NexAIoT Co., Ltd.

IoT Automation Solutions Business Group

PC-based Factory Automation System

NIFE 210 Series

User Manual

NexAIoT Co., Ltd.
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PREFACE

Copyright

Disclaimer

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Acknowledgements

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable 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.

RoHS Compliance

NexAIoT RoHS Environmental Policy and Status Update

NexAIoT is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NexAIoT has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NexAIoT development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NexAIoT are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NexAIoT RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NexAIoT naming convention.

Warranty and RMA

NexAIoT Warranty Period

NexAIoT manufactures products that are new or equivalent to new in accordance with industry standard. NexAIoT warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NexAIoT.

NexAIoT Return Merchandise Authorization (RMA)

- Customers shall enclose the "NexAIoT RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NexAIoT RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NexAIoT is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NexAIoT to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NexAIoT will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NexAIoT will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NexAIoT products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NexAIoT will return it to the customer without any charge.

Board Level

- Component fee: NexAIoT will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NexAIoT will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Information

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

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Danger of explosion if battery is incorrectly replaced. Replace with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

ATTENTION
IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for 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 stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use 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.

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. This equipment is not suitable for use in locations where children are likely to be present.

14. Ensure to connect the power cord to a socket-outlet with earthing connection.

15. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

16. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

17. Do not place heavy objects on the equipment.

18. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

19. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Technical Support and Assistance

1. For the most updated information of NexAIoT products, visit NexAIoT's website at www.nexaiot.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the package that you received is complete.
Your package should have all the items listed in the following table.

NIFE210-E01/E02

Item	Number	Description	Qty
1	5060600171X00	(H)2.5 HDD MYLAR E-LIN 96.2x70x0.1mm	1
2	4NCPF00316X00	TERMINAL BLOCKS 3P PHOENIX CONTACT:1834916 5.08mm FEMALE 180D DIP GREEN	1
3	4NCPF00310X00	TERMINAL BLOCKS 3P PHOENIX CONTACT:1803581 3.81mm FEMALE DIP GREEN	1
4	5061600245X00	WASHER KANGYANG:TW-320-01 10.4x6.4mm T=1mm NYLON BLACK	12
5	5061711760X00	MINI PCI-E BRACKET FOR NISE106 SERIES VER:A ASDA 30x29x2.1mm SPCC T=1.0mm	1
6	50311F0756X00	110 DEGREE FLAT HEAD SCREW LONG FEI F3x.3.5 ISO NI	4
7	50311F0295X00	FLAT HEAD SCREW LONG FEI:F2x4 NYLOK NIGP F2x4 NIGP NYLOK	1
8	50311F0330X00	ROUND HEAD SCREW LONG FEI:P2x3 ISO+NYLON P2x3 NI NYLOK	3
9	50311F0396X00	I HEAD SCREW LONG FEI:I3x3 ISO+NYLOK BLACK I3x3 ISO+NYLOK BLACK	1
10	50344C0379X00	COPPER POST FOR NISE53 SERIES VER:A LONG FEI WITH FEMALE/MALE (FEMALE)6mmx(MALE)5mmxM3	1

NIFE210-E11/E12

Item	Number	Description	Qty
1	5060600171X00	(H)2.5 HDD MYLAR E-LIN 96.2x70x0.1mm	2
2	5061711760X00	MINI PCI-E BRACKET FOR NISE106 SERIES VER:A ASDA 30x29x2.1mm SPCC T=1.0mm	1
3	4NCPF00310X00	TERMINAL BLOCKS 3P PHOENIX CONTACT:1803581 3.81mm FEMALE DIP GREEN	1
4	4NCPF00316X00	TERMINAL BLOCKS 3P PHOENIX CONTACT:1834916 5.08mm FEMALE 180D DIP GREEN	1
5	5061600245X00	WASHER KANGYANG:TW-320-01 10.4x6.4mm T=1mm NYLON BLACK	12
6	50344C0379X00	COPPER POST FOR NISE53 SERIES VER:A LONG FEI WITH FEMALE/MALE (FEMALE)6mmx(MALE)5mmxM3	1
7	50311F0295X00	FLAT HEAD SCREW LONG FEI:F2x4 NYLOK NIGP F2x4 NIGP NYLOK	1
8	50311F0330X00	ROUND HEAD SCREW LONG FEI:P2x3 ISO+NYLON P2x3 NI NYLOK	3
9	50311F0396X00	I HEAD SCREW LONG FEI:I3x3 ISO+NYLOK BLACK I3x3 ISO+NYLOK BLACK	1
10	50311F0756X00	110 DEGREE FLAT HEAD SCREW LONG FEI F3x.3.5 ISO NI	8
11	50322P0002X00	PLASTIC NUT GIN LIAN:M6HW 10mmx6mm	2
12	50311P0001X00	PRICE FOR PLASTIC SCREW HS6-75P 75mm	2

Ordering Information

The following information below provides ordering information for NIFE 210 series.

- **NIFE 210-E01 (P/N: 10J70021000X0)**
  Intel® Celeron® processor J6413 Quad Core 1.8GHz fanless system

- **NIFE 210-E02 (P/N: 10J70021003X0)**
  Intel® Celeron® processor J6413 Quad Core 1.8GHz fanless system with power backup module NISPAK-M1100

- **NIFE 210-E11 (P/N: 10J70021001X0)**
  Intel® Celeron® processor J6413 Quad Core 1.8GHz fanless system with PCIe x4 expansion

- **NIFE 210-E12 (P/N: 10J70021004X0)**
  Intel® Celeron® processor J6413 Quad Core 1.8GHz fanless system with PCIe x4 expansion and power backup module NISPAK-M1100

- **24V, 60W AC/DC power adapter w/o power cord (P/N: 7400060054X00)**

Chapter 1: Product Introduction

NIFE 210-E11/E12

NIFE210-E01/E02

Key Features

- Onboard Intel® Celeron® processor J6413 Quad Core 1.8GHz
- 1 x DP++ and 1 x HDMI for dual independent display support
- 1 x Intel® 2,5GbE LAN port, support WoL & PXE
- 2 x Marvell PHY GbE LAN ports, support WoL
- 2 x RS232/422/485 with auto-flow control and 2.5KV isolation protection
- 2 x USB 3.0, 4 x USB 2.0
- 1 x Front access 2.5" SATA HDD/SSD tray, support DuoSSD (2.5" SSD + MicroSD card)
- 2 x mini-PCIe socket support optional modules and mSATA device
- 1 x M.2 3042/3052 Key B socket
- TPM 2.0 onboard
- PCIe x 4 expansion (E11 model only)
- Support +24VDC input, support ATX power mode

Hardware Specifications

CPU Support

- Onboard Intel® Celeron® processor J6413 Quad Core 1.8GHz

Main Memory

- 1 x SO-DIMM DDR4 non-ECC up to 3200 MT/s, 32GB max.

Display Option

- Dual independent display
  - 1 x HDMI 2.0
  - 1 x DP 1.4 ++

Status LEDs

- 1 x Power LED
- 1 x HDD/SSD access LED
- 1 x Battery LED
- 4 x COM ports Tx/Rx LED
- 5 x programmable GPO LEDs

Storage Device

- 1 x 2.5" HDD/SSD (external, SATA 3.0), support DuoSSD (2.5" SSD + MicroSD card)
- 1 x 2.5" HDD/SSD (external, SATA 3.0)
- 1 x mSATA (via internal mini-PCIe socket)

Top I/O Interface

- 1 x 3-pin remote switch
- 6 x Antenna holes

Front I/O Interface

- ATX power on/off switch
- 1 x Intel® I226-V 2,5GbE LAN port, support WoL and PXE
- 2 x Marvell PHY GbE LAN ports, support WoL
- 1 x DP 1.4 ++
- 1 x HDMI 2.0
- 2 x USB 3.0 (900mA per each)
- 4 x USB 2.0 (500mA per each)
- 1 x Front access 2.5" HDD/SSD tray (SATA 3.0) or DuoSSD (2.5" SSD + MicroSD card)
- 2 x DB9 for COM1/COM2 RS232/422/485 with auto-flow control and 2.5KV isolation protection
- 1 x 3-pin DC input, typical 24V DC input with ±20% range

Expansion Slot

- NIFE 210-E11/E12: one PCIe x 4 expansion
  - Add-on card length: 176mm max.
  - Power consumption: 20W/slot max.
- 1 x Mini-PCIe full size (PCIe x1, USB 2.0, SATA, SIM)
- 1 x Mini-PCIe full size for Fieldbus (FBI) module (PCIe x1, USB 2.0)
- 1 x M.2 3042/3052 Key B (PCIe x1, USB 3.0, SIM)

Power Requirements

- 24V DC input with +/-20% range, with reverse polarity protection
- 1 x Optional 24V, 60W power adapter

Dimensions

- NIFE 210-E11/E12: 150mm (W) x 157mm (D) x 232mm (H)
- NIFE 210-E01/E02: 85mm (W) x 157mm (D) x 214mm (H)

Construction

- Aluminum and metal chassis with fanless design

Environment

- Operating temperature:
  - Ambient with air flow: -10°C to 60°C
    (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 95% (non-condensing)
- Shock protection: 50G, half sine, 11ms, IEC60068-2-27
  - HDD: 20G, half sine, 11ms, IEC60068-2-27
  - SSD: 50G, half sine, 11ms, IEC60068-2-27
- Vibration protection w/ SSD condition:
  - Random: 2Grms @ 5~500Hz, IEC60068-2-64
  - Sinusoidal: 2Grms @ 5~500Hz, IEC60068-2-64

Certifications

- CE approval
  - EN61000-6-2
  - EN61000-6-4
- FCC Class A

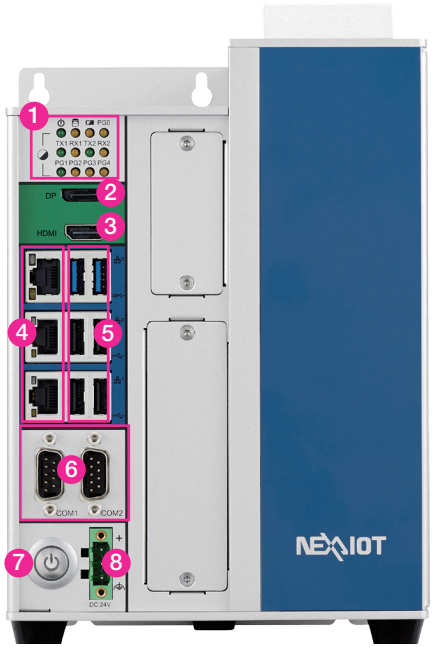
Support OS

- Windows 11 Pro, 64-bit
- Windows 10 Enterprise, 64-bit
- Linux Kernel 5.10

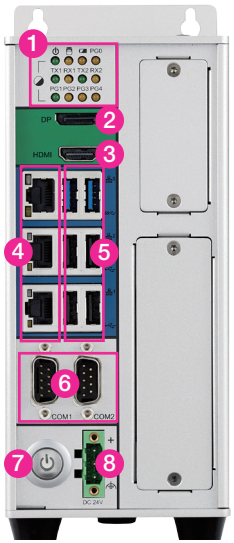
Knowing Your NIFE 210-E11/E10

Front View

NIFE 210-E11/E12



NIFE 210-E01/E02



1 LED Indicators

Indicate the power, hard drive, battery, COM1/2, and GPO activity of the system.

