# DX-1100

## User Manual




**Rugged Workstation**

9/8th Generation Intel® Xeon® and Core™ Processors,
Extreme Performance, Compact and Modular Rugged Workstation

Version: V1.53

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# Preface

## Revision

| Revision | Description | Date |
|---|---|---|
| 1.00 | New Release | 2019/02/11 |
| 1.10 | Add E-Mark Certified | 2019/08/07 |
| 1.20 | Update the Supporting Capacity of Memory to the latest | 2019/11/08 |
| 1.30 | Correction Made | 2019/12/18 |
| 1.40 | Add the latest supported processors | 2019/12/31 |
| 1.41 | Correction Made | 2020/04/09 |
| 1.42 | New Format Updated | 2020/09/01 |
| 1.43 | Correction Made | 2020/11/13 |
| 1.44 | LVD Number Updated | 2021/02/09 |
| 1.45 | Add DC_IN1 Warning | 2021/04/20 |
| 1.46 | Correction Made | 2021/06/28 |
| 1.47 | Add CMI-XM12LAN01-R10 installation steps | 2021/07/26 |
| 1.48 | Correction Made | 2022/05/31 |
| 1.49 | Correction Made | 2023/04/14 |
| 1.50 | Antenna Cutout Universal Bracket (Model No. UB0932) Installation Added | 2025/03/18 |
| 1.51 | Added CMI-CAN01 | 2026/04/21 |
| 1.52 | Added PPM-I360-01 | 2026/09/18 |
| 1.53 | Correction Made | 2026/10/14 |

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## Acknowledgement

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

## Disclaimer

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

## Declaration of Conformity



**FCC**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



**CE**

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

## Product Warranty Statement

**Warranty**

Cincoze products are warranted by Cincoze Co., Ltd. to be free from defect in materials and workmanship for 2 years from the date of purchase by the original purchaser. During the warranty period, we shall, at our option, either repair or replace any product that proves to be defective under normal operation. Defects, malfunctions, or failures of the warranted product caused by damage resulting from natural disasters (such as by lightening, flood, earthquake, etc.), environmental and atmospheric disturbances, other external forces such as power line disturbances, plugging the board in under power, or incorrect cabling, and damage caused by misuse, abuse, and unauthorized alteration or repair, and the product in question is either software, or an expendable item (such as a fuse, battery, etc.), are not warranted.

**RMA**

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

- **RMA Instruction**
  - Customers must fill in Cincoze Return Merchandise Authorization (RMA) Request Form and obtain an RMA number prior to returning a defective product to Cincoze for service.
  - Customers must collect all the information about the problems encountered and note anything abnormal and describe the problems on the “Cincoze Service Form” for the RMA number apply process.
  - Charges may be incurred for certain repairs. Cincoze will charge for repairs to products

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

- Customers agree to ensure the product or assume the risk of loss or damage during transit, to prepay shipping charges, and to use the original shipping container or equivalent.
- Customers can be sent back the faulty products with or without accessories (manuals, cable, etc.) and any components from the system. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, Cincoze is not responsible for the devices/parts.
- Repaired items will be shipped along with a "Repair Report" detailing the findings and actions taken.

**Limitation of Liability**

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

## Technical Support and Assistance

1. Visit the Cincoze website at www.cincoze.com where you can find the latest information about the product.
2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

## Conventions Used in this Manual



**WARNING** This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.




**CAUTION** 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 work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
15. Equipment intended only for use in a RESTRICTED ACCESS AREA.

## Package Contents

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

| Item | Description | Q'ty |
|---|---|---|
| 1 | Rugged Workstation | 1 |
| 2 | CPU Heatsink Pack | 1 |
| 3 | Screw Pack | 1 |
| 4 | Wall Mounting Kit | 1 |
| 5 | Power Terminal Block Connector | 1 |
| 6 | Remote Power On/Off Terminal Block Connector | 1 |
| 7 | Fan Terminal Block Connector | 1 |
| 8 | DVI-I to VGA Adaptor | 1 |

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

## Ordering Information

| Model No. | Product Description |
|---|---|
| DX-1100-R10 | 9/8th Generation Intel® Xeon® and Core™ Processors,<br>Extreme Performance, Compact and Modular Rugged Workstation |

# Chapter 1
# Product Introductions

## 1.1 Overview

The Cincoze DX-1100 is a rugged workstation specifically designed to satisfy demands for the high-performance computing platform. Based on LGA 1151 socket and Intel® C246 chipset, the system supports 9/8th generation Intel Xeon® and Core™ processors (formerly codenamed Coffee Lake S) with up to 8 cores and 64GB memory capacity.

Despite its remarkably compact size, the DX-1100 still delivers the maximum flexibility of modular I/O expansions and provides dual hot-swap 2.5" HDD/SSD tray with RAID function. Thanks to Cincoze' exclusive CFM (Control Function Module) technologies, the DX-1100 can be configured instantly with Power over Ethernet and power ignition sensing functions to be applied in many industrial applications, such as machine vision, in-vehicle transportation, and mobile surveillance.

Featuring rugged construction, fanless/cable-less/jumper-less design, wide operating temperature (-40 to +70°C), wide range DC power input (9-48 VDC), high tolerance to vibration and shock (5/50 Grms), the DX-1100 is maintenance-free and ideal to be deployed in harsh environments.

## 1.2 Highlights




**Workstation Performance & Compact**

Supporting 9/8th Gen Intel® Xeon® E-series processors (up to 8-core, 4.7 GHz), the DX-1100 delivers workstation performance available in a compact size for multi-task applications and space-limited environments.



**Modular Computing**

Based on Cincoze' trusted, innovative, and reliable modular design, the DX-1100 brings the maximum flexibility and allows users to configure I/O interfaces according to specific application requirements.




**Application-driven Functions**

DX-1100 allows users extend functions and additional I/O interfaces according to their requirements. The available option modules include power ignition sensing, M12 PoE, GbE LAN, COM ports and Digital I/Os.

## 1.3 Product pictures




**Front**




**Rear**

## 1.4 Key Features

- Supports 9/8th Generation Intel® Xeon® and Core™ Octa-core Processor
- Triple Independent Display with 4K/2K UHD Resolution (HDMI / DP / DVI-I)
- 2x 2.5" Hot Swap SATA HDD/SSD Tray, 3x mSATA Socket
- 2x USB 3.1 (10Gb/s) for Ultimate Data-transfer Speed
- 1x M.2 E Key Socket (CNVi), 3x Full-size Mini-PCIe Socket, 1x SIM Card Socket
- Supports CMI Interface for I/O Expandability
- Supports PoE+ and Power Ignition Sensing (with optional CFM modules)
- Wide Operating Temperature -40°C to 70°C
- E-Mark (E13, No.10R-0515210), LVD EN62368-1, EN50155 / EN50121-3-2

# 1.5 Specifications

| Model Name | DX-1100 |
|---|---|
| **System** | |
| Processor | • 9th Generation Intel® Coffee Lake-R S Series CPU:<br>- Intel® Xeon® E-2278GEL 8 Cores Up to 3.9 GHz, TDP 35W<br>- Intel® Core™ i7-9700E 8 Cores Up to 4.4 GHz, TDP 65W<br>- Intel® Core™ i5-9500E 6 Cores Up to 4.2 GHz, TDP 65W<br>- Intel® Core™ i3-9100E 4 Cores Up to 3.7 GHz, TDP 65W<br>- Intel® Core™ i7-9700TE 8 Cores Up to 3.8 GHz, TDP 35W<br>- Intel® Core™ i5-9500TE 6 Cores Up to 3.6 GHz, TDP 35W<br>- Intel® Core™ i3-9100TE 4 Cores Up to 3.2 GHz, TDP 35W<br>• 8th Generation Intel® Coffee Lake S Series CPU:<br>- Intel® Xeon® E-2176G 6 Cores Up to 4.7 GHz - 12M Cache, TDP 80W<br>- Intel® Xeon® E-2124G 4 Cores Up to 4.5 GHz - 8M Cache, TDP 71W<br>- Intel® Core™ i7-8700 6 Cores Up to 4.6 GHz - 12M Cache, TDP 65W<br>- Intel® Core™ i5-8500 6 Cores Up to 4.1 GHz - 9M Cache, TDP 65W<br>- Intel® Core™ i3-8100 4 Cores 3.6 GHz - 6M Cache, TDP 65W<br>- Intel® Core™ i7-8700T 6 Cores Up to 4.0 GHz - 12M Cache, TDP 35W<br>- Intel® Core™ i5-8500T 6 Cores Up to 3.5 GHz - 9M Cache, TDP 35W<br>- Intel® Core™ i3-8100T 4 Cores 3.1 GHz - 6M Cache, TDP 35W<br>- Intel® Pentium® G5400 2 Cores 3.7 GHz - 4M Cache, TDP 58W<br>- Intel® Pentium® G5400T 2 Cores 3.1 GHz - 4M Cache, TDP 35W<br>- Intel® Celeron® G4900 2 Cores 3.1 GHz - 2M Cache, TDP 54W<br>- Intel® Celeron® G4900T 2 Cores 2.9 GHz - 2M Cache, TDP 35W |
| Chipset | • Intel® C246 |
| BIOS | • AMI 32 MB BIOS |
| Memory | • 2x DDR4-2666/2400 MHz SO-DIMM Sockets<br>• Support up to 64 GB (Un-buffered and Non-ECC type)<br>* i3/Pentium/Celeron: DDR4 2400 MHz |
| **Graphics** | |
| Graphics Engine | • Integrated Intel® UHD Graphics<br>(Xeon: UHD P630; i7/i5/i3: UHD 630; Pentium/Celeron: UHD 610)<br>• Supports Triple Independent Display (DVI-I/DisplayPort/HDMI®) |
| **Audio** | |
| Audio Codec | • Realtek® ALC888, High Definition Audio |

| | |
|---|---|
| **I/O** | |
| Connector | • 1x DVI-I Connector (VGA: 1920 x1080 @ 60 Hz; DVI-D: 1920 x1200 @ 60 Hz) |
| DisplayPort | • 1x DisplayPort Connector (4096 x 2304 @ 60Hz, According to CPU Specifications) |
| HDMI | • 1x HDMI® Connector (3840 x 2160 @30Hz) |
| LAN | • 2x GbE LAN (Support WoL, Teaming, Jumbo Frame, IEEE 1588v2 and PXE), RJ45<br>- GbE1: Intel® I219-LM<br>- GbE2: Intel® I210 |
| Flow Control | • 4x RS-232/422/485 with Auto Flow Control (Support 5V/12V), DB9 |
| USB | • 2x USB 3.2 Gen2x1 (10Gbps)<br>• 6x USB 3.2 Gen1x1 (5Gbps) |
| Mic-in | • 1x Line-out & 1x Mic-in, Phone Jack 3.5mm |
| ATX Power | • 1x ATX Power On/O Button |
| Reset Button | • 1x Reset Button |
| Mode Switch | • 1x AT/ATX Mode Switch |
| CMOS Switch | • 1x Clear CMOS Switch |
| Remote Power On/O Connector | • 1x Remote Power On/O Connector, 2-pin Terminal Block |
| Terminal Block | • 1x External FAN Connector, 4-pin Terminal Block (Supports Smart Fan by BIOS) |
| **Storage** | |
| HDD/SSD | • 2x 2.5" Front Accessible SATA HDD/SSD Bay (SATA 3.0) |
| mSATA | • 3x mSATA Socket (SATA 3.0, shared by Mini-PCIe socket) |
| RAID | • Supports S/W RAID 0, 1, 5 & 10 |
| **Expansion** | |
| CFM (Control Function Module) Interface | • 1x Control Function Module (CFM) Interface |
| CMI (Combined Multiple I/O) Interface | • 2x Combined Multiple I/O (CMI) High Speed Interface<br>• 1x Combined Multiple I/O (CMI) Low Speed Interface |
| M.2 E Key Socket | • 1x M.2 2230 Socket (Key E), supports WiFi/Bluetooth module or BIOS Selectable Intel® CNVi (Integrated WiFi/Bluetooth) |
| Mini-PCIe | • 3x Full-size Mini-PCIe Socket |

| | |
|---|---|
| SIM Socket | • 1x SIM Socket |
| Antenna Hole | • 3x Antenna Hole |
| **Other Function** | |
| Instant Reboot | • Supports Instant Reboot Technology (0.2 sec) |
| CMOS | • SuperCap Integrated for CMOS Battery Maintenance-free Operation |
| Watchdog Timer | • Software Programmable Supports 256 Levels System Reset |
| **Power Requirement** | |
| Power Type | • AT / ATX |
| Power Supply Voltage | • 9-48VDC |
| Terminal Block | • 1x 3-pin Terminal Block |
| Power Adapter | • Power Adapter AC/DC 24V/5A 120W or 24V/9.2A 220W (Optional) |
| **Physical** | |
| Dimension ( W x D x H ) | • 242.2 x 173 x 77mm |
| Weight Information | • 3.6 kg |
| Construction | • Extruded Aluminum with Heavy Duty Metal |
| Mounting | • Wall mount / VESA mount / DIN Rail Mount / Side Mount |
| Physical Design | • Unibody Chassis<br>• Fanless Design<br>• Jumper-less Design<br>• Cable less Design |
| **Protection** | |
| Reverse Power Input Protection | • Yes |
| Over Voltage Protection | • Protection Range: 51~58V<br>• Protection Type: shut down operating voltage, re-power on at the preset level to recover |
| Over Current Protection | • 15A |
| **Operating System** | |
| Windows | • Windows® 10 |
| Linux | • Supports by Project |
| **Environment** | |

| | |
|---|---|
| Operating Temperature | • 35W TDP Processor: -40°C to 70°C<br>• 54~65W TDP Processor: -40°C to 45°C<br>• 71~80W TDP Processor: -40°C to 40°C<br>* PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling)<br>* With extended temperature peripherals; Ambient with air flow<br>* According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14<br>* Comply with EN50155 dry heat thermal test (85°C for 10 minutes) |
| Storage Temperature | • -40°C to 85°C |
| Relative Humidity | • 95% @ 40°C (non-Condensing) |
| Shock | • IEC60068-2-27: Operating, 50 Grms, Half-sine 11 ms Duration, w/ SSD<br>• IEC/EN61373: Operating, 50 Grms, Half-sine 30 ms Duration, w/ SSD |
| Vibration | • IEC60068-2-64: Operating, 5 Grms, 5-500 Hz, 3 Axes, w/ SSD<br>• IEC/EN61373: Operating, 1 Grms, 5-150 Hz, 3 Axes, w/ SSD |
| MTBF | • 407,391 Hours<br>- Database: Telcordia SR-332 Issue3, Method 1, Case 3 |
| EMC | • CE, UKCA, FCC, ICES-003 Class A<br>• E-mark |
| EMI | • CISPR 32 Conducted & Radiated: Class A<br>• EN/BS EN 50121-3-2 Conducted & Radiated: Class A<br>• EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A<br>• EN/BS EN61000-3-3 Voltage fluctuations & flicker<br>• FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A |
| EMS | • EN/IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>• EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 20 V/m<br>• EN/IEC 61000-4-4 EFT (with optional PPM module):<br>AC Power: 2 kV; DC Power: 1 kV; Signal: 2 kV<br>• EN/IEC 61000-4-5 Surges: AC Power: 2 kV<br>• EN/IEC 61000-4-6 CS: 10V<br>• EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m<br>• EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 0.5 cycles at 50 Hz |
| Safety | • LVD IEC/EN 62368-1 |
| Railway | • EMC:<br>EN 50155: 2007 / AC: 2012 Clause 5.4, 5.5<br>- EN 50121-1: 2017<br>- EN 50121-3-2: 2016<br>• Simulated Long Life Test: |

| | |
|---|---|
| | EN 50155: 2017 Clause 13.4.11.2<br>- IEC 61373 Edition 2.0: 2010, Category 1, Class B-Body mounted: Operating<br>• Vibration:<br>EN 50155: 2017 Clause 13.4.11.4<br>- IEC 61373 Edition 2.0: 2010, Category 1, Class B-Body mounted: Operating<br>• Shock:<br>EN 50155: 2017 Clause 13.4.11.3<br>- IEC 61373 Edition 2.0: 2010, Category 1, Class B-Body mounted: Operating<br>• Dry Heat Thermal Test<br>EN 50155: 2017 Clause 13.4.5.3<br>- Thermal Test Cycle: B<br>- Operating Temperature: OT4 (-40°C to 70°C), 85°C (for 10 minutes) |
| Fire Protection | • EN 45545-2 |

**Product Specifications and features are for reference only and are subject to change without prior notice. For more information, please refer to the latest product datasheet from Cincoze's website.*

# 1.6 System I/O

## 1.6.1 Front

**ATX Power On/Off**

Used to power-on or power-off the system

**HDMI Port**

Used to connect the system with HDMI monitor

**Power LED**

Indicates the power status of the system

**HDD LED**

Indicates the status of the hard drive

**IGN LED**

Indicates the status of the IGN function

**Temperature LED**

Indicates the temperature of the system

**Universal I/O Bracket**

Used to customized I/O output with optional modules

**USB 3.1 Port**

Used to connect USB 3.1/3.0/2.0/1.1 device

**USB 3.0 Port**

Used to connect USB 3.0/2.0/1.1 device

**IGN Setting Switch**

Used to set up IGN function

**SIM Card Slot**

Used to insert a SIM card

**Clear CMOS Switch**

Used to clear CMOS to reset BIOS

**Reset Button**

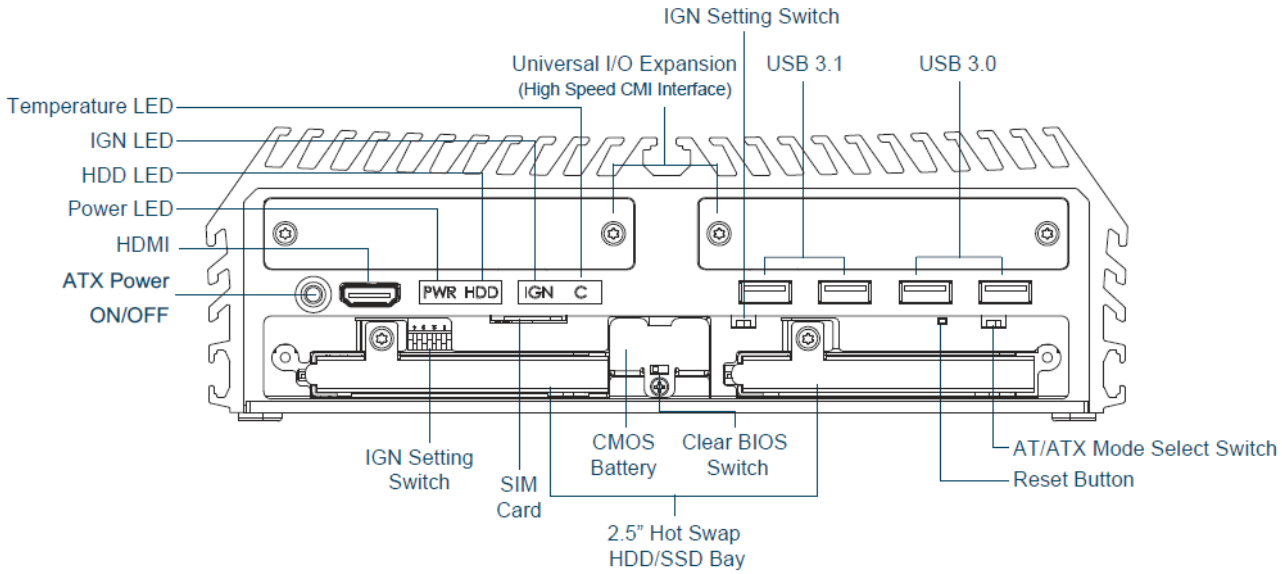
Used to reset the system

**AT/ATX Mode Select Switch**

Used to select AT or ATX power mode

**Removable 2.5” SATA HDD/SSD Bay**

Used to insert a 2.5” SATA HDD/SSD



## 1.6.2 Rear

**DC IN Terminal Block**

Used to plug a DC power input with terminal block

**Antenna Hole**

Used to connect an antenna for optional wireless module

**LAN Port**

Used to connect to local area network

**USB 3.0 Port**

Used to connect USB 3.0/2.0/1.1 device

**DVI-I Port**

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

**Display Port**

Used to connect a monitor with DisplayPort interface

**COM Port**

Used to connect to RS-232/422/485 serial devices

**Line-Out**

Used to connect a speaker

**Mic-In**

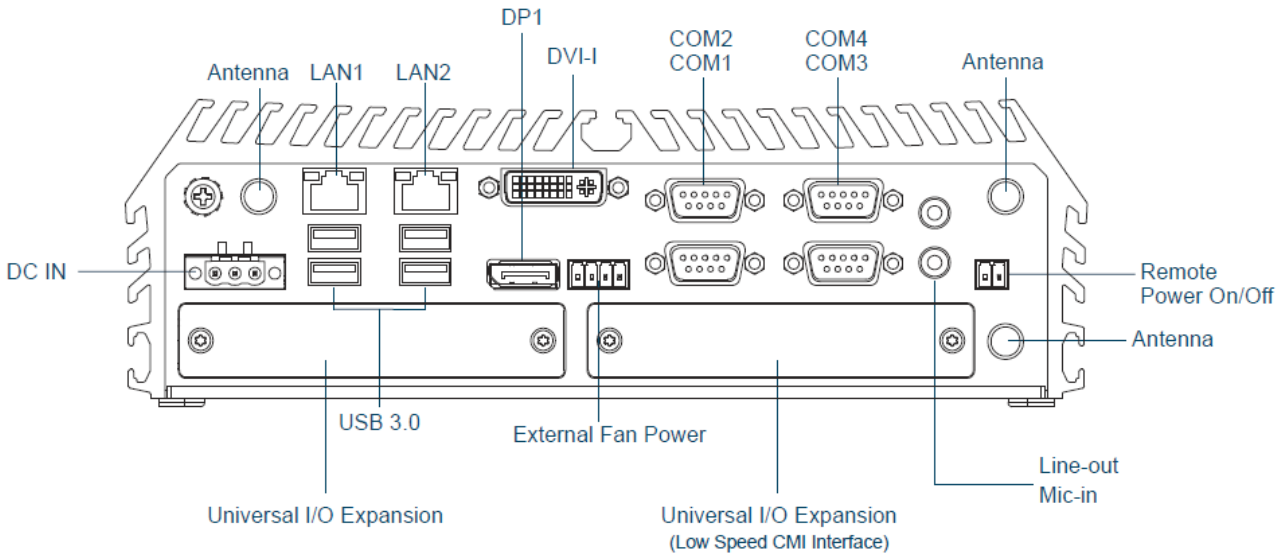
Used to connect a microphone

**Remote Power On/Off**

A terminal block used to connect to remote power on/off switch

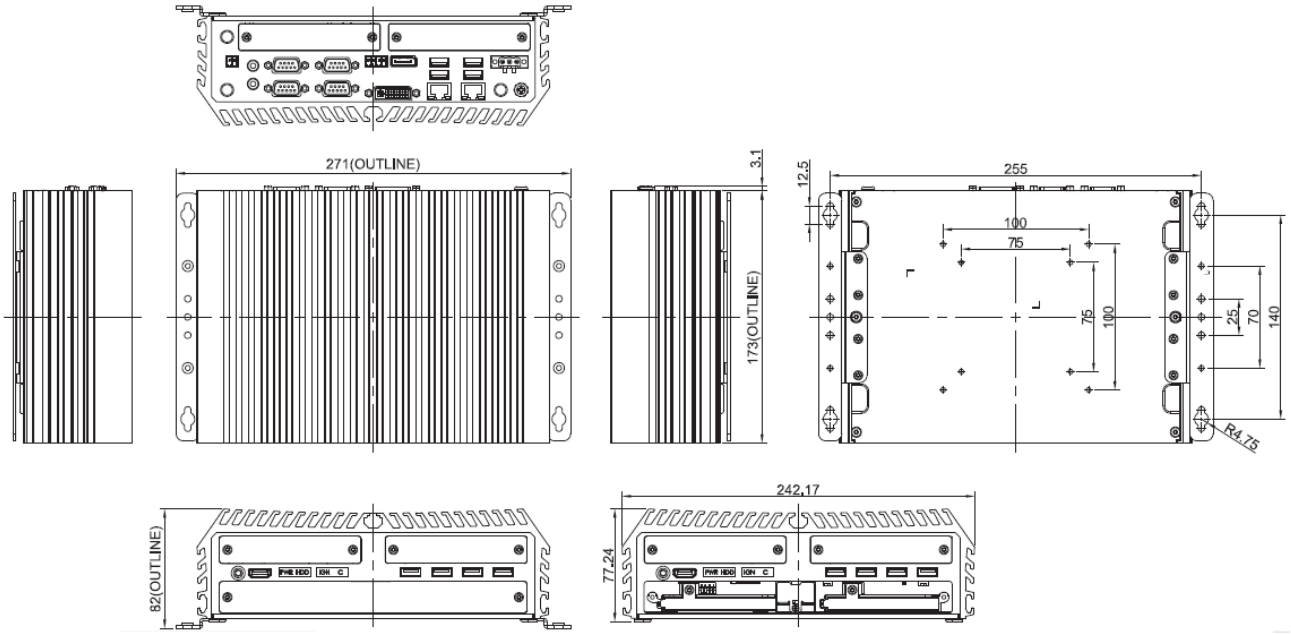
**Universal I/O Bracket**

Used to customized I/O output with optional modules



# 1.7 Mechanical Dimension

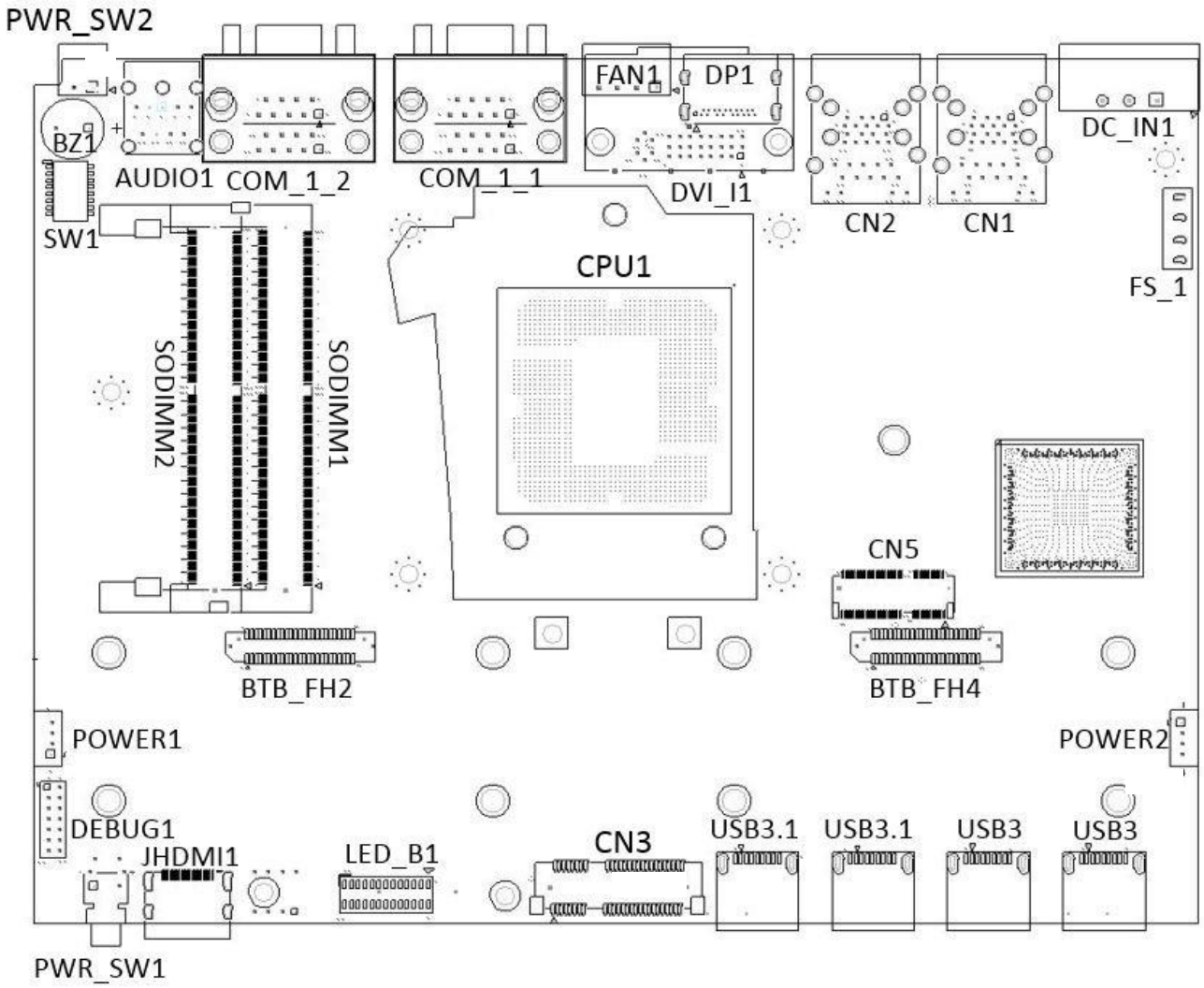
Unit: mm



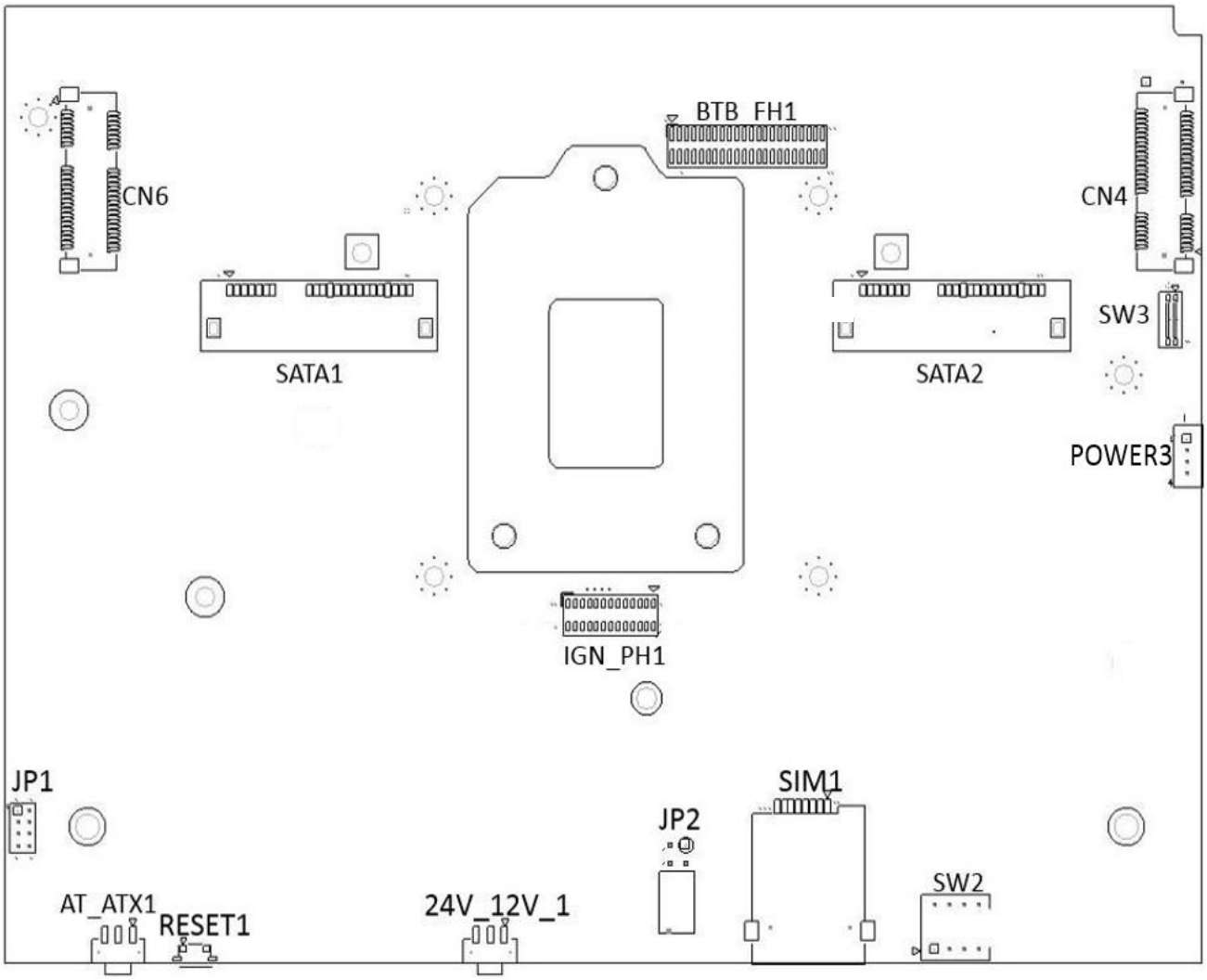
# Chapter 2
# Switches & Connectors

# 2.1 Location of Switches and Connectors

## 2.1.1 Top View



## 2.1.2 Bottom View



## 2.2 Switches and Connectors Definition

### List of Switch

| Location | Definition |
|---|---|
| AT_ATX1 | AT / ATX Power Mode Switch |
| PWR_SW1 | ATX Power on/off Button |
| SW1 | COM1~4 with Power Select Switch |
| SW2 | IGN Module Timing Setting Switch |
| SW3 | Super CAP Switch |
| 24V_12V_1 | IGN Module Voltage Mode Setting Switch |
| Reset1 | Reset Button |
| CLR_CMOS1 | Clear BIOS Switch |

