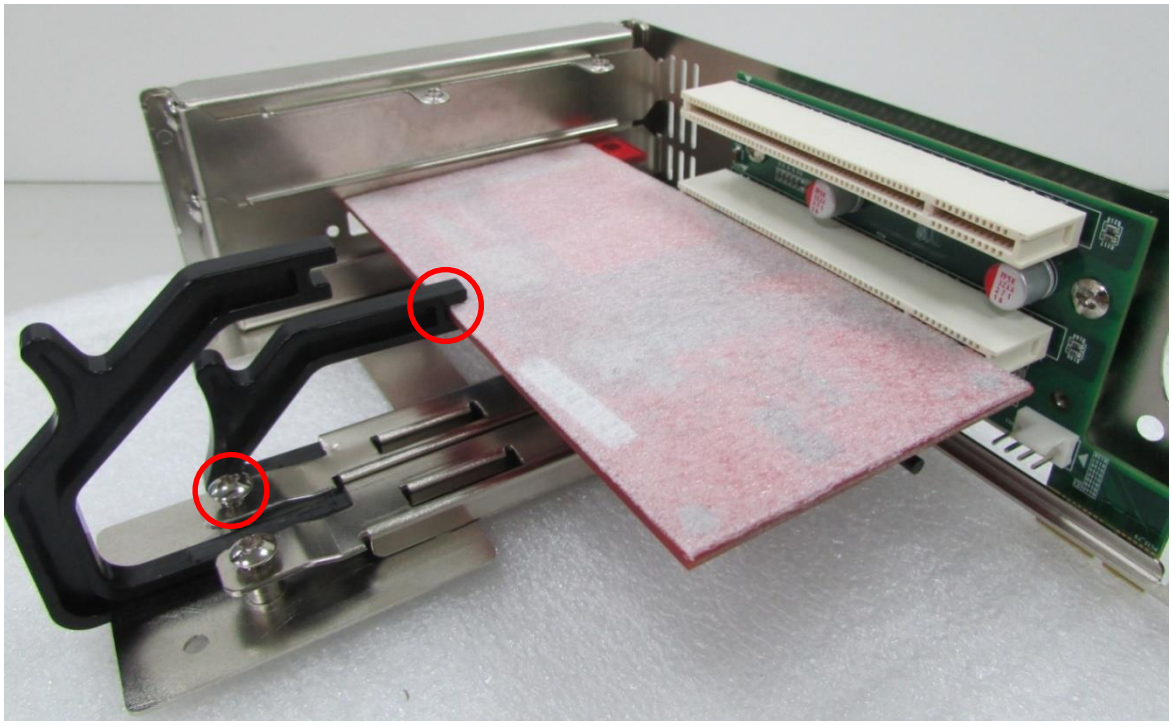
3. Loosen the two screws on fixators of card retainers and remove them.



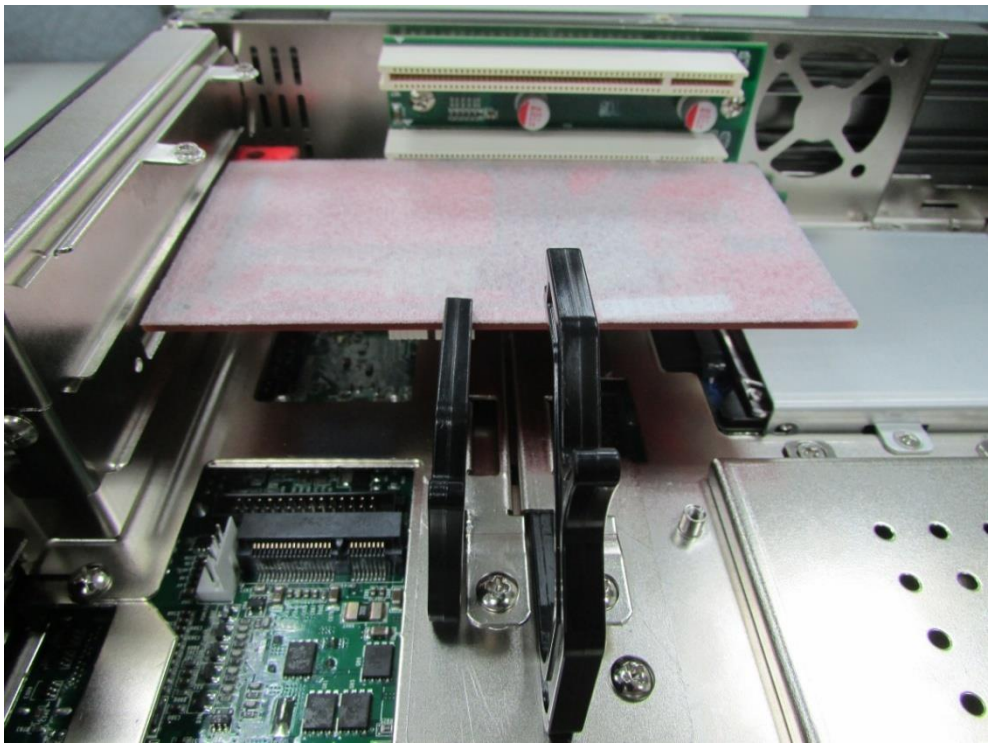
4. Please check the following photo for placing expansion module. Insert the PCI or PCIe cards to the slots and fasten the screw on PCI bracket.



5. Install the fixators and card retainers. Before fastening the screws of fixators, push the card retainers to have the notches meet the sides of cards.