2 DisplayPort

Used to connect the system with a DisplayPort monitor.

3 HDMI

Used to connect the system with an HDMI monitor.

4 LAN Ports

Three LAN ports used to connect the system to a local area network. The LAN port at the top is 2.5GbE, while the two LAN ports below are 1GbE (upright position).

5 USB Ports

USB 2.0 (Black) and USB 3.0 (Blue) ports to connect the system with USB devices.

6 COM1 (Left) and COM2 (Right)

Two DB9 ports used to connect RS232/422/485 compatible devices.

7 Power Button

Press to power-on or power-off the system.

8 24V DC Input

Used to plug a DC power cord.

Top View

NIFE 210-E11/E12

NIFE 210-E01/E02

9 2.5” SSD/HDD Slot

Used to connect an external storage device (NIFE210-E01/E11/E12) or a power backup module NISPAK-M1100 (NIFE210-E02).

10 Fieldbus Slot

11 PCIe Bracket Cover

Used to connect a PCIe x4 add-on card.

12 2.5” SSD/HDD Slot

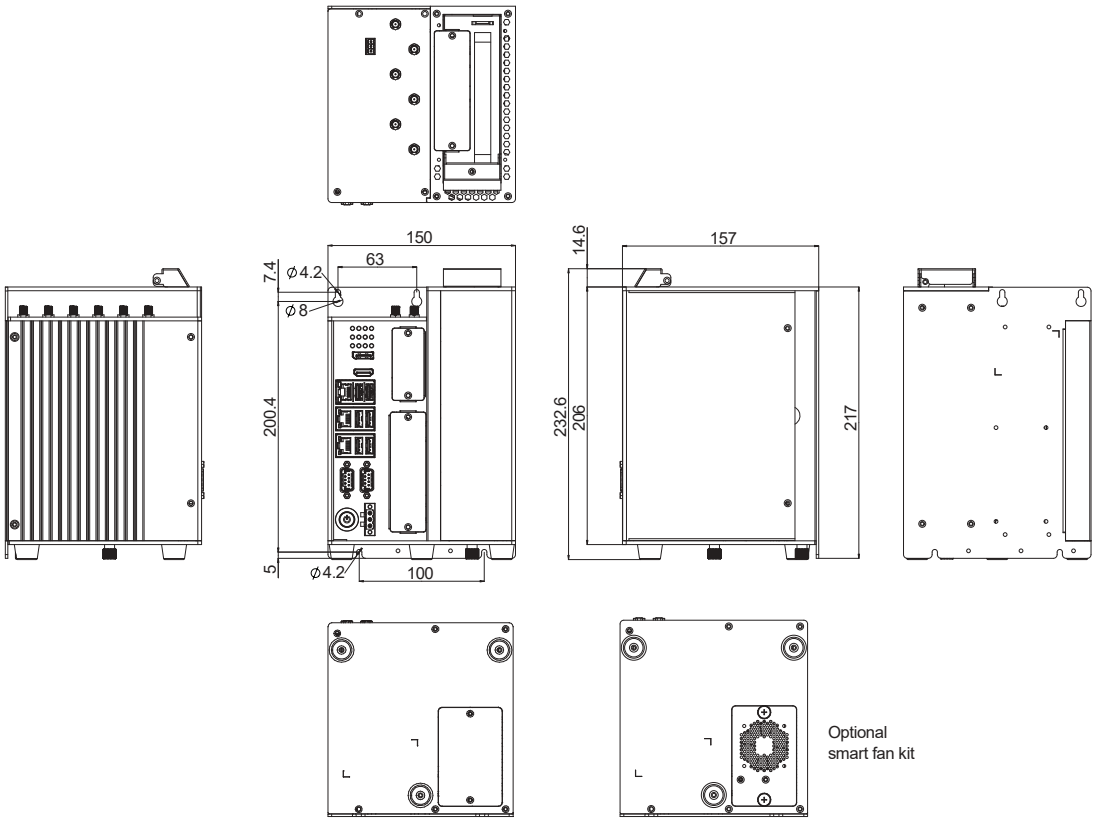
Used to connect an external storage device (NIFE210-E11) or a power backup module NISPAK-M1100 (NIFE210-E12).

13 Remote Power On/Off & S3 Connector

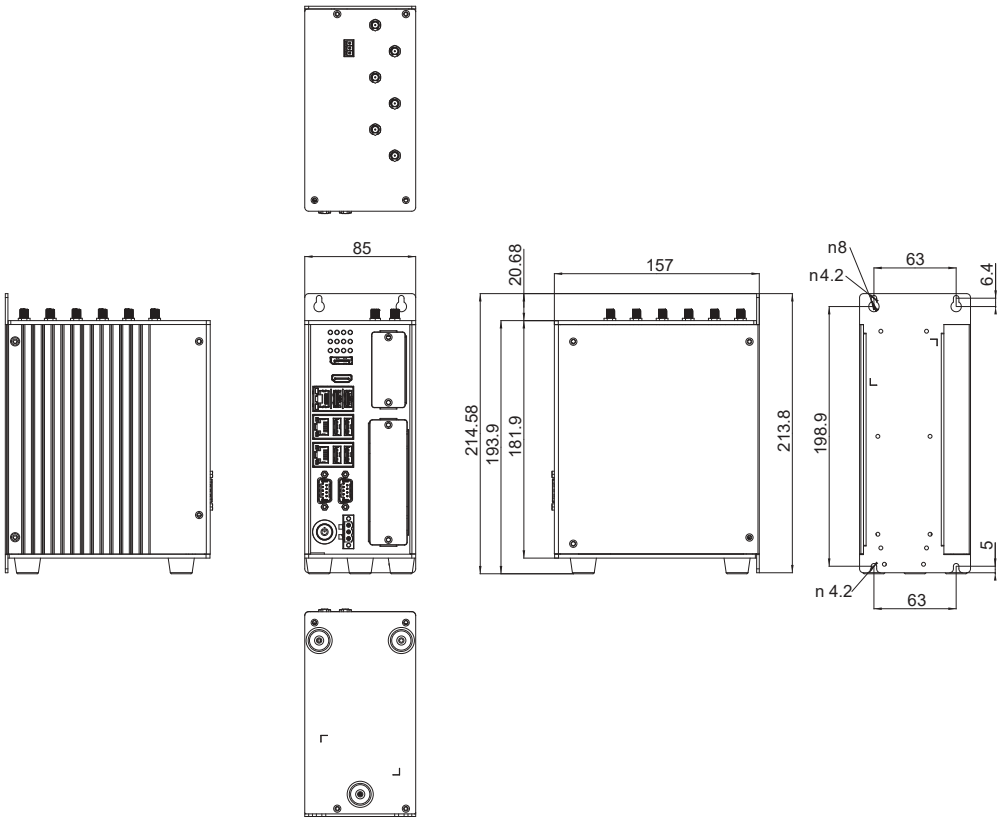
Used to connect a remote to power on/off the system.

NIFE 210 Series Mechanical Dimensions

NIFE 210-E11/E12



NIFE 210-E01/E02



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NIFE 210 series motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

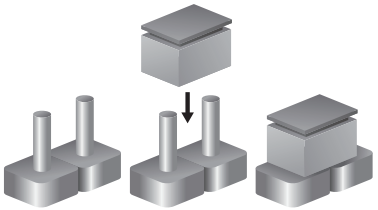
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

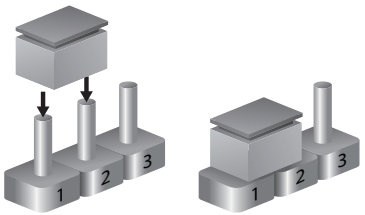
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



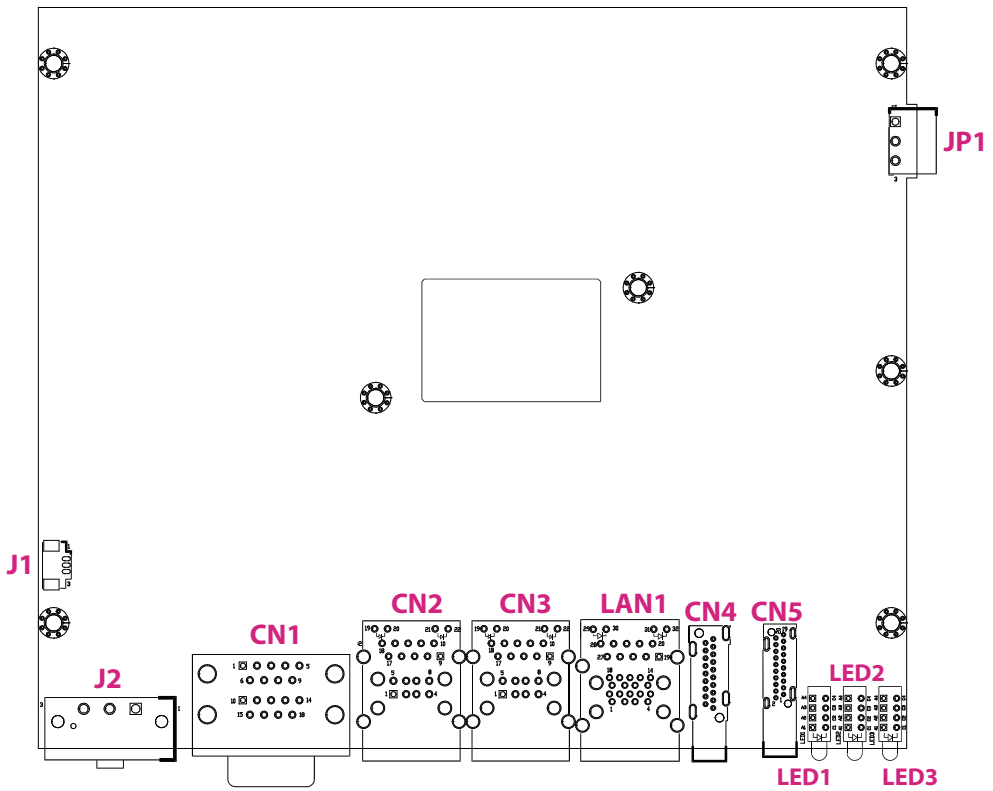
Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The following figures show the motherboard used in the NIFE 210 series, and indicate the locations of the jumpers and connectors. Refer to this chapter for detailed pin settings and definitions of the connectors marked in pink on the figures.