### List of Connector

| Location | Definition |
|---|---|
| SODIMM1,SODIMM2 | 260-pin SO-DIMM DDR4 Sockets |
| SATA1, SATA2 | 22-Pin SATA 3.0 Sockets |
| CN3 | Mini PCI-Express Socket (mPCIE/ mSATA/ 4G Module) |
| CN4, CN6 | Mini PCI-Express Socket (mPCIE/ mSATA) |
| CN5 | M.2 Key E Socket (M.2 PCIE / Intel CNVi) |
| DC_IN1 | 3-pin DC 9-48V Power Input with Power Ignition Connector |
| PWR_SW2 | Remote Power on/off Connector |
| CN1 | LAN1 and USB3.0 Connectors |
| CN2 | LAN2 and USB3.0 Connectors |
| COM1_1, COM1_2 | COM1~COM4 RS232 / RS422 / RS485 Connectors |
| DVI_I1 | DVI-I Connector |
| DP1 | DisplayPort Connector |
| JHDMI1 | HDMI Connector |
| USB3.1 | USB 3.1 Ports |
| USB3.0 | USB 3.0 Ports |
| FAN1 | External PWM Fan Connector |
| AUDIO1 | MIC_IN / LINE_OUT Audio Jack |
| BTB_FH1 | CMI Module to Board Connector |
| BTB_FH2, BTB_FH4 | POE LAN Module to Board Connectors |
| IGN_PH1 | IGN Module to Board Connector |
| Power 1~3 | +5V / +12V Power Output Connectors |
| FS_1 | Input Power Fuse 15A Connector |
| LED_B1 | System LED Connector |

## 2.3 Definition of Switches

**AT_ATX1: AT / ATX Power Mode Switch**

| Switch | Definition |
|---|---|
| 1-2 (Left) | AT Power Mode |
| 2-3 (Right) | ATX Power Mode **(Default)** |




**PWR_SW1: ATX Power on/off Button**

| Switch | Definition |
|---|---|
| Push | Power on System |



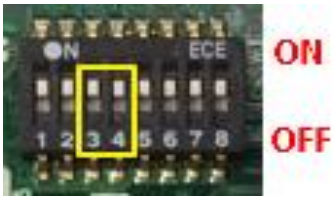
**SW1: COM1/COM2/COM3/COM4 Power Select**

COM1 / 2 / 3 / 4 Voltage Function Setting via DIP Switch

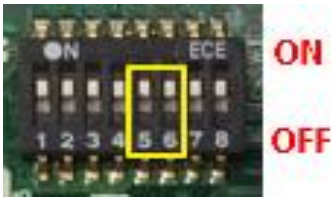
| Location | Function | | DIP1 | DIP2 |
|---|---|---|---|---|
| SW1 | COM1 | 0V(RI) | ON (Default) | ON (Default) |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |



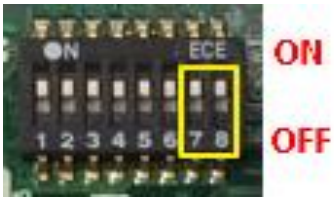

| Location | Function | | DIP3 | DIP4 |
|---|---|---|---|---|
| SW1 | COM2 | 0V(RI) | ON (Default) | ON (Default) |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |




| Location | Function | | DIP5 | DIP6 |
|---|---|---|---|---|
| SW1 | COM3 | 0V(RI) | ON (Default) | ON (Default) |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |

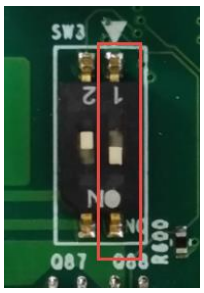



| Location | Function | | DIP7 | DIP8 |
|---|---|---|---|---|
| SW1 | COM4 | 0V(RI) | ON (Default) | ON (Default) |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |



**SW3: Super CAP Switch**

| DIP | Function | ON | OFF |
|---|---|---|---|
| 1 | Super CAP | Enable (Default) | Disable |
| 2 | N/A | N/A | N/A |




**Reset1: System Reset Button**

| Button | Definition | Button | Definition |
|---|---|---|---|
| Push | Reset System | Push | Reset System |



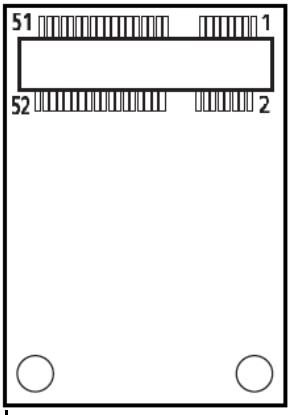

**CLR_CMOS1: Clear CMOS Switch**

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



## 2.4 Definition of Connectors

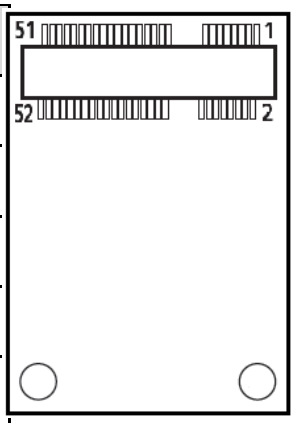
**CN3: Mini PCI-Express Socket (Support mPCIE, mSATA, and SIM Module)**



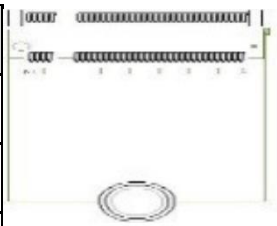

| Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|
| 1 | WAKE# | 19 | NA | 37 | GND |
| 2 | +3.3V | 20 | +3.3V | 38 | USB_D+ |
| 3 | NA | 21 | GND | 39 | +3.3V |
| 4 | GND | 22 | PERST# | 40 | GND |
| 5 | NA | 23 | PERXN/SATARXP | 41 | +3.3V |
| 6 | +1.5V | 24 | +3.3V | 42 | NA |
| 7 | NA | 25 | PERXP/SATARXN | 43 | GND |
| 8 | SIM_PWR | 26 | GND | 44 | NA |
| 9 | GND | 27 | GND | 45 | CLINK_CLK |
| 10 | SIM_DATA | 28 | +1.5V | 46 | NA |
| 11 | REFCLK- | 29 | GND | 47 | CLINK_DATA |
| 12 | SIM_CLK | 30 | SMB_CLK | 48 | +1.5V |
| 13 | REFCLK+ | 31 | PETXN/SATATXN | 49 | CLINK_RESET |
| 14 | SIM_RESET | 32 | SMB_DATA | 50 | GND |
| 15 | GND | 33 | PETXP/SATATXP | 51 | NA |
| 16 | SIM_VPP1 | 34 | GND | 52 | +3.3V |
| 17 | NA | 35 | GND | | |
| 18 | GND | 36 | USB_D- | | |

**CN4 / CN6 : Mini PCI-Express Socket (Support mPCIE and mSATA)**

| Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|
| 1 | WAKE# | 19 | NA | 37 | GND |
| 2 | +3.3V | 20 | +3.3V | 38 | USB_D+ |
| 3 | NA | 21 | GND | 39 | +3.3V |
| 4 | GND | 22 | PERST# | 40 | GND |
| 5 | NA | 23 | PERXN/SATARXP | 41 | +3.3V |
| 6 | +1.5V | 24 | +3.3V | 42 | NA |
| 7 | NA | 25 | PERXP/SATARXN | 43 | GND |
| 8 | NA | 26 | GND | 44 | NA |
| 9 | GND | 27 | GND | 45 | NA |
| 10 | NA | 28 | +1.5V | 46 | NA |
| 11 | REFCLK- | 29 | GND | 47 | NA |
| 12 | NA | 30 | SMB_CLK | 48 | +1.5V |
| 13 | REFCLK+ | 31 | PETXN/SATATXN | 49 | NA |
| 14 | NA | 32 | SMB_DATA | 50 | GND |
| 15 | GND | 33 | PETXP/SATATXP | 51 | NA |
| 16 | NA | 34 | GND | 52 | +3.3V |
| 17 | NA | 35 | GND | | |
| 18 | GND | 36 | USB_D- | | |



**CN5 : M.2 Key E Socket (Support M.2 PCIE / Intel CNVi )**

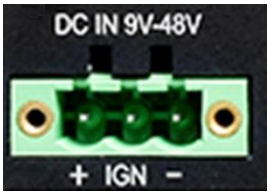


| Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|
| 1 | GND | 27 | KEY | 53 | NC |
| 2 | +3.3V | 28 | KEY | 54 | PULL-UP |
| 3 | USB_D+ | 29 | KEY | 55 | PEWAKE0# |
| 4 | +3.3V | 30 | KEY | 56 | NC |
| 5 | USB_D- | 31 | KEY | 57 | GND |
| 6 | NC | 32 | RGI_DT | 58 | I2C_DATA |
| 7 | GND | 33 | GND | 59 | WTD1N/PETP1 |
| 8 | PCM_CLK | 34 | RGI_RSP | 60 | I2C_CLK |
| 9 | WGR_D1N | 35 | PETP0 | 61 | WTD1P/PETN1 |
| 10 | PCM_SYNC/ LPCRSTN | 36 | RBI_DT | 62 | NC |
| 11 | WGR_D1N | 37 | PETN0 | 63 | GND |
| 12 | PCM_IN | 38 | CLINK_REST | 64 | REF_CLK |
| 13 | GND | 39 | GND | 65 | WTD0N/PETP1 |
| 14 | PCM_OUT | 40 | CLINK_DATA | 66 | NC |
| 15 | WGR_D0N | 41 | PERP0 | 67 | WTD0P/PERN1 |
| 16 | NC | 42 | CLINK_CLK | 68 | NC |
| 17 | WGR_D0P | 43 | PERN0 | 69 | GND |
| 18 | GND | 44 | COEX3 | 70 | PEWAKE1# |
| 19 | GND | 45 | GND | 71 | WTCLK/REFCLKP1 |
| 20 | UART_WAKE | 46 | COEX_TXD | 72 | +3.3V |
| 21 | WGR_CLKN | 47 | REFCLKP0 | 73 | WTCLK/REFCLKN1 |
| 22 | BRI_RSP | 48 | COEX_RXD | 74 | +3.3V |
| 23 | WGR_CLKP | 49 | REFCLKN0 | 75 | GND |
| 24 | NC | 50 | SUSCLK | | |
| 25 | PETP2 | 51 | GND | | |
| 26 | NC | 52 | PERST0# | | |

**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 |







CAUTION

**Please disconnect the power source before mounting the DC power cables or connecting the DC power connector to system.**

**PWR_SW2: Power On/Off Switch Connector**

| Pin | Definition |
|---|---|
| 1 | PWR_SW |
| 2 | GND |





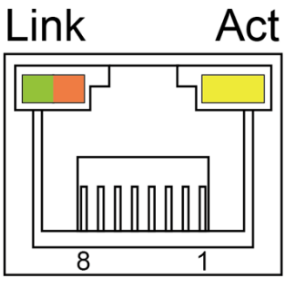

WARNING

**Do not apply power to this connector! This port is used to connect a SWITCH!**

**CN1 / CN2: LAN1 / 2 LED Status Definition**

| Act LED Status | Definition |
|---|---|
| Blinking Yellow | Data Activity |
| Off | No Activity |

| Link LED Status | Definition |
|---|---|
| Steady Green | 1Gbps Network Link |
| Steady Orange | 100Mbps Network Link |
| Off | 10Mbps Network Link |




**FAN1: External PWM Fan Connector**

Connector Type: Terminal Block 1X4 3-pin, 3.5mm pitch

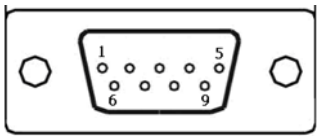
| Pin | Definition |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | SENSE |
| 4 | Control |



**COM1 / COM2 / COM3 / COM4: RS232 / RS422 / RS485 Connector**

Connector Type: 9-pin D-Sub

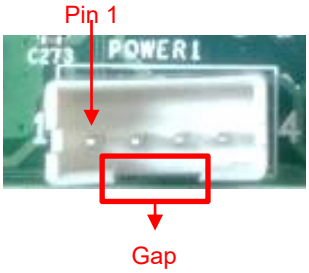
| Pin | RS232 Definition | RS422 / 485 Full Duplex Definition | RS485 Half Duplex Definition |
|---|---|---|---|
| 1 | DCD | TX- | DATA - |
| 2 | RXD | TX+ | DATA + |
| 3 | TXD | RX+ | |
| 4 | DTR | RX- | |
| 5 | GND | | |
| 6 | DSR | | |
| 7 | RTS | | |
| 8 | CTS | | |
| 9 | RI | | |




**POWER1 / 2 / 3 / 4: Power Connector**

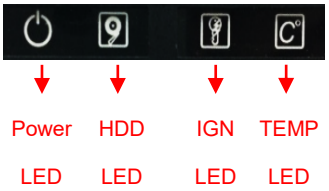
Connector Type: 1x4 4-pin Wafer, 2.0mm pitch

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



**LED_B1: PWR / HDD / IGN / TEMP LED Status**

| LED B1 | Status | | | LED Color |
|---|---|---|---|---|
| Power LED | Power ON | | | Green |
| | Standby | | | Blinking Green & Blue |
| | Power Off | | | Blue |
| HDD LED | HDD Read/Write | | | Blinking Yellow |
| IGN LED | IGN module not installed | | | No light |
| | IGN module installed | IGN disabled | | Green |
| | | IGN enabled | ACC OFF | Blue |
| | | | ACC ON | Green |
| 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 |







NOTE

**The TEMP LED is only available when IGN module is installed.**

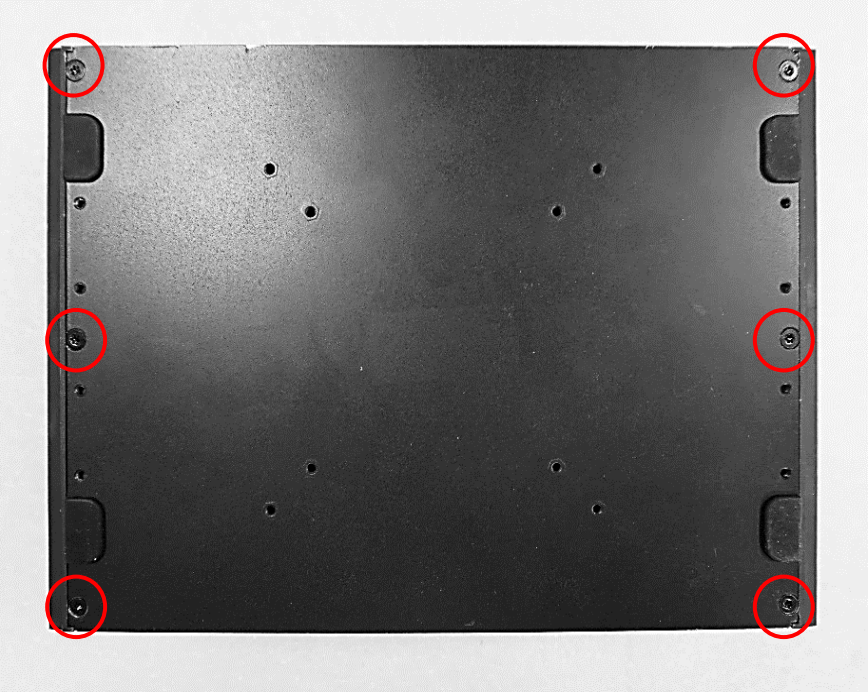
# Chapter 3
# System Setup

## 3.1 Removing Top 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.

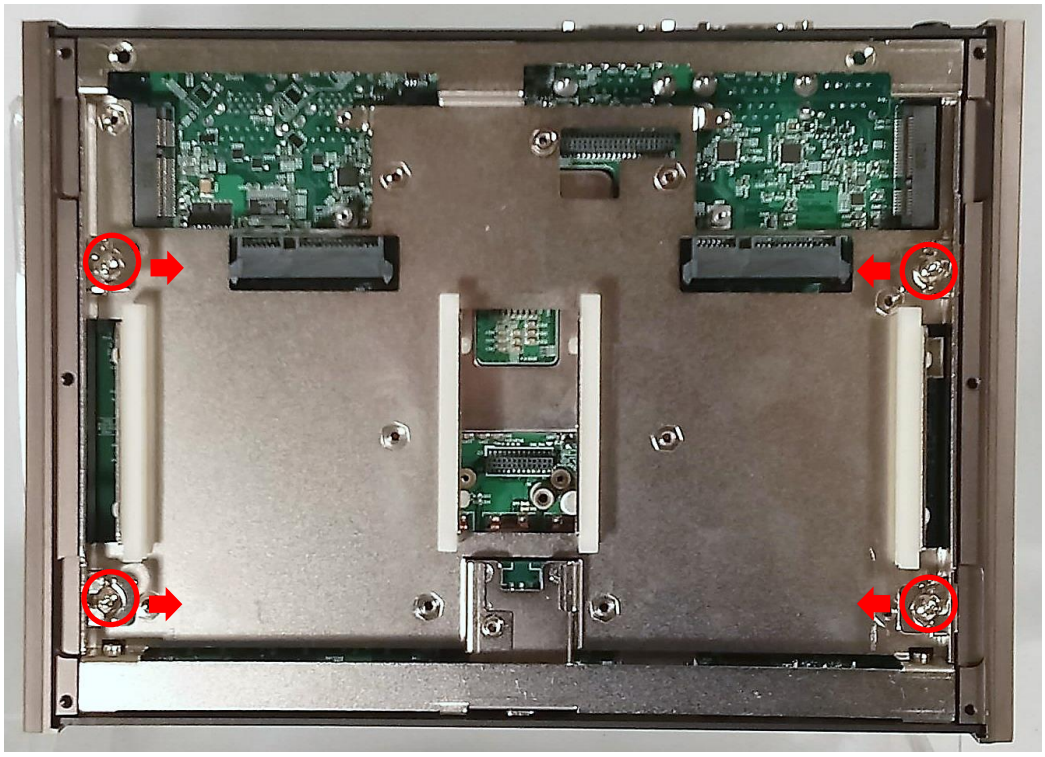
1. Turn over the unit to have the bottom side face up, loosen the 6 screws on the bottom cover and place them aside for later use.



2. Remove the bottom cover from the chassis.



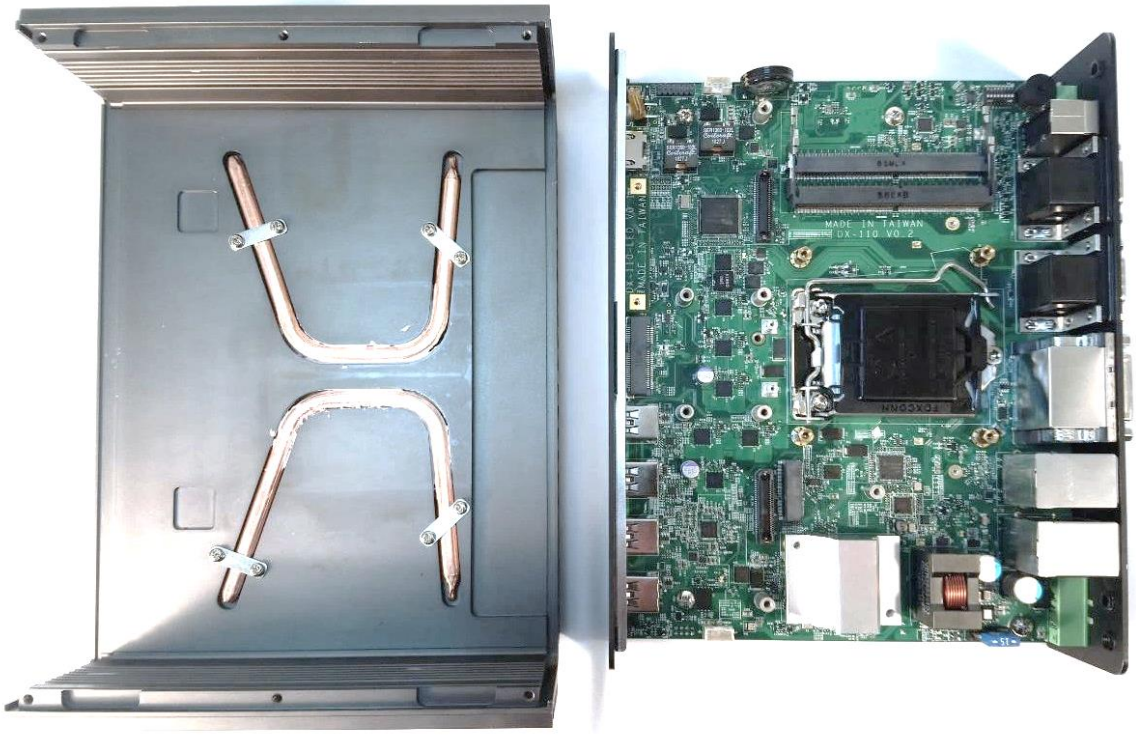
3. Loosen the 4 screws. Pull out 4 latches as marked on photo.



4. Hold front and rear panel and lift up the body of unit vertically.



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



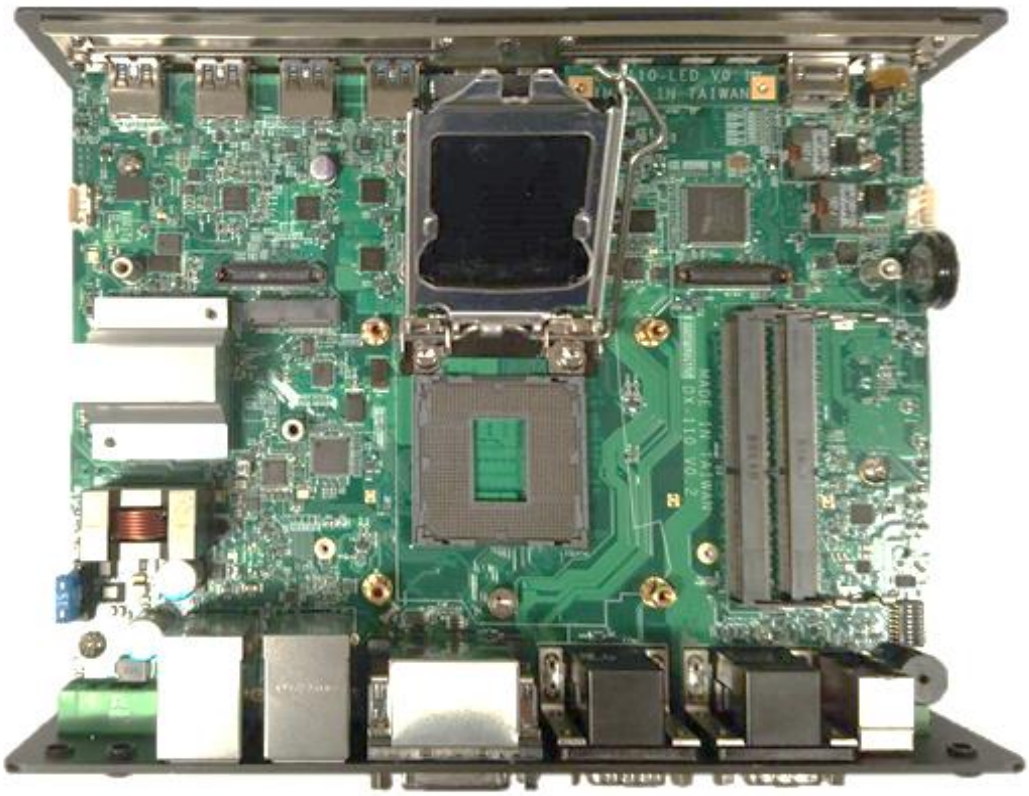


## 3.2 Installing CPU

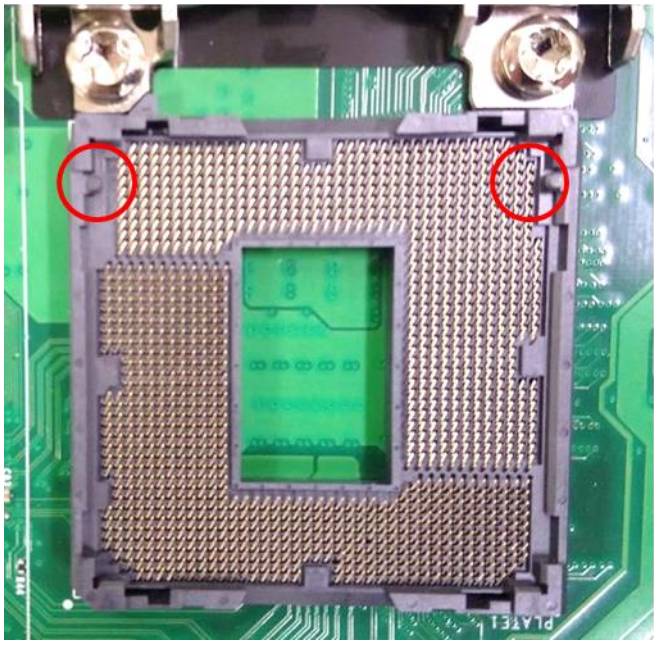
1. Locate the CPU socket, remove the protection cover on it.




2. Press the CPU socket lever and pull it aside away from the socket to unlock it. Pull back the lever to open the socket.



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

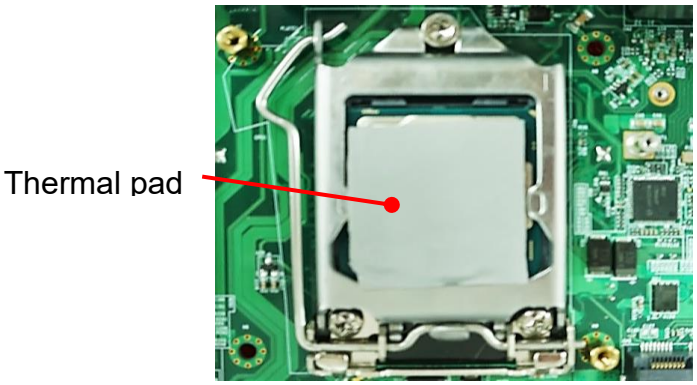





4. The notches of socket provide the space for fingers while lowering the CPU, hold the CPU by the edges toward the notches and insert the CPU gently.



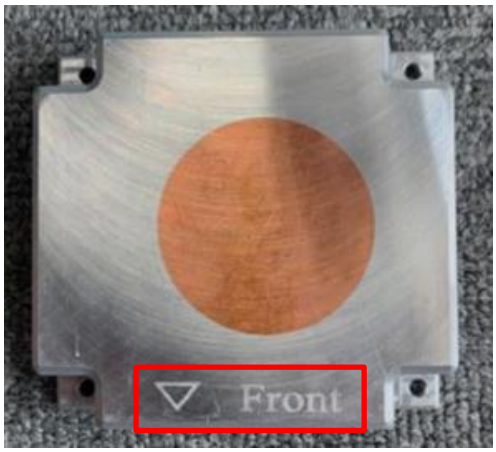
5. Place the thermal pad on the CPU heat spreader. Press down the socket lever to lock the CPU.

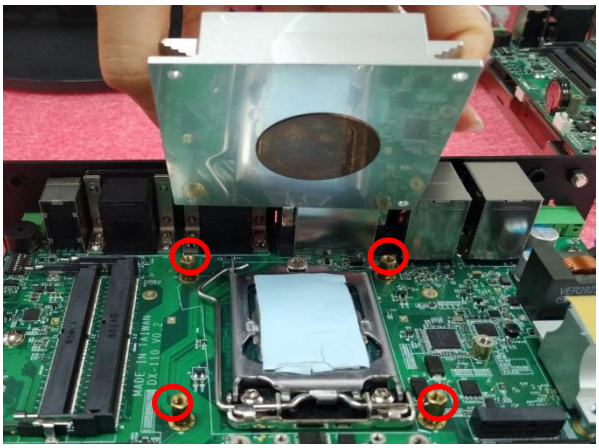



CAUTION

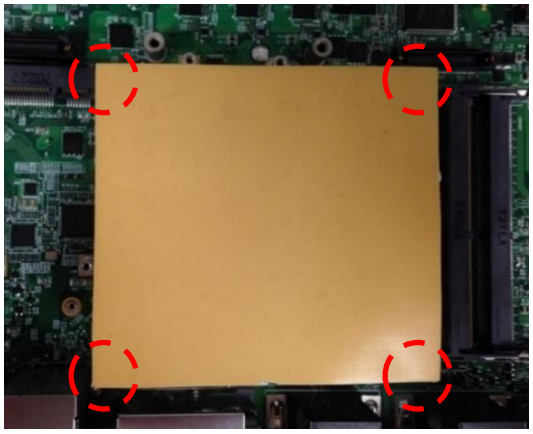
**Before putting on the thermal block (in the next step), please make sure the protective film on the Thermal Pad has been removed!**

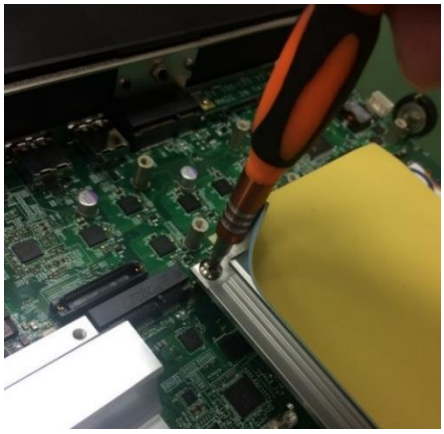
6. Confirm the installation direction of the CPU heatsink and align mounting holes of heatsink with the four nut studs.