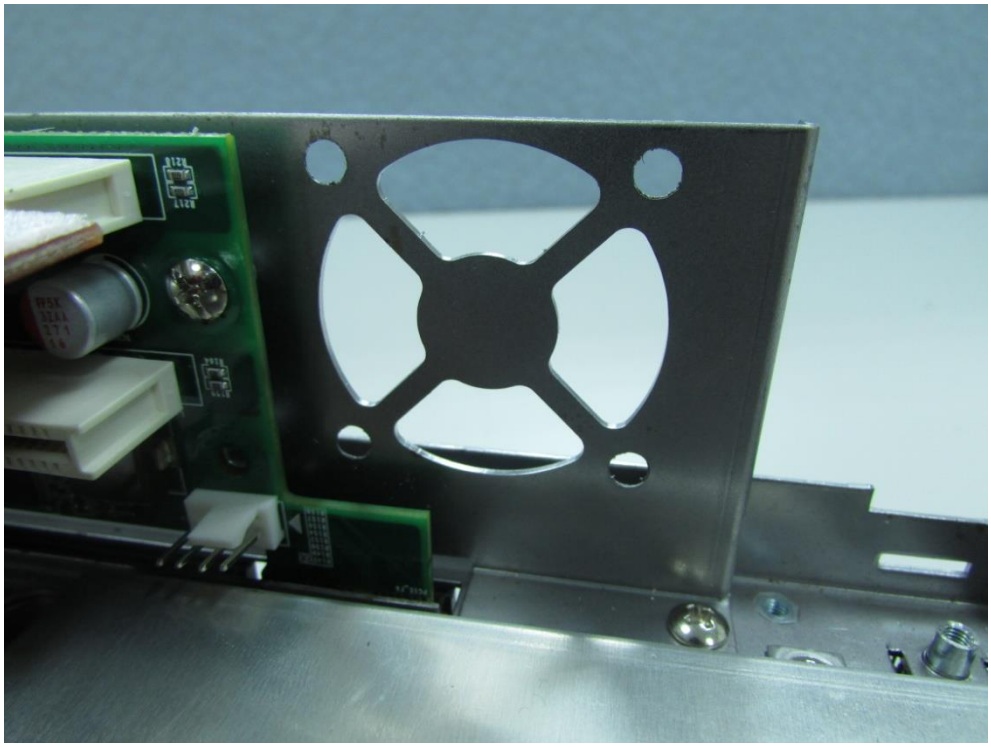


6. Place the expansion module back to chassis by inserting the golden plate to PCIe clot. Fasten the screws afterwards.

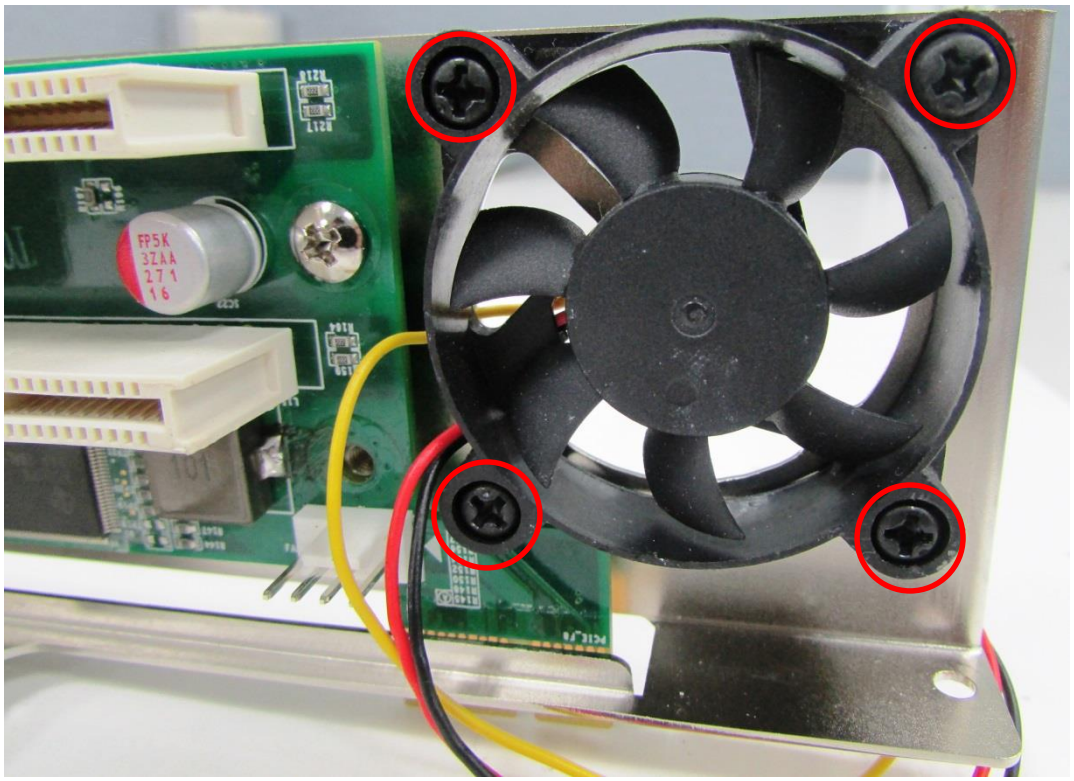


3.12 Installing the Fan for Expansion Module (DS-1002 Only)

1. Align the screw holes on fan with the holes on expansion module and make sure the air must blow into the system.

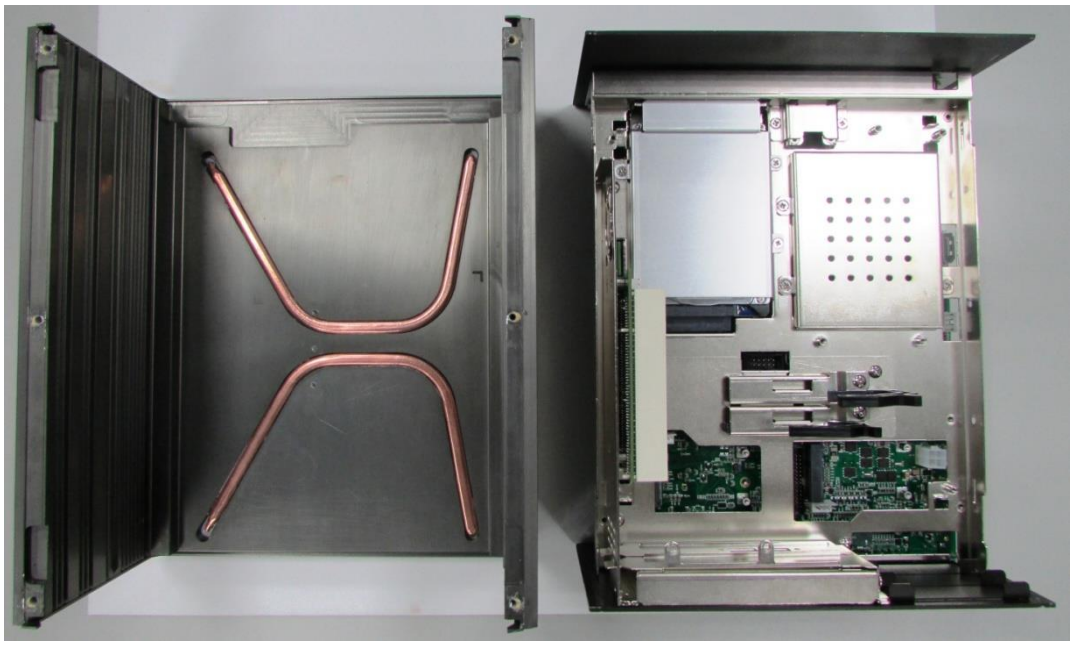


2. Assemble the fan and bracket together by fasten the 4 screws.

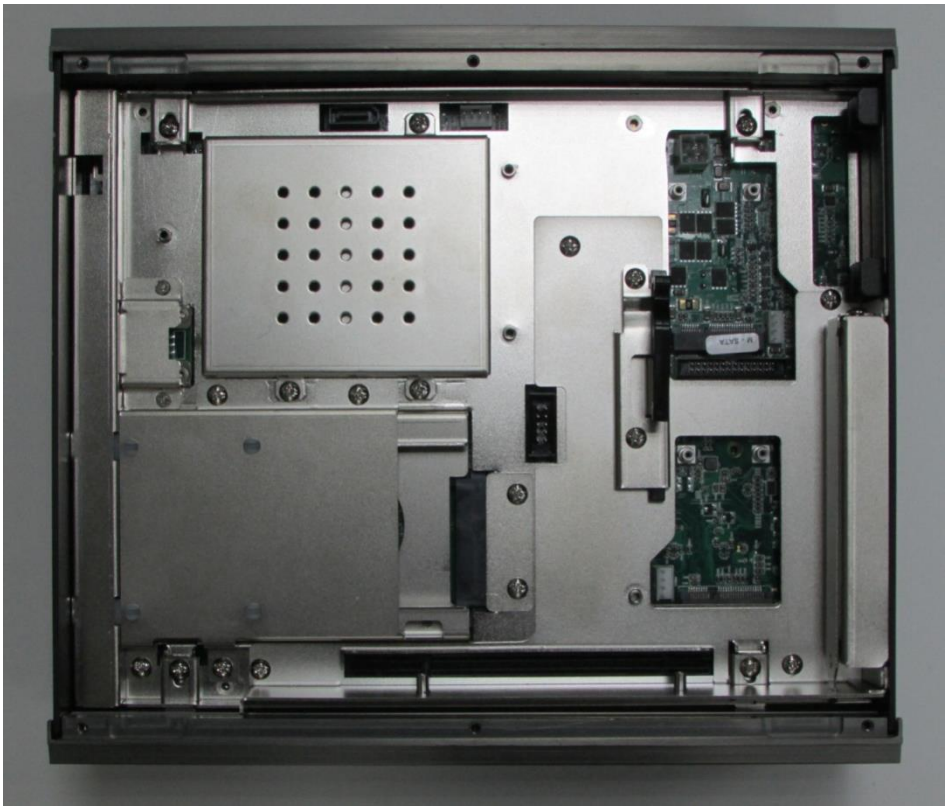


3.13 Installing the Chassis

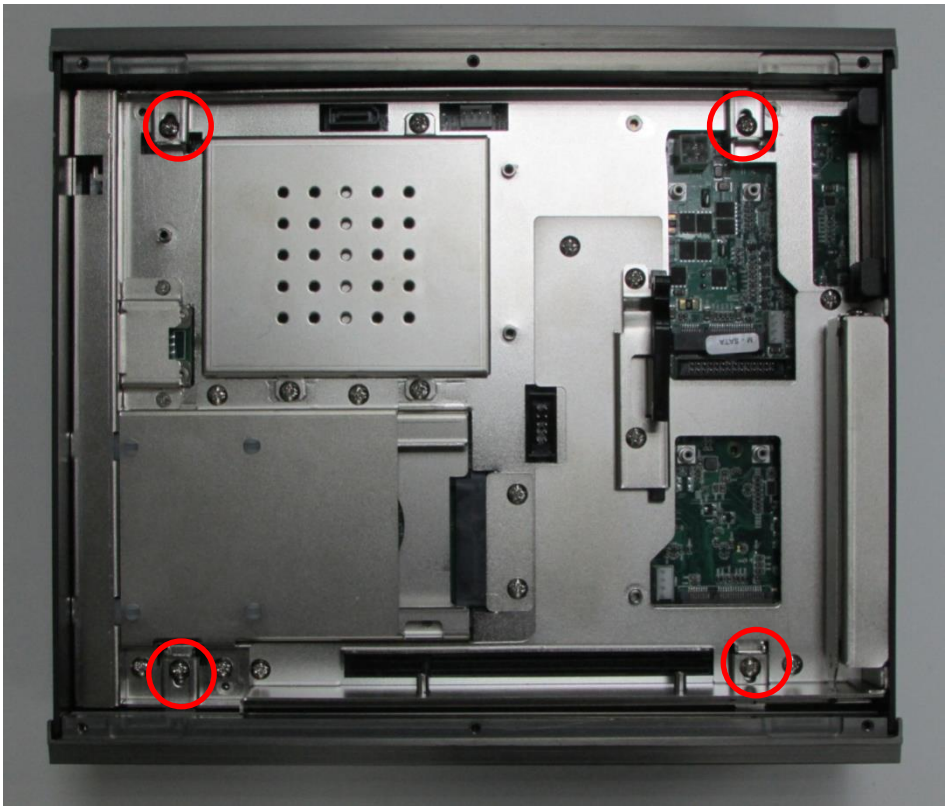
1. Make sure the notch on chassis and the front panel of body are at the same side.



2. Lift up the body of unit. Make sure that both front and rear panels are in the chassis groves and assemble the body on to chassis firmly.

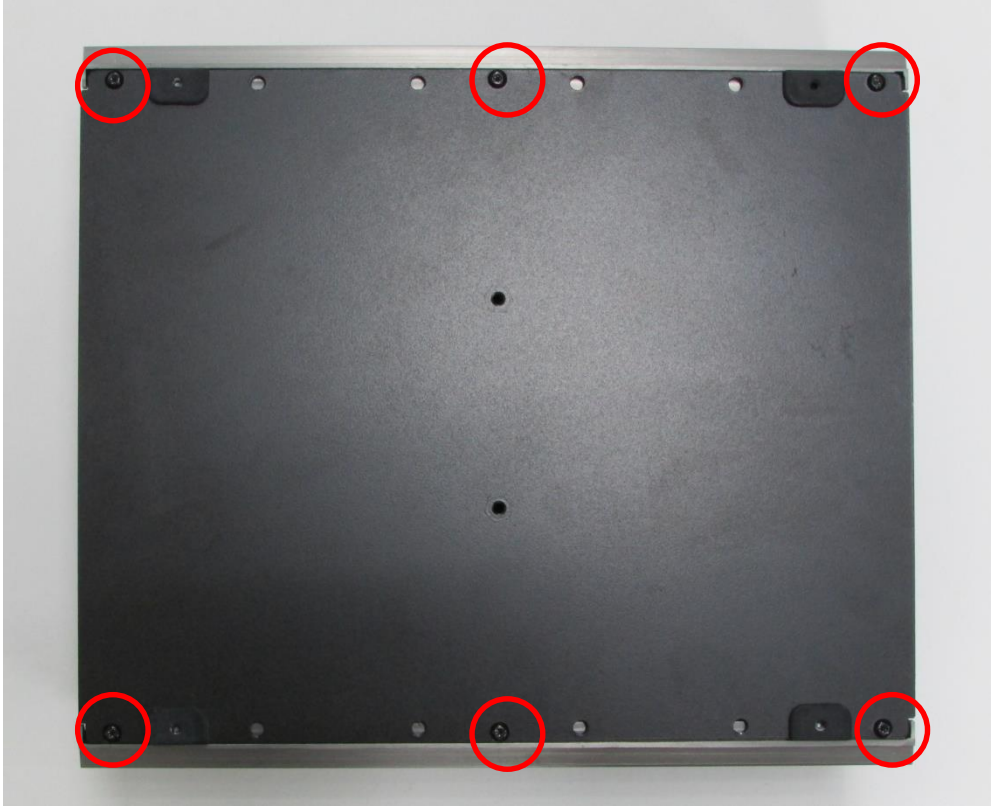


3. Install the 4 base holders and fasten the screws.



3.14 Installing the Chassis Bottom Cover

1. Be sure to align the grooves with front and ear panels. Put the cover back on and fasten the screws to fix the cover.



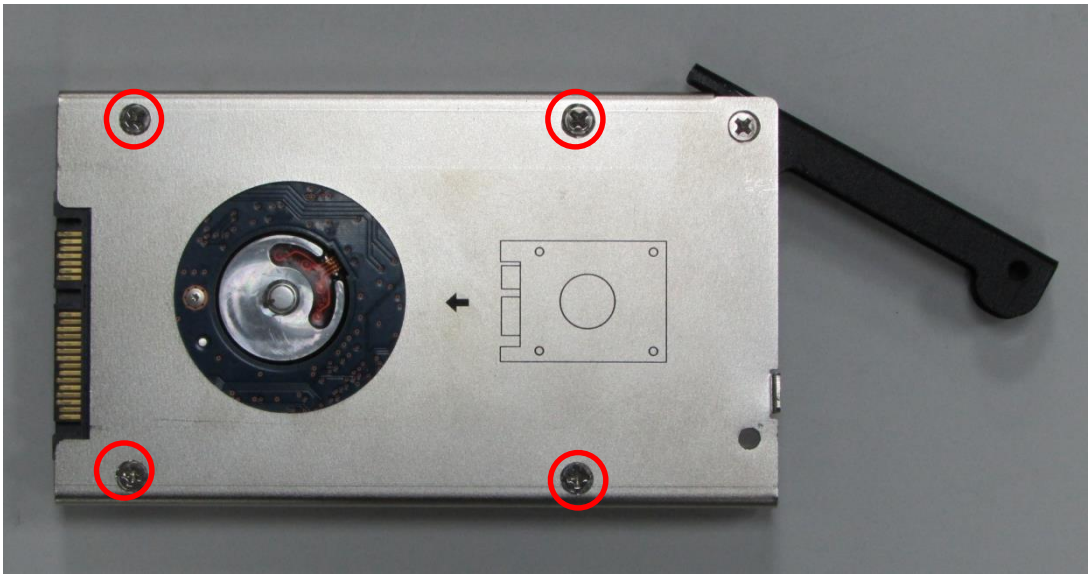
3.15 Installing a SATA Hard Drive on Front Side

1. Loose the screws in order to remove the front of expansion plate.

2. Locate the removable HDD bay and loosen the screw.

3. Move the rotating arm out and pull the HDD bracket out.

4. 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.



5. Align the HDD bracket with the entrance of HDD bay. Holding the rotating arm and insert the HDD bracket until the connector of HDD contact the SATA connector firmly.

6. Place the rotating arm back and fasten the screw.

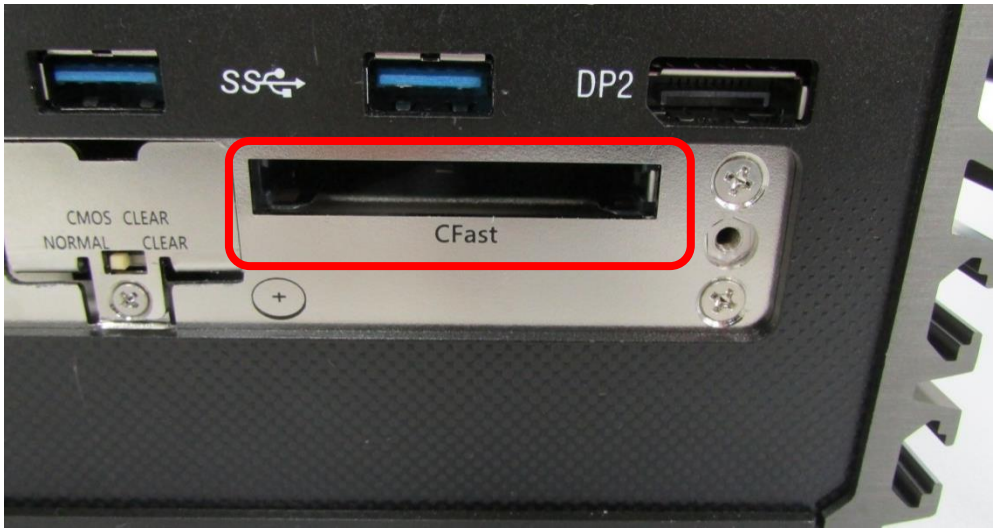
3.16 Installing a SIM Card

1. SIM card slot is on top of HDD bay.

2. Insert the SIM card according to the icon instruction aside.

3.17 Installing a CFast Card

1. Locate the CFast card slot.



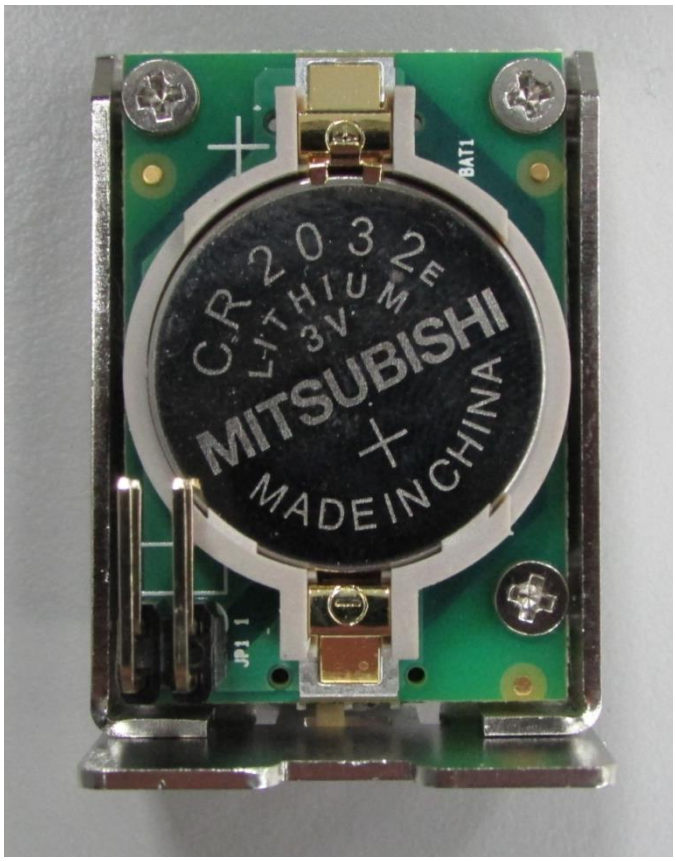
2. Insert the CFast Card.

3.18 Installing the CMOS Battery

1. Locate the removable CMOS Battery and loosen the screw.

2. Pull out the CMOS battery bracket.

3. Insert the CMOS battery in the battery slot.



4. Insert the battery bracket firmly and fasten the screw.

3.19 Fasten the Cover

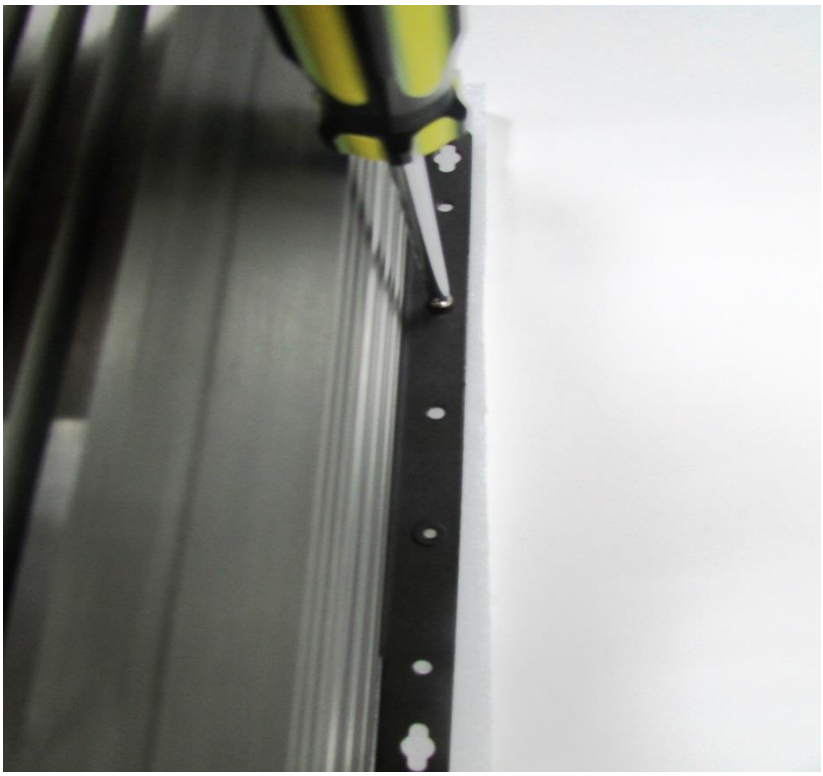
1. Fasten the cover by using the two screws.

3.20 Wall Mount Brackets

DS-1000 series offers wall mount that customers can install system on the wall in convenient and economical ways.