Top Side



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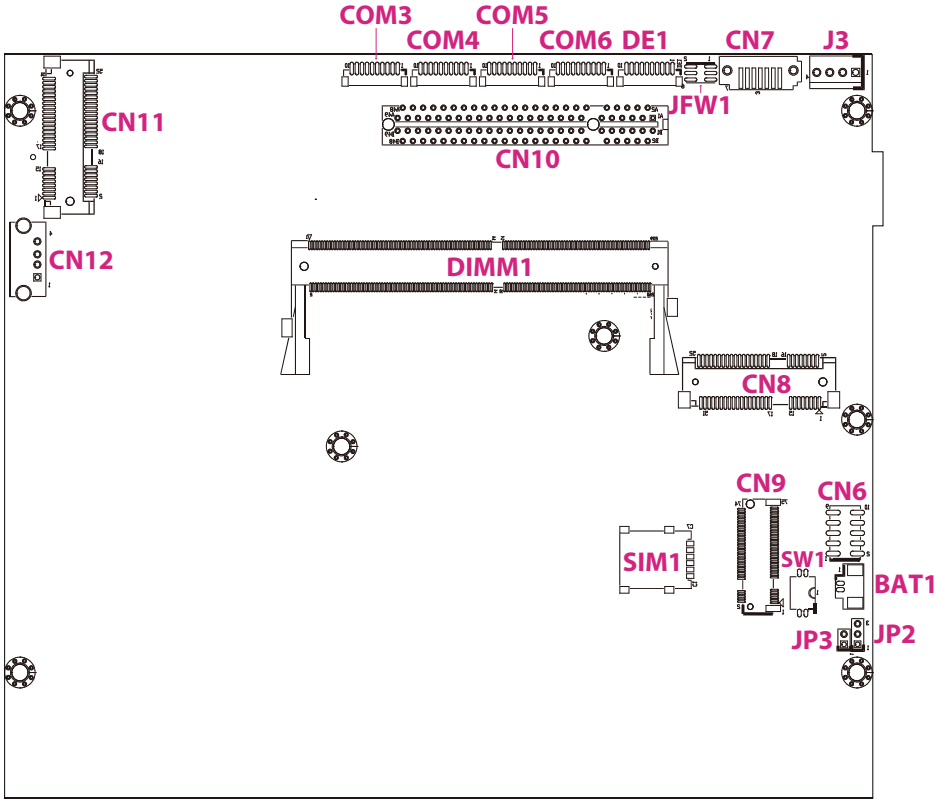
Bottom Side

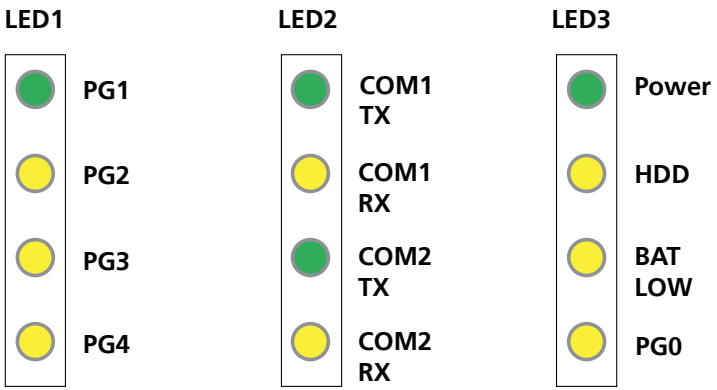


Connector Pin Definitions

External I/O Interfaces - Front Panel

LED Indicators

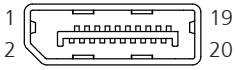
Connector location: LED3, LED2, and LED1



	Pin	Definition	Pin	Definition
LED3	A1	GPIO4_LED	C1	GPO_PR4
	A2	BAT_LED_N	C2	GND
	A3	HDD_LED_PWR	C3	HDD_LED_N
	A4	POWER_LED_PWR	C4	PWR_LED_N
LED2	A1	COM2_RXLEDN	C1	COM2_RXLEDP
	A2	COM2_TXLEDN	C2	COM2_TXLEDP
	A3	COM1_RXLEDN	C3	COM1_RXLEDP
	A4	COM1_TXLEDN	C4	COM1_TXLEDP
LED1	A1	GPIO3_LED	C1	GPO_PR3
	A2	GPIO2_LED	C2	GPO_PR2
	A3	GPIO1_LED	C3	GPO_PR1
	A4	GPIO0_LED	C4	GPO_PR0

DisplayPort

Connector type: DIP 20P 90D FEMALE 26x18.3x7.7mm
Connector location: CN5

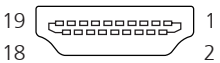


Pin	Definition	Type	Description
1	DPTX0P	I/O	DP LANE0_P signal
2	GND	GND	Digital GND
3	DPTX0N	I/O	DP LANE0_N signal
4	DPTX1P	I/O	DP LANE1_P signal
5	GND	GND	Digital GND
6	DPTX1N	I/O	DP LANE1_N signal
7	DPTX2P	I/O	DP LANE2_P signal
8	GND	GND	Digital GND
9	DPTX2N	I/O	DP LANE2_N signal
10	DPTX3P	I/O	DP LANE3_P signal
11	GND	GND	Digital GND
12	DPTX3N	I/O	DP LANE3_N signal
13	DPCFG1	O	DP CONFIG1 signal

Pin	Definition	Type	Description
14	DPCFG2	O	DP CONFIG2 signal
15	DPAUXPCLK	I/O	DP AUX_CH_P signal
16	GND	GND	Digital GND
17	DPAUXNDAT	I/O	DP AUX_CH_N signal
18	DPHPD	I	DP HPD signal
19	DPRETURN	O	DP RETURN signal
20	VCC3DP	PWR	DP 3.3V Power
NH1	NC		
NH2	NC		
MH1	CHASSIS_GND	ME	Chassis GND
MH2	CHASSIS_GND	ME	Chassis GND
MH3	CHASSIS_GND	ME	Chassis GND
MH4	NC	ME	

HDMI Connector

Connector type: DIP 90D FEMALE 8.1x26.5x16.5mm UP/RIGHT
Connector location: CN4

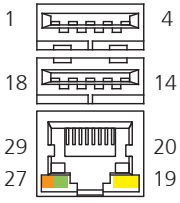


Pin	Definition	Type	Description
1	HDMITX2P1	I/O	HDMI D2+ signal
2	GND	GND	Digital GND
3	HDMITX2N1	I/O	HDMI D2- signal
4	HDMITX1P1	I/O	HDMI D1+ signal
5	GND	GND	Digital GND
6	HDMITX1N1	I/O	HDMI D1- signal
7	HDMITX0P1	I/O	HDMI D0+ signal
8	GND	GND	Digital GND
9	HDMITX0N1	I/O	HDMI D0- signal
10	HDMICLKP1	I/O	HDMI CLK+ signal
11	GND	GND	Digital GND
12	HDMICKLN1	I/O	HDMI CLK- signal
13	NC		

Pin	Definition	Type	Description
14	NC		
15	HDMIDDCSCL	I/O	HDMI SCL signal
16	HDMIDDCSDA	I/O	HDMI SDA signal
17	GND	GND	Digital GND
18	VCC5HDMI	PWR	HDMI 5V Power
19	HDMIHPD	I	HDMI HPD signal
NH1	NC		
NH2	NC		
MH1	CHASSIS_GND	ME	Chassis GND
MH2	CHASSIS_GND	ME	Chassis GND
MH3	CHASSIS_GND	ME	Chassis GND
MH4	NC	ME	

RJ45 (2.5G) x 1 and USB 3.0 x 2 Connctors

Connector type: 32P 90D 30u female DIP 18.9x27.46x30.82mm w/TR&LED
Connector location: LAN1



Pin	Definition	Type	Description
1	5VSBUSB0	PWR	USB2 Port4 5V Power
2	IUSB2N4	I/O	USB2 Port4 DN signal
3	IUSB2P4	I/O	USB2 Port4 DP signal
4	GND	GND	Digital GND
5	IUSB3CRXN0	I/O	USB3 Port0 RX- signal
6	IUSB3CRXP0	I/O	USB3 Port0 RX+ signal
7	GND	GND	Digital GND
8	IUSB3CTXN0	I/O	USB3 Port0 TX- signal
9	IUSB3CTXP0	I/O	USB3 Port0 TX+ signal
10	5VSBUSB0	PWR	USB2 Port5 5V Power

Pin	Definition	Type	Description
11	IUSB2N5	I/O	USB2 Port5 DN signal
12	IUSB2P5	I/O	USB2 Port5 DP signal
13	GND	GND	Digital GND
14	IUSB3CRXN1	I/O	USB3 Port1 RX- signal
15	IUSB3CRXP1	I/O	USB3 Port1 RX+ signal
16	GND	GND	Digital GND
17	IUSB3CTXN1	I/O	USB3 Port1 TX- signal
18	IUSB3CTXP1	I/O	USB3 Port1 TX+ signal
19	LAN1TVCC1	I	LAN1 Volts center tapped
20	LAN1_MDIAP	I/O	LAN1 MDI0+ signal

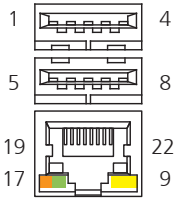
Continued on next page

Pin	Definition	Type	Description
21	LAN1_MDIAN	I/O	LAN1 MDI0- signal
22	LAN1_MDIBP	I/O	LAN1 MDI1+ signal
23	LAN1_MDIBN	I/O	LAN1 MDI1- signal
24	LAN1_MDICP	I/O	LAN1 MDI2+ signal
25	LAN1_MDICN	I/O	LAN1 MDI2- signal
26	LAN1_MDIDP	I/O	LAN1 MDI3+ signal
27	LAN1_MDIDN	I/O	LAN1 MDI3- signal
28	GND	GND	Digital GND
29	V3P3A_LAN1	I	LAN1 LED power
30	LAN1_LEDACTL	I	LAN1 Active LED signal