7. Flip the corner of thermal pad and fasten the heatsink with provided 4 screws.



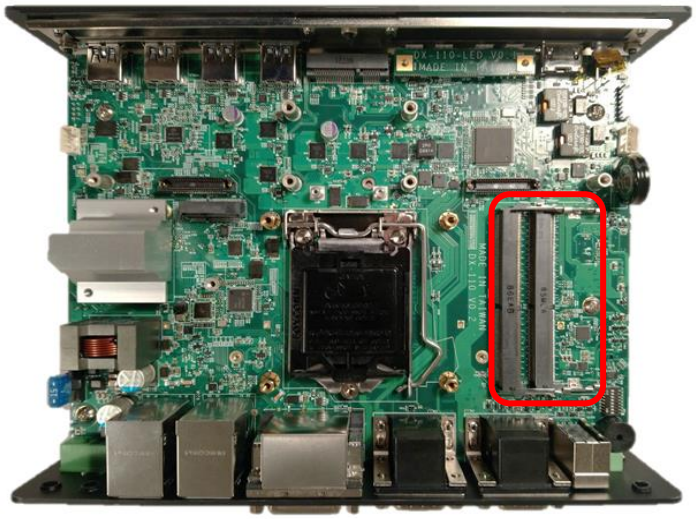


CAUTION

**The yellow surface is part of the thermal pad. Do not tear it off as it would affect the thermal conductivity.**

## 3.3 Installing SO-DIMM Memory

1. Locate the SODIMM socket on the top side of system.



2. Insert a SO-DIMM at a 45-degree angle until its edge connector is connected to SO-DIMM socket firmly.

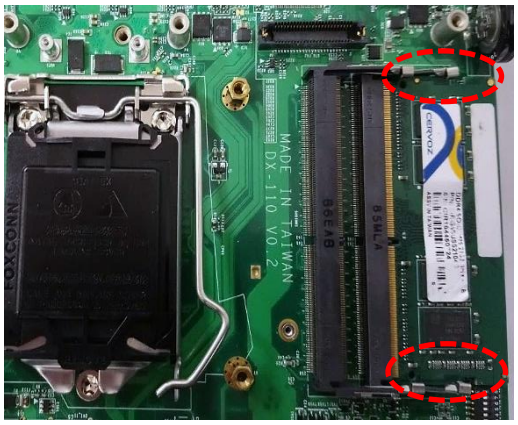



Lower socket

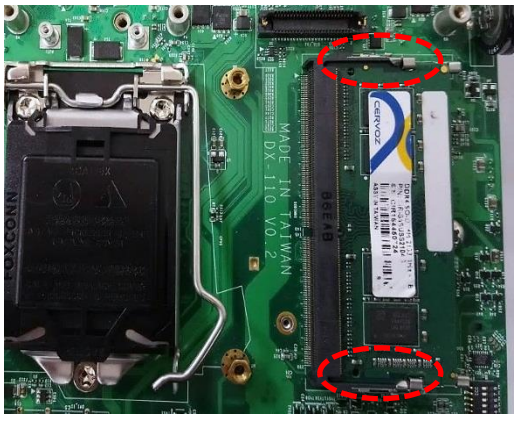



Upper socket

3. Press down the module until the retaining clips snap back in place.



Lower socket



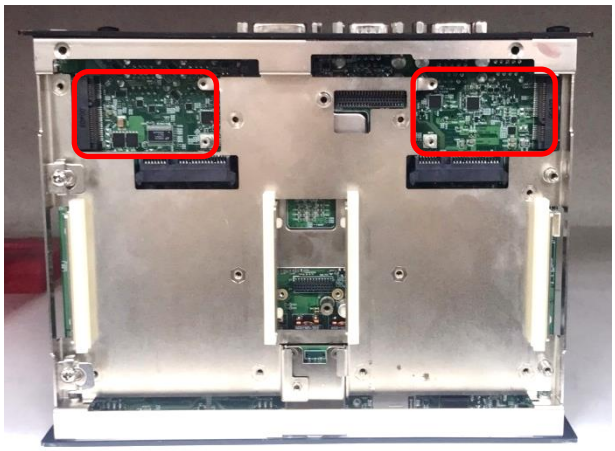
Upper socket

## 3.4 Installing Mini-PCIe/mSATA Card

1. Locate the Mini PCIe socket(s) of the system.

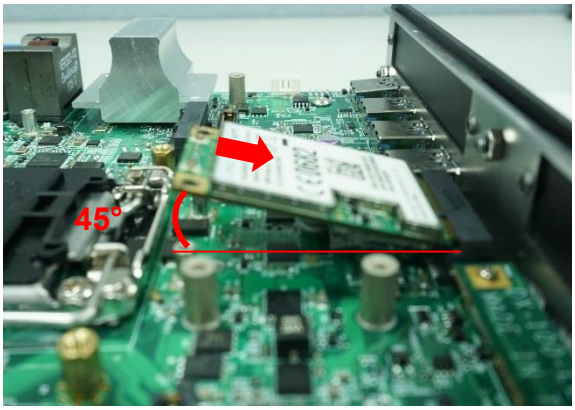


top side, CN3

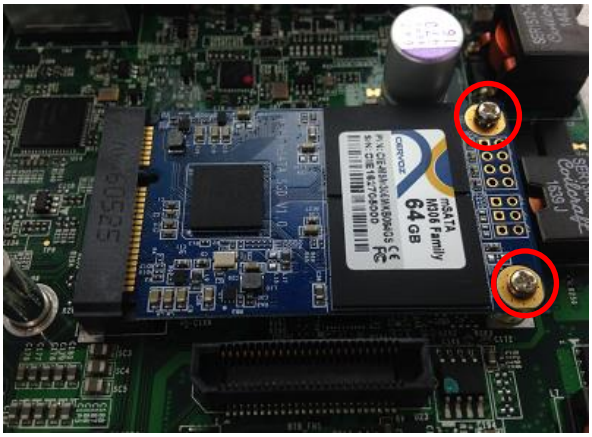


bottom side, CN4 & CN6

2. Insert the Mini-PCIe card at a 45-degree angle until its edge connector is connected firmly into slot. For 3G/4G Mini-PCIe card, please install onto CN3 slot.




3. Press the card down and secure it with 2 screws.



## 3.5 Installing Antenna(s)

1. Remove the antenna rubber covers on rear panel.



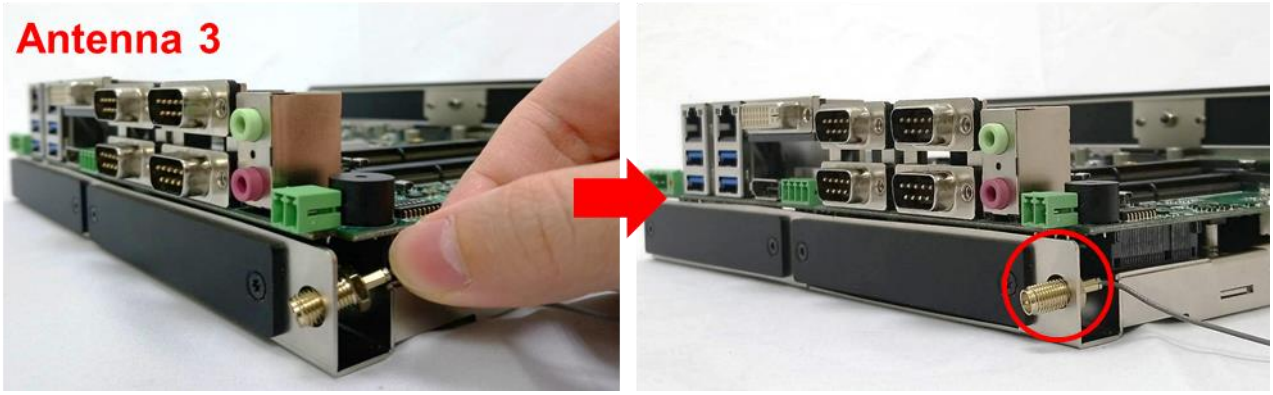

2. For antenna 1 and antenna 2, please penetrate the antenna jack through the hole at both sides as illustrated.

   For antenna 3, please pull off the rear panel by loosening the 10 D-Sub jack screws on rear panel firstly, and penetrate the antenna jack through the hole at both sides as illustrated.







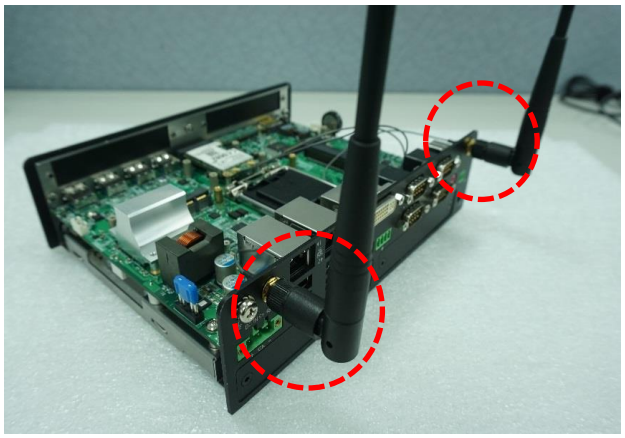


3. For antenna 1 and antenna 2, put on washer and fasten the nut with antenna jack.
   For antenna 3, put on rear panel back and fasten 10 D-Sub jack screws on it, and then put on washer and fasten the nut with antenna jack.



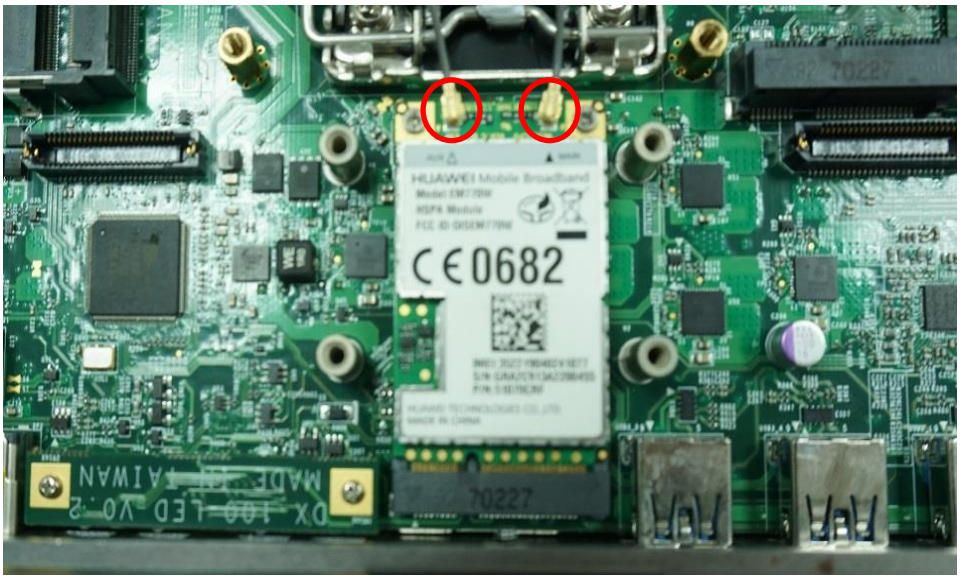



4. Assemble the antenna and antenna jack together.





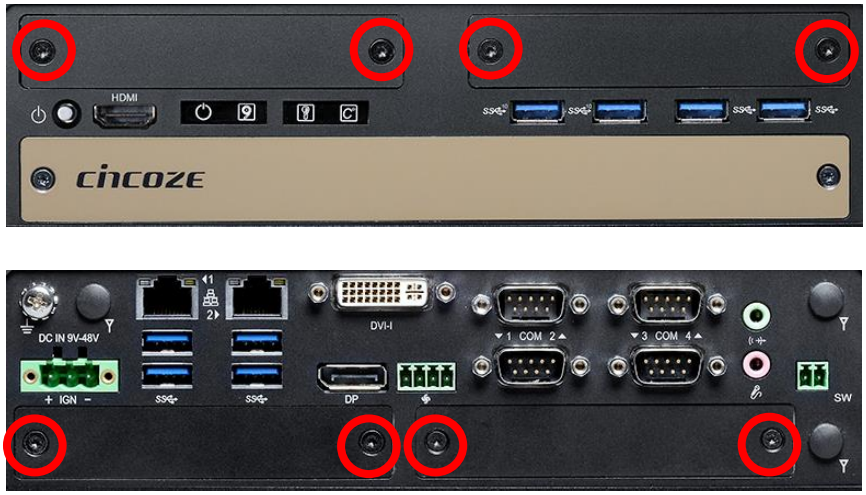

5. Attach the RF connector at another end of cable onto the module.



## 3.6 Installing Antenna Cutout Universal Bracket

An optional Universal Bracket (Model No. UB0932 for the front or the rear panel) features three antenna cutouts for 5G/4G card expansion. This bracket allows users to mount antennas in the designated cutouts. For installation details, refer to Chapter 3.5.

Step 1. Loosen and remove the two screws from either the left or right bracket of the system's front or rear panel. (This example demonstrates using the left-side bracket of the front panel.)

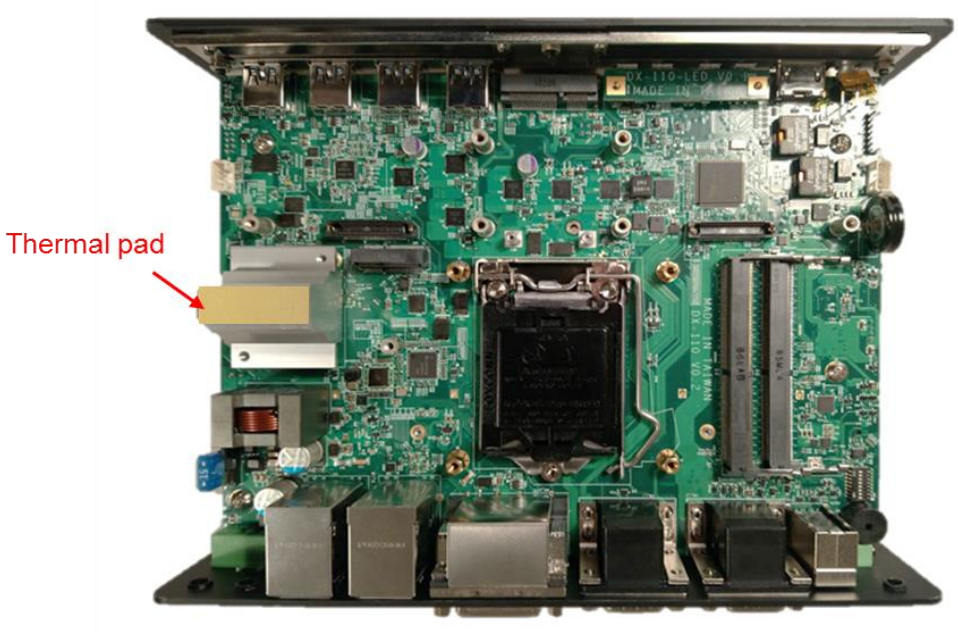



Step 2. Attach the I/O bracket on to the system as indicated below, and fasten the screws back to fix it. For guidance on antenna installation methods, please refer to chapter 3.5.



## 3.7 Installing Thermal Pad

Note: The DX-1100 series don’t need to additional installation of the PCH thermal pad.





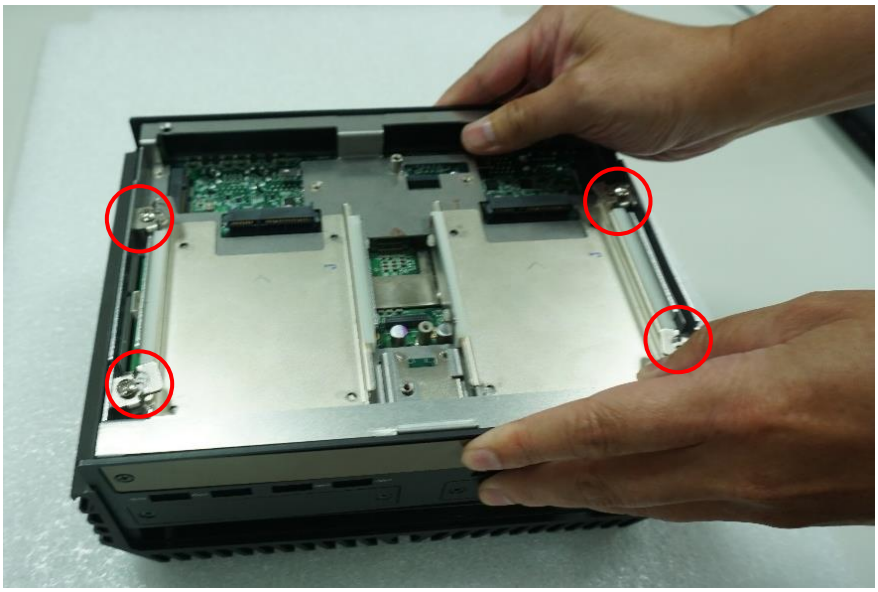


CAUTION

**The yellow surface is part of the thermal pad. Do not tear it off as it would affect the thermal conductivity.**

## 3.8 Installing Top Cover

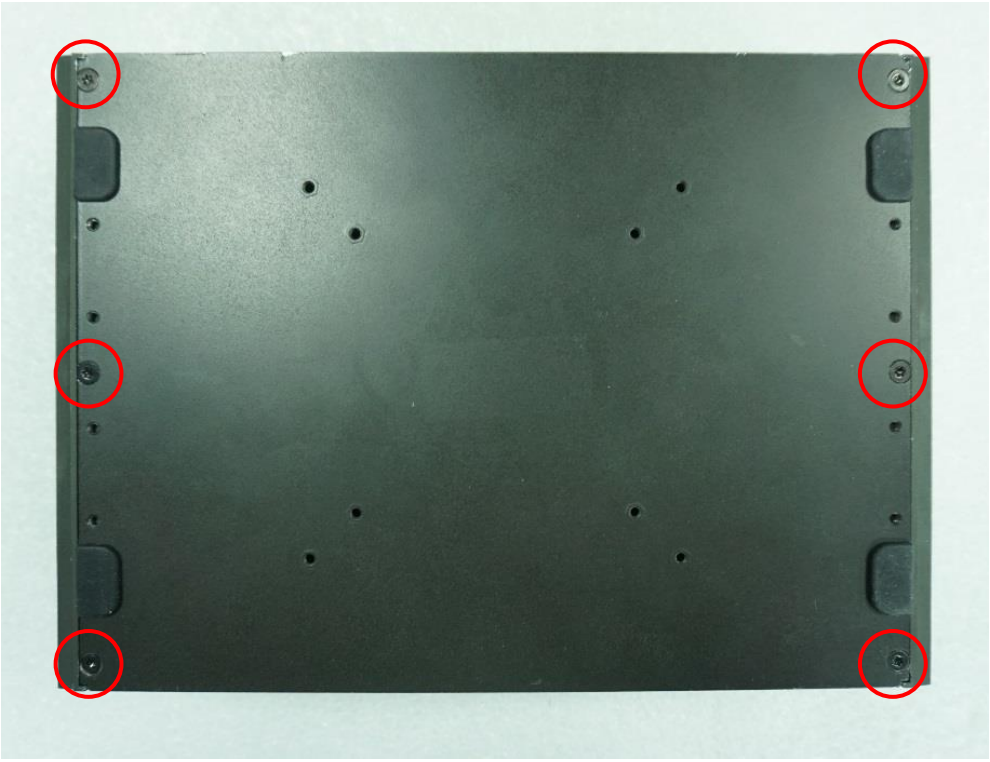
1. Hold front and rear panel and put the body of unit back to chassis and fasten the 4 screws as marked on photo.



2. Place the bottom cover back to system.



3. Fasten the bottom cover with 6 screws.



## 3.9 Removing Maintenance Cover

1. Loosen 2 screws on front panel to remove cover plate.




NOTE

**It's advised to fasten the 2 screws manually. If fastened with an electrical screw driver, please set the torque of the driver to 2.5KgF.**

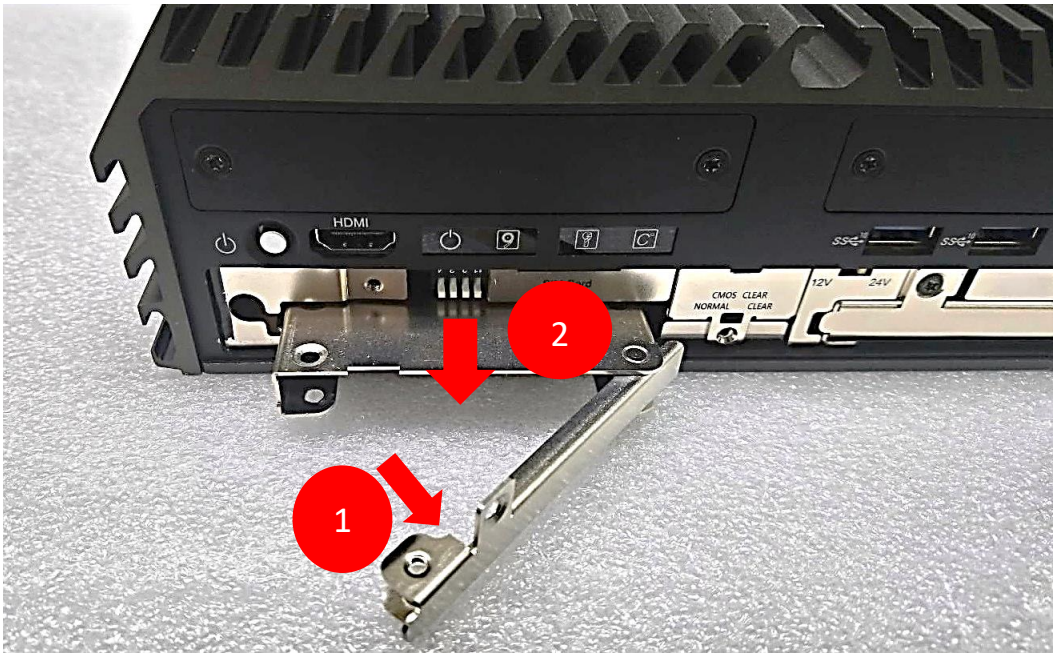



## 3.10 Installing SATA Hard Drive at Front Side

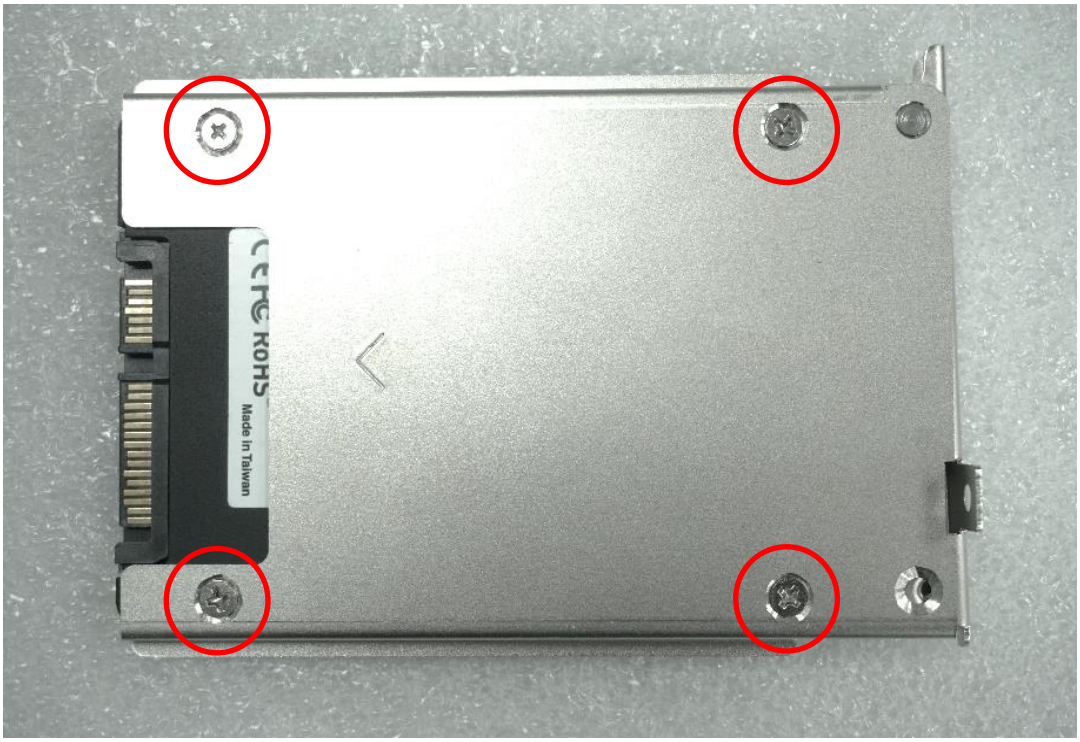
1. Locate the removable HDD bay and loosen the screw.



2. Pull the rotating arm and pull the HDD bracket out of system.




3. Make the bottom 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.



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

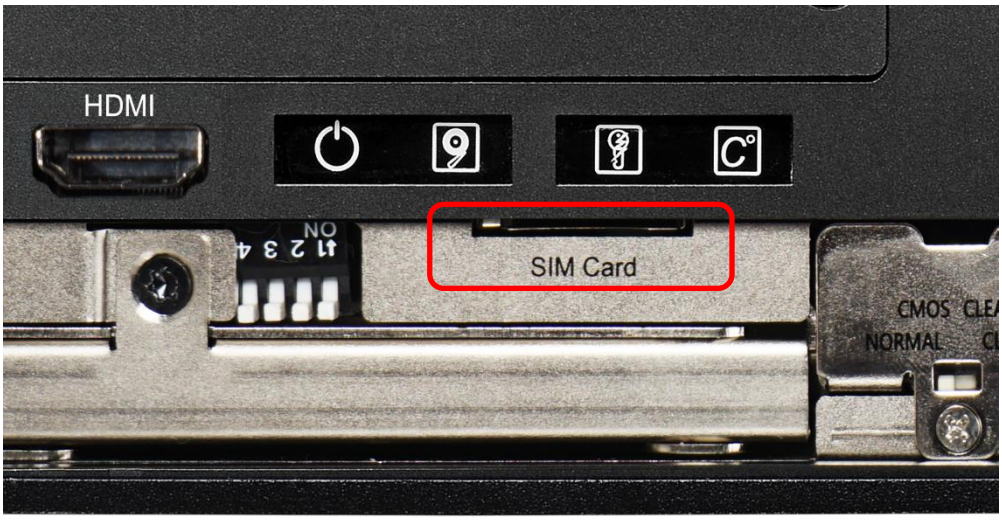



5. Place the rotating arm back and fasten the screw.

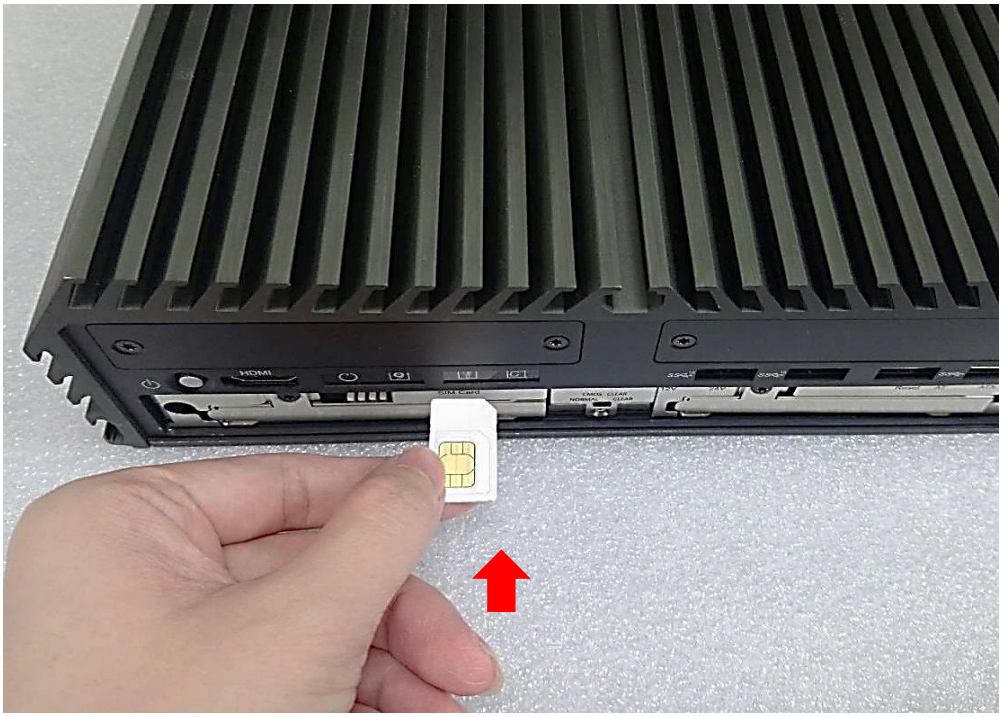


## 3.11 Installing SIM Card

1. Locate the SIM card slot at front side.

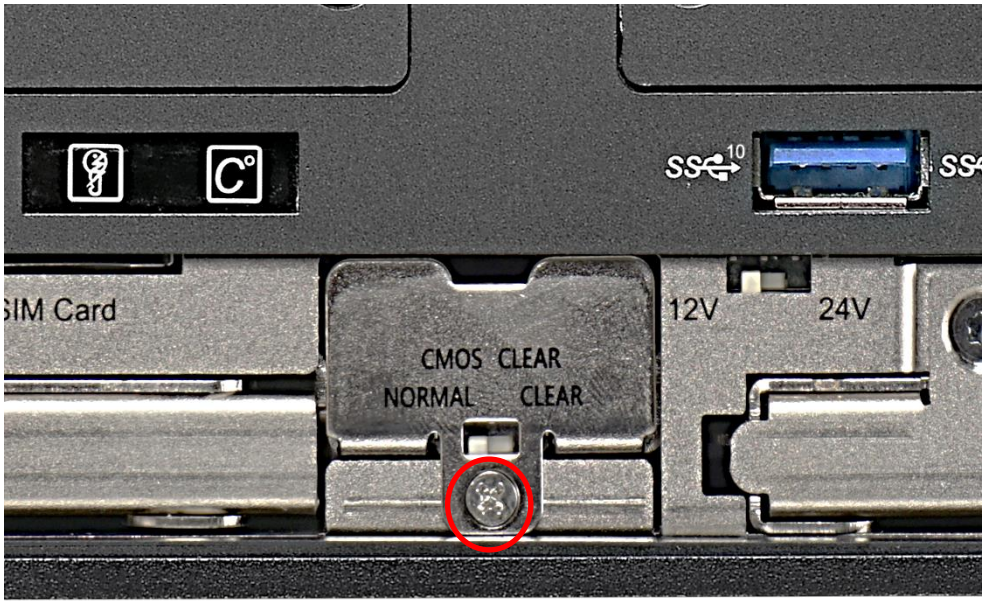



2. Insert a SIM card into SIM slot with the gold contacts facing up. Please pay attention to the insert orientation as illustrated.