1. The mounting holes are at the bottom of system. Use provided 8 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

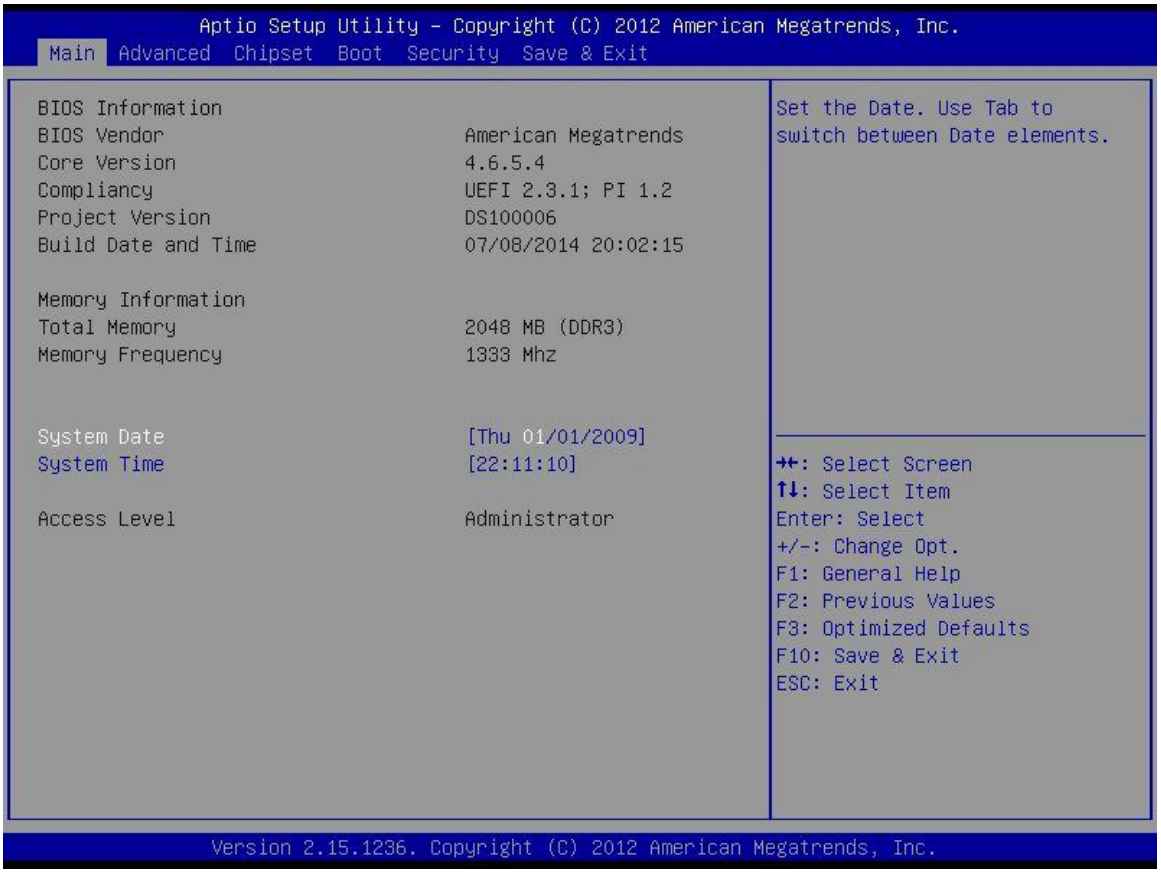
The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

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.



4.2.1 System Date

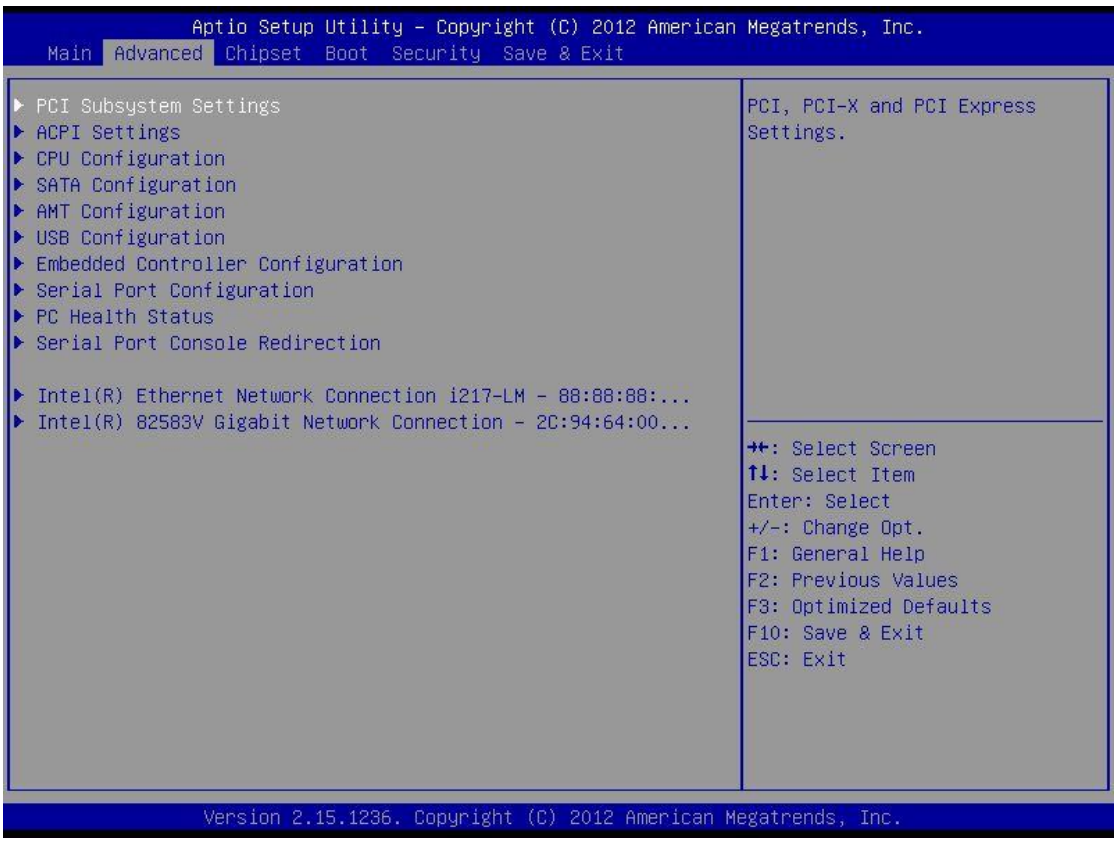
Set the date. Please use <Tab> to switch between date elements.

4.2.2 System Time

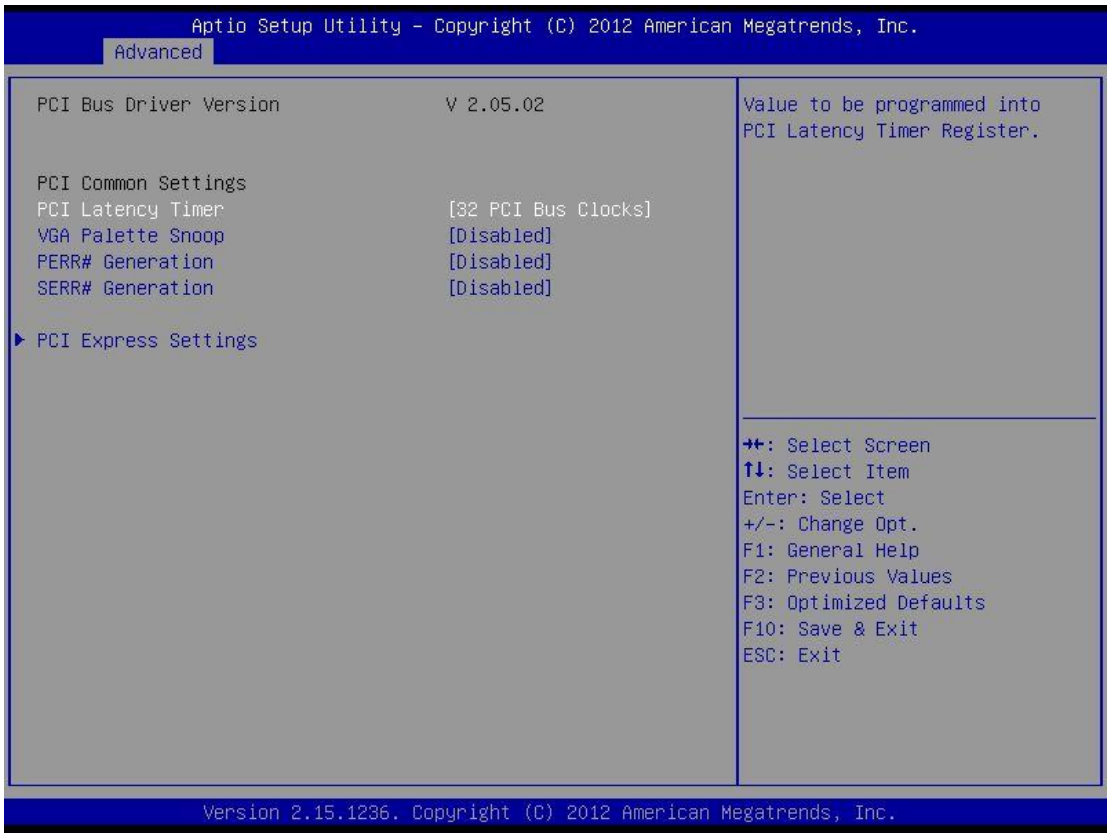
Set the time. Please use <Tab> to switch between time elements.

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.



4.3.1 PCI Subsystem Settings



■ PCI Common Settings

❑ PCI Latency Timer

Value to be programed into PCI Latency Timer Register.

❑ VGA Palette Snoop

Enable or disable VGA palette registers snooping.

❑ PERR# Generation

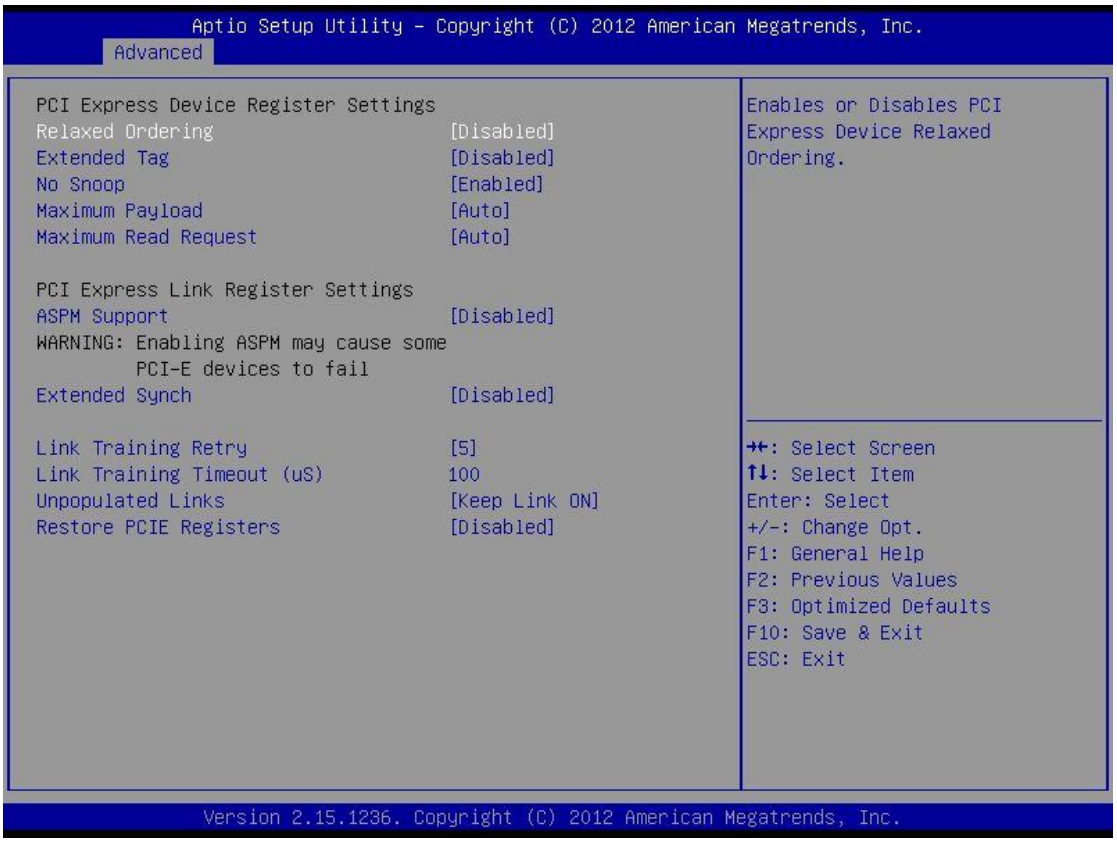
Enable or disable PCI device to generate PERR#.

❑ SERR# Generation

Enable or disable PCI device to generate SERR#.

❑ PCI Express Settings

Press [Enter] to make settings for the following sub-items:



■ PCI Express Device Register Settings

❑ Relaxed Ordering

Enable or disable PCI Express Device Relaxed Ordering.

❑ Extended Tag

Enable or disable Extended Tag.

❑ No Snoop

Enable or disable PCI Express Device No Snoop option.

❑ Maximum Payload

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

❑ Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

■ PCI Express Link Register Settings

❑ ASPM Support

Enable or disable ASPM Support

❑ Extended Synch

Enable or disable Extended Synch

❑ Link Training Retry

Defines number of retry attempts software will take to retrain the link if previous training attempt was unsuccessful.

❑ Link Training Timeout

Defines number of micro-seconds software that will wait before polling "Link Training " bit in link status register. Values range from 10 to 1000 uS.