Pin	Definition	Type	Description
31	LAN1_LED100ML	I	LAN1 Link 100M LED signal
32	LAN1_LED2P5G_1GL	I	LAN1 Link 2.5_1G LED signal
MH1	CHASSIS_GND	ME	Chassis GND
MH2	CHASSIS_GND	ME	Chassis GND
MH3	CHASSIS_GND	ME	Chassis GND
MH4	CHASSIS_GND	ME	Chassis GND
MH5	CHASSIS_GND	ME	Chassis GND
MH6	CHASSIS_GND	ME	Chassis GND
MH7	CHASSIS_GND	ME	Chassis GND
MH8	CHASSIS_GND	ME	Chassis GND

RJ45 (1G) x 1 and USB 2.0 x 2 Connctors

Connector type: DIP 20P 90D female 18.7x27.3x31.05mm w/TF&LED
Connector location: CN3



Pin	Definition	Type	Description
1	5VSBUSB2	PWR	USB2 Port2 5V Power
2	IUSB2N2	I/O	USB2 Port2 DN signal
3	IUSB2P2	I/O	USB2 Port2 DP signal
4	GND	GND	Digital GND
5	5VSBUSB2	PWR	USB2 Port3 5V Power
6	IUSB2N3	I/O	USB2 Port3 DN signal
7	IUSB2P3	I/O	USB2 Port3 DP signal
8	GND	GND	Digital GND
9	RGM1VCC1	I	LAN3 Volts center tapped
10	RGM1MDIP[0]	I/O	LAN3 MDI0+ signal

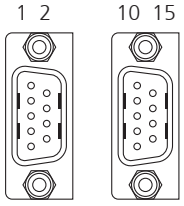
Pin	Definition	Type	Description
11	RGM1MDIN[0]	I/O	LAN3 MDI0- signal
12	RGM1MDIP[1]	I/O	LAN3 MDI1+ signal
13	RGM1MDIN[1]	I/O	LAN3 MDI1- signal
14	RGM1MDIP[2]	I/O	LAN3 MDI2+ signal
15	RGM1MDIN[2]	I/O	LAN3 MDI2- signal
16	RGM1MDIP[3]	I/O	LAN3 MDI3+ signal
17	RGM1MDIN[3]	I/O	LAN3 MDI3- signal
18	GND	GND	Digital GND
19	RGM1LED1ACT	I	LAN3 Active LED signal
20	RGM1LED1PWR	I	LAN3 LED power

Continued on next page

Pin	Definition	Type	Description
21	RGM1LED01G	I	LAN3 Link 1G LED signal
22	RGM1LED0100	I	LAN3 Link 100M LED signal
MH1	CHASSIS_GND	ME	Chassis GND
MH2	CHASSIS_GND	ME	Chassis GND
MH3	CHASSIS_GND	ME	Chassis GND
MH4	CHASSIS_GND	ME	Chassis GND
MH5	CHASSIS_GND	ME	Chassis GND
MH6	CHASSIS_GND	ME	Chassis GND
MH7	CHASSIS_GND	ME	Chassis GND
MH8	CHASSIS_GND	ME	Chassis GND

COM1/COM2 Connectors

Connector type: 9P/9P 90S Male DIP 30.81x19.5x28.35mm BLACK
Connector location: CN1



Pin	Definition	Type	Description
1	COM1DCDL	I	COM1 DCD#
2	COM1RXD	I	COM1 RXD
3	COM1TXD	O	COM1 TXD
4	COM1DTRL	O	COM1 DTR#
5	ISO_GND	GND	Isolation GND
6	COM1DSRL	I	COM1 DSR#
7	COM1RTSL	O	COM1 RTS#
8	COM1CTSL	I	COM1 CTS#
9	COM1RIL	I	COM1 RI#
10	COM2DCDL	I	COM2 DCD#
11	COM2RXD	I	COM2 RXD

Pin	Definition	Type	Description
12	COM2TXD	O	COM2 TXD
13	COM2DTRL	O	COM2 DTR#
14	ISO_GND	GND	Isolation GND
15	COM2DSRL	I	COM2 DSR#
16	COM2RTSL	O	COM2 RTS#
17	COM2CTSL	I	COM2 CTS#
18	COM2RIL	I	COM2 RI#
MH1	CHASSIS_GND	ME	Chassis GND
MH2	CHASSIS_GND	ME	Chassis GND
MH3	CHASSIS_GND	ME	Chassis GND
MH4	CHASSIS_GND	ME	Chassis GND

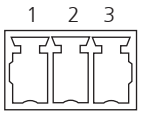
VI Power Connector

Connector type: DIP 5.08mm FEMALE 90D BLACK
Connector location: J2

Pin	Definition	Type	Description
1	VINP1	PWR	Vin 24V Power
2	VINVSS	GND	Vin Power GND
3	VINPGND	GND	Chassis GND
NH1	NC	ME	
NH2	NC	ME	

Remote Power On/Off & S3 Connector

Connector type: DIP 3.81mm FEMALE 90D BLACK
Connector location: JP1



Pin	Definition	Type	Description
1	PWRBTN#_J	I	Power button input signal
2	GND	GND	Digital GND
3	I_PMCSLPS3L	O	SLP_S3 signal

Internal Jumpers

AT/ATX Selection Pin Header

Connector type: 2.0mm MALE 180D DIP
Connector location: JP2

Pin	Definition	Type	Description
1	AT_PWRBT#	I	AT power button signal
2	PBT_PU	I	Power button signal input
3	ATX_PBT	I	ATX power button signal

Pin	Settings
1-2 On	AT
2-3 On	ATX (Default)

Clear CMOS DIP Switch

Connector type: SMD 4P DC24V 25mA 1P2T 180D PIT:1.27mm
Connector location: SW1

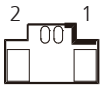
Pin	Definition	PinType	Description
1	I_RTCRSTL	I	RTC Reset signal
2	I_RTCTESTL	I	RTC Test signal
3	GND	GND	Digital GND
4	GND	GND	Digital GND

Pin	Settings
1-4 2-3	Status
On	Clear CMOS
Off	Normal (Default)

Internal Connector

RTC Battery

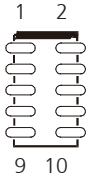
Connector type: SMD 1.25mm MALE 180D
Connector location: BAT1



Pin	Definition	Type	Description
1	GND	GND	Digital GND
2	3V_BAT1	PWR	RTC Battery 3.3V Power
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

GPIO Pin Header

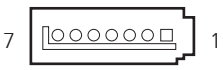
Connector type: SMD 2.0mm H:6.7mm MALE 180D
Connector location: CN6



Pin	Definition	Type	Description
1	VCC5OUT	PWR	GPIO 5V Power
2	GND	GND	Digital GND
3	SGPO0	O	General-purpose Output0
4	SGPI0	I	General-purpose Input0
5	SGPO1	O	General-purpose Output1
6	SGPI1	I	General-purpose Input1
7	SGPO2	O	General-purpose Output2
8	SGPI2	I	General-purpose Input2
9	SGPO3	O	General-purpose Output3
10	SGPI3	I	General-purpose Input3

SATA Connector

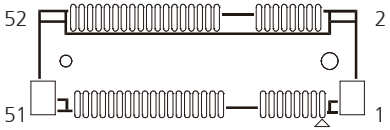
Connector type: SMD 1.27mm H:8.4mm MALE 180D
Connector location: CN7



Pin	Definition	Type	Description
1	GND	GND	Digital GND
2	SATATXP0	I/O	SATA Port0 TXP signal
3	SATATXN0	I/O	SATA Port0 TXN signal
4	GND	GND	Digital GND
5	SATARXN0	I/O	SATA Port0 RXN signal
6	SATARXP0	I/O	SATA Port0 RXP signal
7	GND	GND	Digital GND
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

Mini PCIe-1 Connector

Connector type: SMD H:9.9mm 90D 10u
Connector location: CN8



Pin	Definition	Type	Description
1	I_WAKEL	O	PMC_WAKE#
2	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3V Power
3	NC		
4	GND	GND	Digital GND
5	NC		
6	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
7	I_PCIECLKREQL2	O	CLKREQ#
8	UIM_PWR	PWR	UIM_PWR
9	GND	GND	Digital GND
10	UIM_DATA	I/O	UIM_DATA

Pin	Definition	Type	Description
11	I_PCIECLKOUTN2	CLK	PCIe REFCLK-
12	UIM_CLK	CLK	UIM_CLK
13	I_PCIECLKOUTP2	CLK	PCIe REFCLK+
14	UIM_RESET	O	UIM_RESET
15	GND	GND	Digital GND
16	UIM_VPP	O	UIM_VPP
17	NC		
18	GND	GND	Digital GND
19	NC		
20	S_MPCIeDIS1L	I	W_DISABLE#

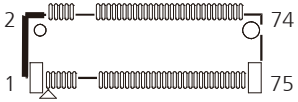
Continued on next page

Pin	Definition	Type	Description
21	GND	GND	Digital GND
22	I_PLTRSTL	I	PERST#
23	PCIESATARP	I/O	PCIe2 RXN/SATA1 RXP signal
24	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
25	PCIESATARN	I/O	PCIe2 RXP/SATA1 RXN signal
26	GND	GND	Digital GND
27	GND	GND	Digital GND
28	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
29	GND	GND	Digital GND
30	I_SMB3P3CLK	CLK	SMBCLK
31	PCIESATATN	I/O	PCIe5 TXN/SATA1 TXN signal
32	I_SMB3P3DATA	I/O	SMBDAT
33	PCIESATATP	I/O	PCIe5 TXP/SATA1 TXP signal
34	GND	GND	Digital GND
35	GND	GND	Digital GND
36	I_USB2N6	I/O	USB2 Port6 DN signal
37	GND	GND	Digital GND
38	I_USB2P6	I/O	USB2 Port6 DP signal
39	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
40	GND	GND	Digital GND

Pin	Definition	Type	Description
41	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
42	NC		
43	GND	GND	Digital GND
44	NC		
45	NC		
46	NC		
47	NC		
48	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
49	NC		
50	GND	GND	Digital GND
51	PCIESATASEL	I	PCEe/SATA selection signal
52	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3V Power
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND
MH3	NC	ME	
NH4	NC	ME	
MH5	GND	ME	Digital GND
MH6	NC	ME	
NH1	NC	ME	
NH2	NC	ME	