## 3.12 Installing CMOS Battery

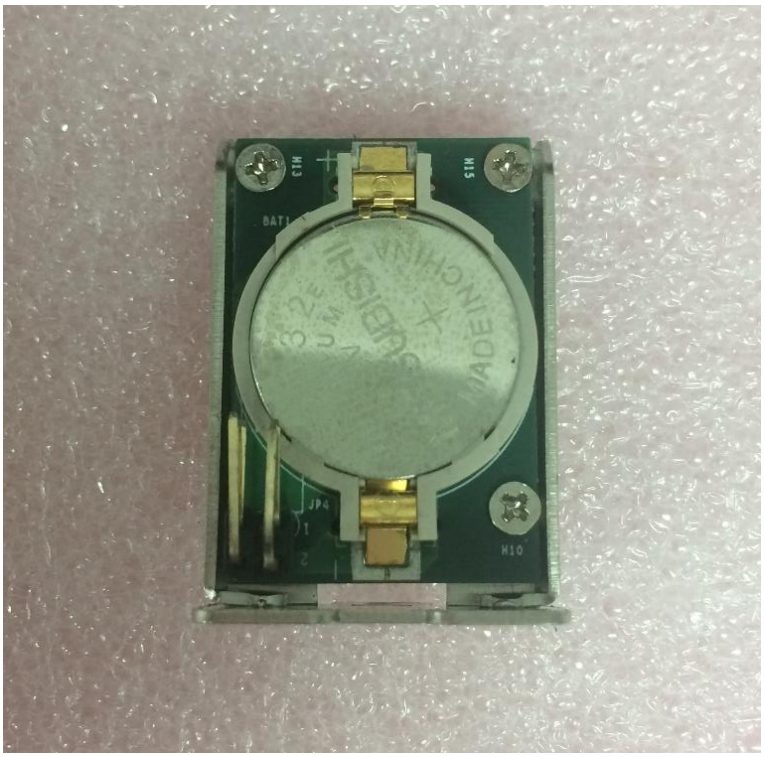
1. Locate the removable CMOS Battery and loosen the screw.



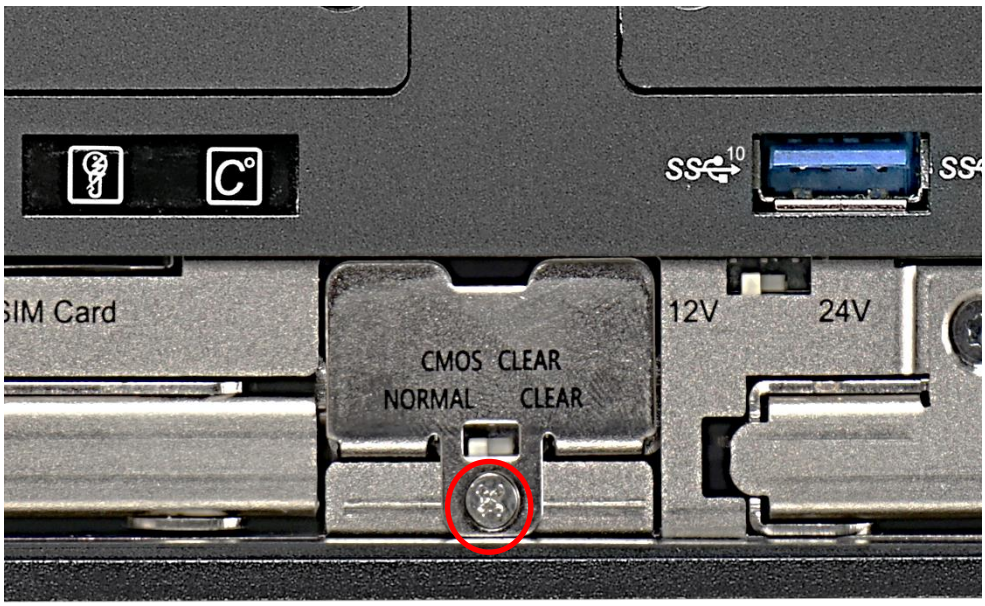

2. Pull out the CMOS battery bracket with assistance of a tweezer.



3. Insert a CMOS battery in the battery slot.



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



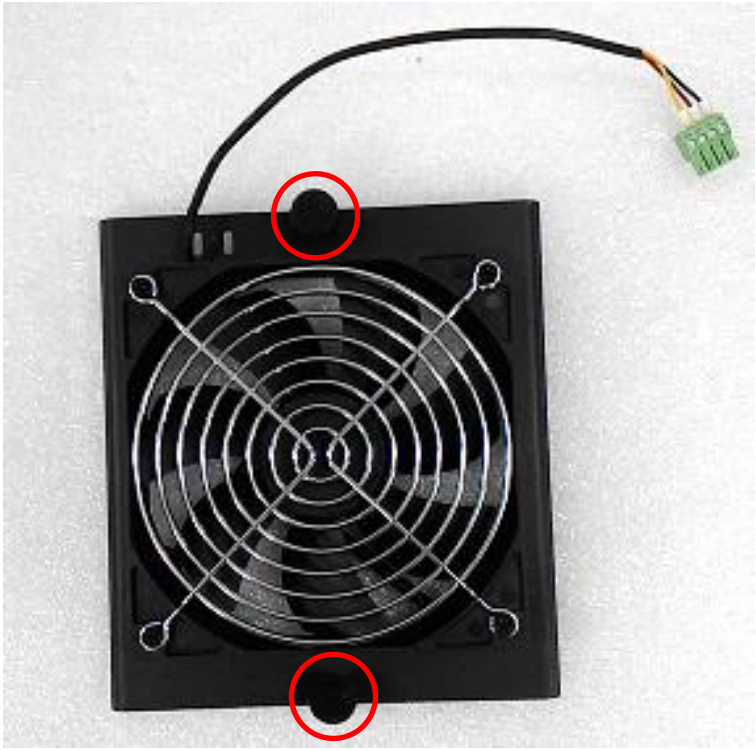
## 3.13 Fastening Maintenance Cover

1. Fasten the cover by using the two screws.

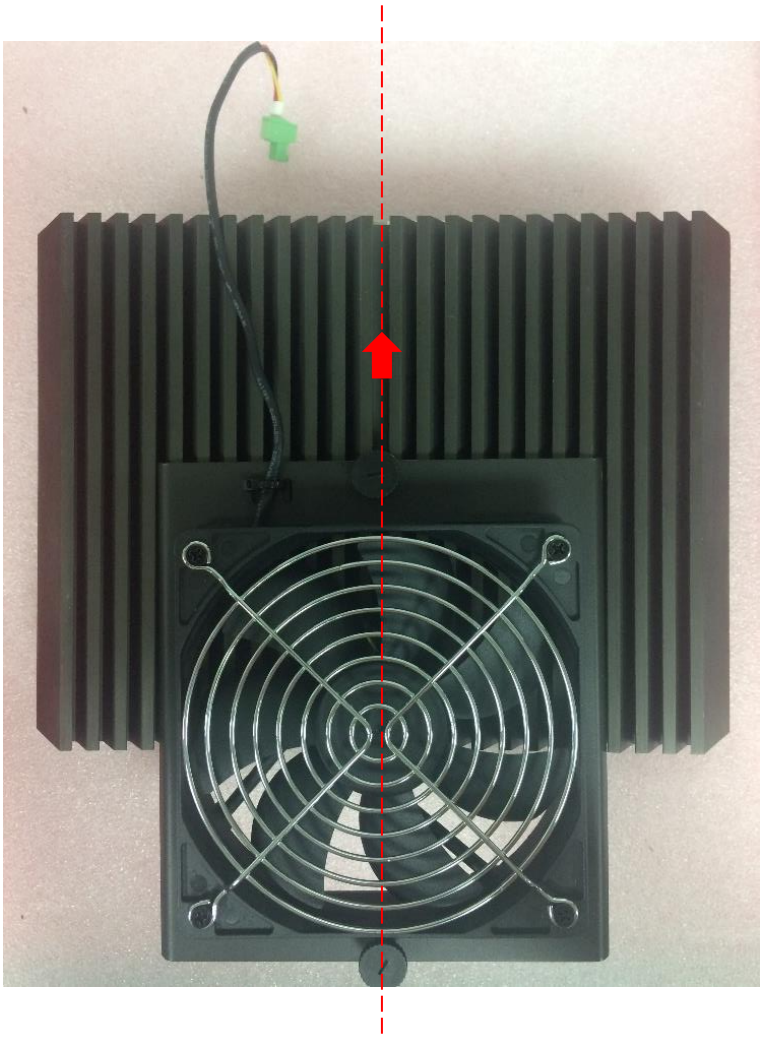



## 3.14 Installing External Fan

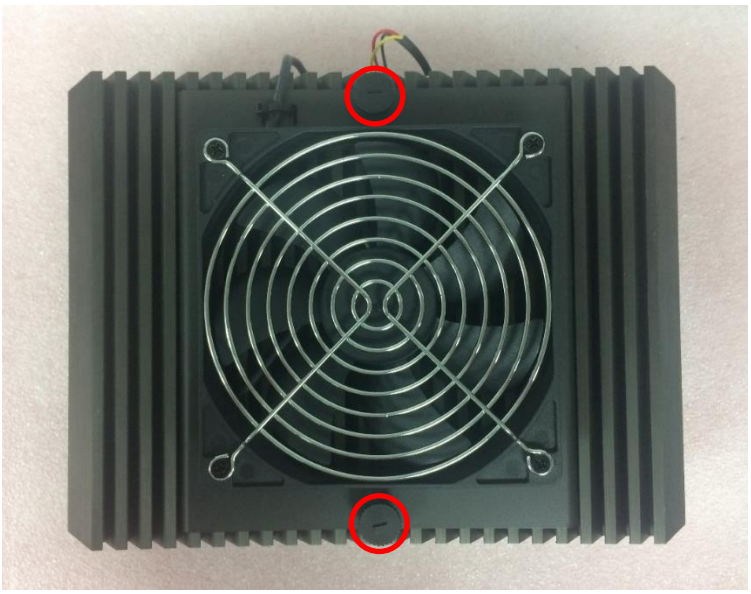
1. Prepare an external fan. Loosen the 2 screws halfway on mounting frame before attempting to install it.



2. Slide the FAN into the middle groove of chassis as illustrated. Tighten the 2 screws to fix it onto chassis.



3. Move the fan to the center of chassis. Tighten the 2 screws marked on photo to secure it.

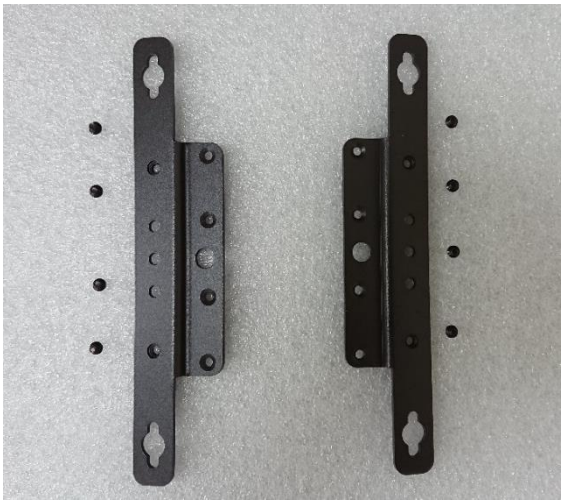


4. Connect the FAN cable to external fan power connector at rear panel.

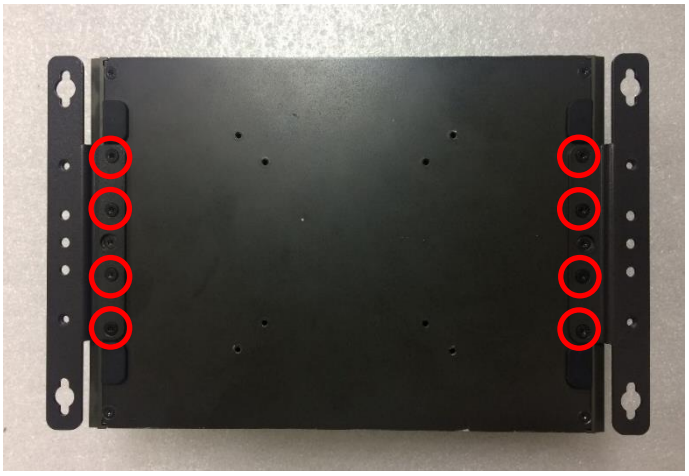


## 3.15 Installing Wall Mount Brackets

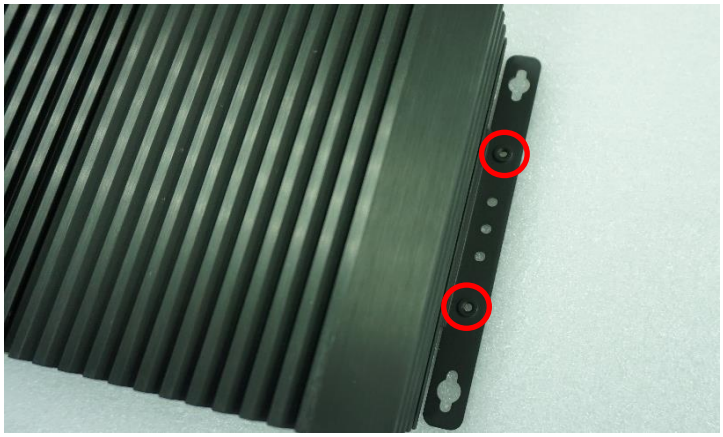
DX-1100 series offers wall mount brackets that customers can install system on the wall in convenient and economical ways.



1. The mounting holes are at the bottom side of system. Use provided 8 screws to fasten the bracket on each side.



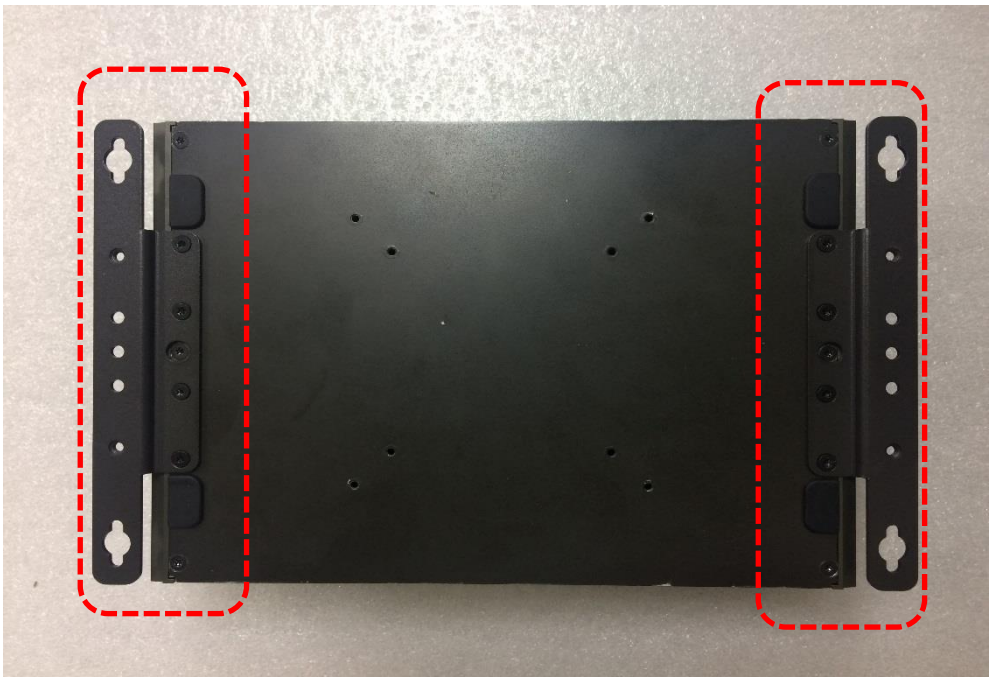
2. There are 2 bracket mounting holes at left and right side for customer fix the system on the wall.



## 3.16 Installing DIN-Rail Mount Brackets

DX-1100 series offers DIN-Rail Mount that customer can install system on the DIN Rail.

1. Please refer to section 3.15 Wall Mount Brackets to install mounting bracket at both sides of system.

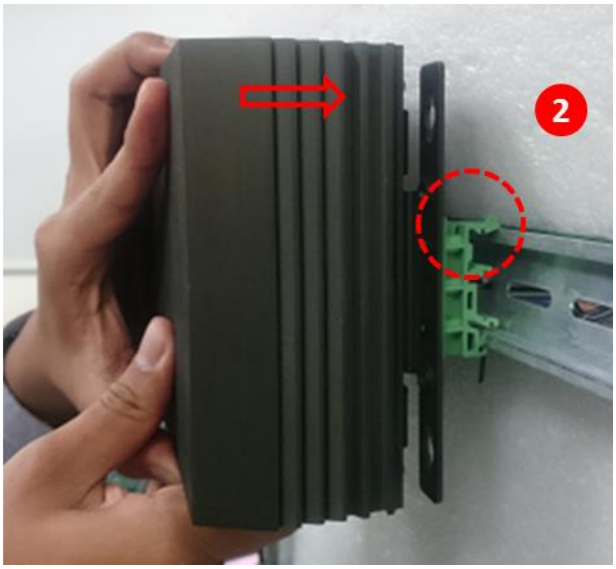


2. Fasten 2 DIN rail mounting clips to mounting brackets on both sides with provided 4 screws as illustrated.



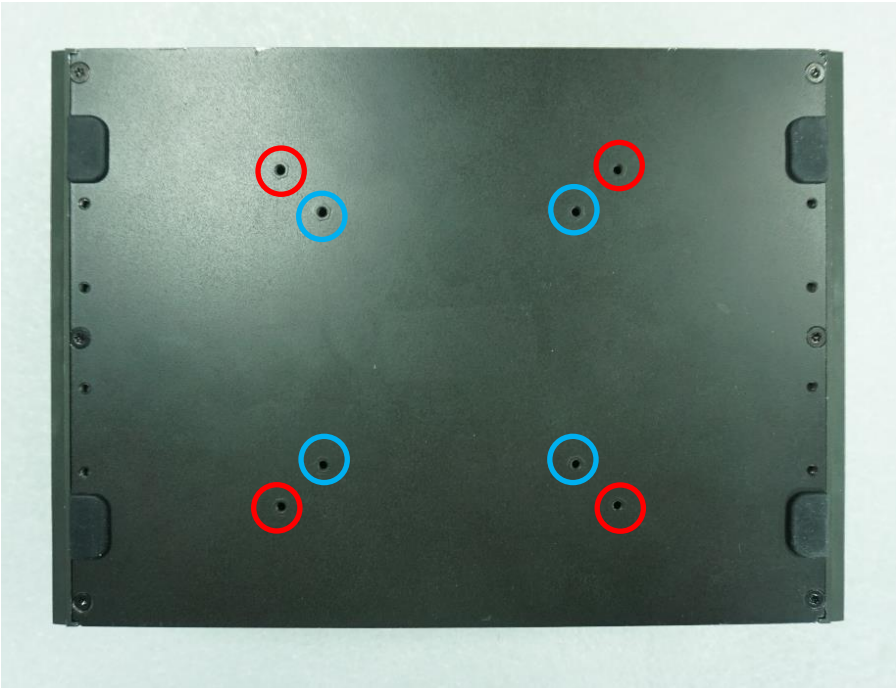
3. Clip the system into DIN rail as illustrated by the following steps. (1) Have lower end of mounting clip snaps into the DIN rail. (2) Press the system toward to have upper end of mounting clip snaps into the other side of DIN rail.



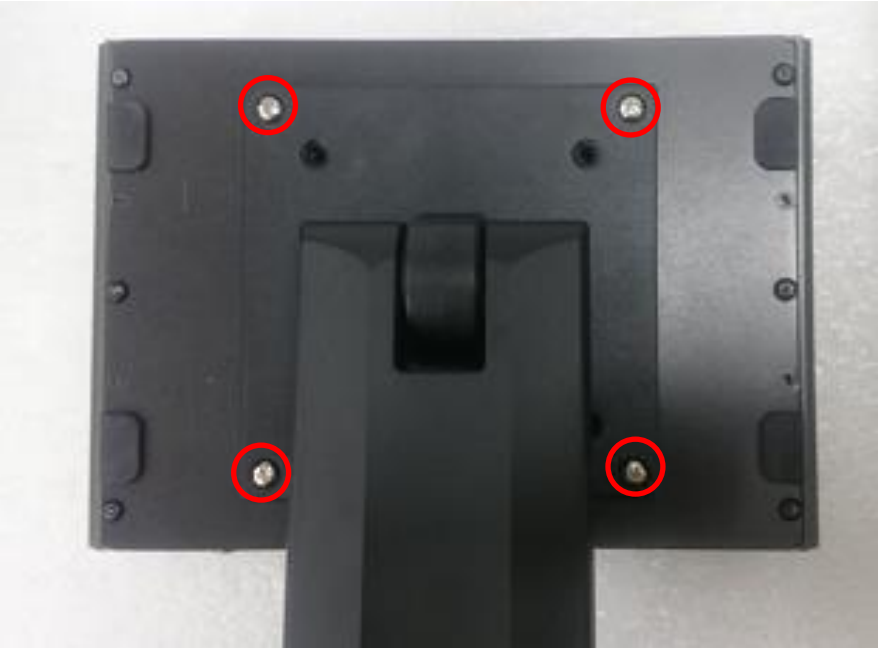




## 3.17 Installing VESA Mount

DX-1100 series supports VESA mounting that customer can mount system with panel complying with VESA 75mm and 100 mm standard for various usage. The 75mm VESA uses blue-circle-marked screw holes. The 100mm VESA uses red-circle-marked screw holes.



1. The following picture illustrates the installation of DX-1100 series on a VESA stand. Align the 4 screw holes of VESA stand with the screw holes on bottom side of system. Fasten 4 screws to fix it.

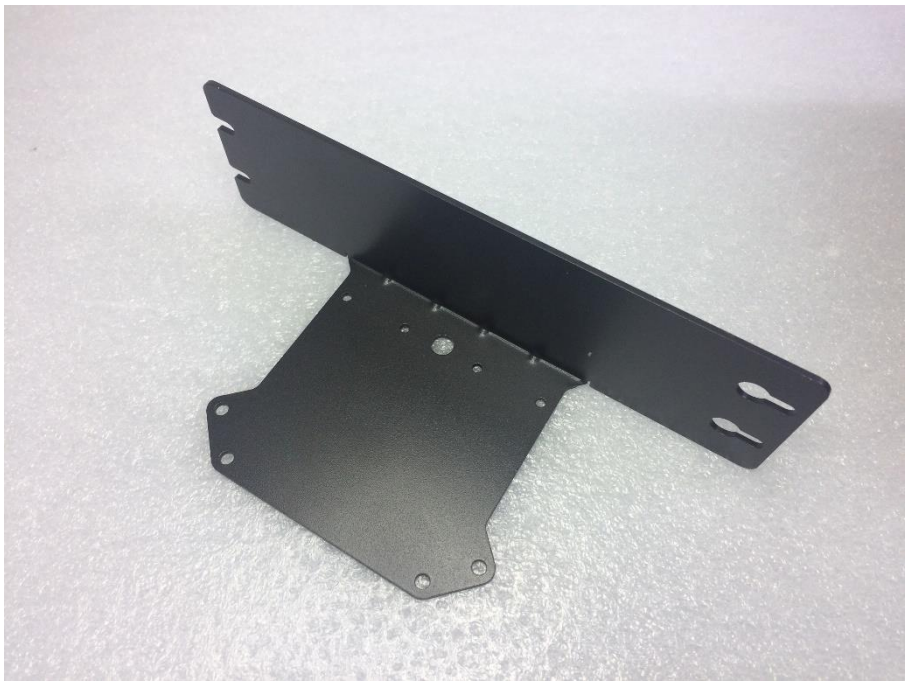


2. Provided below is mounted with VESA stand.

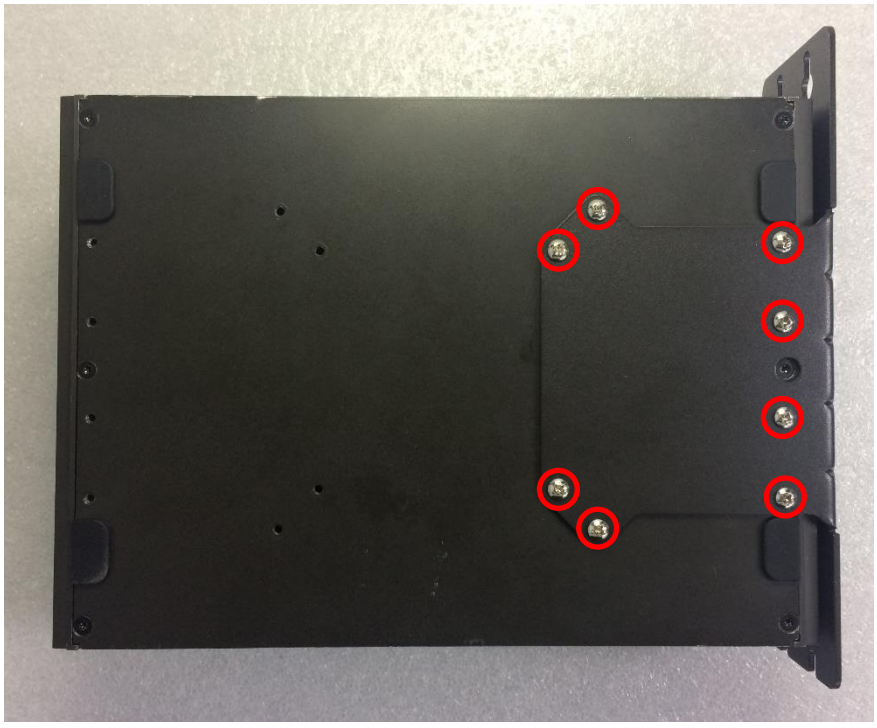


## 3.18 Installing Side Mount Brackets

DX-1100 series offers Side Mount that customer can install system to the right or left side of wall to create effective of space.



1. The mounting holes are at the bottom of system. Fasten the 8 screws to fix the side mount bracket with system together.



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



## 3.19 Installing Power Protection Module

| Model No. | Product Description |
|---|---|
| PPM-I360-01 | 360W Power Protection Module for DV/DX Series |

The DX-1100 series supports an optional Power Protection Module (Model: PPM-I360-01), as shown in Step 1. If you have purchased this accessory, please follow the installation instructions below.

Step 1. Loosen the two screws without removing them.



Step 2. Align the Power Protection Module screws with the slots on the side of the system chassis and slide the moule in, ensuring both screws are firmly seated within the slots.

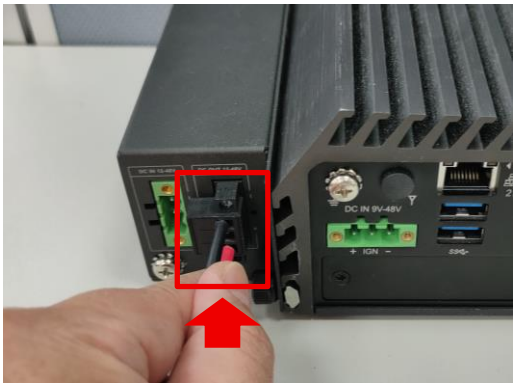




Step 3. Tighten the two screws to secure the module.



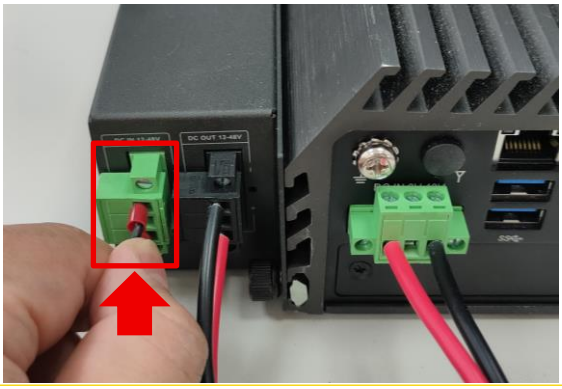
Step 4. Connect the black power connector to the Power Protection Module.



Step 5. Connect the Power Protection Module cable to one of the DC power input connectors firmly on the rear panel of the system in the way as indicated below.



Step 6. Connect the power adapter cable to the green DC power input connector on the Power Protection Module, as shown below.



# 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.



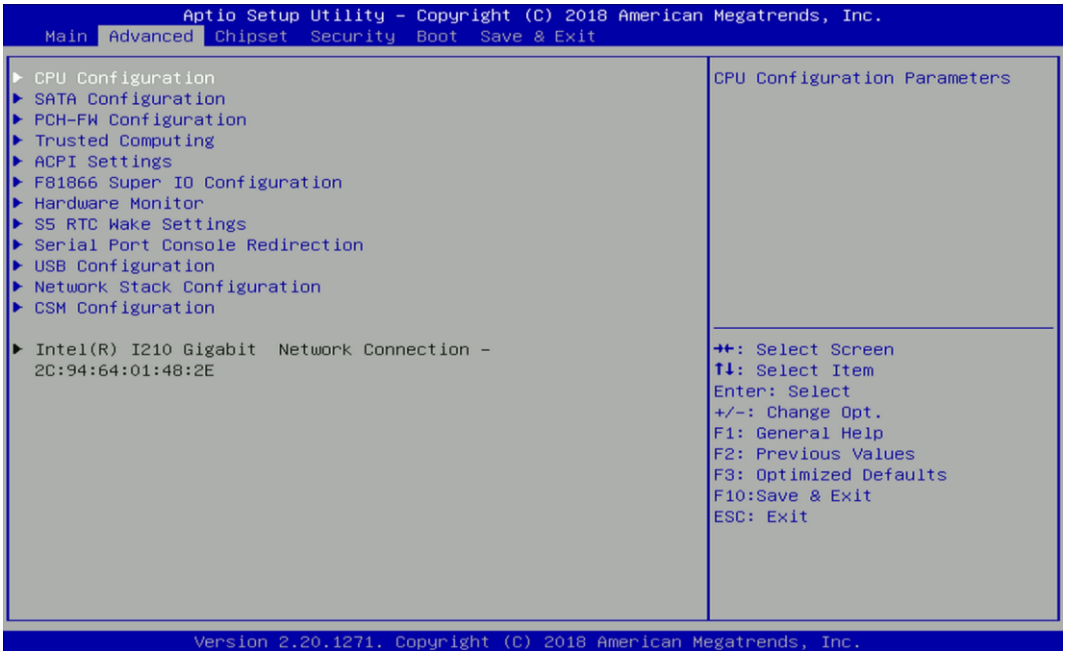

### 4.2.1 System Date

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

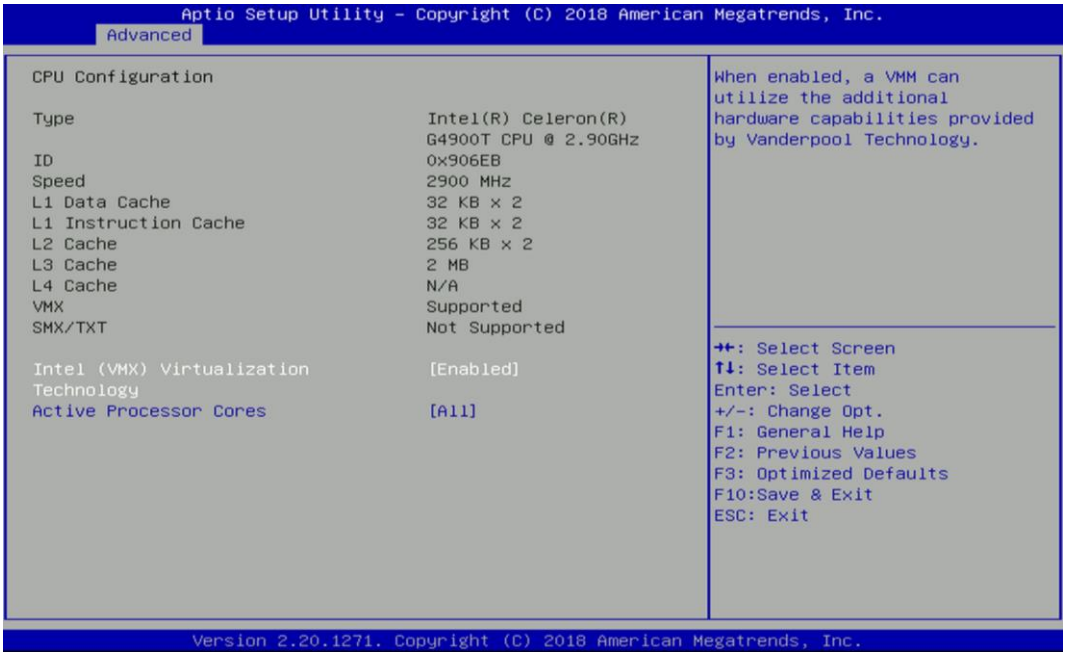
### 4.2.2 System Time

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

# 4.3 Advanced Setup




### 4.3.1 CPU Configuration




**■ Intel® (VXM) Virtualization Technology**

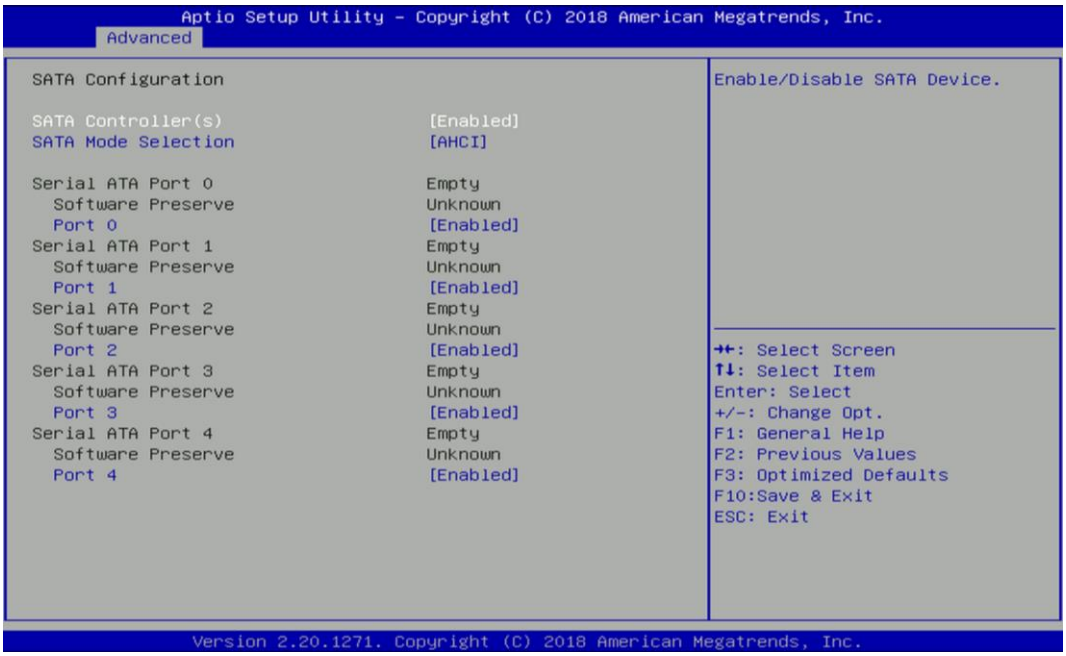
Enables or disables Intel® Virtualization Technology, which will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

**■ Active Process Cores**

Allows you to choose the number of active processor cores.