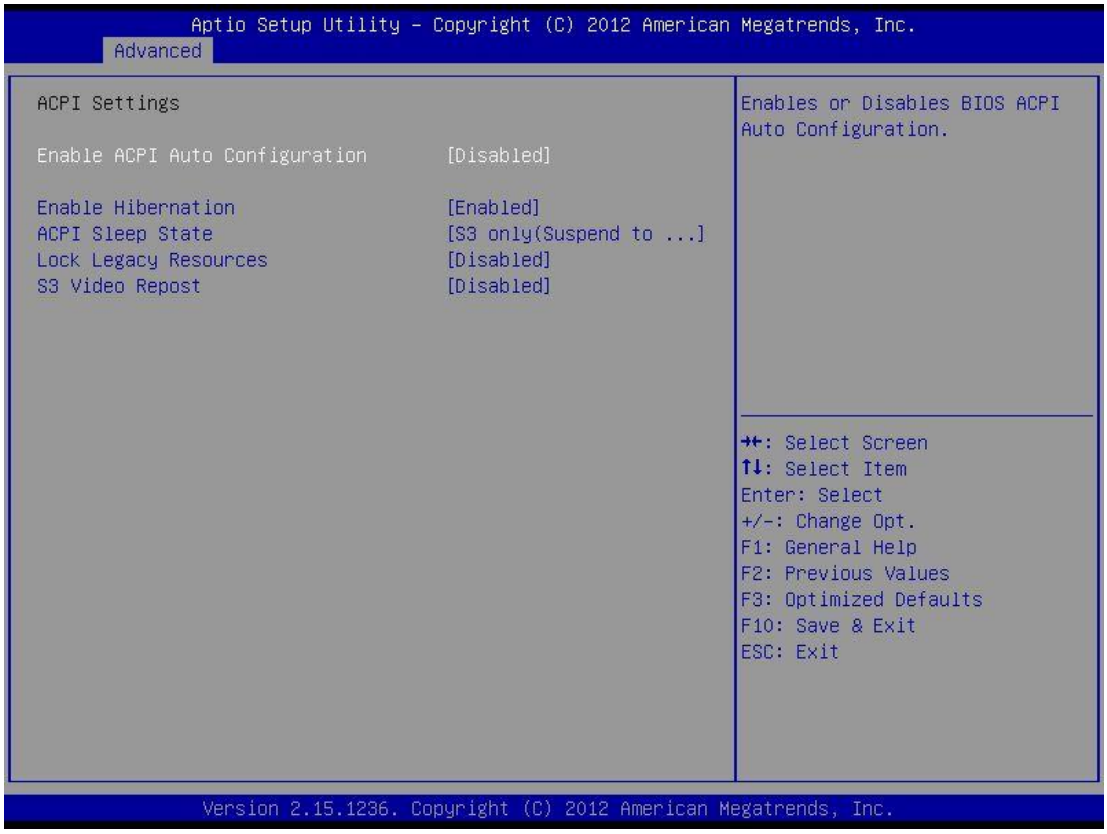
❑ Unpopulated Links

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

❑ Restore PCIE Registers

On non-PCI Express aware OS's (Pre Windows Vista) some devices may not be correctly reinitialized after S3. Enabling this register PCI Express device configurations on S3 resume. Warning: Enabling this may cause issues with other hardware after S3 resume.

4.3.2 ACPI Settings



■ Enable ACPI Auto Configuration

Enable or disable BIOS ACPI auto configuration.

■ Enable Hibernation

Enable or disable system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

■ ACPI Sleep State

This item allows users to set the ACPI sleep state.

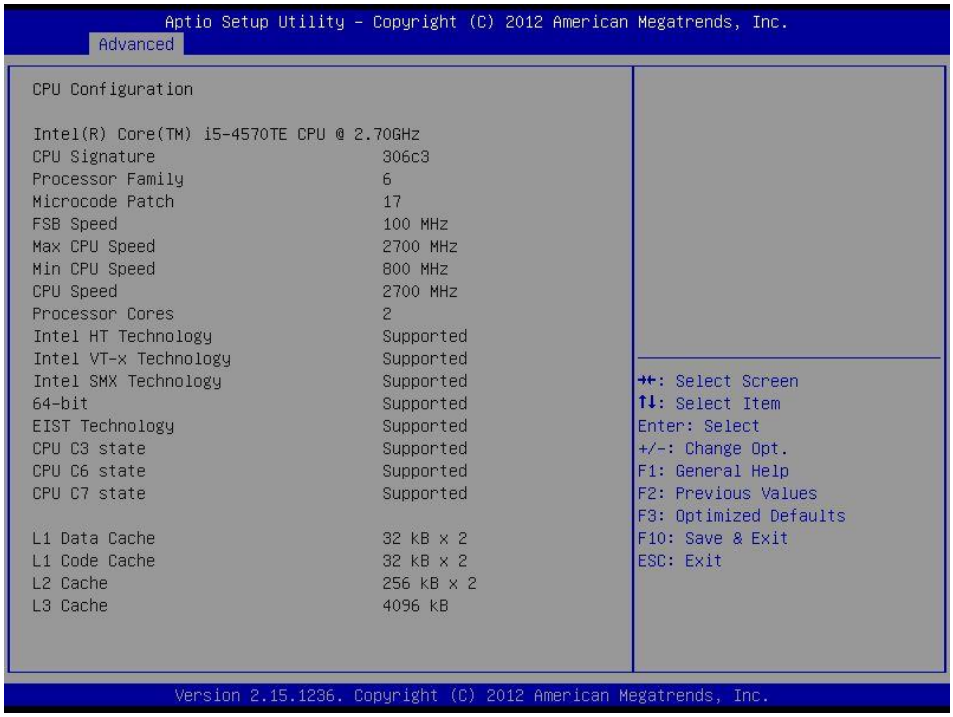
■ Lock Legacy Resources

Enable or disable lock of legacy resources.

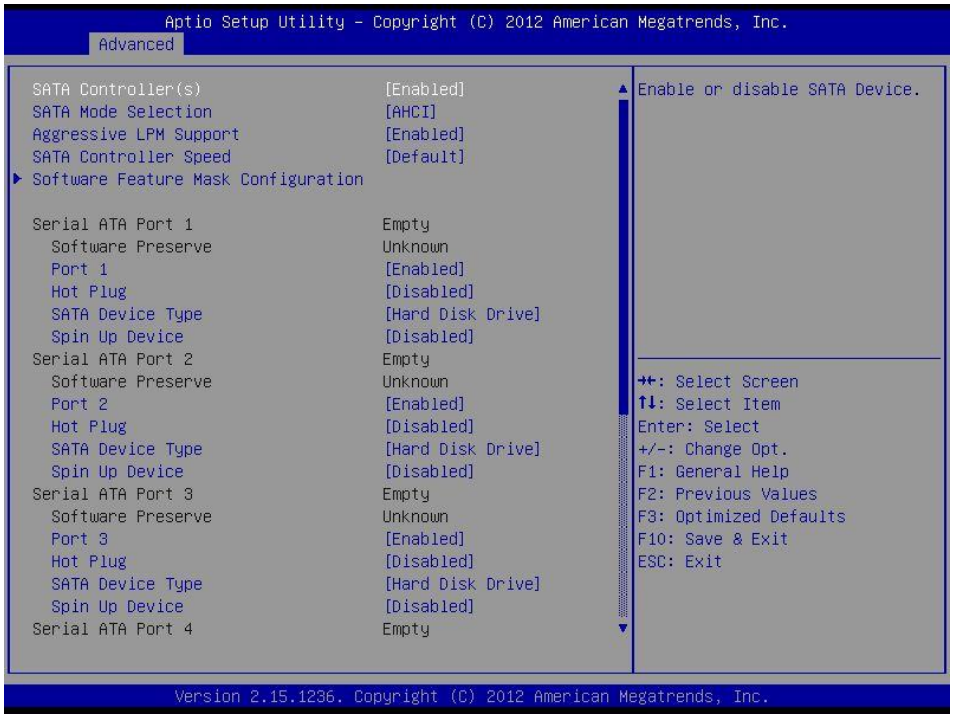
■ S3 Video Repost

Enable or disable S3 Video Repost.

4.3.3 CPU Configuration



4.3.4 SATA Configuration



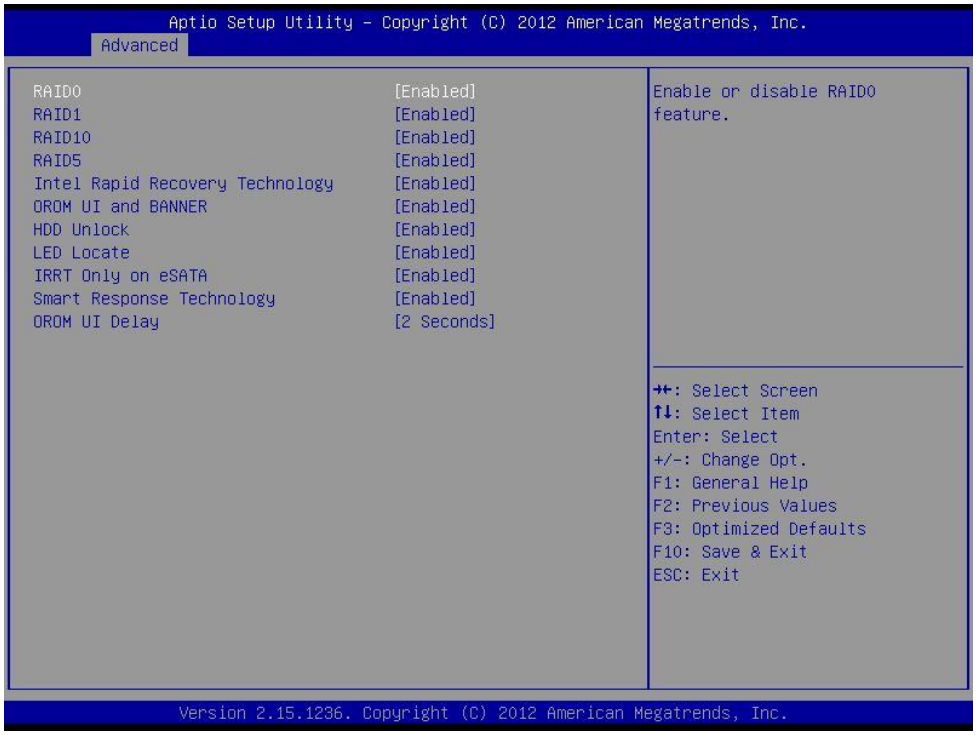
■ **SATA Controller(s)**
Enable or disable Serial ATA controller.

■ **SATA Mode Selection**
This item allows users to select mode of SATA controller.

■ **Aggressive LPM Support**
This item allows users to enable or disable Aggressive LPM Support.

■ **SATA Controller Speed**
The item is for user to set the maximum speed the SATA controller can support.

■ **Software Feature Mask Configuration**
RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.



■ **RAID0**

Enable or disable RAID 0.

■ **RAID1**

Enable or disable RAID 1.

■ **RAID10**

Enable or disable RAID 10.

■ **RAID5**

Enable or disable RAID 5.

■ **Intel Rapid Recovery Technology**

Enable or disable Intel Rapid Recovery Technology.

■ **OROM UI and BANNER**

Enable or disable OROM UI and BANNER.

■ **HDD Unlock**

Enable or disable HDD Unlock.

■ **LED Locate**

Enable or disable LED Locate.

■ **IRRT Only on eSATA**

Enable or disable IRRT Only on eSATA.

■ **Smart Response Technology**

Enable or disable Smart Response Technology.

■ **OROM UI delay**

This item allows users to choose the delay time for option ROM.

Serial ATA Port 1

❑ **Port 1**
Enable or disable SATA Port 1.

❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

Serial ATA Port 2

❑ **Port 2**
Enable or disable SATA Port 2.

❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

Serial ATA Port 3

❑ **Port 3**
Enable or disable SATA Port 3.

❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

Serial ATA Port 4

❑ **Port 4**
Enable or disable SATA Port 4.

❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

Serial ATA Port 5

❑ **Port 5**
Enable or disable SATA Port 5.

❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

Serial ATA Port 6

❑ **Port 6**
Enable or disable SATA Port 6.

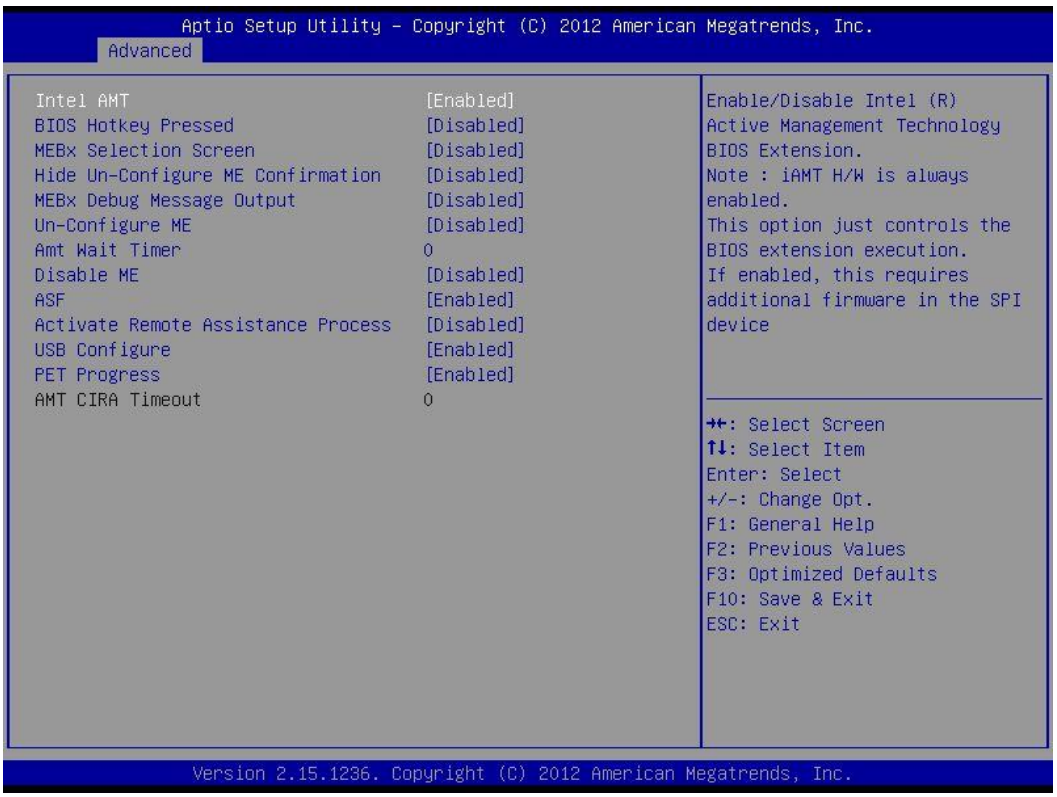
❑ **Hot Plug**
Enable or disable hot plug function.

❑ **SATA Device Type**
Select the type for SATA device.

❑ **Spin Up Device**
Enable or disable Spin up device.