M.2 Key B Connector

Connector type: SMD H:8.5mm 90D GOLD FLASH PIT: 0.5mm
Connector location: CN9



Pin	Definition	Type	Description
1	M2BCONFIG3	O	CONFIG_3
2	M2LTEPWR	PWR	M.2 LTE 3.3V Power
3	GND	GND	Digital GND
4	M2LTEPWR	PWR	M.2 LTE 3.3V Power
5	GND	GND	Digital GND
6	S_M2POFFL	I	POWER_OFF#
7	I_USB2P7	I/O	USB2 Port7 DP signal
8	S_M2DISL	I	W_DISABLE1#
9	I_USB2N7	I/O	USB2 Port7 DN signal
10	NC		
11	GND	GND	Digital GND
12			Connector Key B
13			Connector Key B
14			Connector Key B

Pin	Definition	Type	Description
15			Connector Key B
16			Connector Key B
17			Connector Key B
18			Connector Key B
19			Connector Key B
20	NC		
21	M2BCONFIG0	O	CONFIG_0
22	NC		
23	I_WAKEL	O	PMC_WAKE#
24	NC		
25	NC		
26	NC		
27	GND	GND	Digital GND
28	UIM_VPP	O	UIM-VPP

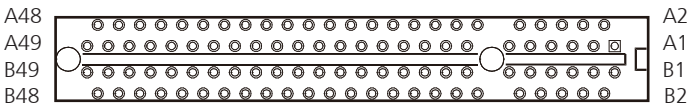
Continued on next page

Pin	Definition	Type	Description
29	I_USB3RXN2	I/O	USB3 Port3 RXN signal
30	UIM_RESET	O	UIM-RESET
31	I_USB3RXP2	I/O	USB3 Port3 RXP signal
32	UIM_CLK	CLK	UIM-CLK
33	GND	GND	Digital GND
34	UIM_DATA	I/O	UIM-DATA
35	I_USB3TXN2	I/O	USB3 Port3 TXN signal
36	UIM_PWR	PWR	UIM-PWR
37	I_USB3TXP2	I/O	USB3 Port3 TXP signal
38	NC		
39	GND	GND	Digital GND
40	NC		
41	I_PCIERXN1	I/O	PCIe5 RXP/SATA0 RXP signal
42	NC		
43	I_PCIERXP1	I/O	PCIe5 RXN/SATA0 RXN signal
44	NC		
45	GND	GND	Digital GND
46	NC		
47	I_PCIETXN1	I/O	PCIe5 TXN/SATA0 TXN signal
48	NC		
49	I_PCIETXP1	I/O	PCIe5 TXP/SATA0 TXP signal
50	M2PERSTL	O	PCIE_RST#
51	GND	GND	Digital GND
52	I_PCIECLKREQL1	O	CLKREQ#
53	I_PCIECLKOUTN1	CLK	PCIe REFCLKN
54	I_WAKEL	O	PMC_WAKE#

Pin	Definition	Type	Description
55	I_PCIECLKOUTP1	CLK	PCIe REFCLKP
56	NC		
57	GND	GND	Digital GND
58	NC		
59	NC		
60	NC		
61	NC		
62	NC		
63	NC		
64	NC		
65	NC		
66	NC		
67	M2PLTRSTL	I	LTE_RST#
68	M2B_SUSCLK		SUSCLK(32KhZ)
69	M2BCONFIG1	O	CONFIG_1
70	M2LTEPWR	PWR	M.2 LTE 3.3V Power
71	GND	GND	Digital GND
72	M2LTEPWR	PWR	M.2 LTE 3.3V Power
73	GND	GND	Digital GND
74	M2LTEPWR	PWR	M.2 LTE 3.3V Power
75	M2BCONFIG2	O	CONFIG_2
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND
NH1	NC	ME	
NH2	NC	ME	

PCIe x 8 Slot

Connector type: DIP H:11mm 180D 30u blue
Connector location: CN10



Pin	Definition	Type	Description
A1	RISER_EXISTL	I	Riser Card detect pin
A2	GND	GND	Digital GND
A3	VCC12	PWR	VCC12 power from Riser Card
A4	NC		
A5	NC		
A6	NC		
A7	NC		
A8	NC		
A9	NC		
A10	NC		
A11	GND	GND	Digital GND
A12	GND	GND	Digital GND

Pin	Definition	Type	Description
A13	I_PCIECLKOUTP4	CLK	PCIe REFCLK+
A14	I_PCIECLKOUTN4	CLK	PCIe REFCLK-
A15	GND	GND	Digital GND
A16	I_PCIERXP6	I/O	PCIe6 RXP signal
A17	I_PCIERXN6	I/O	PCIe6 RXN signal
A18	GND	GND	Digital GND
A19	I_PCIERXP7	I/O	PCIe7 RXP signal
A20	I_PCIERXN7	I/O	PCIe7 RXN signal
A21	GND	GND	Digital GND
A22	GND	GND	Digital GND
A23	I_RISERSATARXP1	I/O	SATA Port1 RXP signal
A24	I_RISERSATARXN1	I/O	SATA Port1 RXN signal

Continued on next page

Pin	Definition	Type	Description
A25	GND	GND	Digital GND
A26	GND	GND	Digital GND
A27	VCC3	PWR	Riser Card 3.3V Power
A28	VCC3	PWR	Riser Card 3.3V Power
A29	VCC3	PWR	Riser Card 3.3V Power
A30	GND	GND	Digital GND
A31	GND	GND	Digital GND
A32	GND	GND	Digital GND
A33	+24VDC_INPUT	PWR	Super CAP +24V Input Power
A34	+24VDC_INPUT	PWR	Super CAP +24V Input Power
A35	+24VDC_INPUT	PWR	Super CAP +24V Input Power
A36	GND	GND	Digital GND
A37	GND	GND	Digital GND
A38	GND	GND	Digital GND
A39	VCC5	PWR	Riser Card 5V Power
A40	VCC5	PWR	Riser Card 5V Power
A41	VCC5	PWR	Riser Card 5V Power
A42	GND	GND	Digital GND
A43	GND	GND	Digital GND
A44	GND	GND	Digital GND
A45	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power
A46	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power

Pin	Definition	Type	Description
A47	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power
A48	GND	GND	Digital GND
A49	GND	GND	Digital GND
NH1	NC	ME	
B1	3VSB	PWR	Riser Card 3.3VSB Power
B2	3VSB	PWR	Riser Card 3.3VSB Power
B3	3VSB	PWR	Riser Card 3.3VSB Power
B4	GND	GND	Digital GND
B5	I_SMB3P3CLK	CLK	SMBCLK
B6	I_SMB3P3DATA	I/O	SMBDAT
B7	GND	GND	Digital GND
B8	NC		
B9	GND	GND	Digital GND
B10	I_PLTRSTL	I	Platform RST#
B11	I_WAKEL	O	PMC_WAKE#
B12	NC		
B13	GND	GND	Digital GND
B14	I_PCIECLKREQL4	O	
B15	GND	GND	Digital GND
B16	I_PCIETXP6	I/O	PCIe6 TXP signal
B17	I_PCIETXN6	I/O	PCIe6 TXN signal
B18	GND	GND	Digital GND

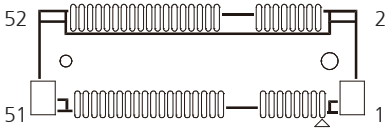
Continued on next page

Pin	Definition	Type	Description
B19	I_PCIETXP7	I/O	PCIe7 TXP signal
B20	I_PCIETXN7	I/O	PCIe7 TXN signal
B21	GND	GND	Digital GND
B22	GND	GND	Digital GND
B23	I_RISERSATATXP1	I/O	SATA Port1 TXP signal
B24	I_RISERSATATXN1	I/O	SATA Port1 TXN signal
B25	GND	GND	Digital GND
B26	GND	GND	Digital GND
B27	VCC3	PWR	Riser Card 3.3V Power
B28	VCC3	PWR	Riser Card 3.3V Power
B29	VCC3	PWR	Riser Card 3.3V Power
B30	GND	GND	Digital GND
B31	GND	GND	Digital GND
B32	GND	GND	Digital GND
B33	+24VDC_INPUT	PWR	Super CAP +24V Input Power
B34	+24VDC_INPUT	PWR	Super CAP +24V Input Power

Pin	Definition	Type	Description
B35	+24VDC_INPUT	PWR	Super CAP +24V Input Power
B36	GND	GND	Digital GND
B37	GND	GND	Digital GND
B38	GND	GND	Digital GND
B39	I_PMCSLPS3L	I	SLP_S3 signal
B40	H_SIOUART0TXD	I	UART TX signal to Super CAP
B41	H_SIOUART0RXD	O	UART RX signal to Super CAP
B42	GND	GND	Digital GND
B43	I_PMCPWRBTNL	O	Power button signal
B44	GND	GND	Digital GND
B45	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power
B46	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power
B47	+24VDC_OUTPUT	PWR	Super CAP +24V Output Power
B48	GND	GND	Digital GND
B49	GND	GND	Digital GND
NH2	NC	ME	

Mini PCIe-2 Connector

Connector type: SMD H:9.9mm 90D 10u
Connector location: CN11



Pin	Definition	Type	Description
1	I_WAKEL	O	PMC_WAKE#
2	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3V Power
3	NC		
4	GND	GND	Digital GND
5	NC		
6	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
7	I_PCIECLKREQL2	O	CLKREQ#
8	UIM_PWR	PWR	UIM_PWR
9	GND	GND	Digital GND
10	UIM_DATA	I/O	UIM_DATA

Pin	Definition	Type	Description
11	I_PCIECLKOUTN2	CLK	PCIe REFCLK-
12	UIM_CLK	CLK	UIM_CLK
13	I_PCIECLKOUTP2	CLK	PCIe REFCLK+
14	UIM_RESET	O	UIM_RESET
15	GND	GND	Digital GND
16	UIM_VPP	O	UIM_VPP
17	NC		
18	GND	GND	Digital GND
19	NC		
20	S_MPCIeDIS1L	I	W_DISABLE#