Configuration options: [All] [1].

### 4.3.2 SATA And RST Configuration




**■ SATA Controller(s) [Enabled]**

Enables or disables SATA device.

**■ SATA Mode Selection [AHCI]**

Allows you to select which mode SATA controller will operates.

Configuration options: [AHCI], [RAID]

- **Serial ATA Port 0**

  **Port 0 [Enabled]**

  Enables or disables SATA Port 0.

- **Serial ATA Port 1**

  **Port 1 [Enabled]**

  Enables or disables SATA Port 1.

- **Serial ATA Port 2**

  **Port 1 [Enabled]**

  Enables or disables SATA Port 2.

- **Serial ATA Port 3**

  **Port 1 [Enabled]**

  Enables or disables SATA Port 3.

- **Serial ATA Port 4**

  **Port 1 [Enabled]**

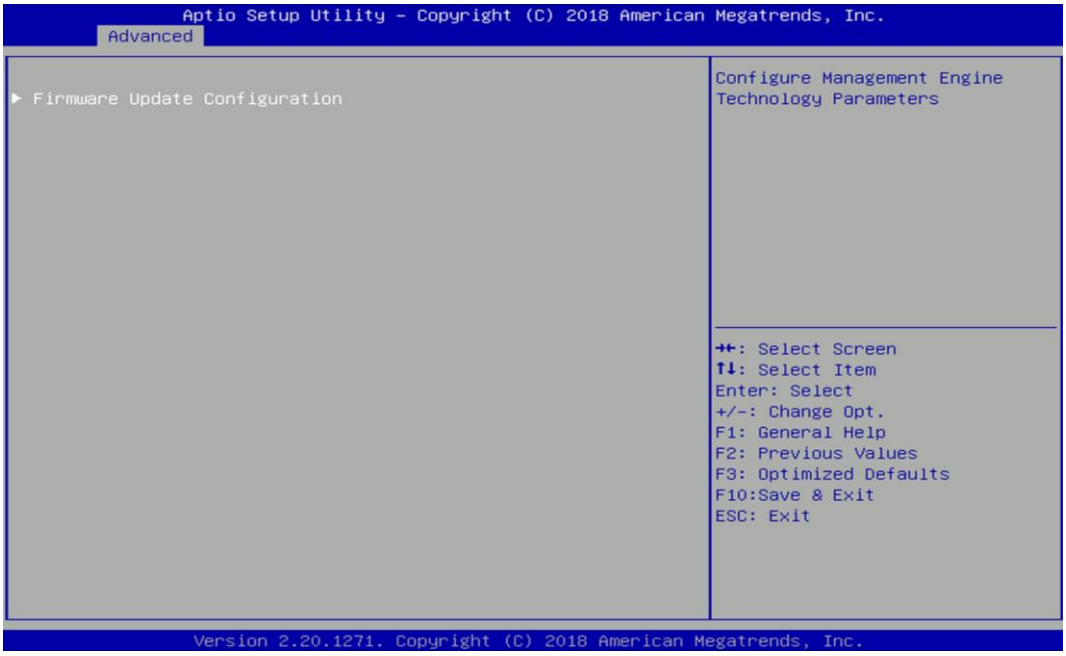
  Enables or disables SATA Port 4.

- **Serial ATA Port 5**

  **Port 1 [Enabled]**

  Enables or disables SATA Port 5.

### 4.3.3 PCH-FW Configuration



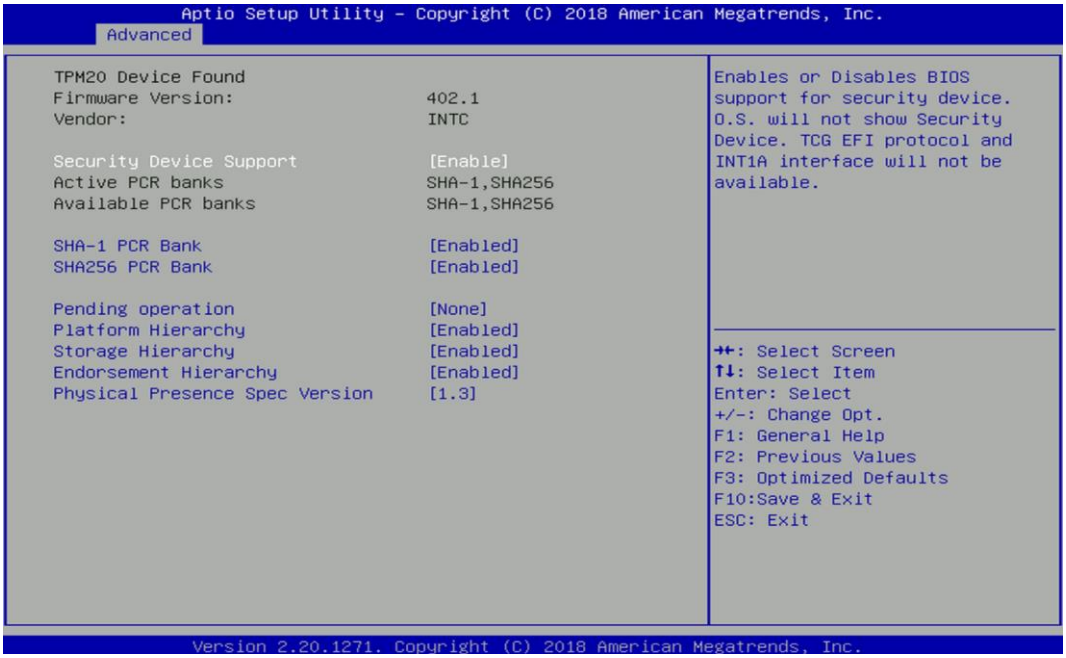

**■ Firmware Update Configuration**

Configure Management Engine Parameters

**❑ Me FW Image Re-Flash**

Enables or disables ME firmware Image Re-Flash function.

### 4.3.4 Trusted Computing Settings




**■ Security Device Support [Enabled]**

Enables or disables Security Device Support function.

**■ SHA-1 PCR Bank [Enabled]**

Enables or disables SHA-1 PCR Bank function.

■ **SHA256 PCR Bank [Enabled]**

Enables or disables SHA256 PCR Bank function.

■ **Pending Operation [None]**

Allows you to select which mode Pending Operation will operate.

Configuration options: [None], [TPM Clear]

■ **Platform Hierarchy [Enabled]**

Enables or disables Platform Hierarchy function.

■ **Storage Hierarchy [Enabled]**

Enables or disables Storage Hierarchy function.

■ **Endorsement Hierarchy [Enabled]**

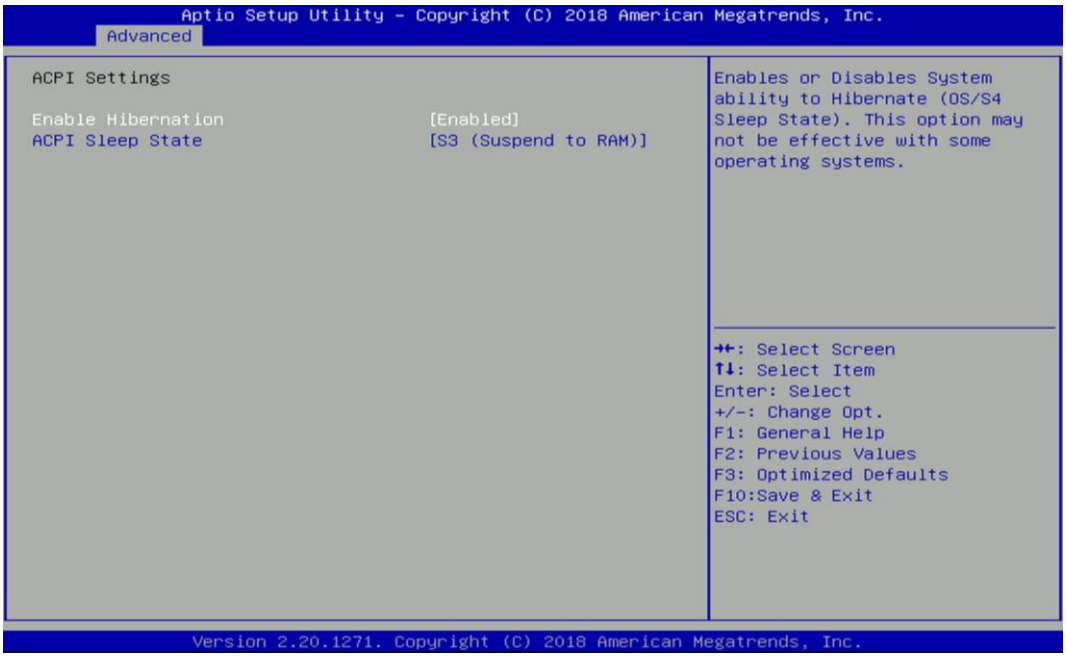
Enables or disables Endorsement Hierarchy function.

■ **Physical Presence Spec Version [1.3]**

Allows you to select which mode Physical Presence Spec Version will operate.

Configuration options: [1.2], [1.3]

### 4.3.5 ACPI Settings




■ **Enable Hibernation [Enabled]**

Enables or disables system ability to hibernate state (OS/S4 state). This option may not be effective with some OS.

■ **ACPI Sleep State [S3 (Suspend to RAM)]**

Allows users to select the highest Advanced Configuration Power Interface® (ACPI) sleep state that system will enter when suspend button is pressed.

[Suspend Disabled]: Disables entering suspend state.

[S3 (suspend to RAM)]: Enables suspend to RAM state.

### 4.3.6 F81866 Super IO Configuration

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




■ **Serial Port 1~6 Configuration.**




❑ **Serial Port [Enabled]**

Enables or disables serial port.

❑ **Change Settings [Auto]**

Allows you to change the IO Address & IRQ settings of the specified serial port.

❑ **Onboard Serial Port 1~6 Mode [RS232]**

Allows you to select Serial Port Mode.

Configuration options: [RS232] [RS422/RS485 Full Duplex] [RS485 Half Duplex]

■ **Watch Dog [Disabled]**

Enables or disables watch dog function.

■ **Watch Dog Mode [Sec]**

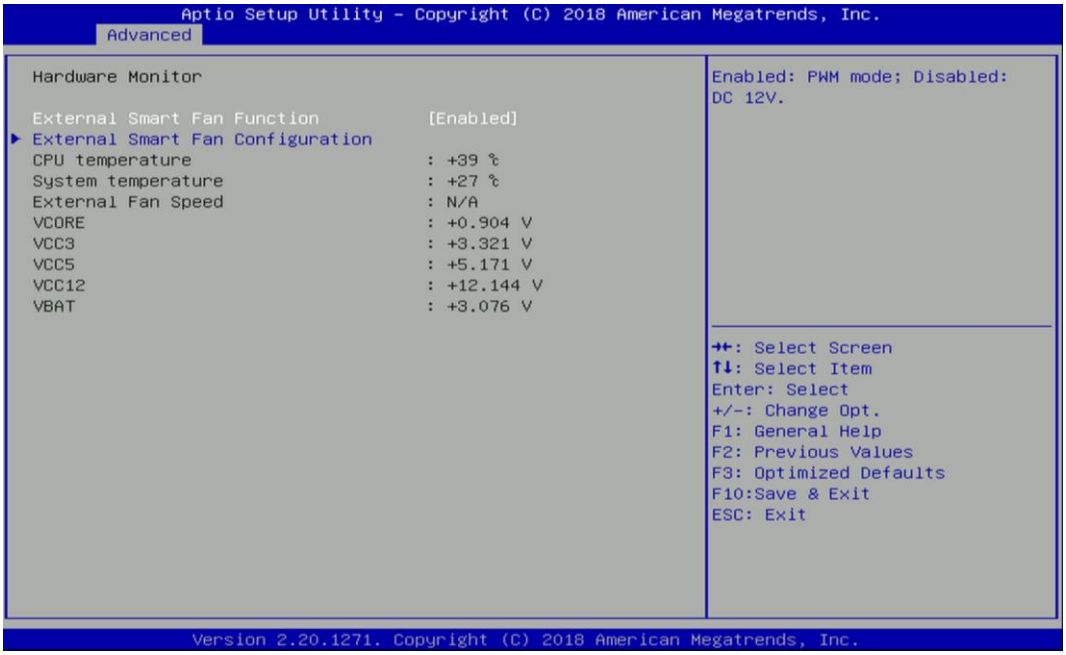
Allows to set watchdog timer unit <Sec> or <Min>.

■ **Watch Dog Timer [0]**

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

### 4.3.7 Hardware Monitor

This screen displays the current status of all monitored hardware devices/components such as voltages, temperatures and all fans' speeds.

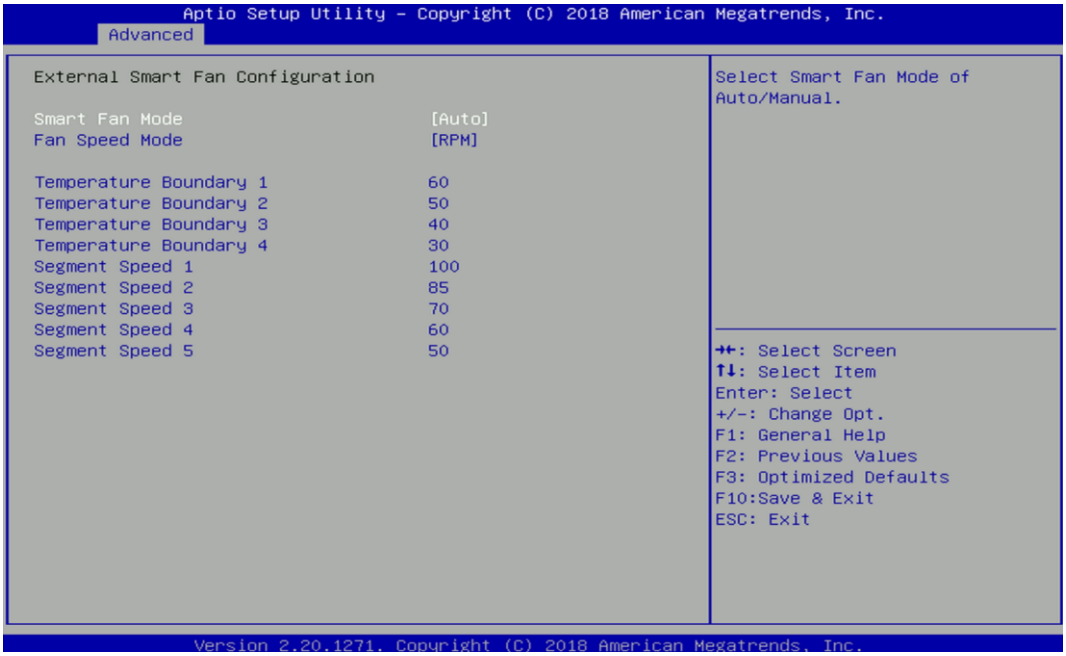



■ **External Smart Fan Function [Enabled]**

Enables or disables External Smart Fan function.

■ **External Smart Fan Configuration [Enabled]**

Configure External Smart Fan Parameters.




❑ **Smart Fan Mode [Auto]**

Allows you to select Smart Fan Mode.

Configuration options: [Auto] [Manual]

❑ **Fan Speed Mode [RPM]**

Allows you to select Fan Speed Mode.

Configuration options: [RPM] [Duty]

### 4.3.8 S5 RTC Wake Settings




■ **Wake system from S5 [Disabled]**

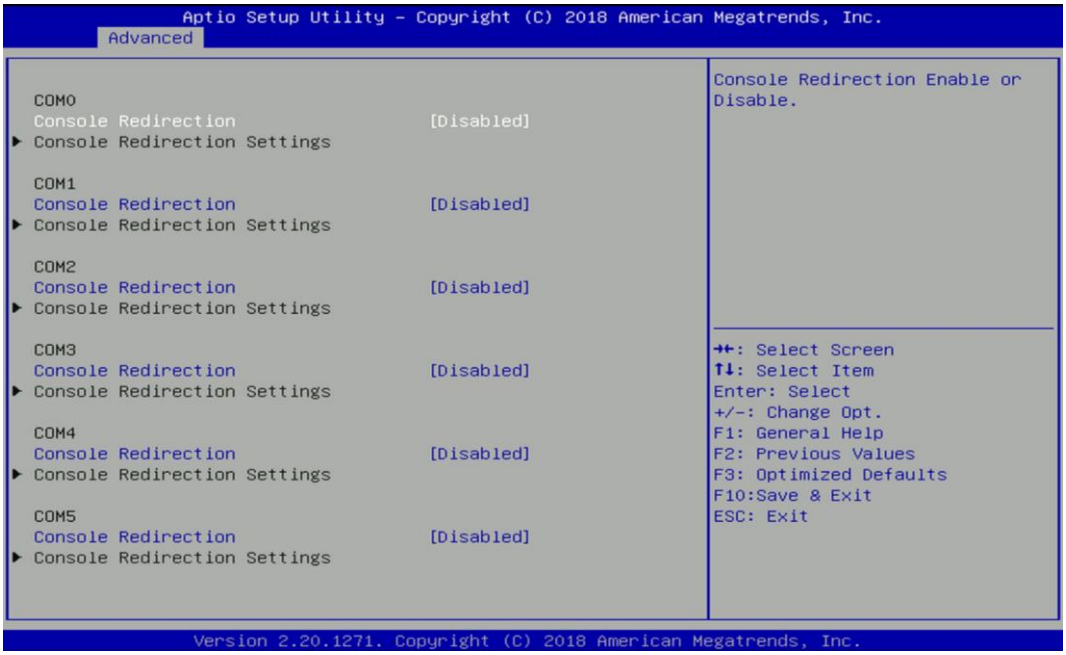
Enables or disables wake system from S5 (soft-off state).

[Disabled]: Disables wake system from S5.

[Fixed Time]: Sets a fixed time (HH:MM:SS) to wake system from S5.

[Dynamic Time]: Sets an increase minute(s) from current time to wake system from S5.

### 4.3.9 Serial Port Console Redirection




■ **Console Redirection**

Allow users to enable or disable COM0, COM1, COM2, COM3, COM4, COM5 console redirection function.

COM0 = Serial Port 1

COM1 = Serial Port 2

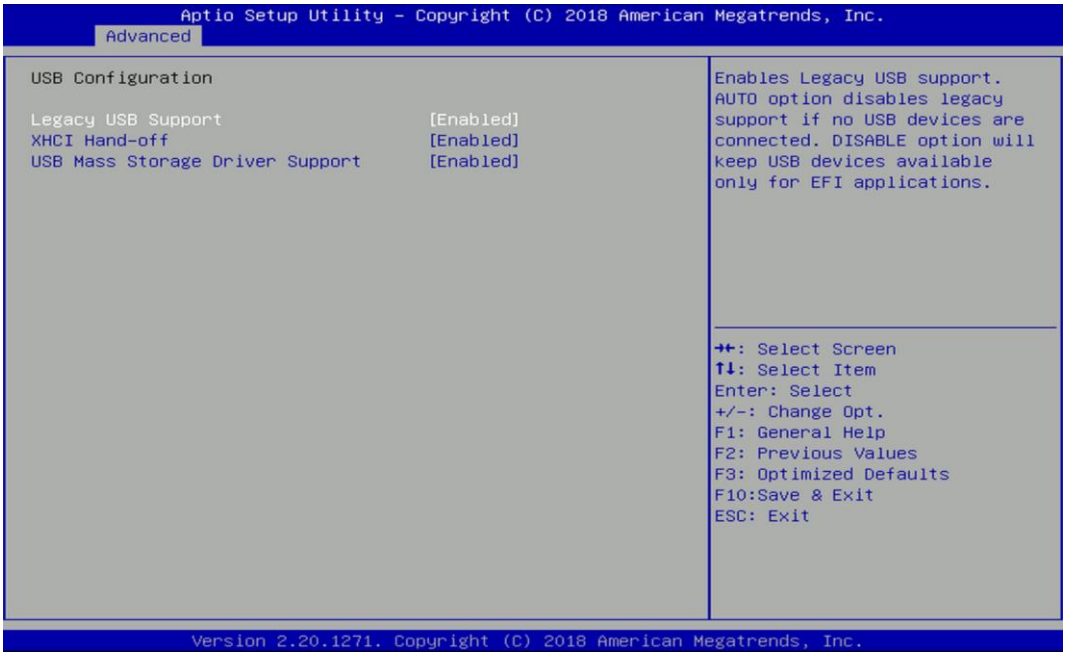
COM2 = Serial Port 3

COM3 = Serial Port 4

COM4 = Serial Port 5

COM5 = Serial Port 6

### 4.3.10 USB Configuration



### ■ Legacy USB Support [Enabled]

This item allows you to enable or disable legacy USB support. When set to [Auto], legacy USB support will be disabled automatically if no USB devices are connected.

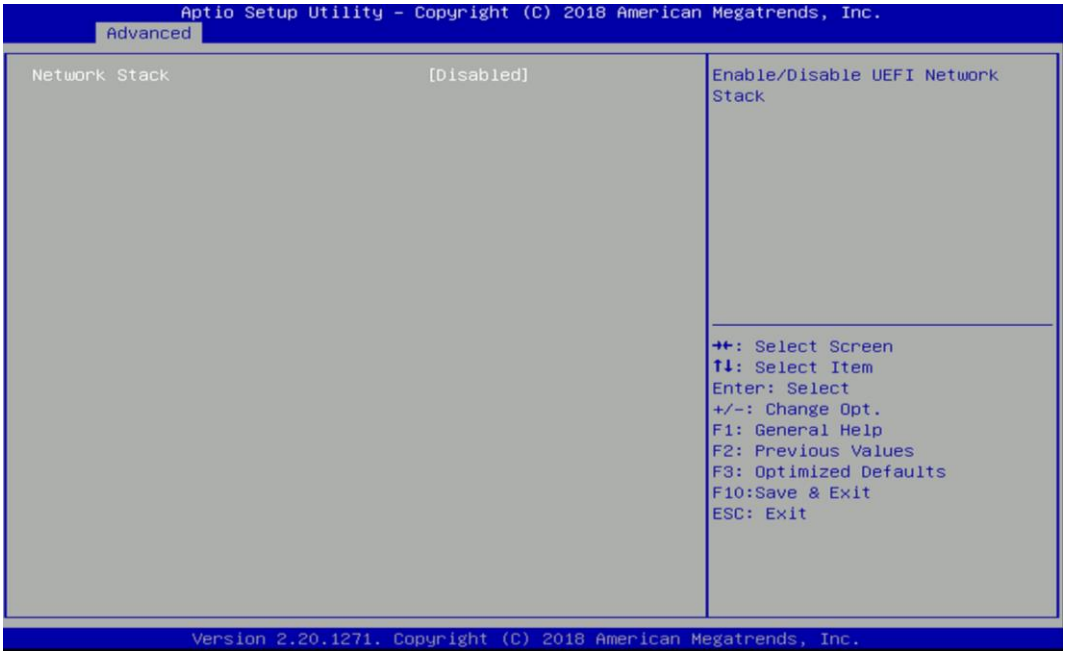
### ■ XHCI Hand-off [Enabled]

Enables or disables XHCI (USB3.0) hand-off function. Use this feature as a workaround for operating systems without XHCI hand-off support.

### ■ USB Mass Storage Driver Support [Enabled]

Enables or disables USB mass storage driver support.

## 4.3.11 Network Stack Configuration

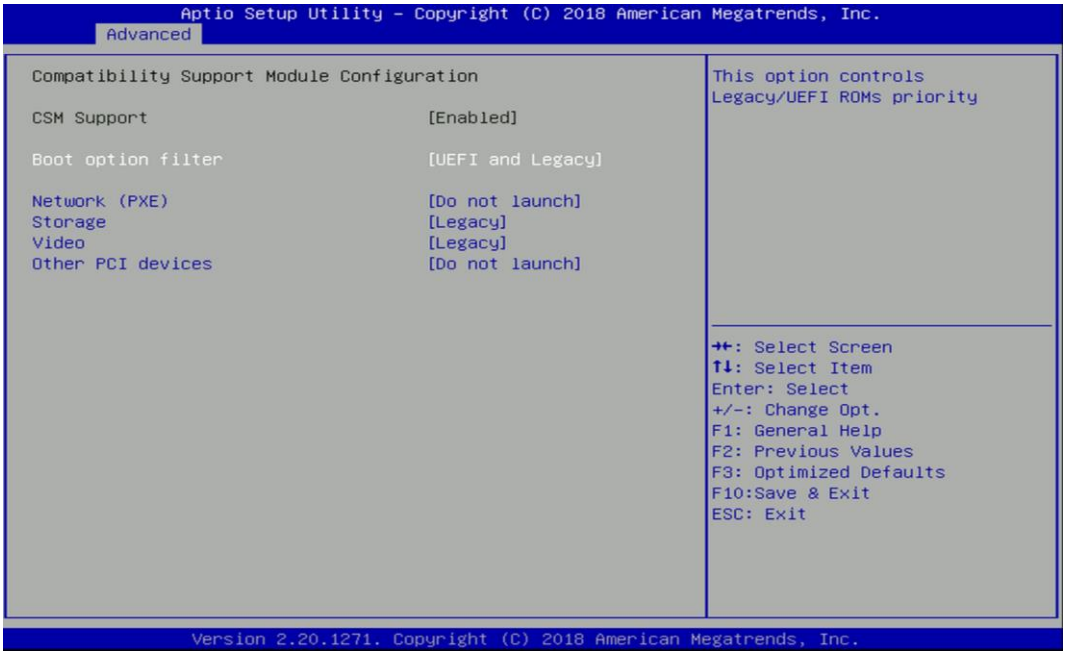



### ■ Network Stack [Disabled]

Enables or disables UEFI Network Stack.

### 4.3.12 CSM Configuration

This option controls legacy/UEFI ROMs priority.




■ **CSM Support [Enabled]**

Enables or disables compatibility support module.

■ **Boot option filter [UEFI and Legacy]**

Allows you to select which type of operating system to boot.

[UEFI and Legacy]: Allows booting from operating systems that support legacy option ROM or UEFI option ROM.

[Legacy only]: Allows booting from operating systems that only support legacy option ROM.

[UEFI only]: Allows booting from operating systems that only support UEFI option ROM.

■ **Network PXE [Do not launch]**

Controls the execution of UEFI and Legacy PXE (Network Preboot eXecution Environment) option ROM.

[Do not launch]: Disables option ROM execution.

[UEFI]: Enables UEFI option ROM only.

[Legacy]: Enables legacy option ROM only.

■ **Storage [Legacy]**

Controls the execution of UEFI and Legacy Storage option ROM.

[Do not launch]: Disables option ROM execution.

[UEFI]: Enables UEFI option ROM only.

[Legacy]: Enables legacy option ROM only.

■ **Video [Legacy]**

Controls the execution of UEFI and Legacy Video option ROM.

[Do not launch]: Disables option ROM execution.

[UEFI]: Enables UEFI option ROM only.

[Legacy]: Enables legacy option ROM only.

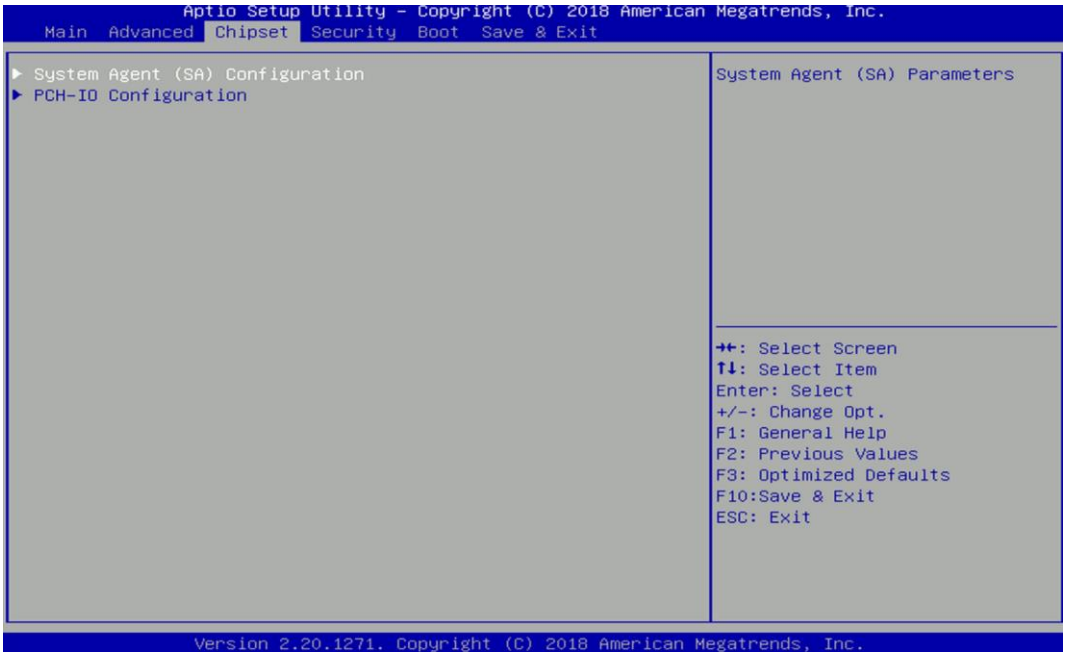
### ■ Other PCI devices [Do not launch]

Allows users to determine option ROM execution policy for devise other than network, storage, or video.