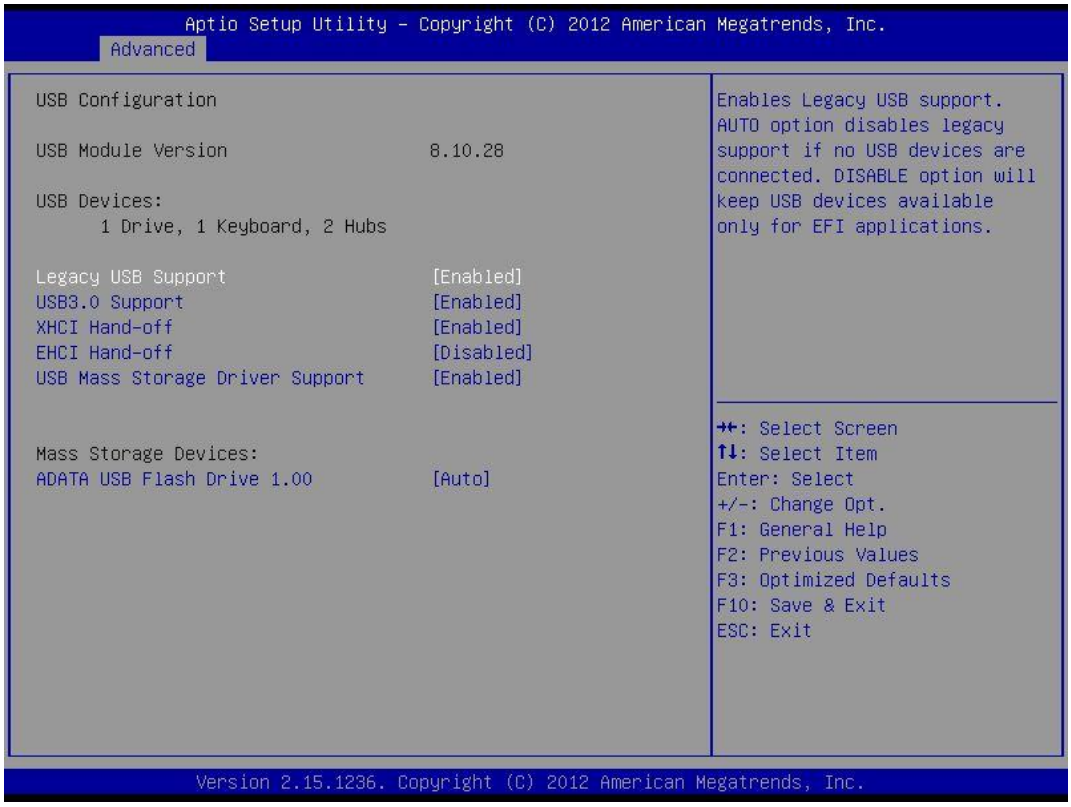
4.3.5 AMT Configuration

Intel Active Management Technology (AMT) is hardware-based technology for remotely managing and securing PCs out-of-band.



- **Intel AMT**
  This item allows users to enable or disable Intel AMT BIOS extension.
- **BIOS Hotkey Pressed**
  Use this function to enable or disable BIOS Hotkey Press function.
- **MEBx Selection Screen**
  This item allows users to enable or disable MEBx selection screen.
- **Hide Un-Configuration ME Confirmation**
  Use this function to enable or disable Hide Un-Configure ME without password configuration prompt function.
- **MEBx Debug Message Output**
  This item allows users to enable or disable MEBx debug message.
- **Un-Configure ME**
  Use this function to enable or disable Un-Configure ME without password function.
- **Amt Wait Timer**
  Use this item to set time to wait before sending ASF_GET_BOOT_OPTIONS.
- **Disable ME**
  This item allows users to enable or disable ME function.
- **ASF**
  This item allows users to enable or disable Alert Specification Format.
- **Activate Remote Assistance Process**
  This item allows users to enable or disable trigger CIRA boot.
- **USB Configure**
  Use this item to enable or disable USB configure function.
- **PET Progress**
  Use this item to enable or disable PET events progress to receive PET event or not.
- **AMT CIRA Timeout**
  OEM defined timeout for MPS connection to be established.

4.3.6 USB Configuration



■ Legacy USB support

Enabled: To enable legacy USB support.

Disabled: To keep USB devices available only for EFI specification,

Auto: To disable legacy support if no USB devices are connected. Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

■ USB3.0 support

This item allows users to enable or disable USB3.0 (XHCI) function.

■ XHCI Hand-off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should claim by XHCI driver.

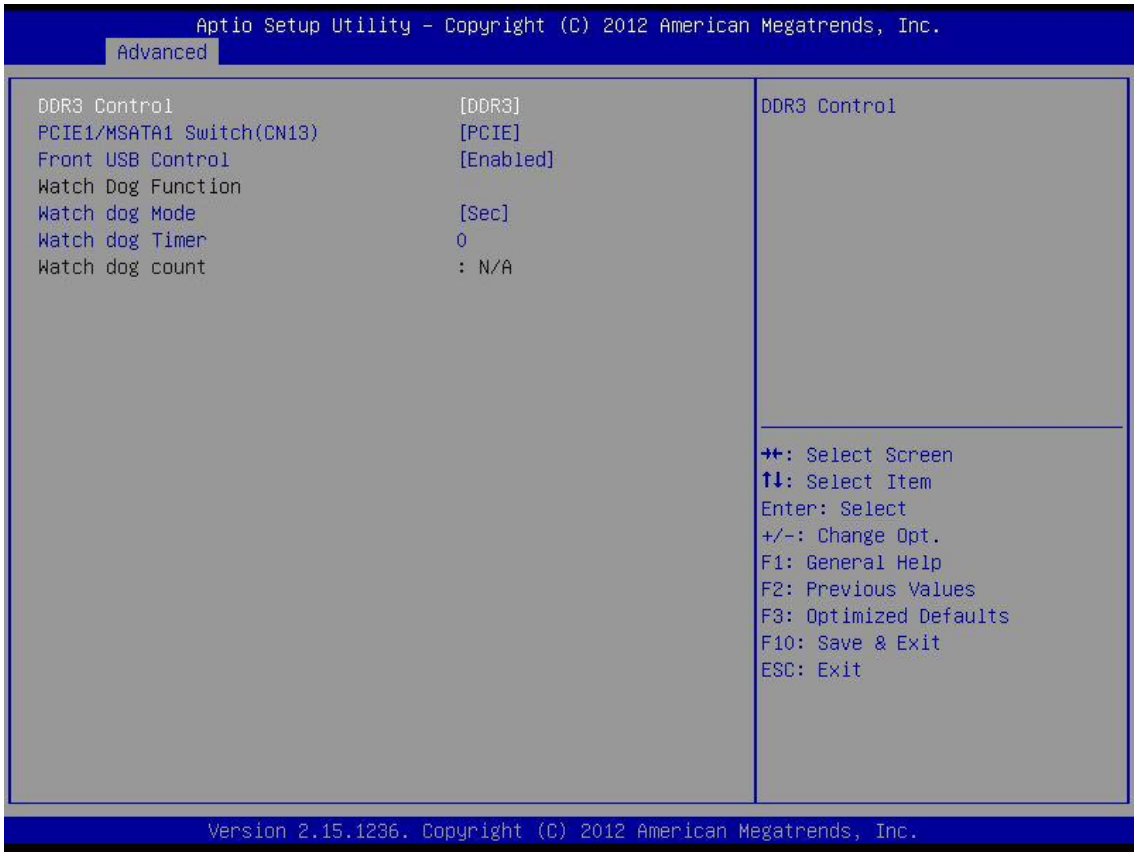
■ EHCI Hand-off

This is a workaround for OS without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

■ USB Mass Storage Driver Support

This item allows users to enable or disable USB Mass Storage Driver.

4.3.7 Embedded Controller Configuration



■ DDR3 Control

This item allows users to select DDR3 or DDR3L mode.

■ PCIE1/MSATA1 Switch (CN13)

This item allows users to select Mini-PCIE or MSATA interface.

■ Front USB Control

This item allows users to enable or disable front USB2.0 ports.

Watch Dog Function

You can setup the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

■ Watch dog Mode

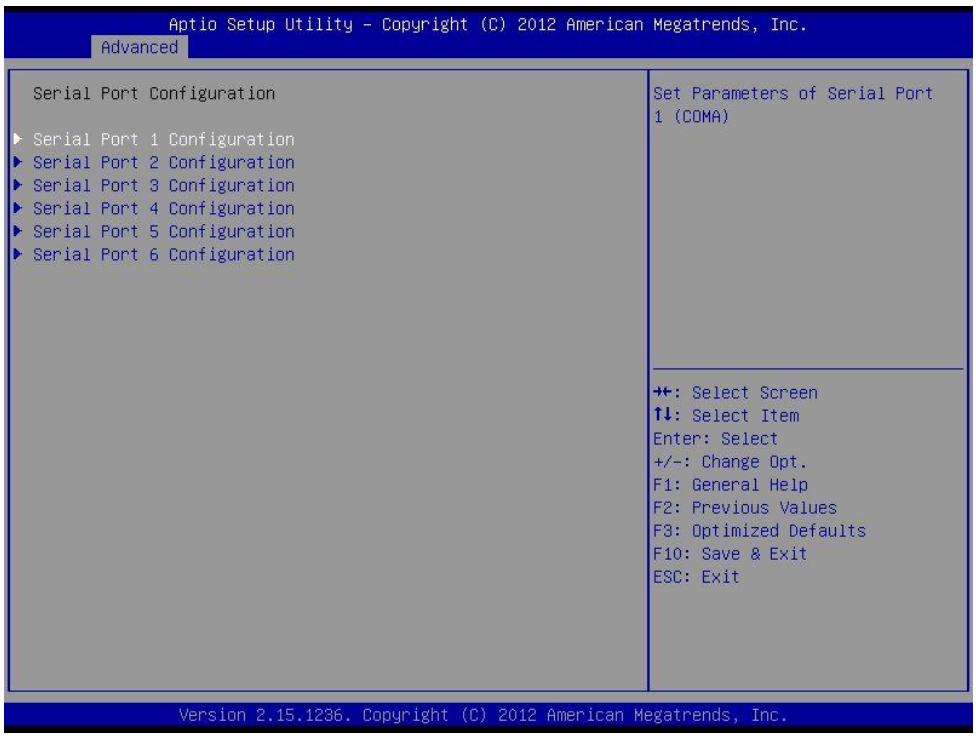
Change the Watch dog mode. Select <Sec> or <Min> mode.

■ Watch dog Timer

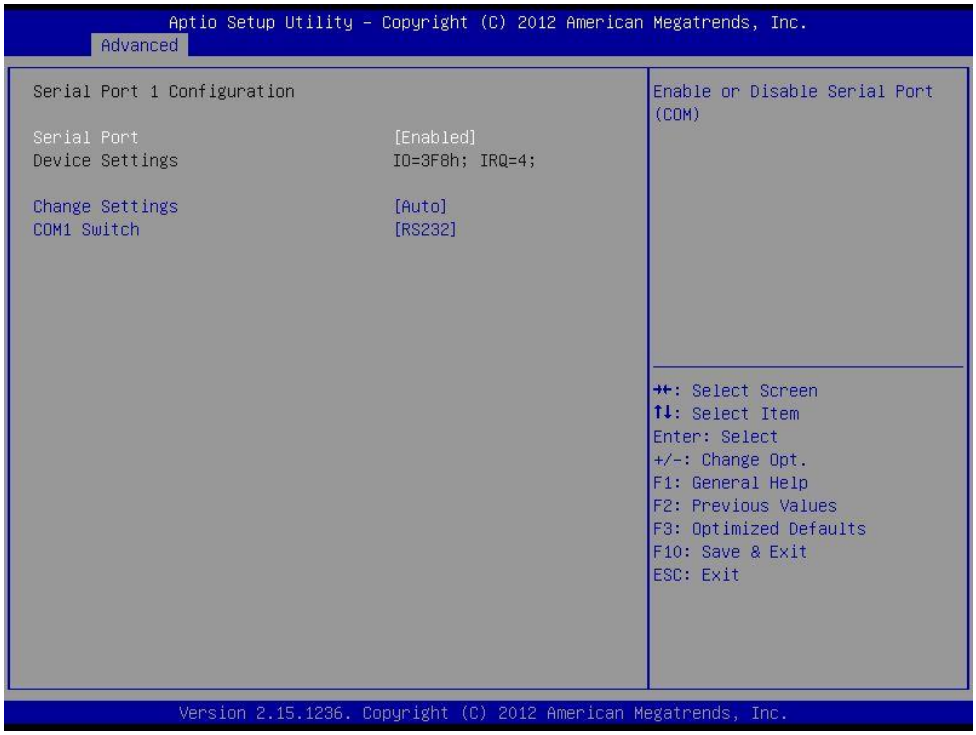
User can set a value in the range of 0 to 255.

4.3.8 Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.



■ Serial Port 1 Configuration

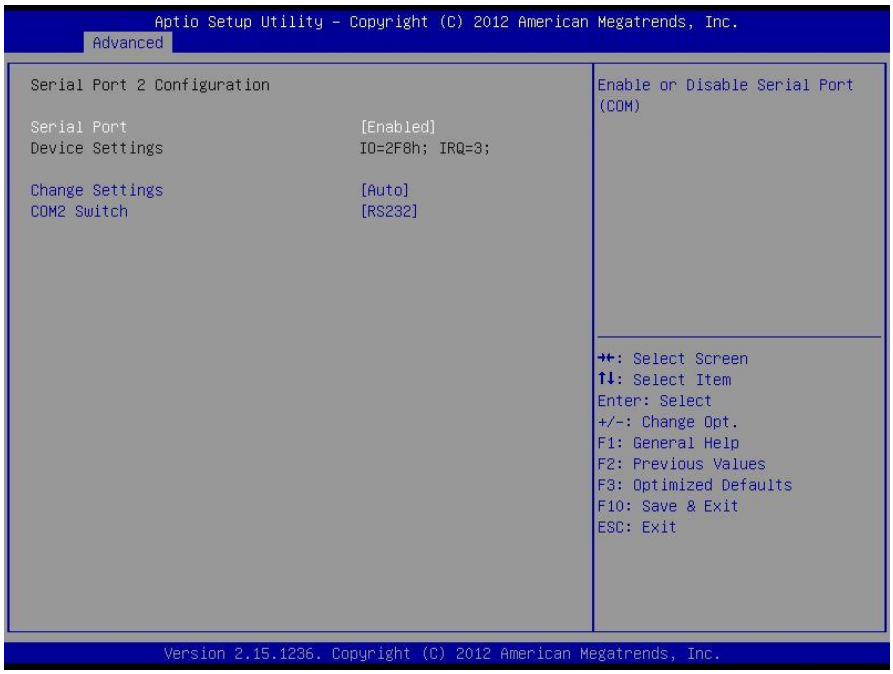


❑ **Serial Port**
This item will allow users to enable or disable serial port.

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

❑ **COM1 Switch**
Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

■ Serial Port 2 Configuration

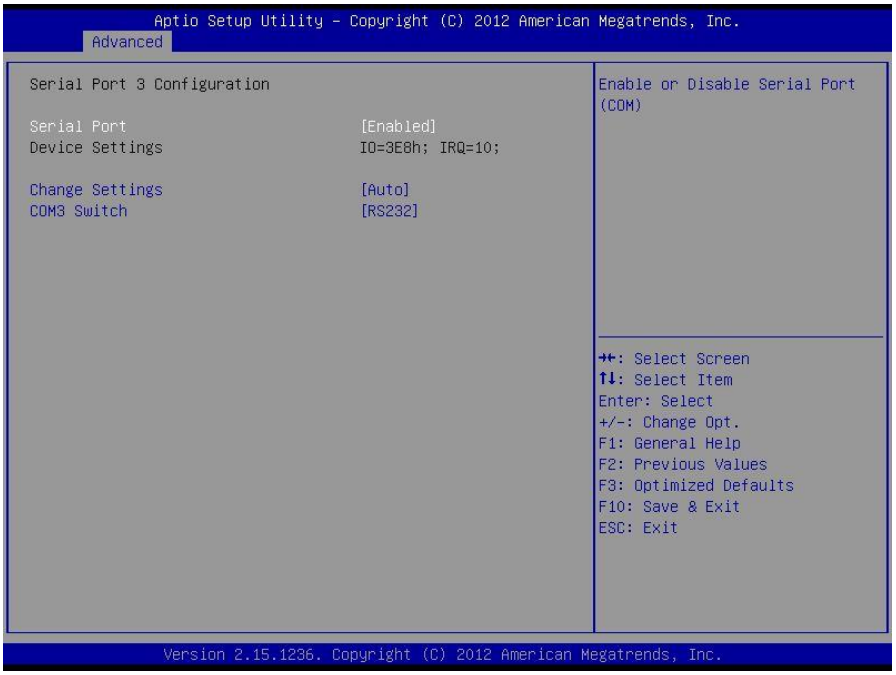


❑ **Serial Port**
This item will allow users to enable or disable serial port.