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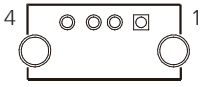
Pin	Definition	Type	Description
21	GND	GND	Digital GND
22	I_PLTRSTL	I	PERST#
23	PCIESATARP	I/O	PCIe2 RXN/SATA1 RXP signal
24	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
25	PCIESATARN	I/O	PCIe2 RXP/SATA1 RXN signal
26	GND	GND	Digital GND
27	GND	GND	Digital GND
28	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
29	GND	GND	Digital GND
30	I_SMB3P3CLK	CLK	SMBCLK
31	PCIESATATN	I/O	PCIe5 TXN/SATA1 TXN signal
32	I_SMB3P3DATA	I/O	SMBDAT
33	PCIESATATP	I/O	PCIe5 TXP/SATA1 TXP signal
34	GND	GND	Digital GND
35	GND	GND	Digital GND
36	I_USB2N6	I/O	USB2 Port6 DN signal
37	GND	GND	Digital GND
38	I_USB2P6	I/O	USB2 Port6 DP signal
39	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
40	GND	GND	Digital GND

Pin	Definition	Type	Description
41	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3.3V Power
42	NC		
43	GND	GND	Digital GND
44	NC		
45	NC		
46	NC		
47	NC		
48	1V5_MINIPCIE1	PWR	Mini PCIe-1 LTE 1.5V Power
49	NC		
50	GND	GND	Digital GND
51	PCIESATASEL	I	PCEe/SATA selection signal
52	3VSB_MINIPCIE1	PWR	Mini PCIe-1 LTE 3V Power
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND
MH3	NC	ME	
NH4	NC	ME	
MH5	GND	ME	Digital GND
MH6	NC	ME	
NH1	NC	ME	
NH2	NC	ME	

USB2.0 Port Internal Connector

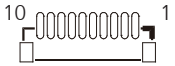
Connector type: DIP 4P 180D FEMALE 14.5x7x13.7mm
Connector location: CN12



Pin	Definition	Type	Description
1	5VSBUSB3	PWR	USB2 Port3 5V Power
2	IUSB2N8	I/O	USB2 Port8 DN signal
3	IUSB2P8	I/O	USB2 Port8 DP signal
4	GND	GND	Digital GND
5	CN12_GND	ME	Chassis GND
6	CN12_GND	ME	Chassis GND

COM3 Connector

Connector type: SMD 1.0mm male 180D 0.5A
Connector location: COM3



Pin	Definition	Type	Description
1	COM3DCDL	I	COM3 DCD#
2	COM3RXD	I	COM3 RXD
3	COM3TXD	O	COM3 TXD
4	COM3DTRL	O	COM3 DTR#
5	GND	GND	Digital GND
6	COM3DSRL	I	COM3 DSR#
7	COM3RTSL	O	COM3 RTS#
8	COM3CTSL	I	COM3 CTS#
9	COM3RIL	I	COM3 RI#
10	GND	GND	Digital GND
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

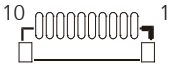
COM4 Connector

Connector type: SMD 1.0mm male 180D 0.5A
Connector location: COM4

Pin	Definition	Type	Description
1	COM4DCDL	I	COM4 DCD#
2	COM4RXD	I	COM4 RXD
3	COM4TXD	O	COM4 TXD
4	COM4DTRL	O	COM4 DTR#
5	GND	GND	Digital GND
6	COM4DSRL	I	COM4 DSR#
7	COM4RTSL	O	COM4 RTS#
8	COM4CTSL	I	COM4 CTS#
9	COM4RIL	I	COM4 RI#
10	GND	GND	Digital GND
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

COM5 Connector

Connector type: SMD 1.0mm male 180D 0.5A
Connector location: COM5



Pin	Definition	Type	Description
1	COM5DCDL	I	COM5 DCD#
2	COM5RXD	I	COM5 RXD
3	COM5TXD	O	COM5 TXD
4	COM5DTRL	O	COM5 DTR#
5	GND	GND	Digital GND
6	COM5DSRL	I	COM5 DSR#
7	COM5RTSL	O	COM5 RTS#
8	COM5CTSL	I	COM5 CTS#
9	COM5RIL	I	COM5 RI#
10	GND	GND	Digital GND
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

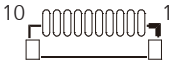
COM6 Connector

Connector type: SMD 1.0mm male 180D 0.5A
Connector location: COM6

Pin	Definition	Type	Description
1	COM6DCDL	I	COM6 DCD#
2	COM6RXD	I	COM6 RXD
3	COM6TXD	O	COM6 TXD
4	COM6DTRL	O	COM6 DTR#
5	GND	GND	Digital GND
6	COM6DSRL	I	COM6 DSR#
7	COM6RTSL	O	COM6 RTS#
8	COM6CTSL	I	COM6 CTS#
9	COM6RIL	I	COM6 RI#
10	GND	GND	Digital GND
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

Debug Connector

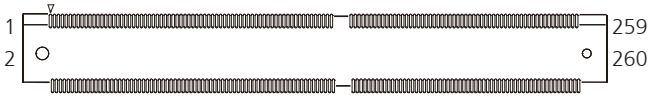
Connector type: SMD 1.0mm male 180D 0.5A
Connector location: DE1



Pin	Definition	Type	Description
1	GND	GND	Digital GND
2	I_PLTRSTL	I	Platform RST#
3	I_ESPICLK	CLK	eSPI CLK
4	I_ESPICS0L	O	eSPI CS#
5	I_ESPIIO3	I/O	eSPI IO3
6	I_ESPIIO2	I/O	eSPI IO2
7	I_ESPIIO1	I/O	eSPI IO1
8	I_ESPIIO0	I/O	eSPI IO0
9	I_ESPIRSTL	O	eSPI RST#
10	3VSB	PWR	Debug port 3.3V Power
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

DDR4 SO-DIMM

Connector type: SMD PIT: 0.5mm H:9.2mm 90D 10u 1.2V STD BLACK
Connector location: DIMM1



Pin	Definition	Type	Description
1	GND	GND	Digital GND
2	GND	GND	Digital GND
3	DDR1_DQ6	I/O	DDR4 DIMM1 DQ5
4	DDR1_DQ1	I/O	DDR4 DIMM1 DQ4
5	GND	GND	Digital GND
6	GND	GND	Digital GND
7	DDR1_DQ7	I/O	DDR4 DIMM1 DQ1
8	DDR1_DQ4	I/O	DDR4 DIMM1 DQ0
9	GND	GND	Digital GND
10	GND	GND	Digital GND
11	DDR1_DQSN0	I/O	DDR4 DIMM1 DQS#0
12	CHBDM	O	DDR4 DIMM1 DM0

Pin	Definition	Type	Description
13	DDR1_DQSP0	I/O	DDR4 DIMM1 DQS0
14	GND	GND	Digital GND
15	GND	GND	Digital GND
16	DDR1_DQ0	I/O	DDR4 DIMM1 DQ6
17	DDR1_DQ5	I/O	DDR4 DIMM1 DQ7
18	GND	GND	Digital GND
19	GND	GND	Digital GND
20	DDR1_DQ2	I/O	DDR4 DIMM1 DQ2
21	DDR1_DQ3	I/O	DDR4 DIMM1 DQ3
22	GND	GND	Digital GND
23	GND	GND	Digital GND
24	DDR1_DQ14	I/O	DDR4 DIMM1 DQ12

Continued on next page

Pin	Definition	Type	Description
25	DDR1_DQ10	I/O	DDR4 DIMM1 DQ13
26	GND	GND	Digital GND
27	GND	GND	Digital GND
28	DDR1_DQ13	I/O	DDR4 DIMM1 DQ8
29	DDR1_DQ9	I/O	DDR4 DIMM1 DQ9
30	GND	GND	Digital GND
31	GND	GND	Digital GND
32	DDR1_DQSN1	I/O	DDR4 DIMM1 DQS#1
33	CHBDM	O	DDR4 DIMM1 DM1
34	DDR1_DQSP1	I/O	DDR4 DIMM1 DQS1
35	GND	GND	Digital GND
36	GND	GND	Digital GND
37	DDR1_DQ12	I/O	DDR4 DIMM1 DQ15
38	DDR1_DQ11	I/O	DDR4 DIMM1 DQ14
39	GND	GND	Digital GND
40	GND	GND	Digital GND
41	DDR1_DQ8	I/O	DDR4 DIMM1 DQ10
42	DDR1_DQ15	I/O	DDR4 DIMM1 DQ11
43	GND	GND	Digital GND
44	GND	GND	Digital GND
45	DDR1_DQ18	I/O	DDR4 DIMM1 DQ21
46	DDR1_DQ17	I/O	DDR4 DIMM1 DQ20

Pin	Definition	Type	Description
47	GND	GND	Digital GND
48	GND	GND	Digital GND
49	DDR1_DQ16	I/O	DDR4 DIMM1 DQ17
50	DDR1_DQ20	I/O	DDR4 DIMM1 DQ16
51	GND	GND	Digital GND
52	GND	GND	Digital GND
53	DDR1_DQSN2	I/O	DDR4 DIMM1 DQS#2
54	CHBDM	O	DDR4 DIMM1 DM2
55	DDR1_DQSP2	I/O	DDR4 DIMM1 DQS2
56	GND	GND	Digital GND
57	GND	GND	Digital GND
58	DDR1_DQ19	I/O	DDR4 DIMM1 DQ22
59	DDR1_DQ22	I/O	DDR4 DIMM1 DQ23
60	GND	GND	Digital GND
61	GND	GND	Digital GND
62	DDR1_DQ21	I/O	DDR4 DIMM1 DQ18
63	DDR1_DQ23	I/O	DDR4 DIMM1 DQ19
64	GND	GND	Digital GND
65	GND	GND	Digital GND
66	DDR1_DQ29	I/O	DDR4 DIMM1 DQ28
67	DDR1_DQ26	I/O	DDR4 DIMM1 DQ29
68	GND	GND	Digital GND

Continued on next page

Pin	Definition	Type	Description
69	GND	GND	Digital GND
70	DDR1_DQ30	I/O	DDR4 DIMM1 DQ24
71	DDR1_DQ25	I/O	DDR4 DIMM1 DQ25
72	GND	GND	Digital GND
73	GND	GND	Digital GND
74	DDR1_DQSN3	I/O	DDR4 DIMM1 DQS#3
75	CHBDM	O	DDR4 DIMM1 DM3
76	DDR1_DQS3	I/O	DDR4 DIMM1 DQS3
77	GND	GND	Digital GND
78	GND	GND	Digital GND
79	DDR1_DQ28	I/O	DDR4 DIMM1 DQ30
80	DDR1_DQ27	I/O	DDR4 DIMM1 DQ31
81	GND	GND	Digital GND
82	GND	GND	Digital GND
83	DDR1_DQ24	I/O	DDR4 DIMM1 DQ26
84	DDR1_DQ31	I/O	DDR4 DIMM1 DQ27
85	GND	GND	Digital GND
86	GND	GND	Digital GND
87	DDR1_CB5	O	DDR4 DIMM1 CB5
88	DDR1_CB4	O	DDR4 DIMM1 CB4
89	GND	GND	Digital GND
90	GND	GND	Digital GND