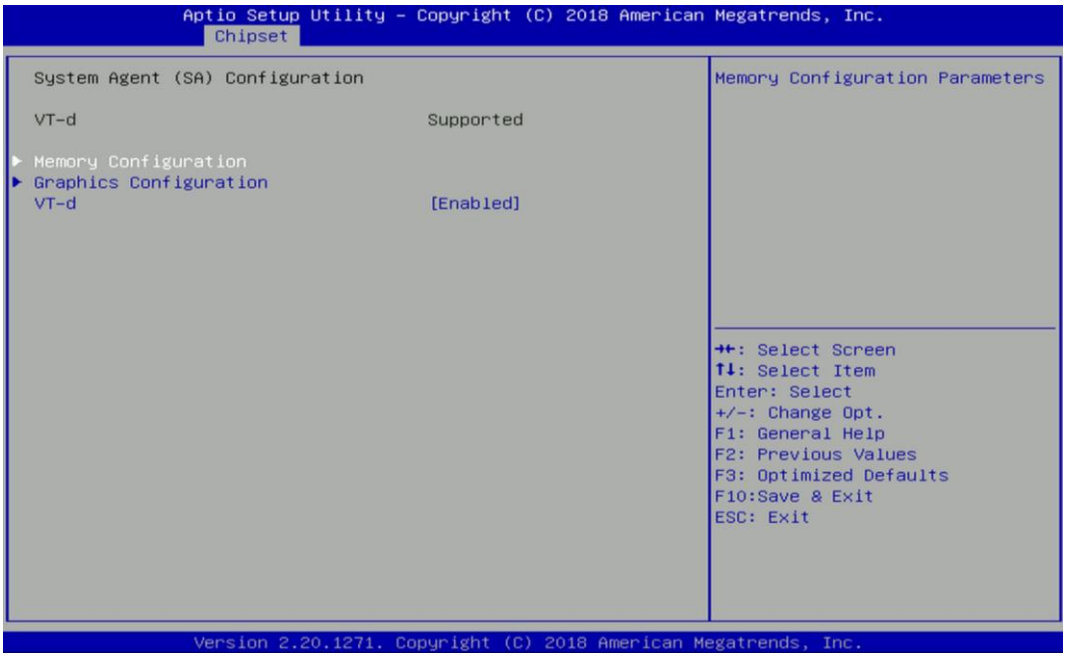
Configuration options: [Do not launch] [UEFI] [Legacy]

# 4.4 Chipset Setup

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




## 4.4.1 System Agent (SA) Configuration




### ■ Memory Configuration

This item displays detailed memory configuration in the system.

■ **Graphics Configuration**

❑ **Internal Graphics [Auto]**

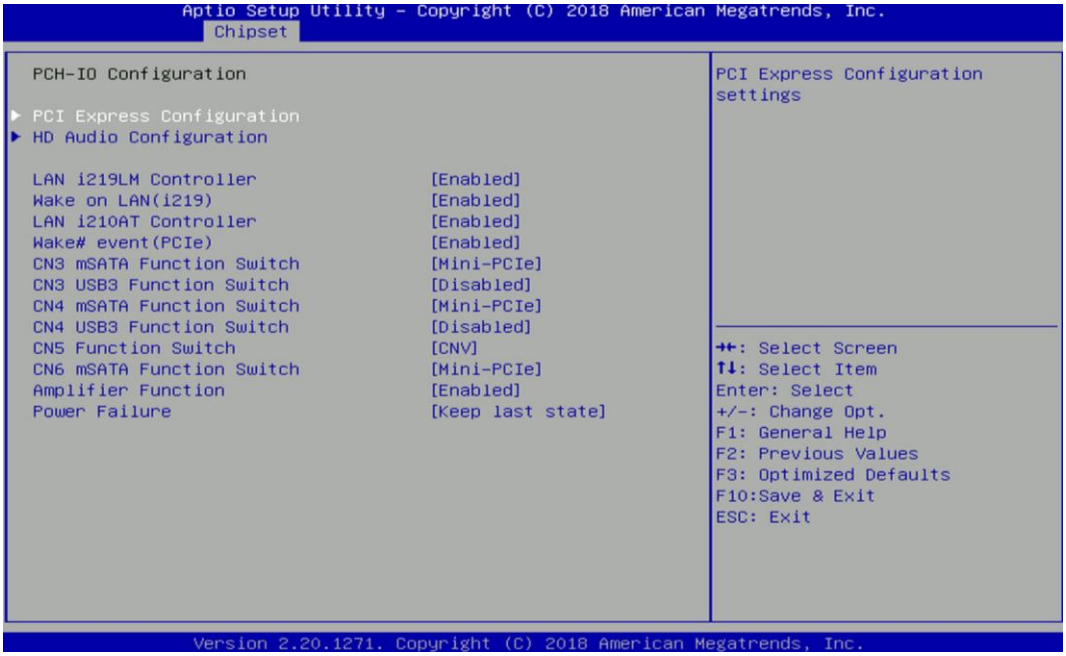
Allows users to enable or disable Internal Graphics.

Configuration options: [Auto] [Disabled] [Enabled]

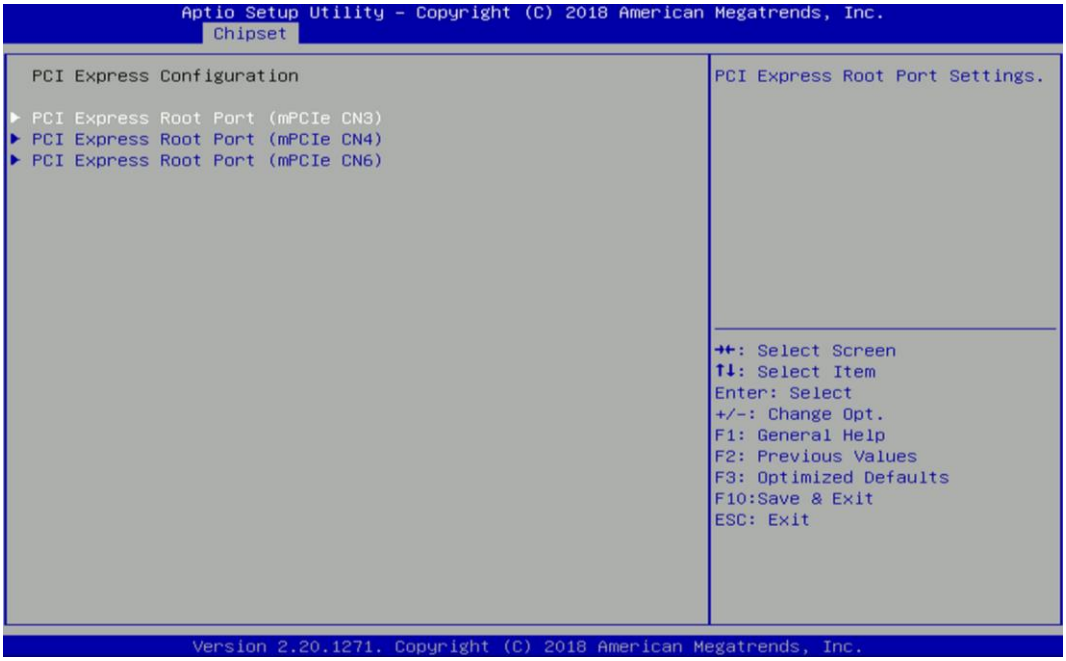
■ **VT-d [Enabled]**

Enables or disables Intel® Virtualization Technology for Directed I/O (VT-d) capability.

### 4.4.2 PCH-IO Configuration




■ **PCI Express Configuration**




❑ **PCI Express Root Port (mPCIe CN3)**

■ **PCI Express Root Port [Enabled]**

Enables or disables PCI Express Root Port.

■ **PCIe Speed [Auto]**

Allows you to select PCI Express interface speed.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3].

- ❑ **PCI Express Root Port (mPCIe CN4)**
  - ■ **PCI Express Root Port [Enabled]**

    Enables or disables PCI Express Root Port.
  - ■ **PCIe Speed [Auto]**

    Allows you to select PCI Express interface speed.

    Configuration options: [Auto] [Gen1] [Gen2] [Gen3].
- ❑ **PCI Express Root Port (mPCIe CN6)**
  - ■ **PCI Express Root Port [Enabled]**

    Enables or disables PCI Express Root Port.
  - ■ **PCIe Speed [Auto]**

    Allows you to select PCI Express interface speed.

    Configuration options: [Auto] [Gen1] [Gen2] [Gen3].

■ **HD Audio Configuration**

- ❑ **HD Audio [Enabled]**

Enables or disables HD Audio.

■ **LAN i219LM Controller [Enabled]**

Enables or disables I219-LM LAN Controller.

■ **Wake on LAN Enabled [Enabled]**

Enables or disables integrated LAN Wake On LAN function.

■ **LAN i210AT Controller [Enabled]**

Enables or disables I210 LAN Controller.

■ **CN3 mSATA Function Switch [Mini-PCIe]**

Allows you to change **mPCIe CN3** as [Mini-PCIe] or [mSATA].

■ **CN3 USB3 Function Switch [Disabled]**

Enables or disables CN3 USB3 Controller.

■ **CN4 mSATA Function Switch [Mini-PCIe]**

Allows you to change **mPCIe CN4** as [Mini-PCIe] or [mSATA].

■ **CN4 USB3 Function Switch [Disabled]**

Enables or disables CN4 USB3 Controller.

■ **CN5 mSATA Function Switch [CNV]**

Allows you to change **mPCIe CN5** as [CNV] or [WiFi].

■ **CN6 mSATA Function Switch [Mini-PCIe]**

Allows you to change **mPCIe CN6** as [Mini-PCIe] or [mSATA].

■ **Amplifier Function [Enabled]**

Enables or disables Amplifier Function.

■ **Power Failure [Keep last state]**

Allows you to specify which power state system will enter when power is resumed after a power failure (G3 state).

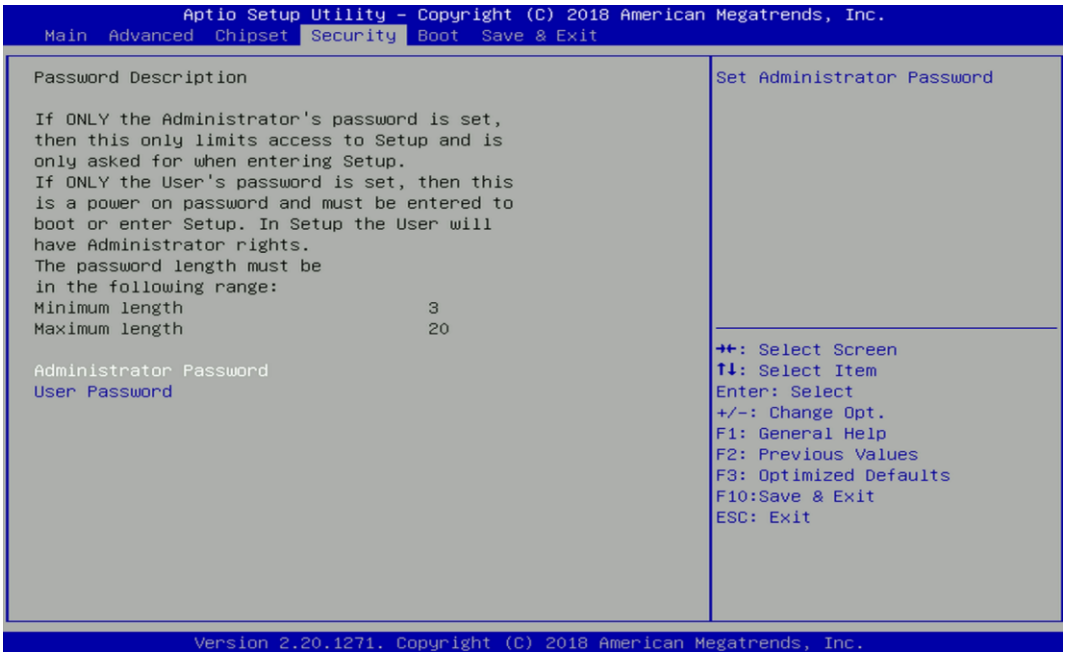
[Always on]: Enters to power on state.

[Always off]: Enters to power off state.

[Keep last state]: Enters to the last power state before a power failure.

## 4.5 Security Setup

This section allows users to configure BIOS security settings.




### 4.5.1 Administrator Password

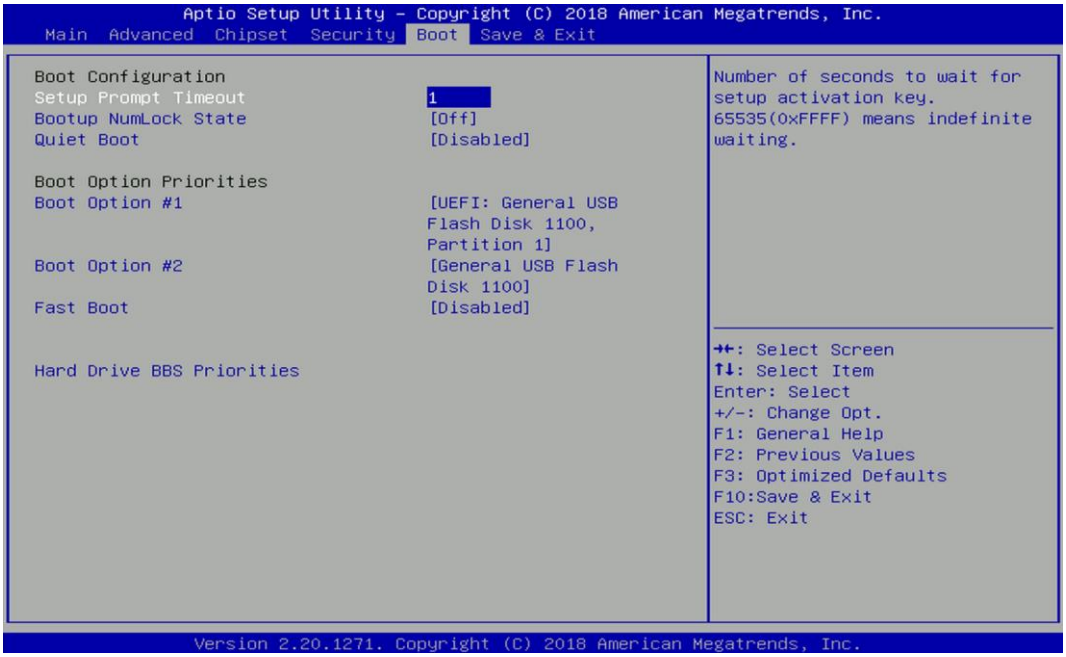
Administrator Password controls access to the BIOS Setup utility.

### 4.5.2 User Password

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

# 4.6 Boot Setup

This section allows you to configure Boot settings.




### 4.6.1 Setup Prompt Timeout

Use this item to set number of seconds (1..65535) to wait for setup activation key.

### 4.6.2 Bootup NumLock State

Allows you to set NumLock key to [On] or [Off] state when system boots up.

### 4.6.3 Quiet Boot

Allows you to enable or disable Quiet Boot function.

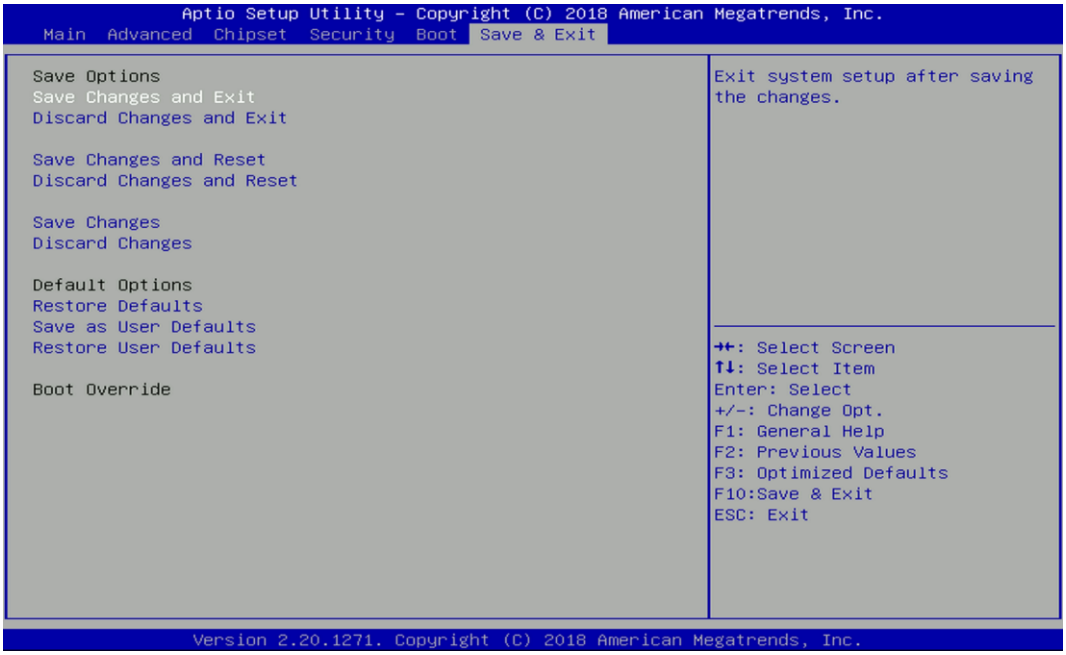
### 4.6.4 Fast Boot

Allows you to enable or disable Fast Boot function. If enabled, system boots with initialization of a minimal set of devices required to launch active boot option.

### 4.6.5 Hard Drive BBS Priority

Allows you to set the order of the legacy devices in this group.

# 4.7 Save & Exit




### 4.7.1 Save Changes and Exit

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

### 4.7.2 Discard Changes and Exit

This item allows you to exit system setup without saving changes.

### 4.7.3 Save Changes and Reset

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

### 4.7.4 Discard Changes and Reset

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

### 4.7.5 Save Changes

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

### 4.7.6 Discard Changes.

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

### 4.7.7 Restore Defaults

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

### 4.7.8 Save as User Defaults

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

### 4.7.9 Restore User Defaults

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

# Chapter 5
# Product Application
## (For DIO Only)

# 5.1 Digital I/O (DIO) application

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

## 5.1.1 Digital I/O Programming Guide

### 5.1.1.1 Pins for Digital I/O

| Item | Standard |
|---|---|
| GPIO70 (Pin103) | DI |
| GPIO71 (Pin104) | |
| GPIO72 (Pin105) | |
| GPIO73 (Pin106) | |
| GPIO74 (Pin107) | |
| GPIO75 (Pin108) | |
| GPIO76 (Pin109) | |
| GPIO77 (Pin110) | |
| GPIO80 (Pin111) | DO |
| GPIO81 (Pin112) | |
| GPIO82 (Pin113) | |
| GPIO83 (Pin114) | |
| GPIO84 (Pin115) | |
| GPIO85 (Pin116) | |
| GPIO86 (Pin117) | |
| GPIO87 (Pin118) | |

#### 5.1.1.2 Programming Guide

To program the Super I/O chip F81866A configuration registers, the following configuration procedures must be followed in sequence:
(1) Enter the Extended Function Mode
(2) Configure the configuration registers
(3) Exit the Extended Function Mode

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

#### 5.1.1.3 Relative Registers

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

**Logic Device Number Register (LDN) — Index 07h**

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

8.7.13.1GPIO7 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.<br>1: GPIO77 is in output mode. |
| 6 | GPIO76_OE | R/W | LRESET# | 0 | 0: GPIO76 is in input mode.<br>1: GPIO75 is in output mode. |
| 5 | GPIO75_OE | R/W | LRESET# | 0 | 0: GPIO75 is in input mode.<br>1: GPIO75 is in output mode. |
| 4 | GPIO74_OE | R/W | LRESET# | 0 | 0: GPIO74 is in input mode.<br>1: GPIO74 is in output mode. |
| 3 | GPIO73_OE | R/W | LRESET# | 0 | 0: GPIO73 is in input mode.<br>1: GPIO73 is in output mode. |
| 2 | GPIO72_OE | R/W | LRESET# | 0 | 0: GPIO72 is in input mode.<br>1: GPIO72 is in output mode. |
| 1 | GPIO71_OE | R/W | LRESET# | 0 | 0: GPIO71 is in input mode.<br>1: GPIO71 is in output mode. |
| 0 | GPIO70_OE | R/W | LRESET# | 0 | 0: GPIO70 is in input mode.<br>1: GPIO70 is in output mode. |

8.7.13.3GPIO7 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#. |
| 3 | GPIO73_IN | R | - | - | The pin status of GPIO73/SLIN#. |
| 2 | GPIO72_IN | R | - | - | The pin status of GPIO72/ACK#. |
| 1 | GPIO71_IN | R | - | - | The pin status of GPIO71/BUSY. |
| 0 | GPIO70_IN | R | - | - | The pin status of GPIO70/PE/FANCTL3/PWM_DAC3. |

8.7.14.2GPIO8 Output Data Register — Index 89h (This byte could be also written by base address + 2)

| Bit | Name | R/W | Reset | Default | Description |
|---|---|---|---|---|---|
| 7 | GPIO87_VAL | R/W | LRESET# | 1 | 0: GPIO87 outputs 0 when in output mode.<br>1: GPIO87 outputs 1 when in output mode. |
| 6 | GPIO86_VAL | R/W | LRESET# | 1 | 0: GPIO86 outputs 0 when in output mode.<br>1: GPIO86 outputs 1 when in output mode. |
| 5 | GPIO85_VAL | R/W | LRESET# | 1 | 0: GPIO85 outputs 0 when in output mode.<br>1: GPIO85 outputs 1 when in output mode. |
| 4 | GPIO84_VAL | R/W | LRESET# | 1 | 0: GPIO84 outputs 0 when in output mode.<br>1: GPIO84 outputs 1 when in output mode. |
| 3 | GPIO83_VAL | R/W | LRESET# | 1 | 0: GPIO83 outputs 0 when in output mode.<br>1: GPIO83 outputs 1 when in output mode. |
| 2 | GPIO82_VAL | R/W | LRESET# | 1 | 0: GPIO82 outputs 0 when in output mode.<br>1: GPIO82 outputs 1 when in output mode. |
| 1 | GPIO81_VAL | R/W | LRESET# | 1 | 0: GPIO81 outputs 0 when in output mode.<br>1: GPIO81 outputs 1 when in output mode. |
| 0 | GPIO80_VAL | R/W | LRESET# | 1 | 0: GPIO80 outputs 0 when in output mode.<br>1: GPIO80 outputs 1 when in output mode. |

8.7.14.1GPIO8 Output Enable Register — Index 88h

| Bit | Name | R/W | Reset | Default | Description |
|---|---|---|---|---|---|
| 7 | GPIO87_OE | R/W | LRESET# | 1 | 0: GPIO87 is in input mode.<br>1: GPIO87 is in output mode. |
| 6 | GPIO86_OE | R/W | LRESET# | 1 | 0: GPIO86 is in input mode.<br>1: GPIO85 is in output mode. |
| 5 | GPIO85_OE | R/W | LRESET# | 1 | 0: GPIO85 is in input mode.<br>1: GPIO85 is in output mode. |
| 4 | GPIO84_OE | R/W | LRESET# | 1 | 0: GPIO84 is in input mode.<br>1: GPIO84 is in output mode. |
| 3 | GPIO83_OE | R/W | LRESET# | 1 | 0: GPIO83 is in input mode.<br>1: GPIO83 is in output mode. |
| 2 | GPIO82_OE | R/W | LRESET# | 1 | 0: GPIO82 is in input mode.<br>1: GPIO82 is in output mode. |
| 1 | GPIO81_OE | R/W | LRESET# | 1 | 0: GPIO81 is in input mode.<br>1: GPIO81 is in output mode. |
| 0 | GPIO80_OE | R/W | LRESET# | 1 | 0: GPIO80 is in input mode.<br>1: GPIO80 is in output mode. |

### 5.1.1.4 Sample Code in C Language

5.1.1.4.1 Control of GP70 to GP77 (DI1 ~ DI8)

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

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

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

<Output/Input Mode Selection>          // Set GP70 to GP77 input Mode
WriteByte(AddrPort, 0x80)          // Select configuration register 80h
WriteByte(DataPort, 0x0X)              // Set (bit 0~7) = 0 to select GP 70~77 as Input mode.

<Input Value>
WriteByte(AddrPort, 0x82)          // Select configuration register 82h
ReadByte(DataPort, Value)          // Read bit 0~7 (0xFF)= GP70 ~77 as High.

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

5.1.1.4.2 Control of GP80 to GP87 (DO1 ~ DO8)

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

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

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

<Output/Input Mode Selection>      // Set GP80 to GP87 output Mode
WriteByte(AddrPort, 0x88)          // Select configuration register 88h
WriteByte(DataPort, 0xXF))         // Set (bit 0~7) = 1 to select GP 80 ~87 as Output mode.

<Output Value>
WriteByte(AddrPort, 0x89)          // Select configuration register 89h
WriteByte(DataPort, Value)         // Set bit 0~7=(0/1) to output GP 80~87 as Low or High

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

**5.1.1.5 Change base address**

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

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

WriteByte(AddrPort, 0x60)    // Select configuration register 60h (High Byte address)
WriteByte(DataPort, (0x0A))

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

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

Cincoze default GPIO Port base address is 0xA00h

### 5.1.1.6 DATA Bit Table (DIO)

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Value |
| 1 | | | | | | | | /h |

**= DI1**
**(Base address +3) (0xA03)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Value |
| 1 | | | | | | | | /h |

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

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | Value |
| 2 | | | | | | | | /h |

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

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | Value |
| 2 | | | | | | | | /h |

**= DO2**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | Value |
| 4 | | | | | | | | /h |

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

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | Value |
| 4 | | | | | | | | /h |

**= DO3**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | Value |
| 8 | | | | | | | | /h |

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

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | Value |
| 8 | | | | | | | | /h |

**= DO4**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | Value |
| 10 | | | | | | | | /h |

**= DI5**
**(Base address +3) (0xA03)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | Value |
| 10 | | | | | | | | /h |

**= DO5**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | Value |
| 20 | | | | | | | | /h |

**= DI6**
**(Base address +3) (0xA03)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | Value |
| 20 | | | | | | | | /h |

**= DO6**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Value |
| 40 | | | | | | | | /h |

**= DI7**
**(Base address +3) (0xA03)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Value |
| 40 | | | | | | | | /h |

**= DO7**
**Base address +2) (0xA02)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Value |
| 80 | | | | | | | | /h |

**= DI8**
**(Base address +3) (0xA03)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | bit |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Value |
| 80 | | | | | | | | /h |

**= DO8**
**Base address +2) (0xA02)**

#### 5.1.1.7 DIO I/O Port Address (Default Address 0xA00)

| DI8 | DI7 | DI6 | DI5 | DI4 | DI3 | DI2 | DI1 | DO8 | DO7 | DO6 | DO5 | DO4 | DO3 | DO2 | DO1 | Pin Definition |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Data Bits |
| DI | | | | | | | | DO | | | | | | | | DIO |
| 0xA03 | | | | | | | | 0xA02 | | | | | | | | I/O Port address |

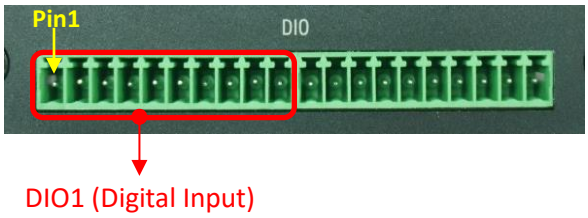
## 5.2 DIO Hardware Specification

- XCOM+: Isolated power in V+
- XCOM-: Isolated power in V-
- Isolated power in DC voltage: 9-30V
- 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)

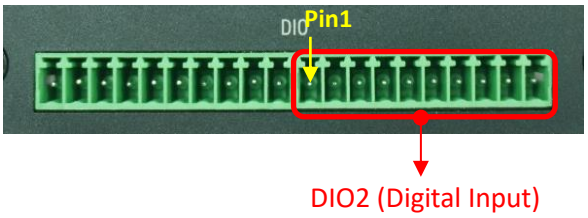
### 5.2.1 DIO Connector Definition

**DIO1/DIO2: Digital Input / Output Connector**

Connector Type: Terminal Block 2X10 10-pin, 3.5mm pitch




DIO1 (Digital Input)

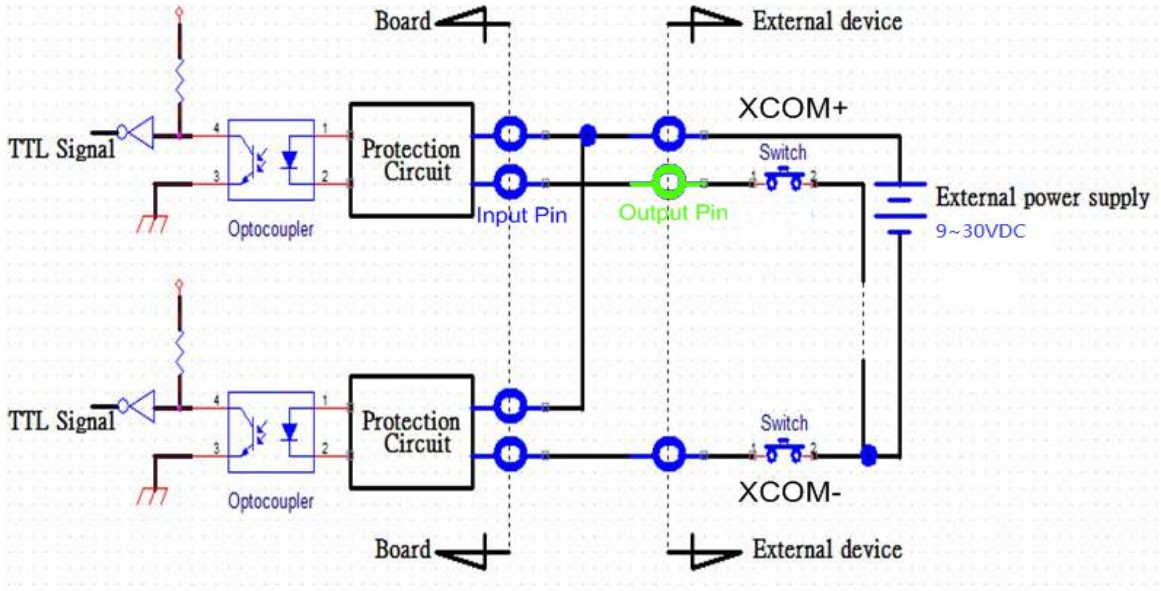



DIO2 (Digital Input)