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

❑ **COM2 Switch**
Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

■ Serial Port 3 Configuration

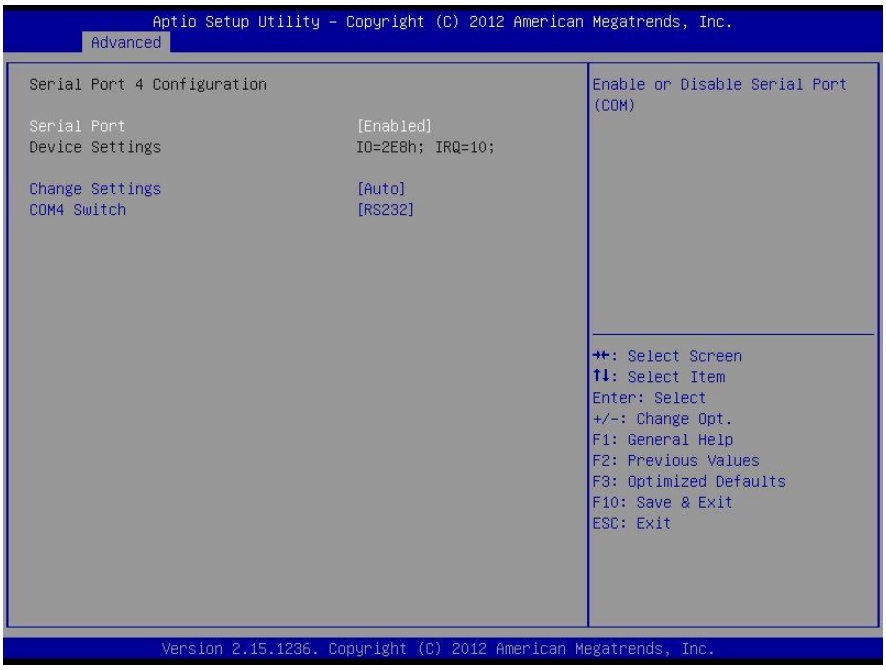


❑ **Serial Port**
This item will allow users to enable or disable serial port.

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

❑ **COM3 Switch**
Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

■ Serial Port 4 Configuration

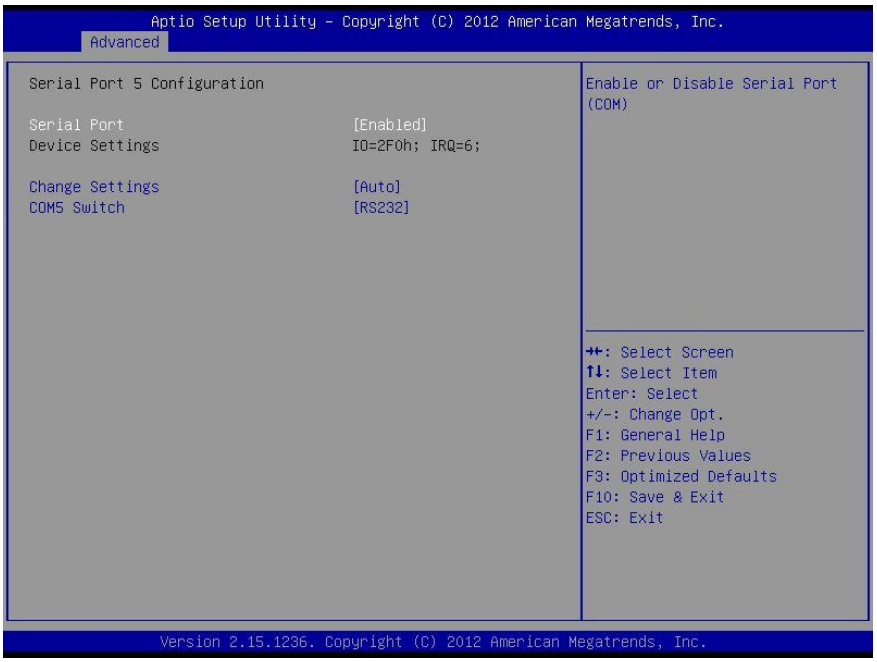


❑ **Serial Port**
This item will allow users to enable or disable serial port.

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

❑ **COM4 Switch**
Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

■ Serial Port 5 Configuration

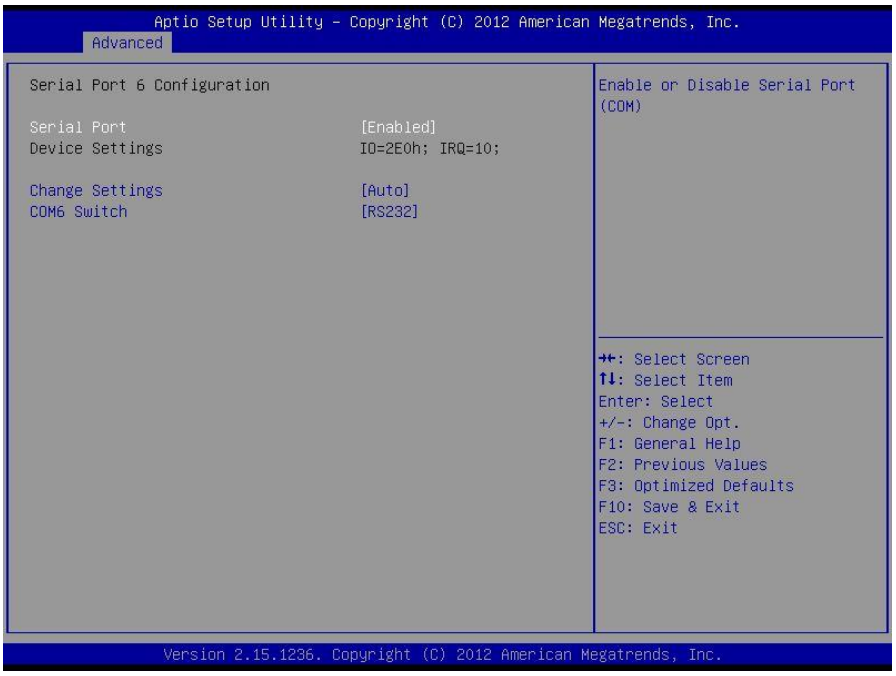


❑ **Serial Port**
This item will allow users to enable or disable serial port.

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

❑ **COM5 Switch**
Change the Serial interface. Select <RS232> ,<RS422> or <RS485> interface.

■ Serial Port 6 Configuration



❑ Serial Port

This item will allow users to enable or disable serial port.

❑ Change Settings

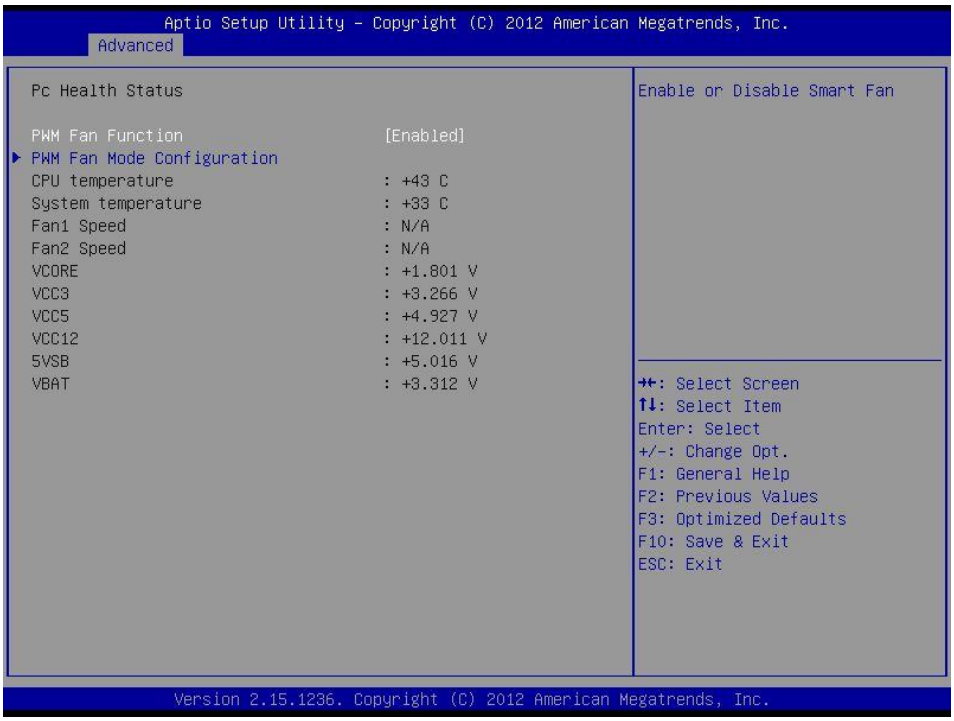
This setting is used to change the address & IRQ settings of the specified serial port.

❑ COM6 Switch

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

4.3.9 PC Health Status

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



■ PWM Fan Function

This item will allow users to enable or disable PWM Fan.

■ PWM Fan Mode Configuration

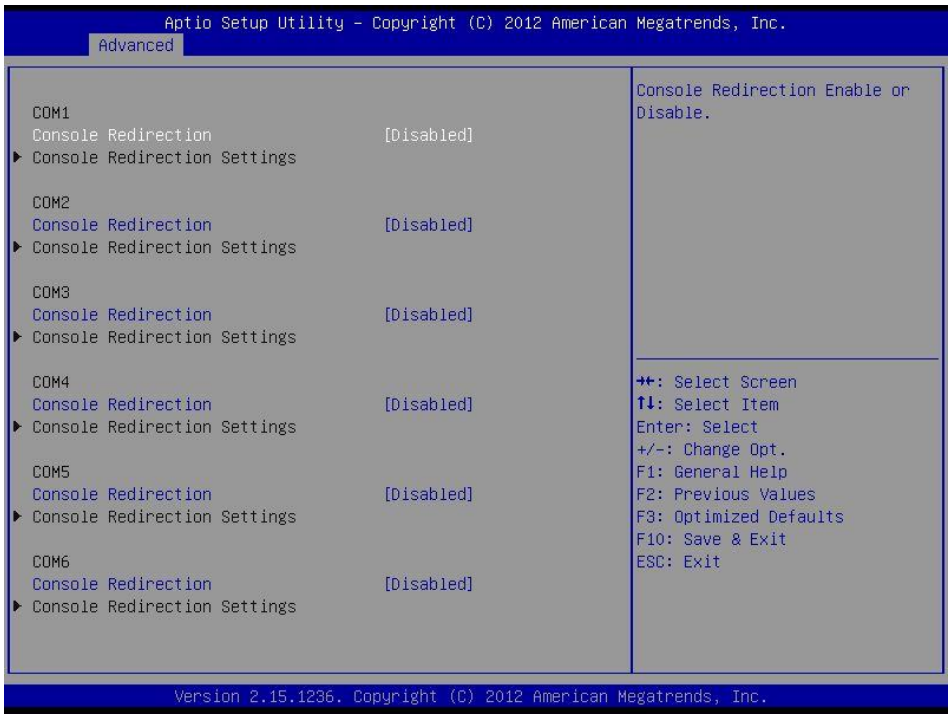
❑ PWM Fan 1 Duty

This item allows users to change the PWM Fan 1 duty.

❑ PWM Fan 2 Duty

This item allows users to change the PWM Fan 2 duty.

4.3.10 Serial Port Console Redirection

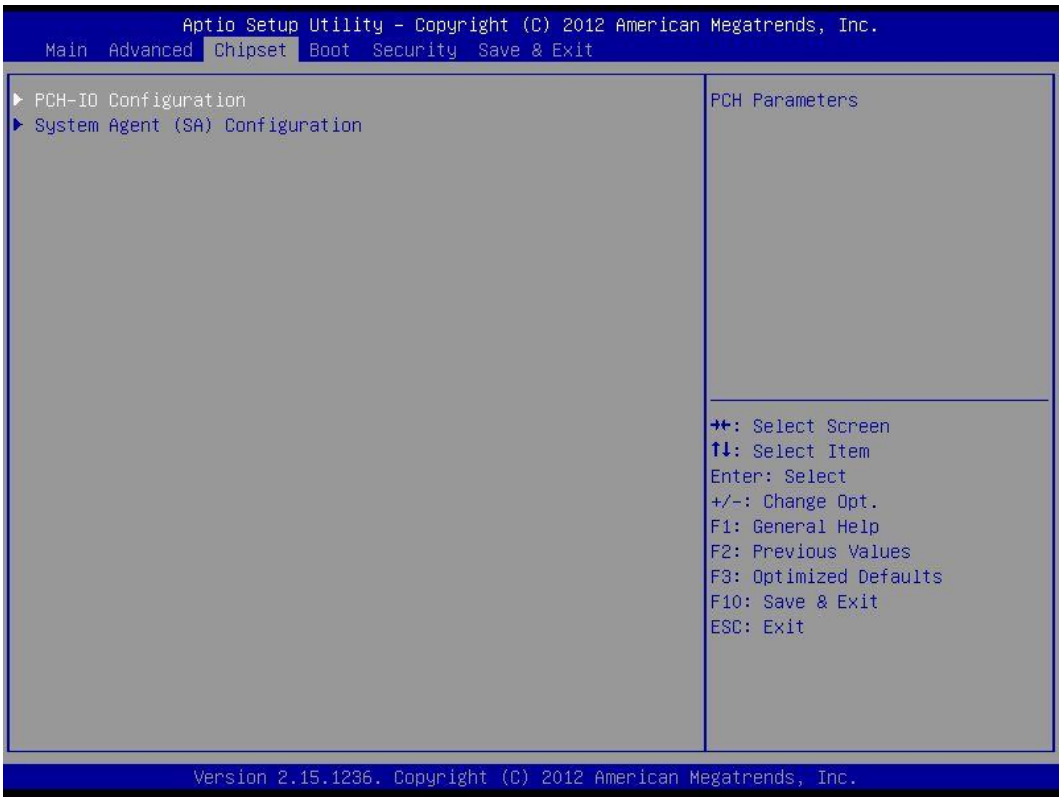


■ Console Redirection

This item allows users to enable or disable console redirection.