Pin	Definition	Type	Description
91	DDR1_CB1	O	DDR4 DIMM1 CB1
92	DDR1_CB0	O	DDR4 DIMM1 CB0
93	GND	GND	Digital GND
94	GND	GND	Digital GND
95	DDR1_DQSN8	I/O	DDR4 DIMM1 DQS#8
96	CHBDM8	O	DDR4 DIMM1 DM8
97	DDR1_DQSP8	I/O	DDR4 DIMM1 DQS8
98	GND	GND	Digital GND
99	GND	GND	Digital GND
100	DDR1_CB6	O	DDR4 DIMM1 CB6
101	DDR1_CB2	O	DDR4 DIMM1 CB2
102	GND	GND	Digital GND
103	GND	GND	Digital GND
104	DDR1_CB7	O	DDR4 DIMM1 CB7
105	DDR1_CB3	O	DDR4 DIMM1 CB3
106	GND	GND	Digital GND
107	GND	GND	Digital GND
108	DDR_RSTL	O	DDR4 DIMM1 RESET#
109	DDR1_CKE0	O	DDR4 DIMM1 CKE0
110	DDR1_CKE1	O	DDR4 DIMM1 CKE1
111	VDDQ	PWR	DDR4 VDD 1.2V Power
112	VDDQ	PWR	DDR4 VDD 1.2V Power

Continued on next page

Pin	Definition	Type	Description
113	DDR1_BG1	O	DDR4 DIMM1 BG1
114	DDR1_ACTL	O	DDR4 DIMM1 ACT#
115	DDR1_BG0	O	DDR4 DIMM1 BG0
116	DDR1_ALERTL	I/O	DDR4 DIMM1 ALERT#
117	VDDQ	PWR	DDR4 VDD 1.2V Power
118	VDDQ	PWR	DDR4 VDD 1.2V Power
119	DDR1_A12	I/O	DDR4 DIMM1 A12/BC#
120	DDR1_A11	I/O	DDR4 DIMM1 A11
121	DDR1_A9	I/O	DDR4 DIMM1 A9
122	DDR1_A7	I/O	DDR4 DIMM1 A7
123	VDDQ	PWR	DDR4 VDD 1.2V Power
124	VDDQ	PWR	DDR4 VDD 1.2V Power
125	DDR1_A8	I/O	DDR4 DIMM1 A8
126	DDR1_A5	I/O	DDR4 DIMM1 A5
127	DDR1_A6	I/O	DDR4 DIMM1 A6
128	DDR1_A4	I/O	DDR4 DIMM1 A4
129	VDDQ	PWR	DDR4 VDD 1.2V Power
130	VDDQ	PWR	DDR4 VDD 1.2V Power
131	DDR1_A3	I/O	DDR4 DIMM1 A3
132	DDR1_A2	I/O	DDR4 DIMM1 A2
133	DDR1_A1	I/O	DDR4 DIMM1 A1
134	DDR1_EVENTL	O	DDR4 DIMM1 EVENT#

Pin	Definition	Type	Description
135	VDDQ	PWR	DDR4 VDD 1.2V Power
136	VDDQ	PWR	DDR4 VDD 1.2V Power
137	DDR1_CLKP0	CLK	DDR4 DIMM1 CK0
138	DDR1_CLKP1	CLK	DDR4 DIMM1 CK1
139	DDR1_CLKN0	CLK	DDR4 DIMM1 CK0#
140	DDR1_CLKN1	CLK	DDR4 DIMM1 CK1#
141	VDDQ	PWR	DDR4 VDD 1.2V Power
142	VDDQ	PWR	DDR4 VDD 1.2V Power
143	DDR1_PAR	O	DDR4 DIMM1 PARITY
144	DDR1_A0	I/O	DDR4 DIMM1 A0
145	DDR1_BA1	O	DDR4 DIMM1 BA1
146	DDR1_A10	I/O	DDR4 DIMM1 A10/AP
147	VDDQ	PWR	DDR4 VDD 1.2V Power
148	VDDQ	PWR	DDR4 VDD 1.2V Power
149	DDR1_CSL0	O	DDR4 DIMM1 S0#
150	DDR1_BA0	O	DDR4 DIMM1 BA0
151	DDR1_WEL	O	DDR4 DIMM1 A14_WE#
152	DDR1_RASL	O	DDR4 DIMM1 A16_RAS#
153	VDDQ	PWR	DDR4 VDD 1.2V Power
154	VDDQ	PWR	DDR4 VDD 1.2V Power
155	DDR1_ODT0	O	DDR4 DIMM1 ODT0
156	DDR1_CASL	O	DDR4 DIMM1 A15_CAS#

Continued on next page

Pin	Definition	Type	Description
157	DDR1_CSL1	O	DDR4 DIMM1 S1#
158	DDR1_A13	I/O	DDR4 DIMM1 A13
159	VDDQ	O	DDR4 VDD 1.2V Power
160	VDDQ	PWR	DDR4 VDD 1.2V Power
161	DDR1_ODT1	O	DDR4 DIMM1 ODT1
162	DDR1S2L	O	DDR4 DIMM1 S2#/C0
163	VDDQ	PWR	DDR4 VDD 1.2V Power
164	DDR1_VREFCA	I	DDR4 DIMM1 VREFCA
165	DDR1S3L	O	DDR4 DIMM1 S3#/C1
166	AD1SA2	O	DDR4 DIMM1 SPD Address SA2
167	GND	GND	Digital GND
168	GND	GND	Digital GND
169	DDR1_DQ34	I/O	DDR4 DIMM1 DQ37
170	DDR1_DQ33	I/O	DDR4 DIMM1 DQ36
171	GND	GND	Digital GND
172	GND	GND	Digital GND
173	DDR1_DQ32	I/O	DDR4 DIMM1 DQ33
174	DDR1_DQ36	I/O	DDR4 DIMM1 DQ32
175	GND	GND	Digital GND
176	GND	GND	Digital GND
177	DDR1_DQSN4	I/O	DDR4 DIMM1 DQS#4
178	CHBDM	O	DDR4 DIMM1 DM4

Pin	Definition	Type	Description
179	DDR1_DQSP4	I/O	DDR4 DIMM1 DQS4
180	GND	GND	Digital GND
181	GND	GND	Digital GND
182	DDR1_DQ35	I/O	DDR4 DIMM1 DQ39
183	DDR1_DQ38	I/O	DDR4 DIMM1 DQ38
184	GND	GND	Digital GND
185	GND	GND	Digital GND
186	DDR1_DQ37	I/O	DDR4 DIMM1 DQ35
187	DDR1_DQ39	I/O	DDR4 DIMM1 DQ34
188	GND	GND	Digital GND
189	GND	GND	Digital GND
190	DDR1_DQ41	I/O	DDR4 DIMM1 DQ45
191	DDR1_DQ47	I/O	DDR4 DIMM1 DQ44
192	GND	GND	Digital GND
193	GND	GND	Digital GND
194	DDR1_DQ42	I/O	DDR4 DIMM1 DQ41
195	DDR1_DQ43	I/O	DDR4 DIMM1 DQ40
196	GND	GND	Digital GND
197	GND	GND	Digital GND
198	DDR1_DQSN5	I/O	DDR4 DIMM1 DQS#5
199	CHBDM	O	DDR4 DIMM1 DM5
200	DDR1_DQSP5	I/O	DDR4 DIMM1 DQS5

Continued on next page

Pin	Definition	Type	Description
201	GND	GND	Digital GND
202	GND	GND	Digital GND
203	DDR1_DQ45	I/O	DDR4 DIMM1 DQ46
204	DDR1_DQ44	I/O	DDR4 DIMM1 DQ47
205	GND	GND	Digital GND
206	GND	GND	Digital GND
207	DDR1_DQ46	I/O	DDR4 DIMM1 DQ42
208	DDR1_DQ40	I/O	DDR4 DIMM1 DQ43
209	GND	GND	Digital GND
210	GND	GND	Digital GND
211	DDR1_DQ49	I/O	DDR4 DIMM1 DQ52
212	DDR1_DQ53	I/O	DDR4 DIMM1 DQ53
213	GND	GND	Digital GND
214	GND	GND	Digital GND
215	DDR1_DQ52	I/O	DDR4 DIMM1 DQ49
216	DDR1_DQ51	I/O	DDR4 DIMM1 DQ48
217	GND	GND	Digital GND
218	GND	GND	Digital GND
219	DDR1_DQSN6	I/O	DDR4 DIMM1 DQS#6
220	CHBDM	O	DDR4 DIMM1 DM6
221	DDR1_DQSP6	I/O	DDR4 DIMM1 DQS6
222	GND	GND	Digital GND

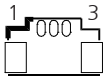
Pin	Definition	Type	Description
223	GND	GND	Digital GND
224	DDR1_DQ55	I/O	DDR4 DIMM1 DQ54
225	DDR1_DQ50	I/O	DDR4 DIMM1 DQ55
226	GND	GND	Digital GND
227	GND	GND	Digital GND
228	DDR1_DQ54	I/O	DDR4 DIMM1 DQ50
229	DDR1_DQ48	I/O	DDR4 DIMM1 DQ51
230	GND	GND	Digital GND
231	GND	GND	Digital GND
232	DDR1_DQ57	I/O	DDR4 DIMM1 DQ60
233	DDR1_DQ61	I/O	DDR4 DIMM1 DQ61
234	GND	GND	Digital GND
235	GND	GND	Digital GND
236	DDR1_DQ58	I/O	DDR4 DIMM1 DQ57
237	DDR1_DQ62	I/O	DDR4 DIMM1 DQ56
238	GND	GND	Digital GND
239	GND	GND	Digital GND
240	DDR1_DQSN7	I/O	DDR4 DIMM1 DQS#7
241	CHBDM	O	DDR4 DIMM1 DM7
242	DDR1_DQSP7	I/O	DDR4 DIMM1 DQS7
243	GND	GND	Digital GND
244	GND	GND	Digital GND