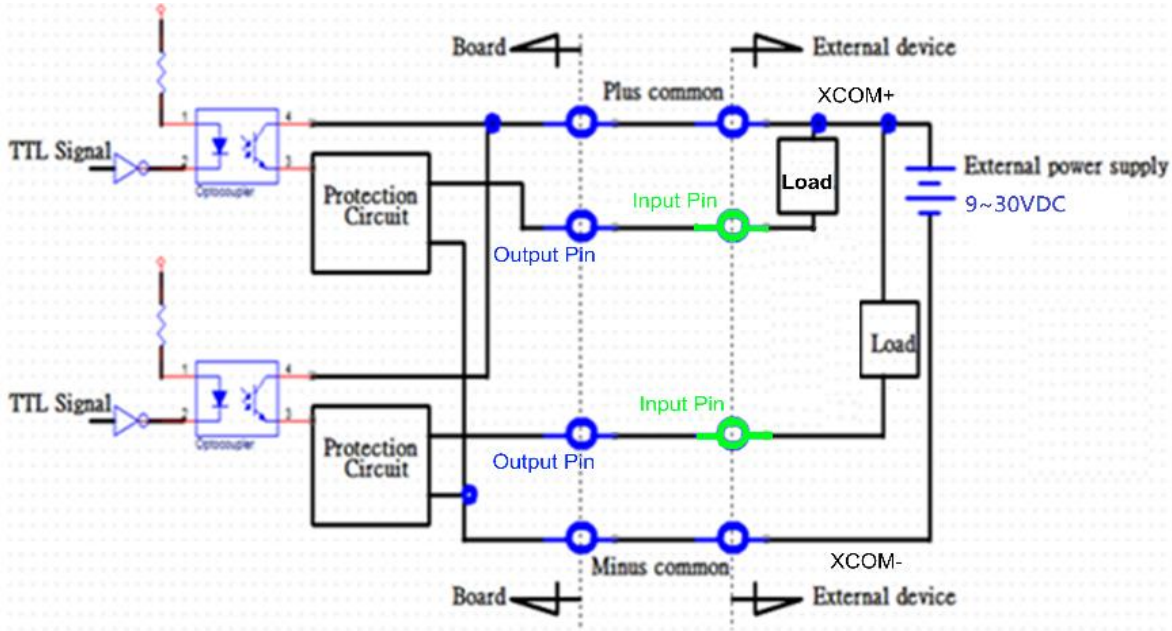
| Location | Pin | Definition |
|---|---|---|
| DIO1 | 1 | DC INPUT (XCOM+) |
| | 2 | DI1 |
| | 3 | DI2 |
| | 4 | DI3 |
| | 5 | DI4 |
| | 6 | DI5 |
| | 7 | DI6 |
| | 8 | DI7 |
| | 9 | DI8 |
| | 10 | GND (XCOM-) |

| Location | Pin | Definition |
|---|---|---|
| DIO2 | 1 | DC INPUT (XCOM+) |
| | 2 | DO1 |
| | 3 | DO2 |
| | 4 | DO3 |
| | 5 | DO4 |
| | 6 | DO5 |
| | 7 | DO6 |
| | 8 | DO7 |
| | 9 | DO8 |
| | 10 | GND (XCOM-) |

**Reference Input Circuit**




**Reference Output Circuit**



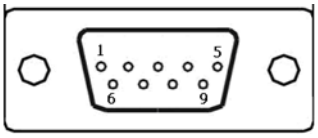
# Chapter 6
# Optional Modules
## Pin Definitions and Settings

# 6.1 CMI-COM Connector Definition and Settings

### COM5 / COM6: RS232 / RS422 / RS485 Connector

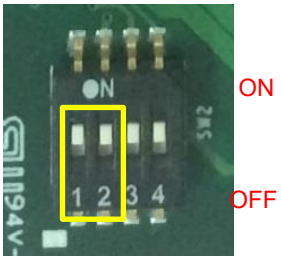
Connector Type: 9-pin D-Sub

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

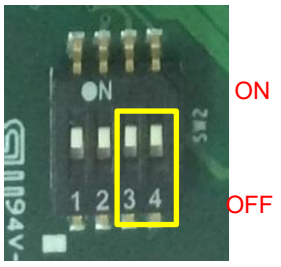



### SW2: COM5/COM6 Power Select

| Location | Function | | DIP1 | DIP2 |
|---|---|---|---|---|
| SW2 on CMI-COM Module | COM5 | 0V(RI) | ON **(Default)** | ON **(Default)** |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |




| Location | Function | | DIP3 | DIP4 |
|---|---|---|---|---|
| SW2 on CMI-COM Module | COM6 | 0V(RI) | ON **(Default)** | ON **(Default)** |
| | | 5V | ON | OFF |
| | | 12V | OFF | OFF |



# 6.2 CMI-M12 Connector Definition and Settings

**CMI-M12LAN01 Module Pin Definitions**

Connector Type: M12 A coded 8pin connector

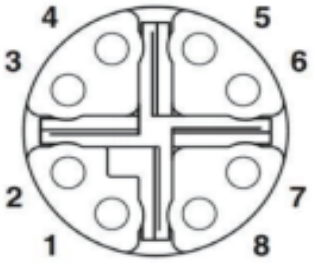
| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | 2_LAN1_0+ | 2 | 2_LAN1_0- |
| 3 | 2_LAN1_1+ | 4 | 2_LAN1_2+ |
| 5 | 2_LAN1_2- | 6 | 2_LAN1_1- |
| 7 | 2_LAN1_3+ | 8 | 2_LAN1_3- |




**CMI-XM12LAN01 Module Pin Definitions**

Connector Type: M12 X coded 8pin connector

| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | D1+ | 2 | D1- |
| 3 | D2+ | 4 | D2- |
| 5 | D4+ | 6 | D4- |
| 7 | D3- | 8 | D3+ |



## 6.3 CMI-CAN01 Connector Definition and Settings

**COM1 and COM2 (on the module) : CAN BUS Connector**

Connector Type: 9-pin D-Sub

| Pin | CAN BUS1 Definition | CAN BUS2 Definition |
|---|---|---|
| 1 | N.C | N.C |
| 2 | CAN1L | CAN2L |
| 3 | GND | GND |
| 4 | N.C | N.C |
| 5 | N.C | N.C |
| 6 | GND | GND |
| 7 | CAN1H | CAN2H |
| 8 | N.C | N.C |
| 9 | N.C | N.C |

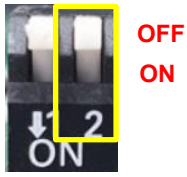



**SW1: COM1/COM2 120Ω Terminating Resistor Select**

| Location | Function | | DIP1 | DIP2 |
|---|---|---|---|---|
| SW1 on CMI-CAN Module | COM1 | Enabled | OFF (Default) | OFF (Default) |
| | | Disabled | ON | ON |




| Location | Function | | DIP1 | DIP2 |
|---|---|---|---|---|
| SW1 on CMI-CAN Module | COM2 | Enabled | OFF (Default) | OFF (Default) |
| | | Disabled | ON | ON |

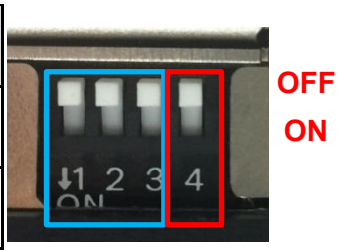


## 6.4 CFM-IGN Switch Definition and Settings

**SW2: IGN Module Timing Setting Switch**

Set shutdown delay timer when ACC is turned off

| Pin 1 | Pin 2 | Pin 3 | Pin 4 | Definition |
|---|---|---|---|---|
| ON | ON | ON | ON (IGN enabled) / OFF (IGN disabled) | 0 second |
| ON | ON | OFF | | 1 minute |
| ON | OFF | ON | | 5 minutes |
| ON | OFF | OFF | | 10 minutes |
| OFF | ON | ON | | 30 minutes |
| OFF | ON | OFF | | 1 hour |
| OFF | OFF | ON | | 2 hours |
| OFF | OFF | OFF | | Reserved (0 second) |




**24V_12V_1: IGN Module Voltage Mode Setting Switch**

12V / 24V Car Battery Switch

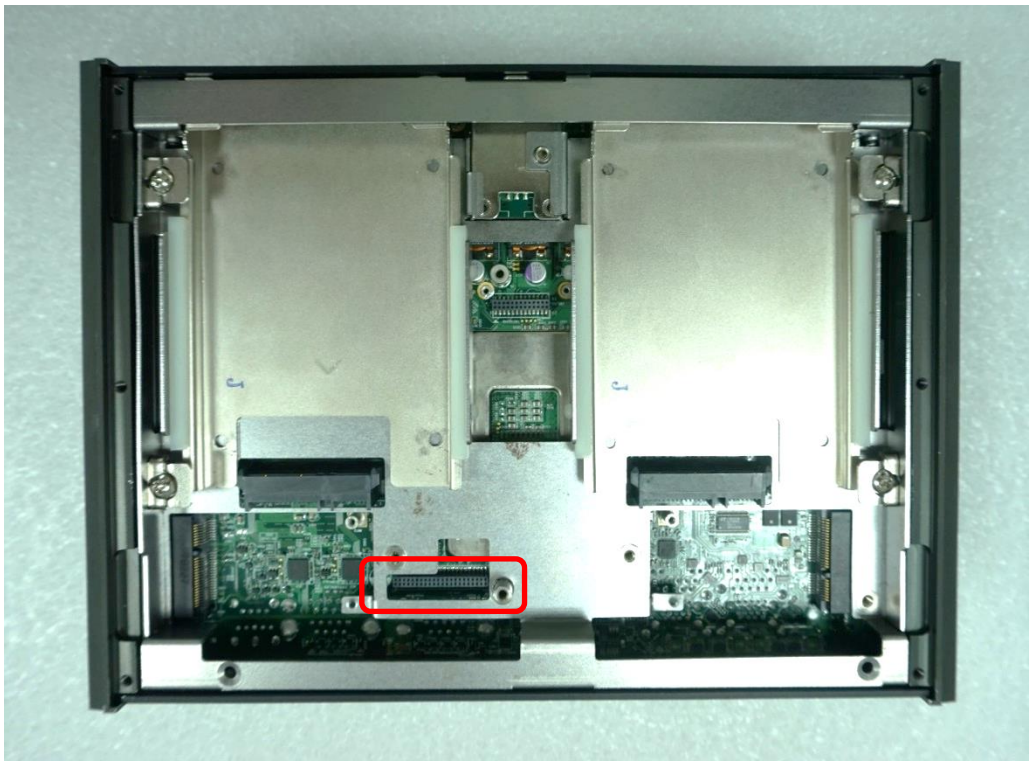
| Pin | Definition |
|---|---|
| 1-2 | 24V Car Battery Input (Default) |
| 2-3 | 12V Car Battery Input |



## 6.5 Installing CMI-COM Module

| Model No. | Product Description |
|---|---|
| CMI-COM01/UB0903 | CMI Module with 2x RS232/422/485 (Support 5V/12V) / 1x Universal Bracket with 2x DB9 Cutout for DX Series |

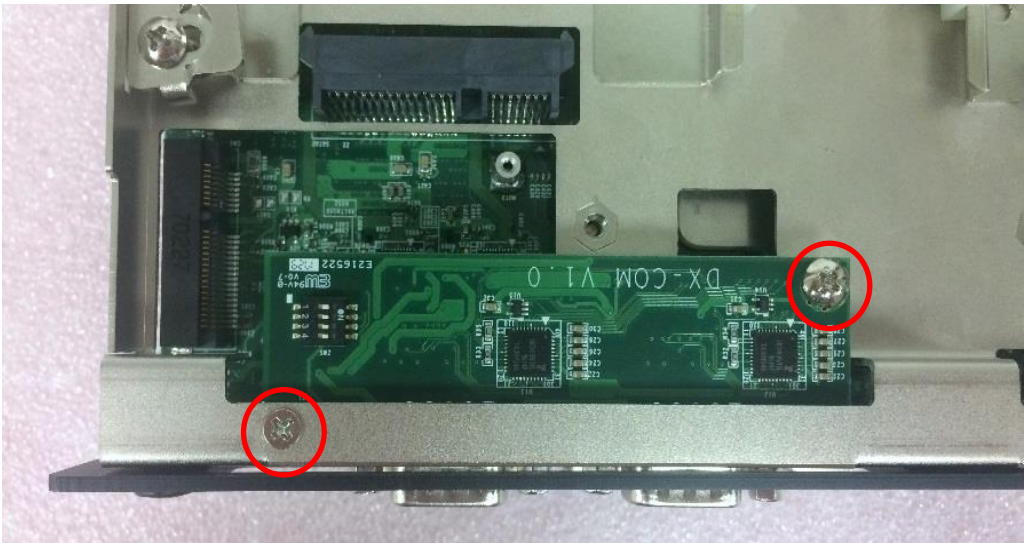
1. Locate the connector of CMI-module on the bottom side of system.



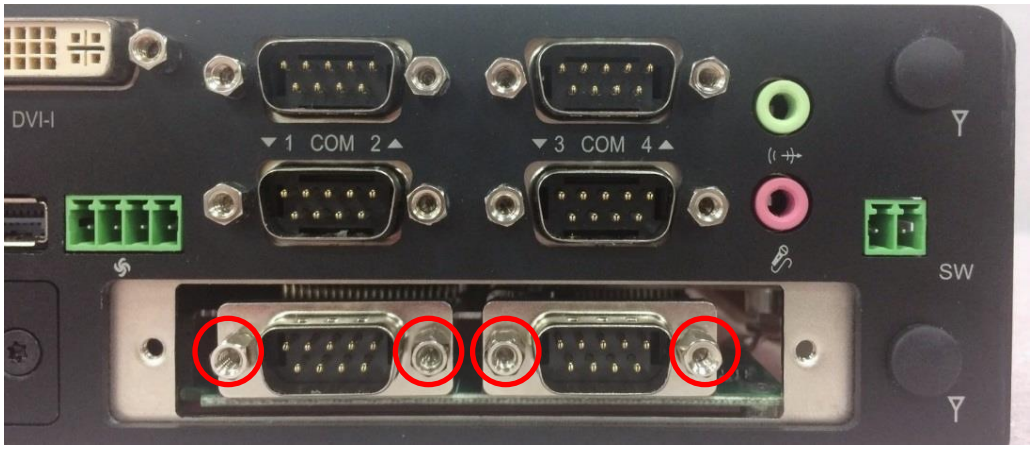
2. Loosen the 2 screws on rear bezel to remove the cover plate.



3. Insert the CMI-COM module carefully into the CMI connector on main board. Fix it with 2 screws.



4. Loosen the 4 D-Sub jack screws as marked on photo.



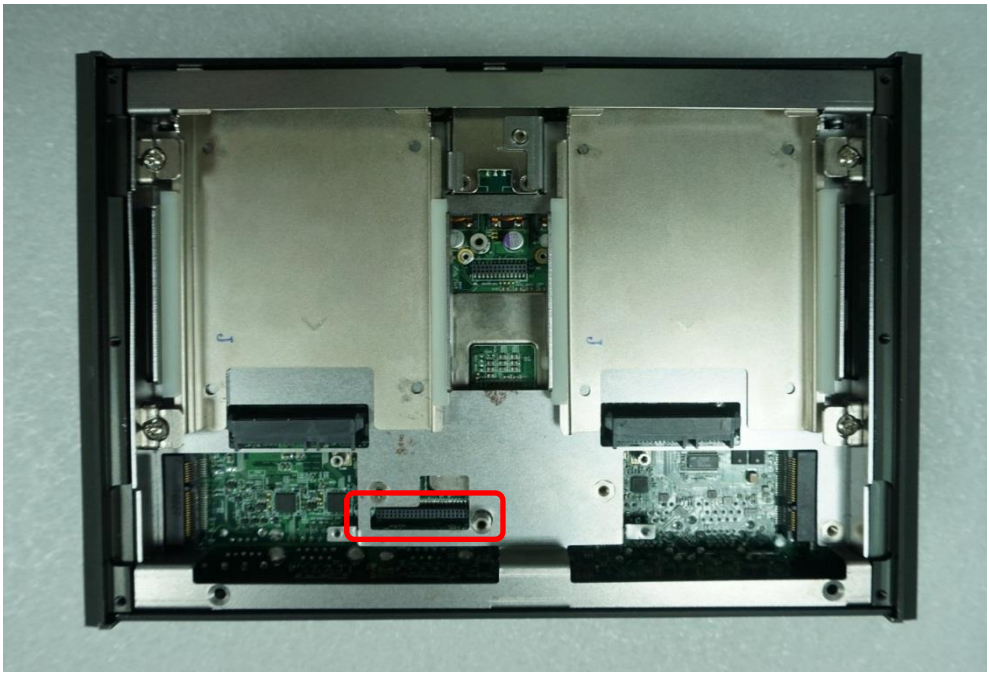

5. Attach the COM bracket. Fasten 2 screws and 4 D-Sub jack screws to fix it.



## 6.6 Installing CMI-DIO Module

| Model No. | Product Description |
|---|---|
| CMI-DIO01/UB1318 | CMI Module with 16DIO (8in 8out) / 1x Universal Bracket with DIO Cutout |

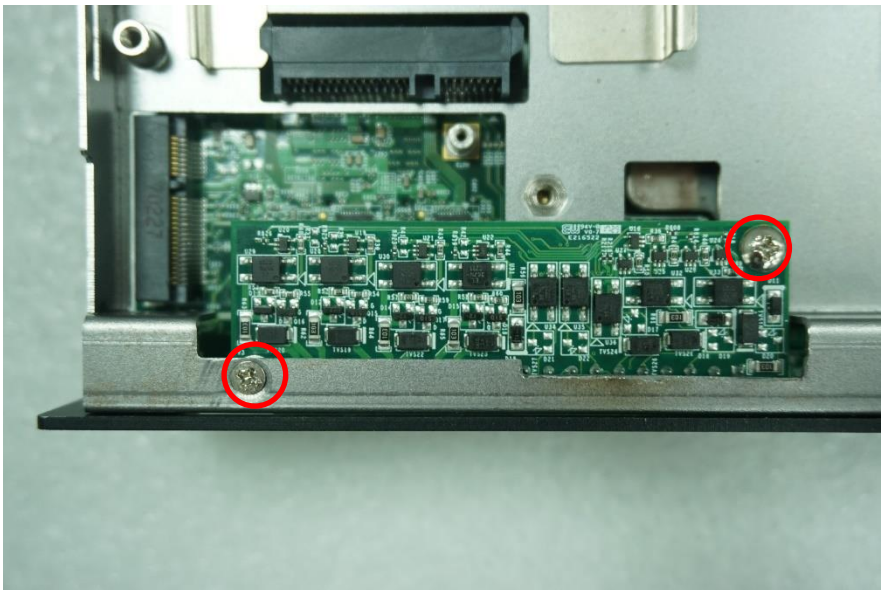
1. Locate the connector of CMI-DIO module on the bottom side of system.



2. Loosen the 2 screws on rear bezel to remove the cover plate.



3. Insert the CMI-DIO module carefully into the CMI connector on main board. Fix it with 2 screws.



4. Attach the DIO bracket, and fasten 2 screws to fix it.

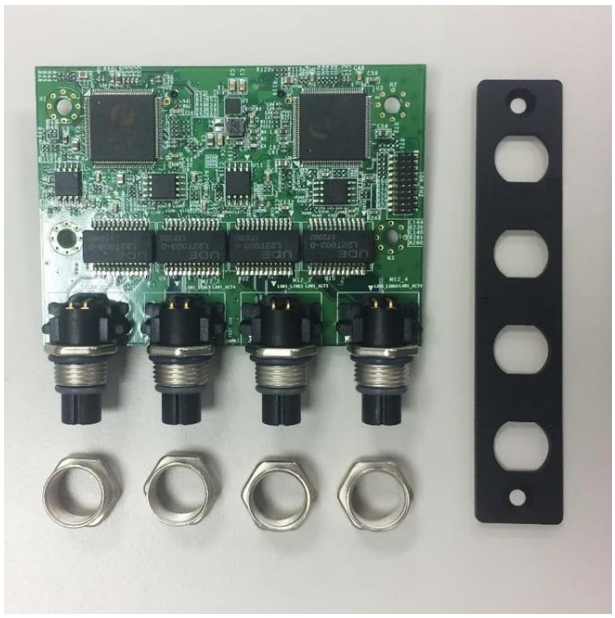


# 6.7 Installing High Speed CMI Modules

The applicable high speed CMI modules for DX-1100 series are CMI-LAN01-R12/UB1712, CMI-M12LAN01-R12/UB1710, and CMI-XM12LAN01-R10/UB0930.

## 6.7.1 CMI-M12LAN01-R12/UB1710 module

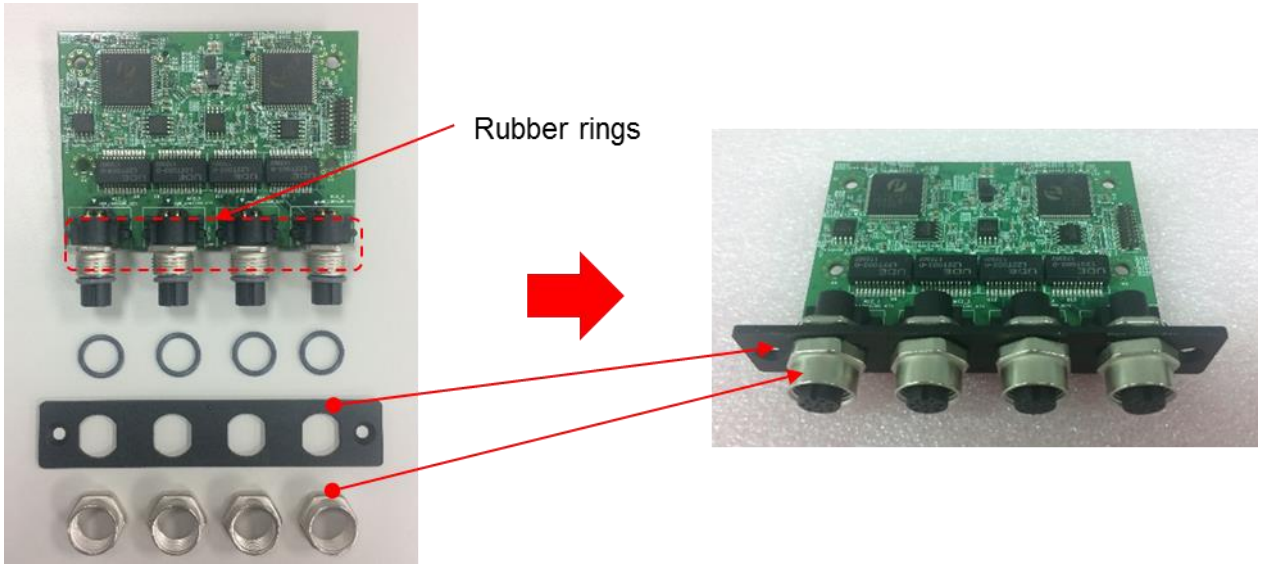
| Model No. | Product Description |
|---|---|
| CMI-M12LAN01/UB1710 | CMI Module with M12 Connector, 4x Intel GbE LAN / 1x Universal Bracket with 4x M12 A-Coded Cutout for DX Series |



1. Loosen the 2 screws on front bezel to remove the cover plate.



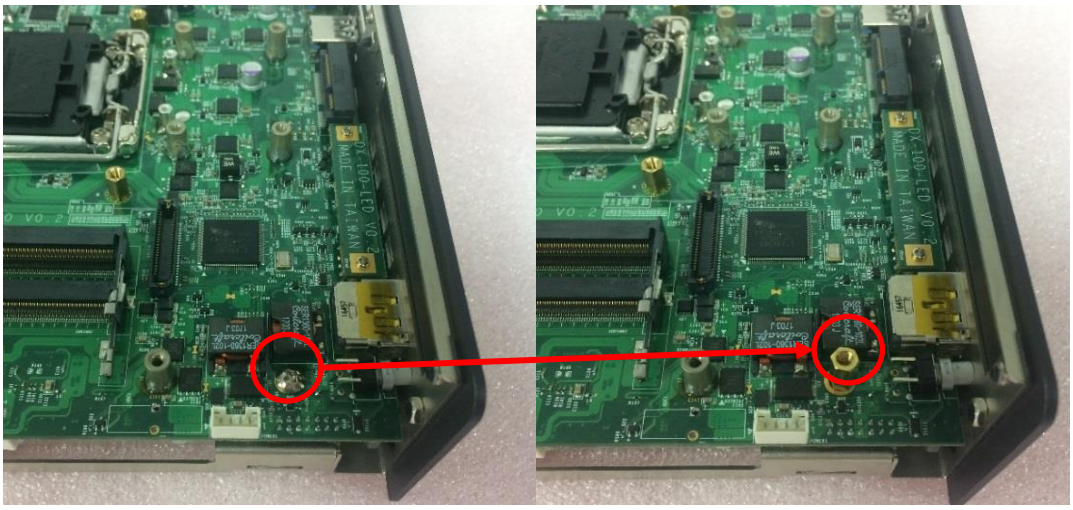
2. Remove 4 rubber rings on M12 jacks; Penetrate M12 jacks of CMI module through the accompanying M12 I/O bracket. then fasten 4 ring hexes onto jacks as illustrated in right hand picture below.



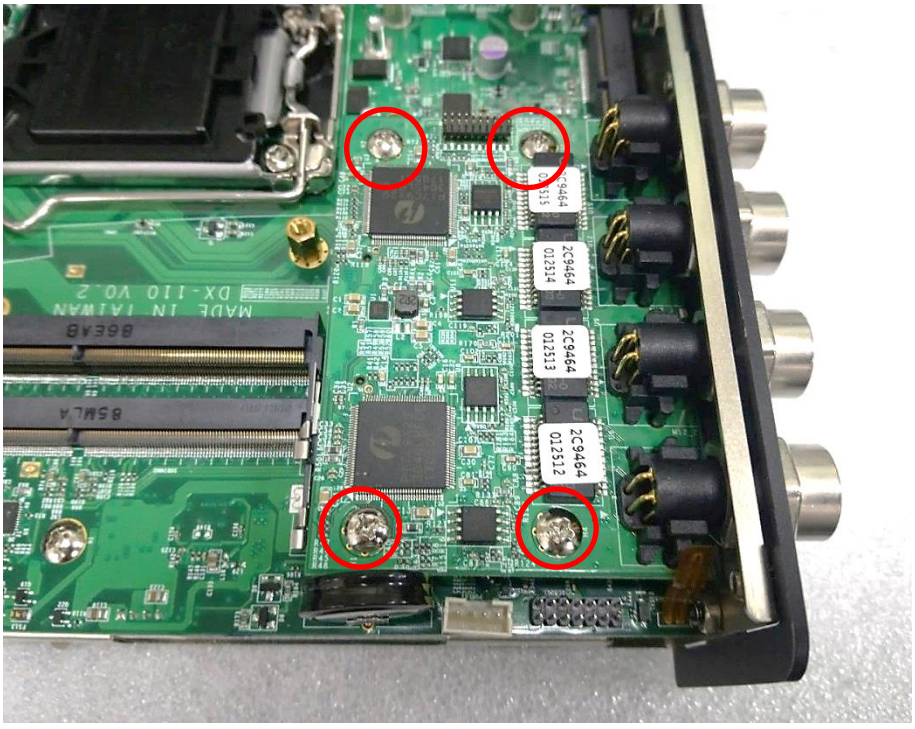

3. Locate the CMI connector on the top side of system.



4. Exchange screw to copper pillar before insert the CMI module.



5. Insert the CMI module vertically into the female connector on system's mainboard until it's connected firmly and fasten 4 screws to fix it.



6. Fasten 2 screws on cover plate.



### 6.7.2 CMI-XM12LAN01-R10/UB0930

| Model No. | Product Description |
|---|---|
| CMI-XM12LAN01/UB0930 | CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded Cutout for DX Series |



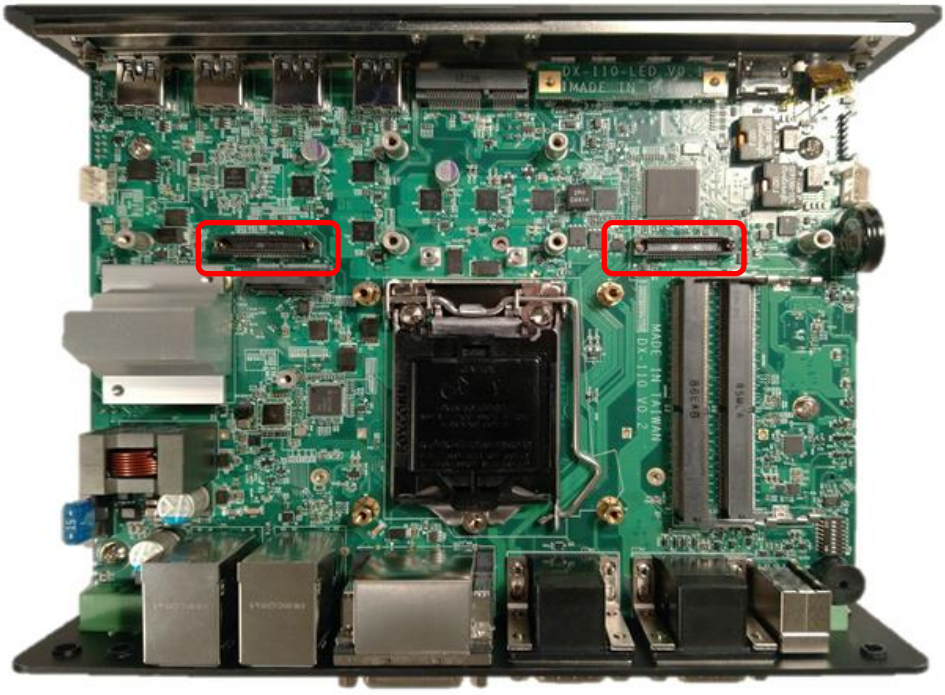

1. Assemble the hex rings, M12 I/O bracket and hex washers together as indicated below: Penetrate hex rings through the M12 I/O bracket holes, and fix them with hex washers.



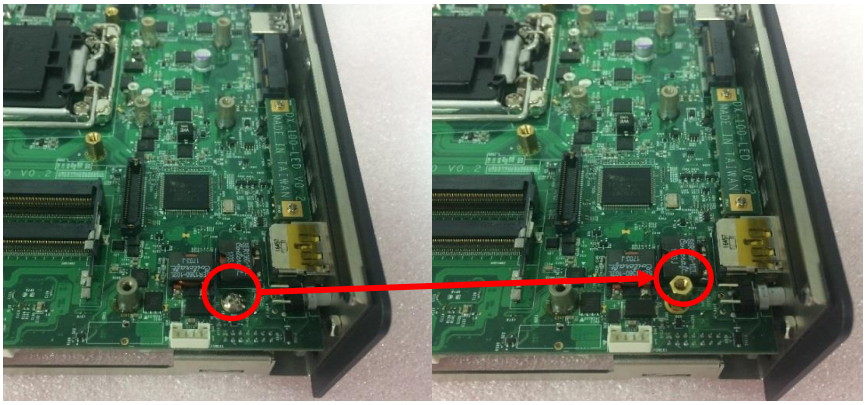
2. Loosen the 2 screws on front bezel to remove the cover plate.