4.4 Chipset

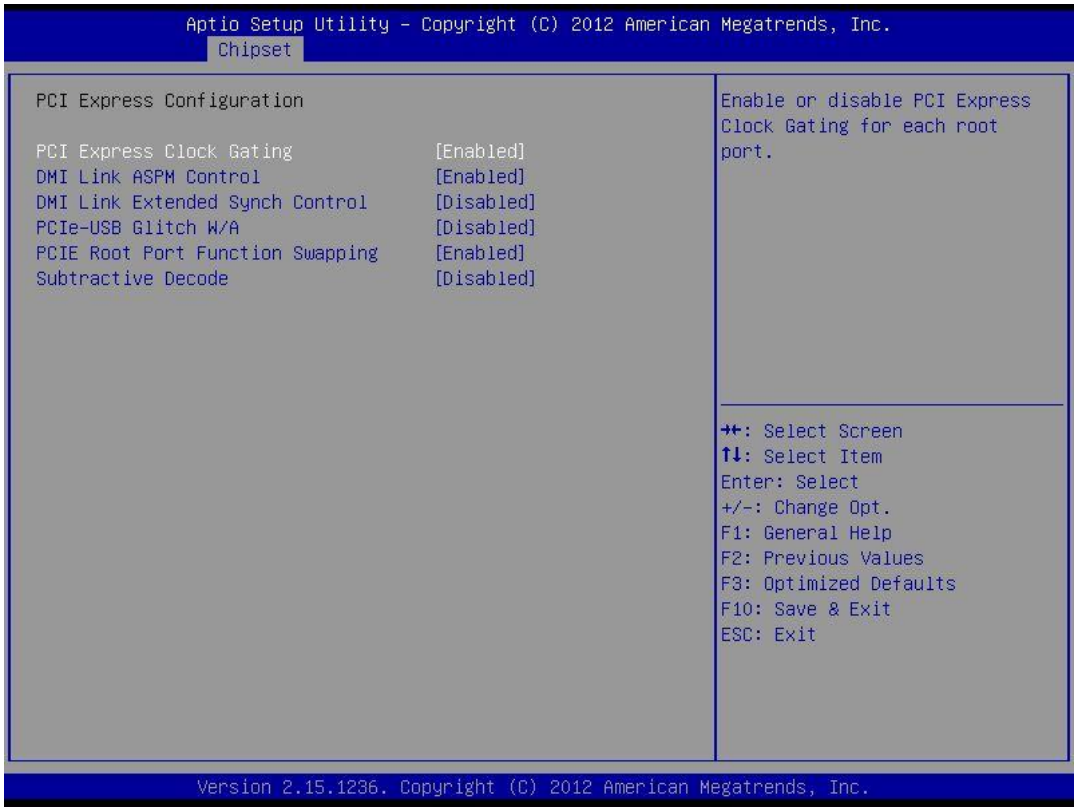
This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



4.4.1 PCH-IO Configuration

This section allows you to configure the chipset.

■ PCI Express Configuration



❑ PCI Express Clock Gating

This item allows users to enable or disable the PCI Express Clock Gating.

❑DMI Link ASPM Support

This item allows users to enable or disable ASPM.

❑ DMI Link Extended Synch Control

This item allows users to enable or disable DMI Link Extended Synch.

❑ PCIe-USB Glitch W/A

This item allows users to enable or disable PCIe-USB Glitch W/A.

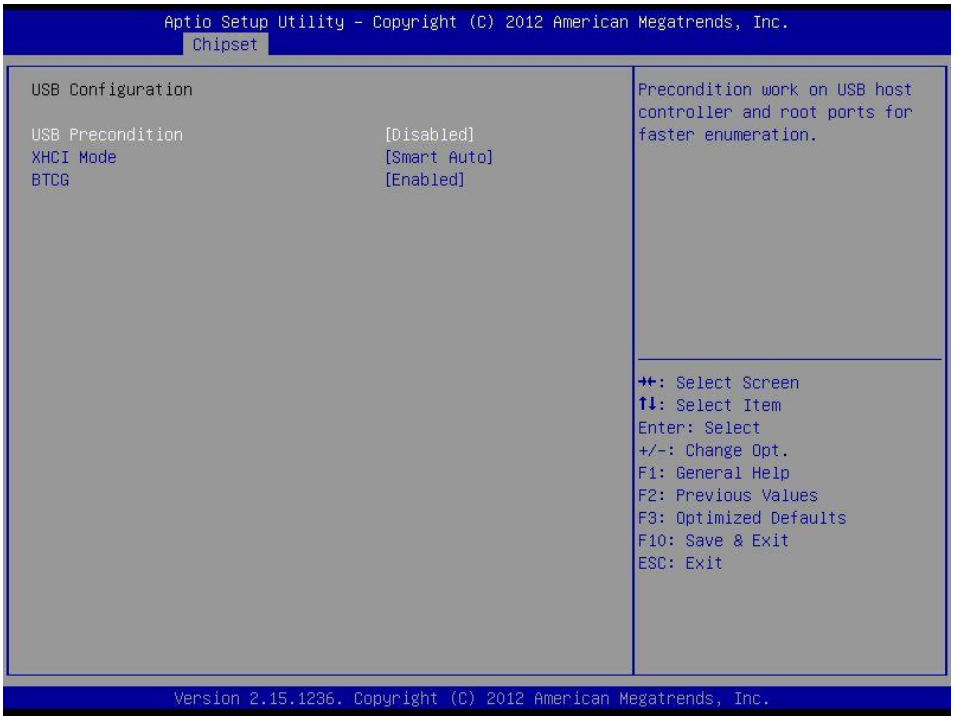
❑ PCIE Root Port Function Swapping

This item allows users to enable or disable PCIE Root Port Function Swapping.

❑ Subtractive Decode

This item allows users to enable or disable Subtractive Decode.

■ USB Configuration

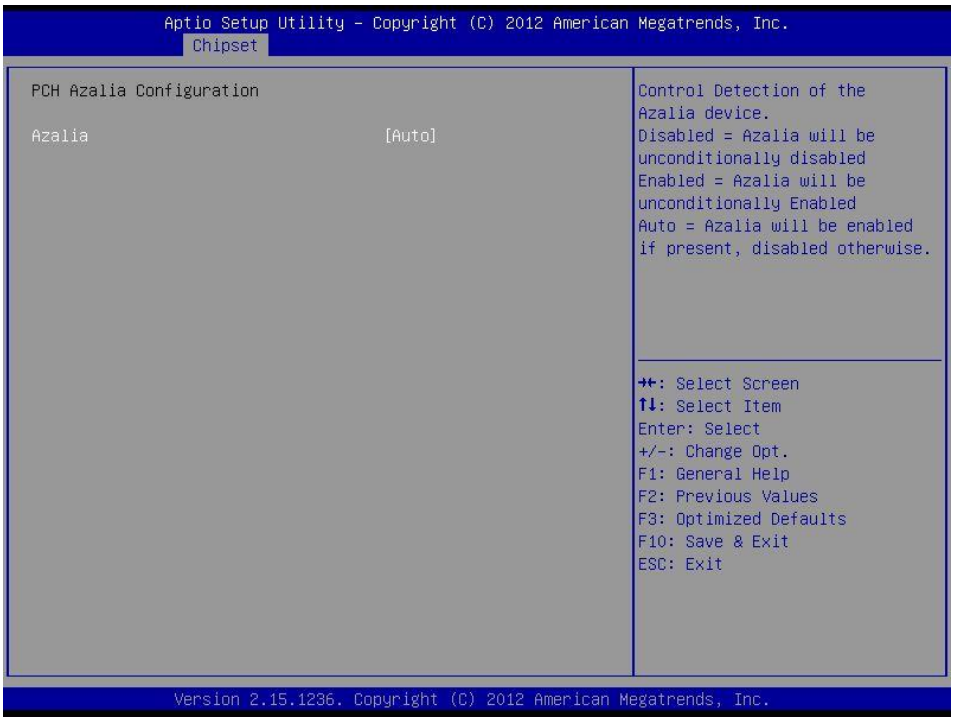


❑ **USB Precondition**
This item allows user to enable or disable USB Precondition.

❑ **XHCI Mode**
Select Smart auto, Auto, Enabled, Disable and Manual Mode of operation of XHCI controller.

❑ **BTCG**
Enables or disables the BTCG function.

■ PCH Azalia Configuration



❑ **Azalia**
Control detection of the Azalia device.
Disabled = Azalia will be unconditionally disabled
Enabled = Azalia will be unconditionally enabled
Auto = Azalia will be enabled if present, disabled otherwise

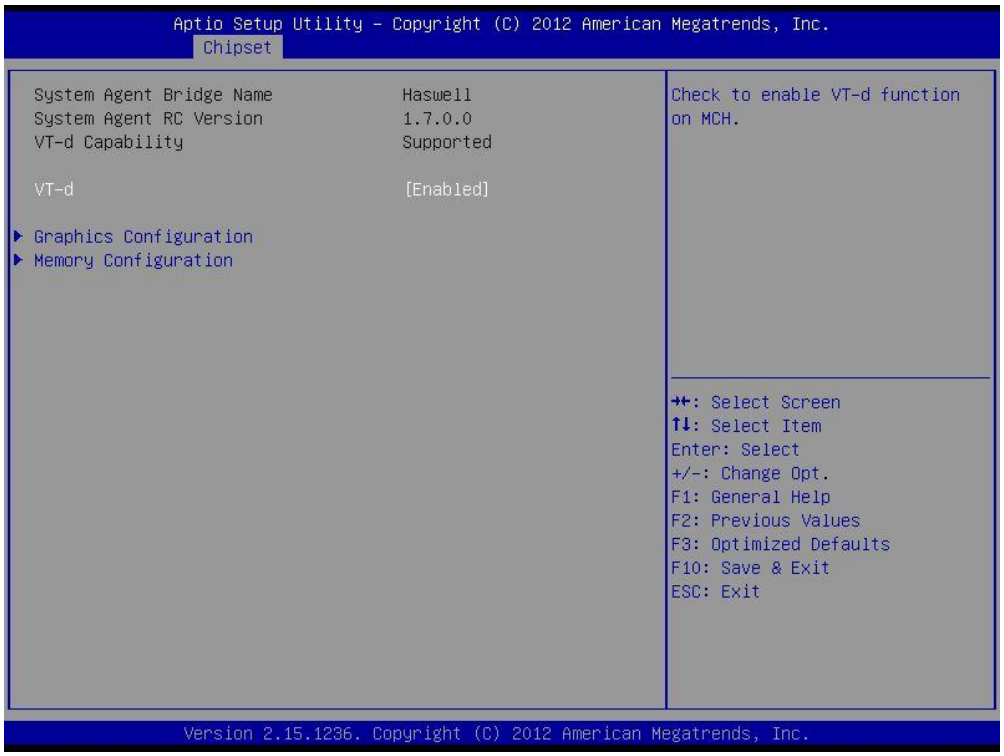
■ DeepSx Power Policies

Enable or disable deep sleep mode.

■ Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:
Power Off: Leaves the computer in the power off state.
Power On: Leaves the computer in the power on state.
Last State: Restores the system to the previous status before power failure or interrupt occurred.

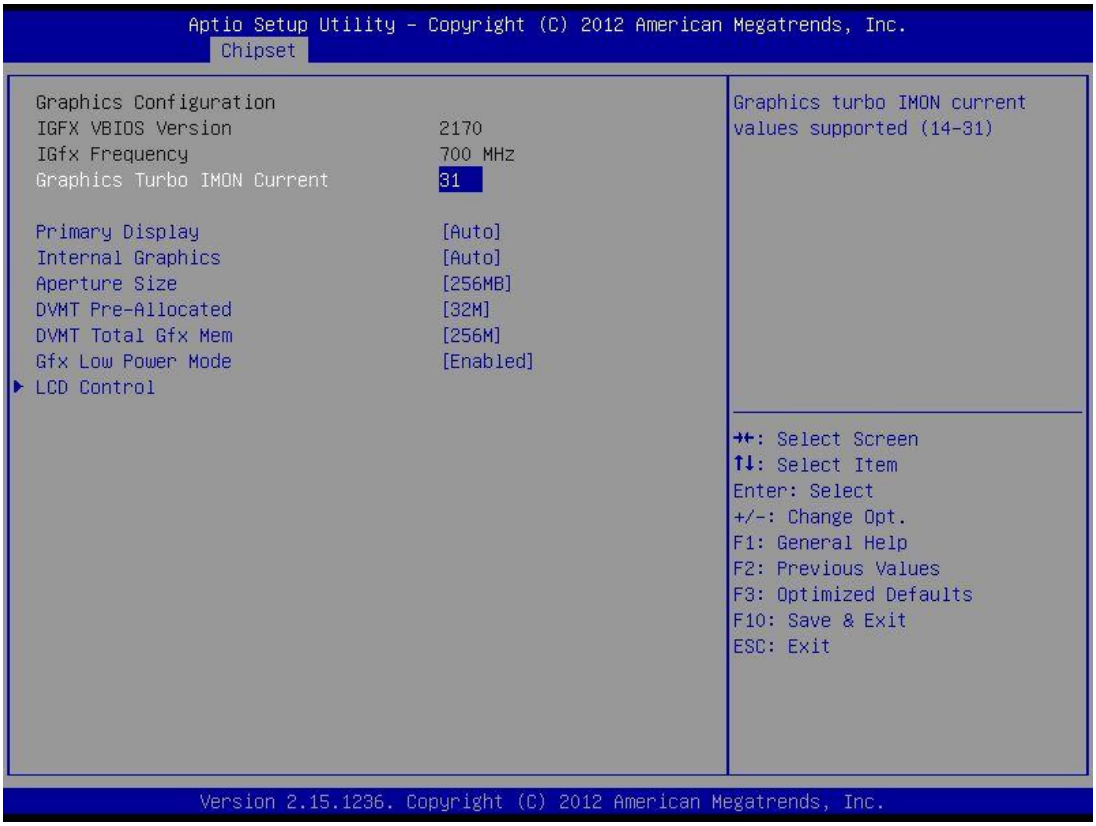
4.4.2 System Agent (SA) Configuration



■ VT-d

This item allows users to enable or disable VT-d.

■ Graphic Configuration



❑ **Graphics Turbo IMON Current**

Graphics turbo IMON current values supported (14-31).

❑ **Primary Display**

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

❑ **Internal Graphics**

"Auto or Disable or Enable" Internal Graphics.

❑ **Aperture Size**

Aperture size optimal between 128MB, 256MB, or 512MB.

❑ **DVMT Pre-Allocated**

DVMT pre-allocated (fixed) Graphics memory size optimal from 32M to 1024M.