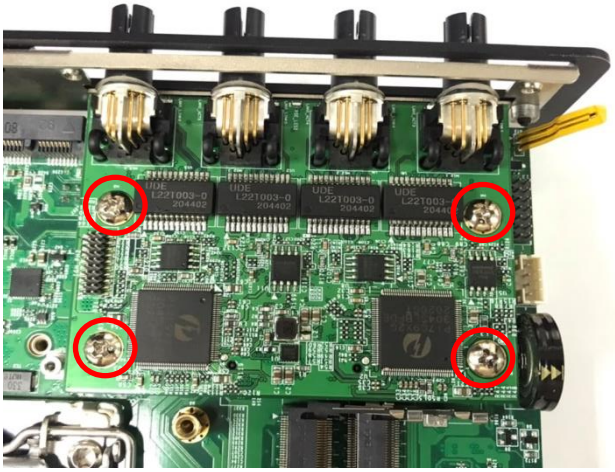

3. Locate the CMI connector on the top side of system.



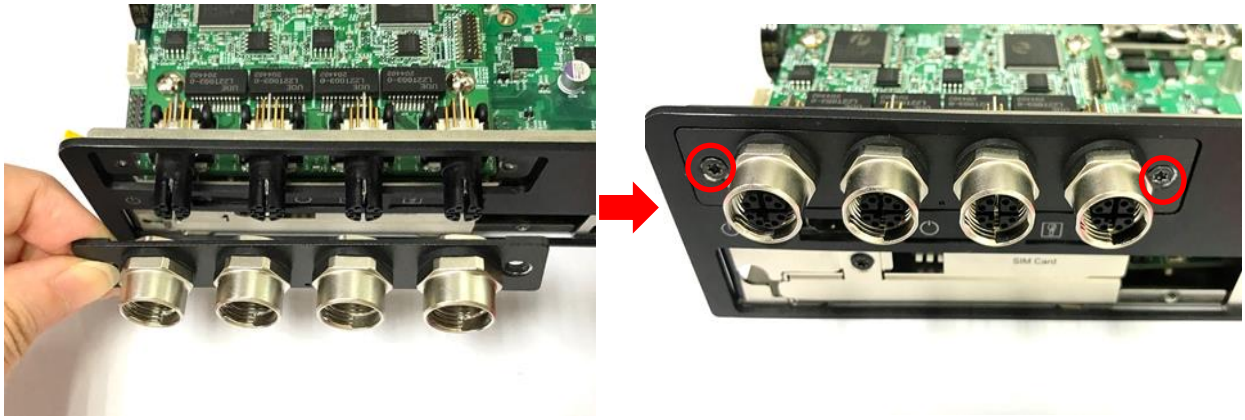
4. Exchange screw to copper pillar before insert the CMI module.



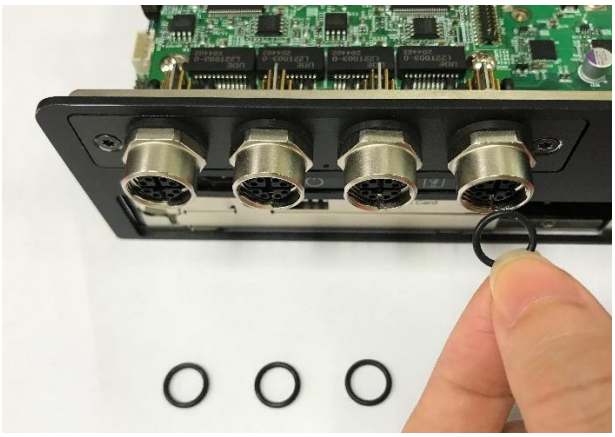
5. Insert the CMI module vertically into the female connector on system's mainboard until it's connected firmly and fasten 4 screws to fix it.

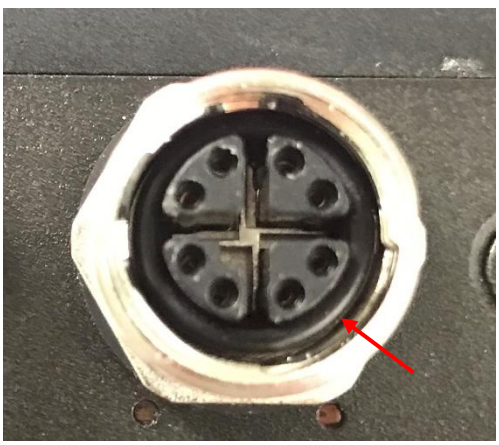


6. Attach the assembled M12 I/O bracket on to the system, and fasten the two screws to fix it.



7. Put on the rubber rings to the four M12 LAN ports.





### 6.7.3 CMI-CAN01-R10/UB1738

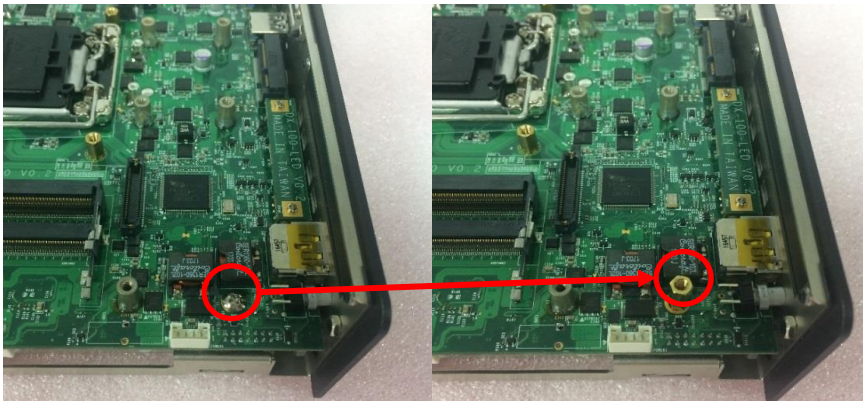
1. Loosen the 2 screws on front bezel to remove the cover plate.



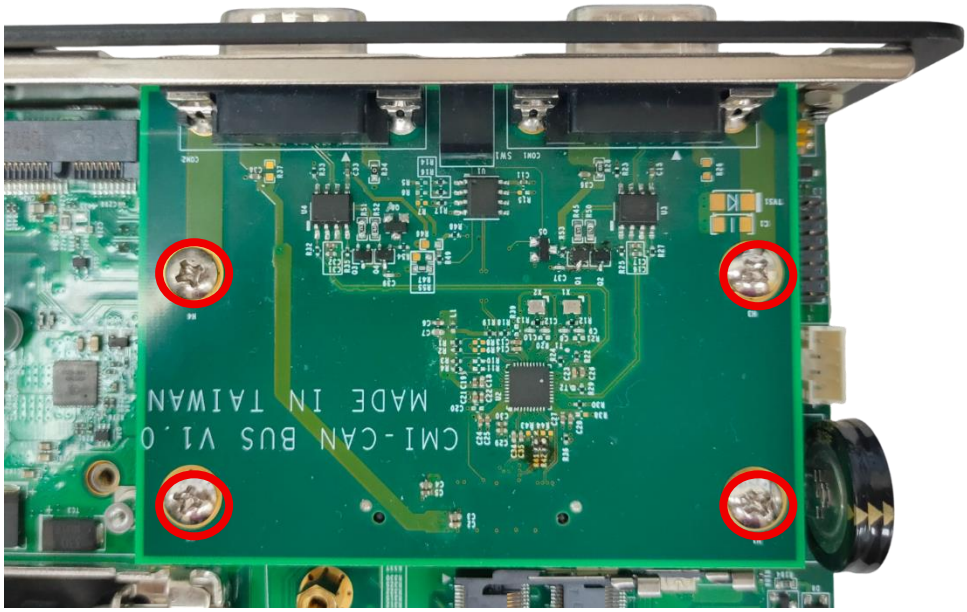

2. Locate the CMI connector on the top side of system.



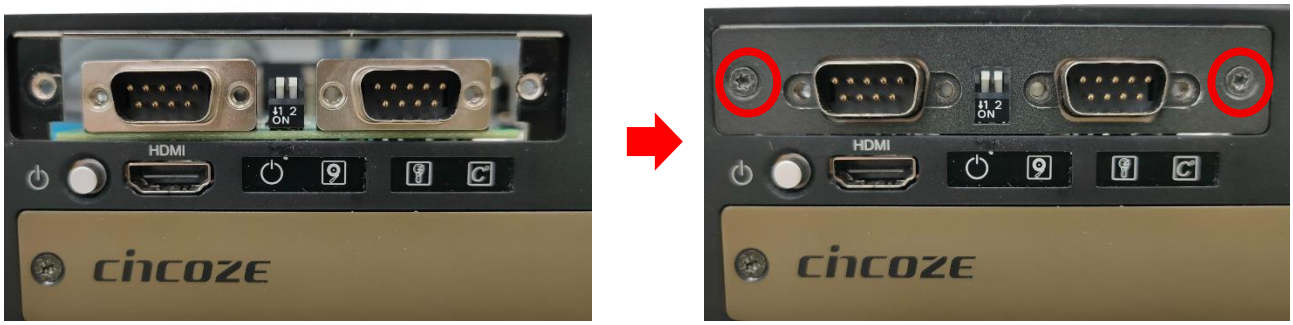
3. Exchange screw to copper pillar before insert the CMI module.



4. Insert the CMI module vertically into the female connector on system's mainboard until it's connected firmly and fasten 4 screws to fix it.




5. Attach the I/O bracket and fasten the two screws to secure it.



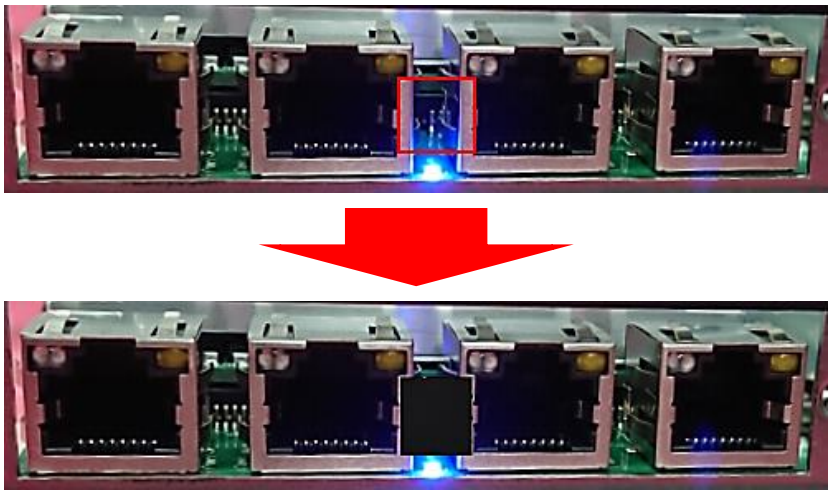

6. Fasten 4 D-Sub jack screws to secure it.



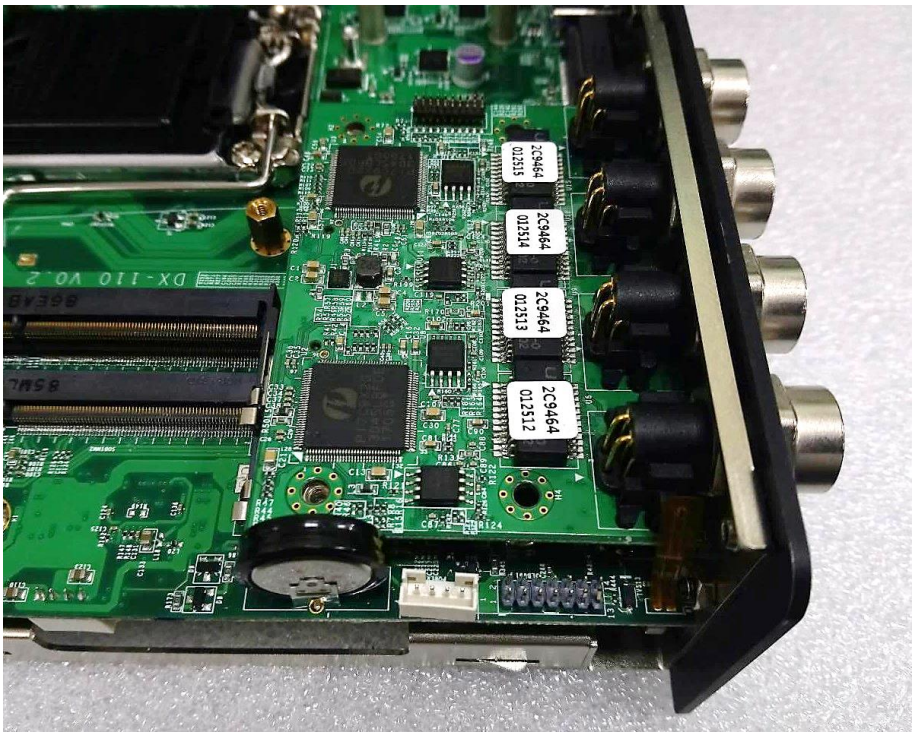
# 6.8 Installing CFM-PoE Module

| Model No. | Product Description |
|---|---|
| CFM-PoE01 | CFM Module with PoE Control Function, Individual Port 25.5W |

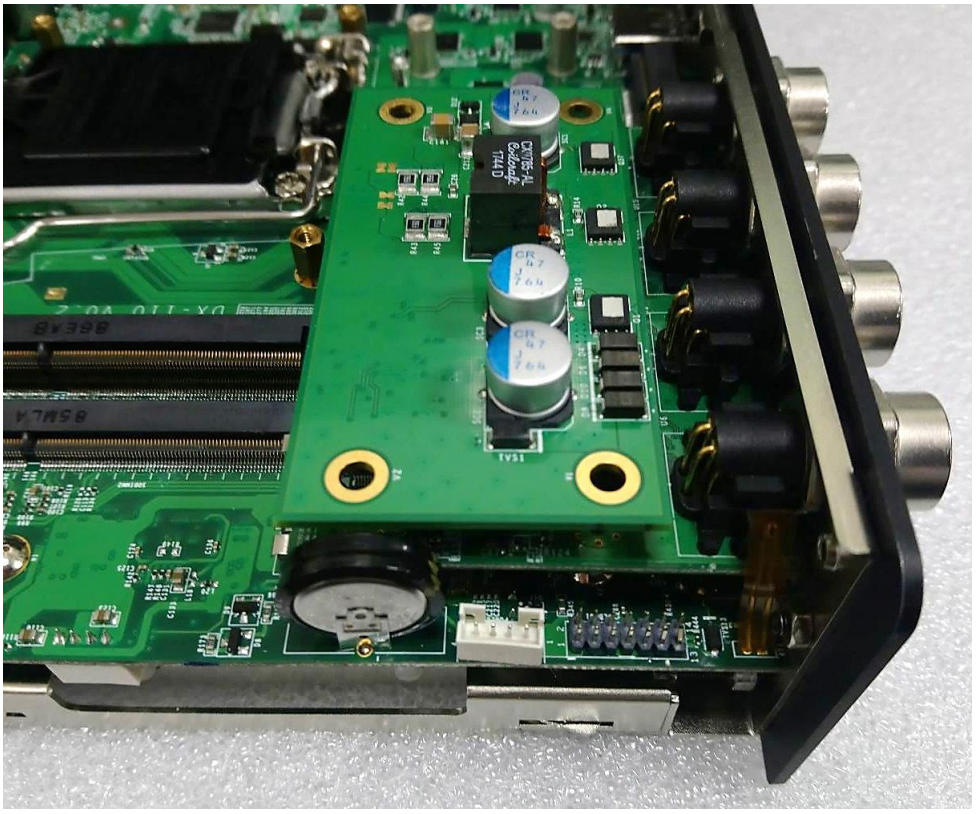
1. If you use CMI-LAN module, please paste the shading tape to the place which was marked by red circle. If you use CMI-M12LAN module please skip this step.



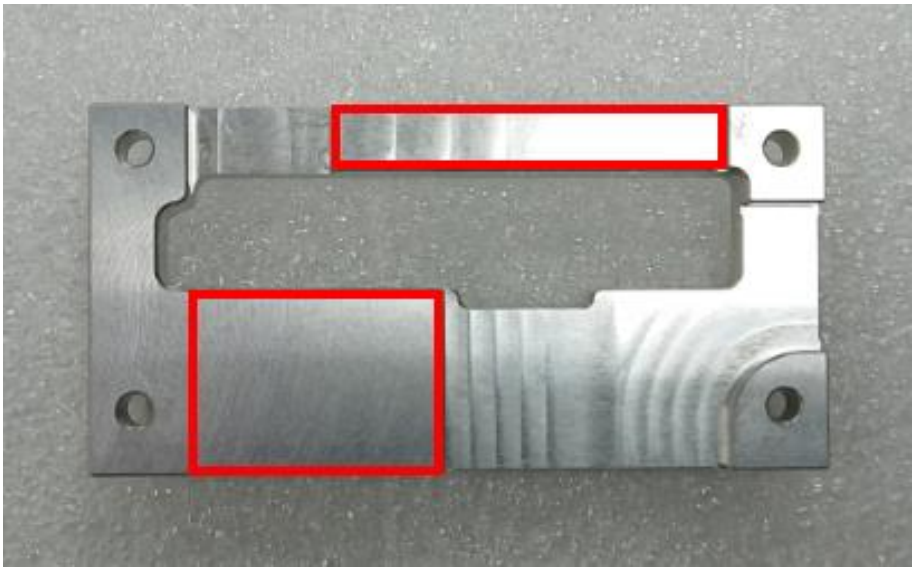
2. Insert the CMI-LAN module for DX-1100 vertically to the female connector (BTB_FH2 or BTB_FH4) on system's mainboard until it is connected firmly, and fasten 4 copper pillars to fix it. (CMI-M12LAN module is taken as the installation example in this chapter)



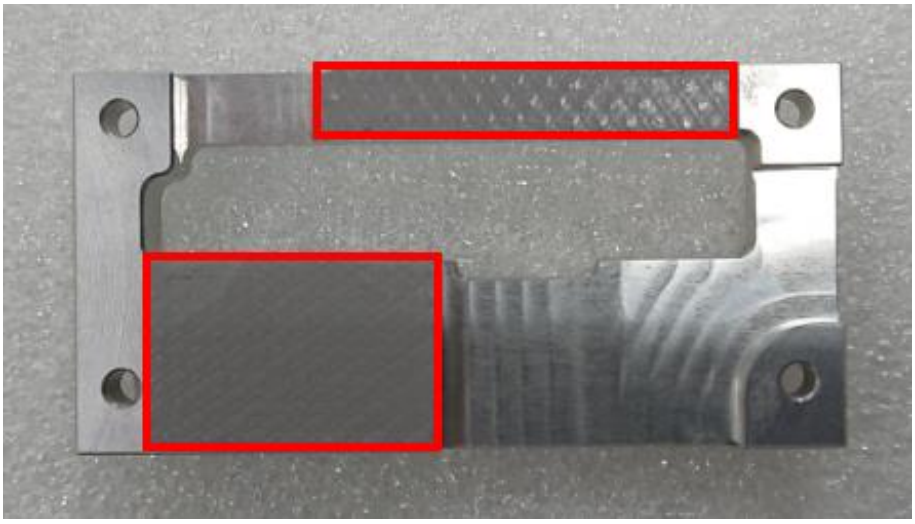
3. Insert the CFM-PoE01 module vertically into the female connector on the CMI module until it’s connected firmly.



4. Turn over the heatsink of CFM-PoE01 and locate the two places marked by red squares.



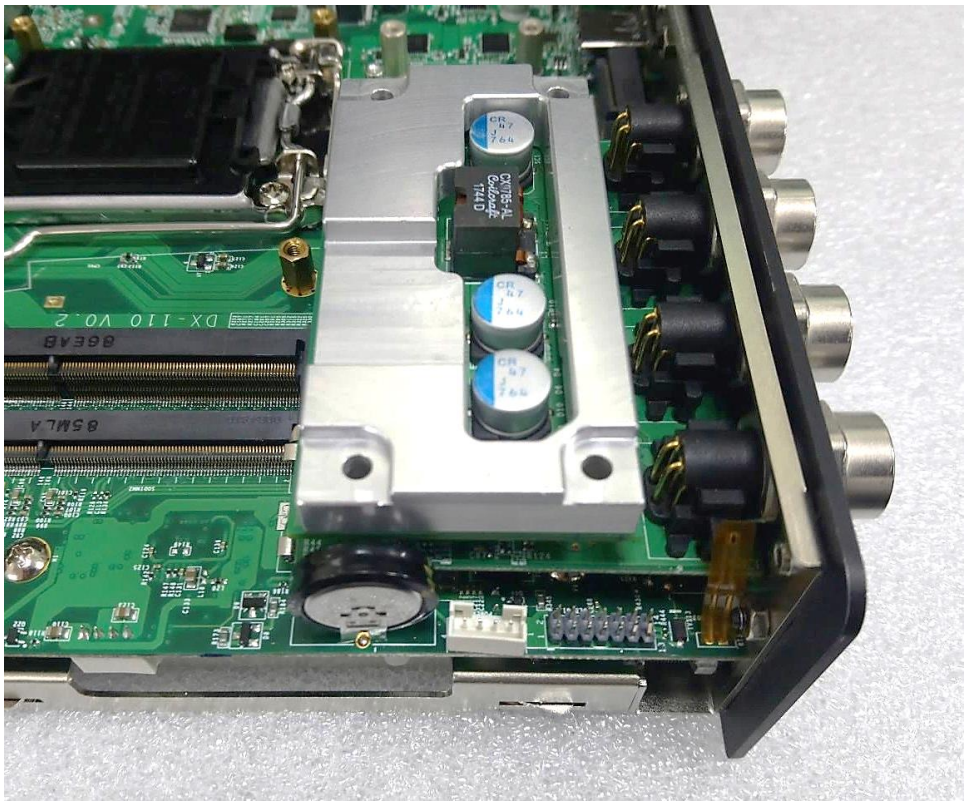
5. Paste two thermal pads for CFM-PoE01 onto the heatsink carefully.



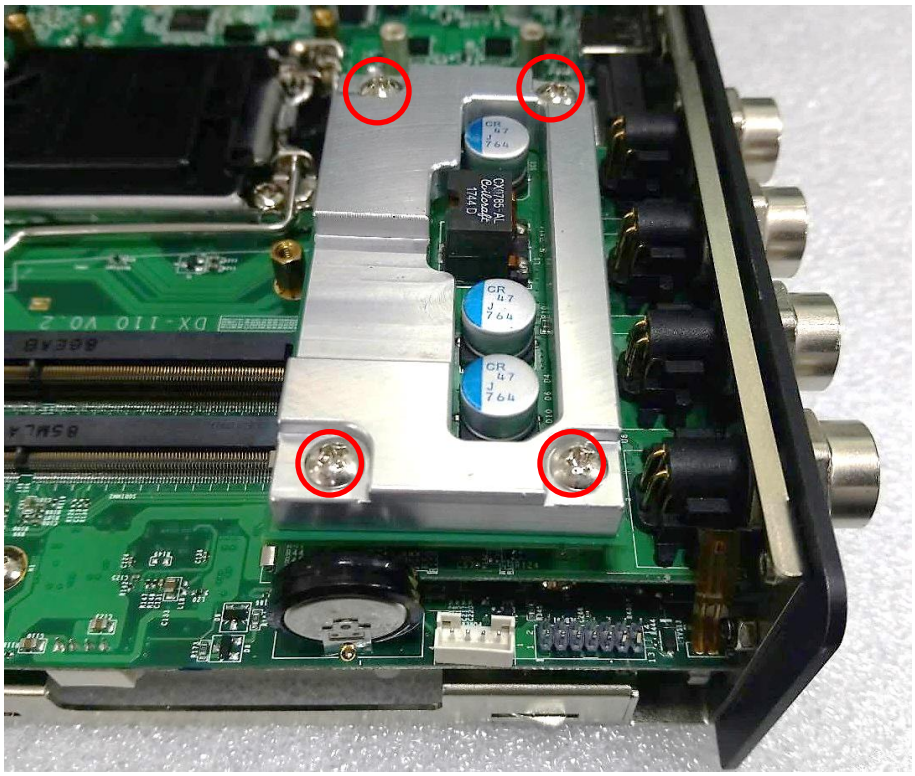
CAUTION

**Before putting on the thermal block (in the next step), please make sure the protective films on the Thermal Pads have been removed!**

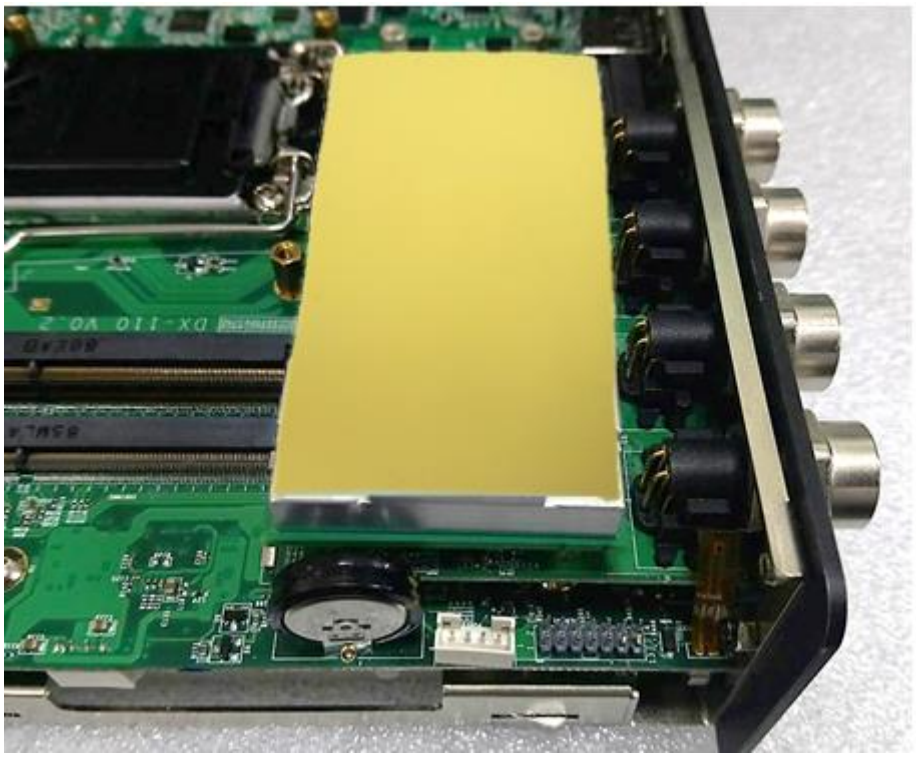
6. Paste the heatsink onto the CMI-PoE module carefully and connect the PoE module to the CMI-M12LAN module.



7. Fasten 4 screws to fix it.



8. Paste the last thermal pad onto the heatsink carefully.





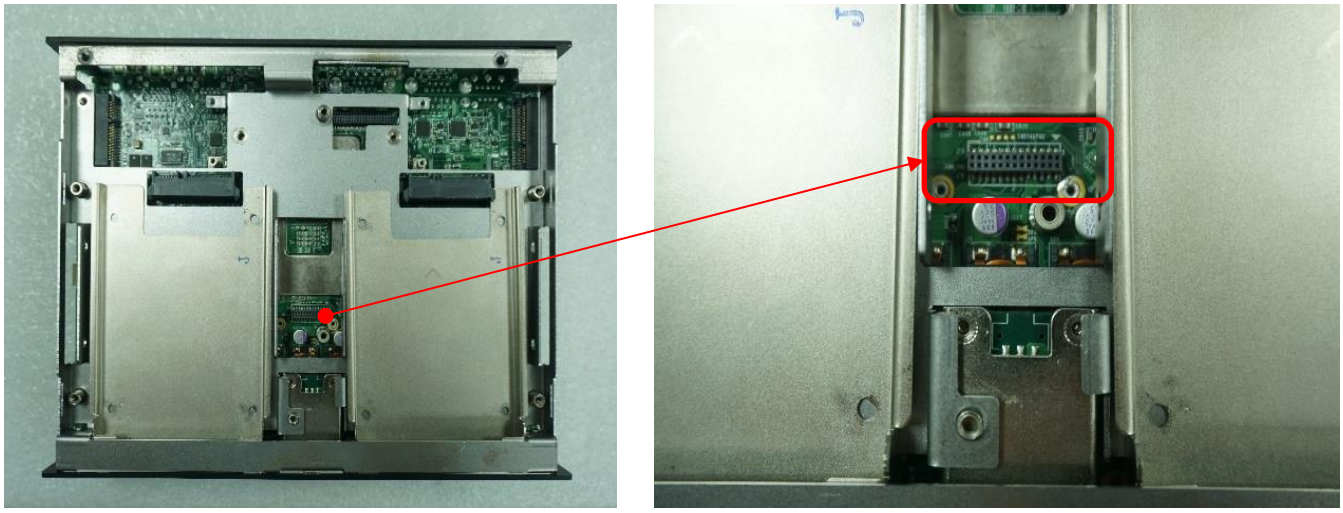

CAUTION

**The yellow surface is part of the thermal pad. Do not tear it off as it would affect the thermal conductivity.**

## 6.9 Installing CFM-IGN Module

| Model No. | Product Description |
|---|---|
| CFM-IGN01 | CFM Module with Power Ignition Sensing Control Function, 12V/24V Selectable |

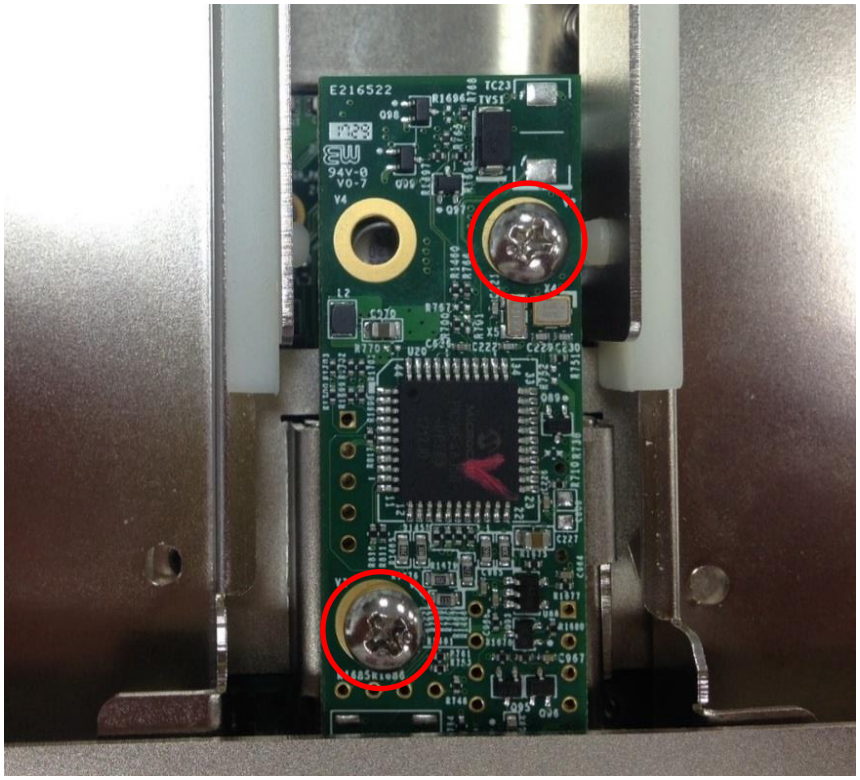
1. Locate the IGN connector on the bottom side of system.



2. Fasten 1 copper pillar before insert IGN module.



3. Insert IGN module vertically to the female connector on the system's mainboard, and fasten 2 screws to fix it.



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