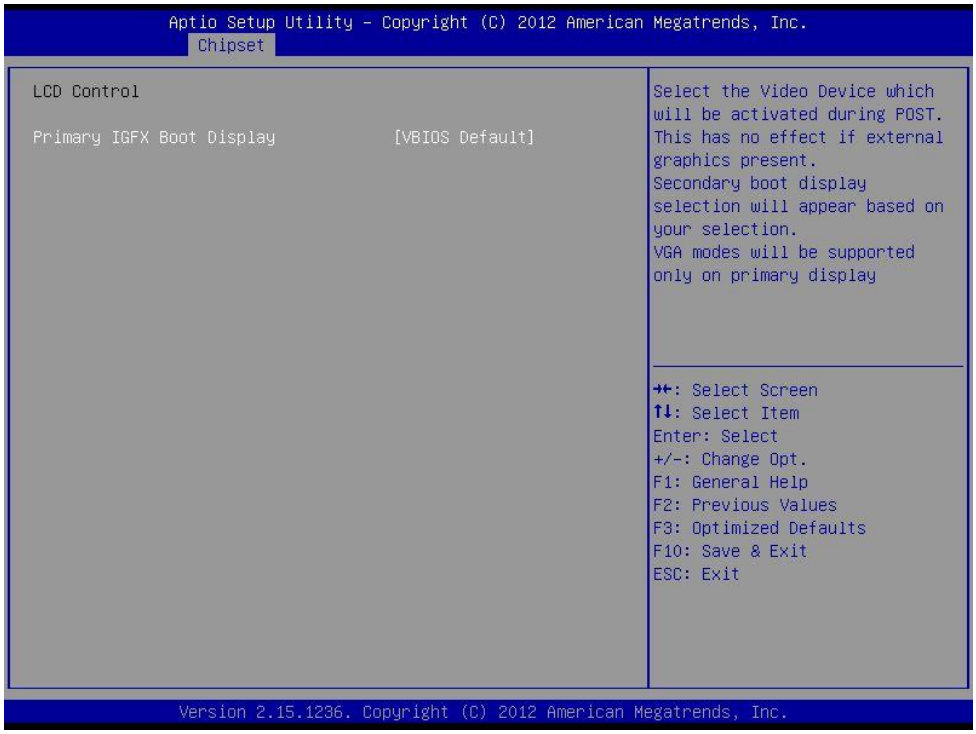
❑ **DVMT Total Gfx Mem**

DVMT Total Gfx Mem optimal Between 128M, 256M or MAX.

❑ **Gfx Low Power Mode**

This item allows users to enable or disable IGD low power mode.

❑ LCD Control



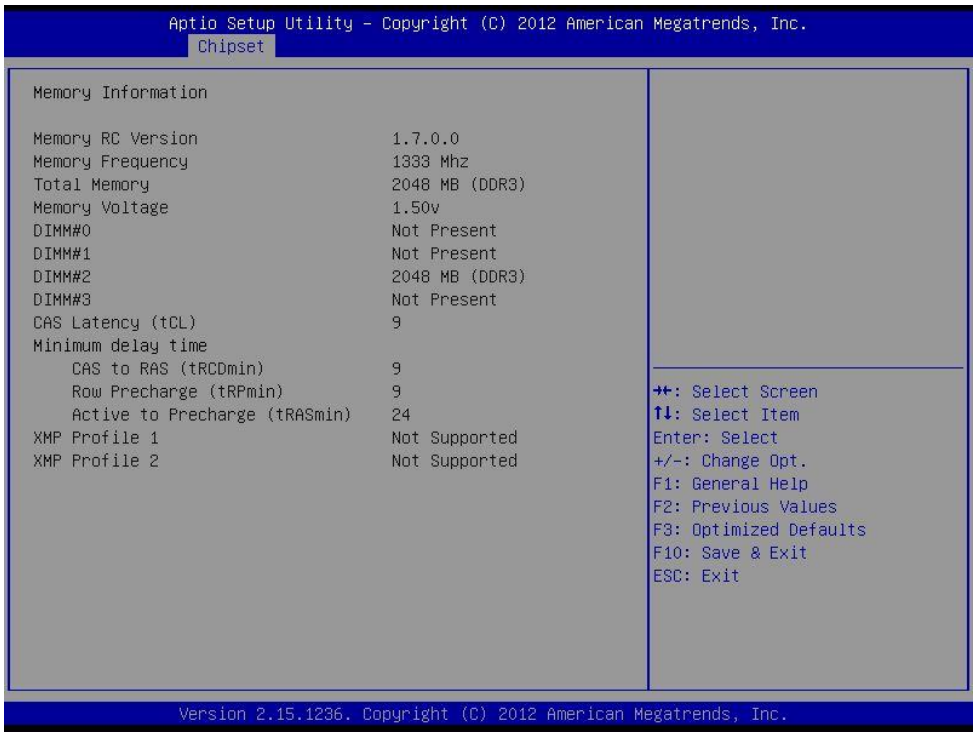
◆ Primary IGFX Boot Display

Select the Video Device that will be activated during POST. This has no effect if external graphics present. Secondary booty display selection will appear based on your selection. VGA modes will be supported only on primary display.

NOTE

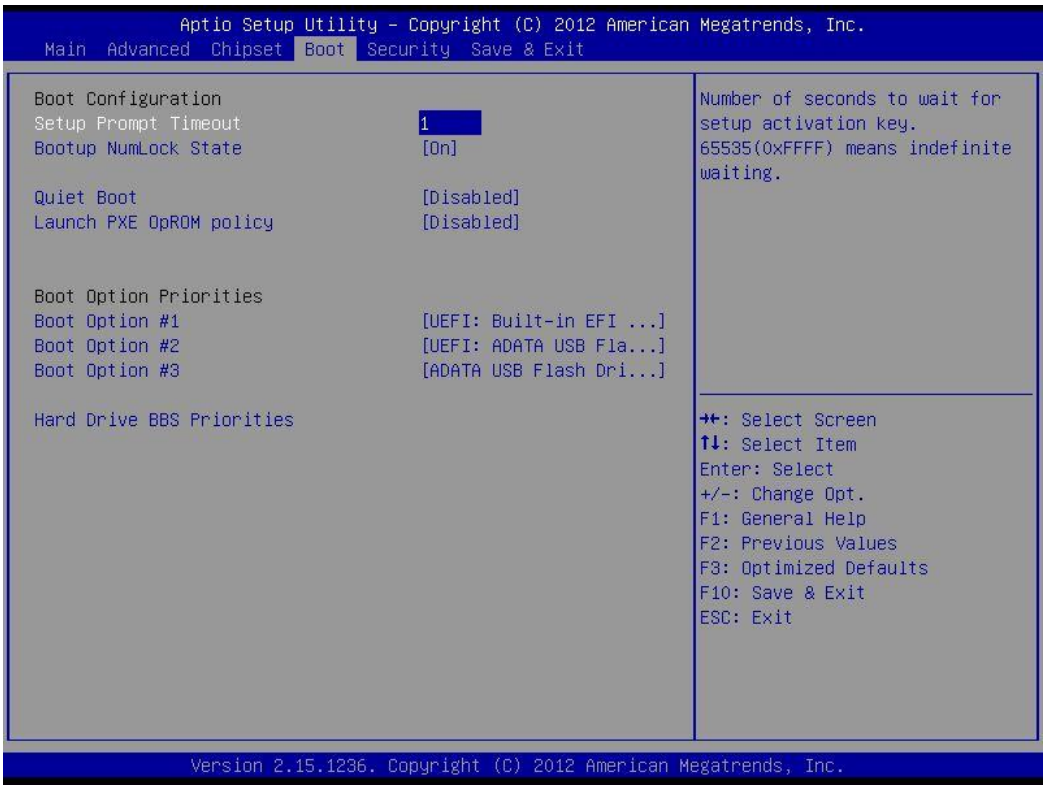
The triple display can only working PASS under Windows 7, and the 2 and 3rd display can not work under DOS.

■ Memory Information



4.5 Boot

This section allows you to configure the boot settings.



4.5.1 Setup Prompt Timeout

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

4.5.2 Bootup NumLock State

Select the Power-on state for Numlock.

4.5.3 Quiet Boot

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

4.5.4 Launch PXE OpEOM Policy

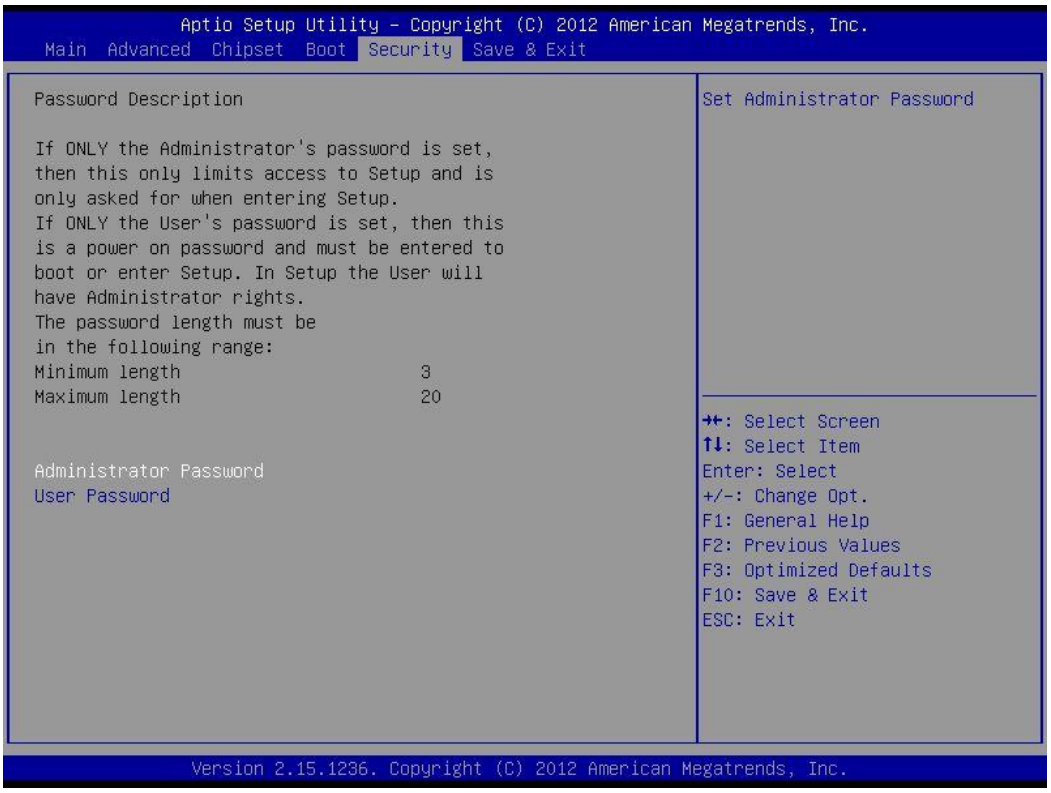
This option controls the execution of UEFI and Legacy PXE OpROM.

4.5.5 Boot Option Priorities

Set the system boot order.

4.6 Security

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



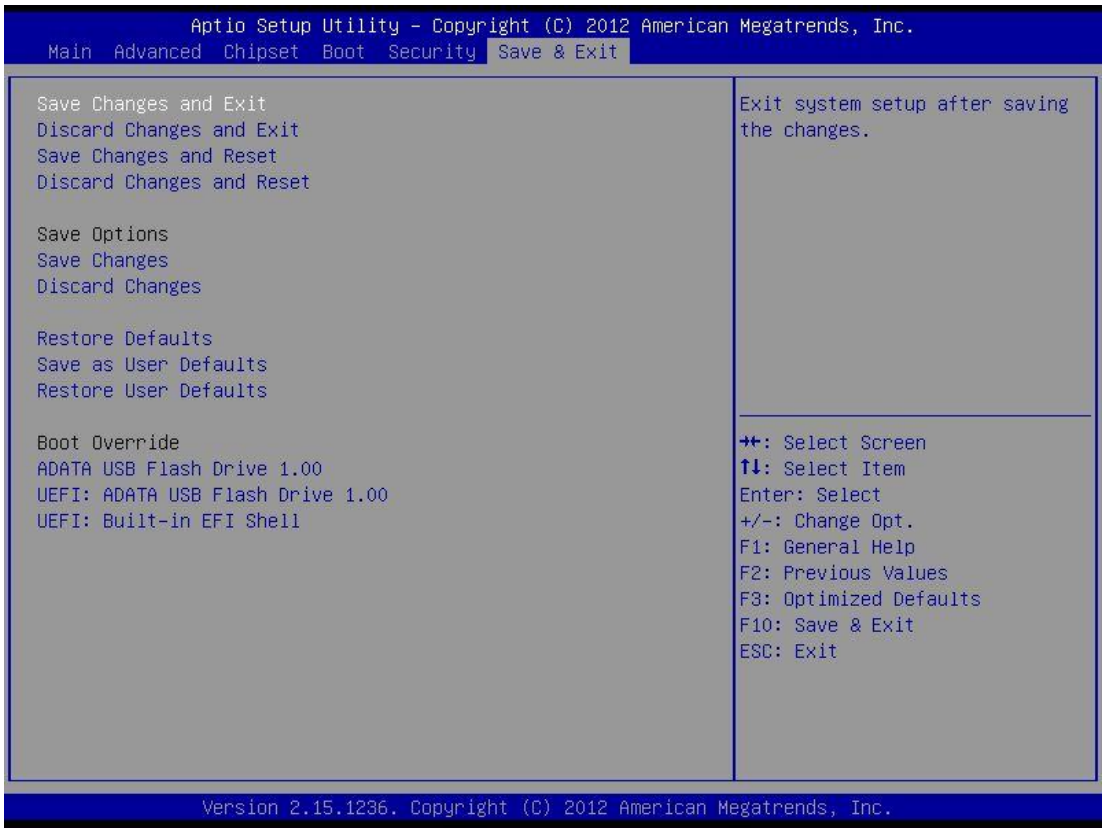
4.6.1 Administrator Password

Administrator Password controls access to the BIOS Setup utility.

4.6.2 User Password

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

4.7 Save & Exit



4.7.1 Save Changes and Exit

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

4.7.2 Discard Changes and Exit

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

4.7.3 Save Changes and Reset

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

4.7.4 Discard Changes and Reset

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

4.7.5 Save Changes

This item allows user to save changes done so far to any of the options.

4.7.6 Discard Changes

This item allows user to discard changes done so far to any of the options.

4.7.7 Restore Defaults

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

4.7.8 Save as User Defaults

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

4.7.9 Restore User Defaults

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

Boot Overfide

Boot device selection can override your boot priority.

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 for Cincoze DE series product

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. **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.

7.7.11.3GPIO7 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#.

7.7.12.1GPIO8 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.

7.7.12.2GPIO8 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

<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 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 DIO Port base address is 0x0A00h

5.1.1.6 DATA Bit Table (DI/O)

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 Digital I/O (DIO) Hardware Specification

- XCOM+ / 2XCOM+ : Isolated power in V+
- XCOM- / 2XCOM- : Isolated power in V-
- Isolated power in DC voltage : 9~30V

- 8x 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

- 8x 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)

www.cincoze.com