Continued on next page

Pin	Definition	Type	Description
245	DDR1_DQ59	I/O	DDR4 DIMM1 DQ62
246	DDR1_DQ56	I/O	DDR4 DIMM1 DQ63
247	GND	GND	Digital GND
248	GND	GND	Digital GND
249	DDR1_DQ63	I/O	DDR4 DIMM1 DQ58
250	DDR1_DQ60	I/O	DDR4 DIMM1 DQ59
251	GND	GND	Digital GND
252	GND	GND	Digital GND
253	MEMSCL	CLK	DDR4 DIMM1 SCL
254	MEMSDA	I/O	DDR4 DIMM1 SDA
255	VCC3	PWR	DDR4 VDDSPD 3.3V Power
256	AD1SA0	O	DDR4 DIMM1 SPD Address SA0
257	VPP	PWR	DDR4 VPP 2.5V Power
258	VDDQ_VTT	PWR	DDR4 VTT1 0.6V Power
259	VPP	PWR	DDR4 VPP 2.5V Power
260	AD1SA1	O	DDR4 DIMM1 SPD Address SA1
MH1	NC	ME	
MH2	NC	ME	
NH1	NC	ME	
NH2	NC	ME	

Power Button w/LED Cable Connector

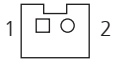
Connector type: SMD 1.25mm MALE 180D
Connector location: J1



Pin	Definition	Type	Description
1	PB_POWER	PWR	Power LED power
2	GND	GND	Digital GND
3	PWRBTN#_C	I	Power button signal
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND

SATA Power Connector

Connector type: DIP 2.5mm MALE 180D
Connector location: J3



Pin	Definition	Type	Description
1	SATAPWR	PWR	SATA 5V Power
2	GND	GND	Digital GND

Flash BIOS Pin Header

Connector type: SMD 1.27mm H:5.5mm male 180D
Connector location: JFW1

Pin	Definition	Type	Description
1	VSPI	PWR	Flash BIOS 3.3V Power
2	GND	GND	Digital GND
3	BIOSSPICSL0	I	BIOS SPI CS#0
4	BIOSSPICLK	CLK	BIOS SPI CLK
5	BIOSSPISO	I/O	BIOS SPI SO
6	BIOSSPISI	I/O	BIOS SPI SI

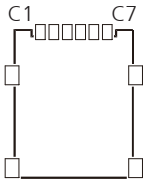
Reset Pin Header

Connector type: 2.0mm MALE 180D DIP
Connector location: JP3

Pin	Definition	Type	Description
1	I_PMCSYSRESETL	I	External Reset signal
2	GND	GND	Digital GND

Nano SIM Connector

Connector type: SMD 6P 12.4x14x1.5mm NO PUSH TYPE
Connector location: SIM1



Pin	Definition	Type	Description
C1	UIM_PWR	PWR	SIM Card Power
C2	UIM_RESET	I	SIM Card Reset
C3	UIM_SIM_CLK	CLK	SIM Card Clock
C5	GND	GND	Digital GND
C6	UIM_VPP	I	SIM Card VPP
C7	UIM_DATA	I/O	SIM Card Data
MH1	GND	ME	Digital GND
MH2	GND	ME	Digital GND
MH3	GND	ME	Digital GND
MH4	GND	ME	Digital GND

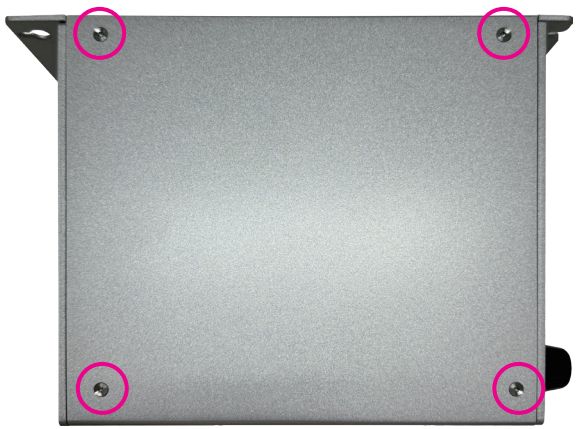
Chapter 3: System Setup

Removing the Side Cover for NIFE 210-E01/E02

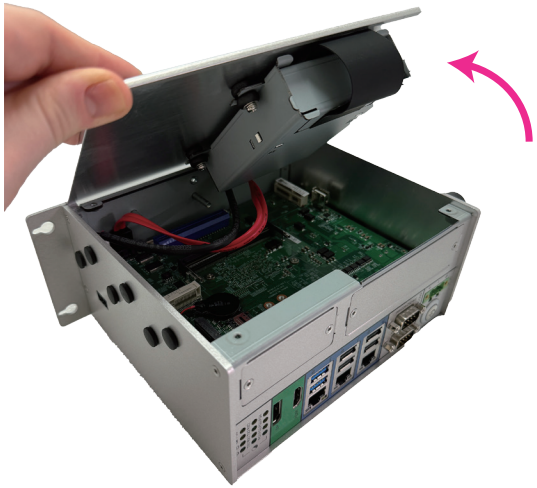
Before removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Place the NIFE 210-E01/E02 system on a flat surface to prepare for installation.

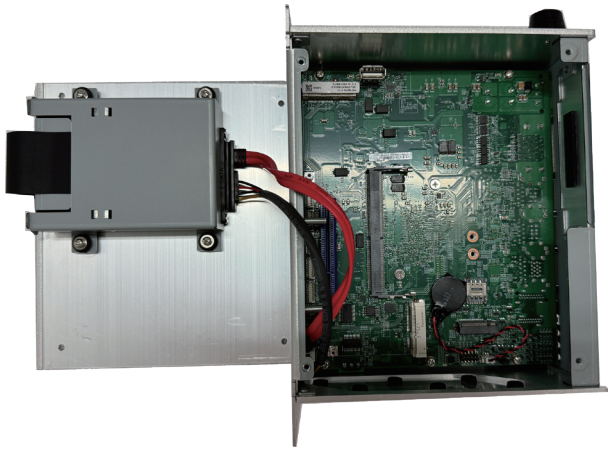
2. Remove the four screws circled below, located on the right side cover of the NIFE 210-E01/E02.



3. Gently lift the side cover.



4. Now you can access all the modules located on the motherboard for add-on modules installation.



CAUTION!

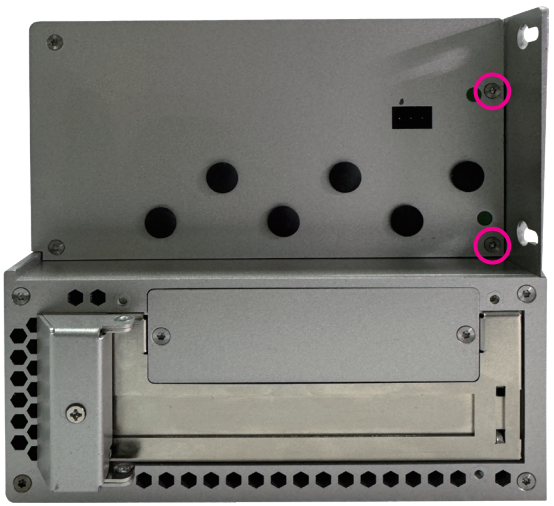
Do not pinch or squeeze the cables during installation.

Removing the Side Cover for NIFE 210-E11/E12

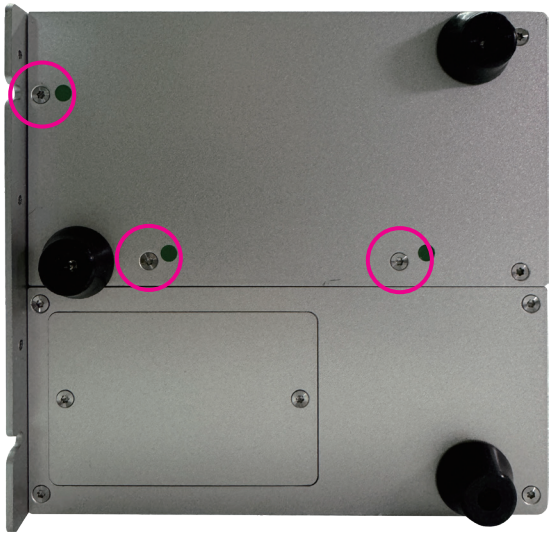
Before removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Place the NIFE 210-E11/E12 system on a flat surface to prepare for installation.

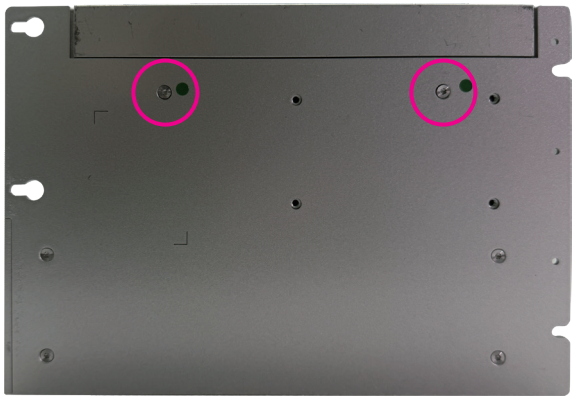
2. Remove the two screws circled below, located on the top of NIFE 210-E11/E12.



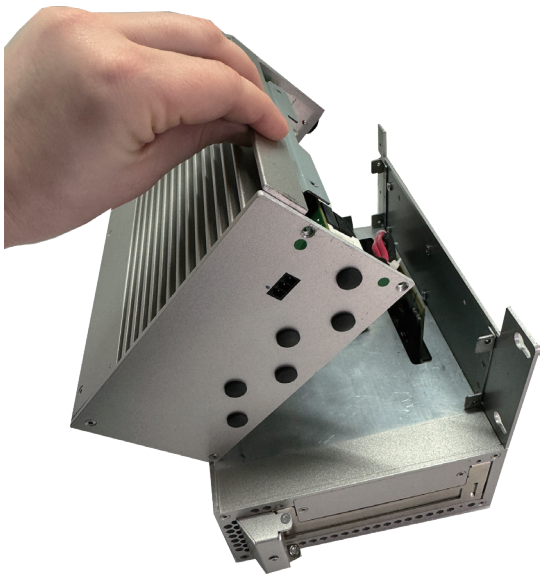
3. Remove the three screws circled below, located on the bottom of NIFE 210-E11/E12.



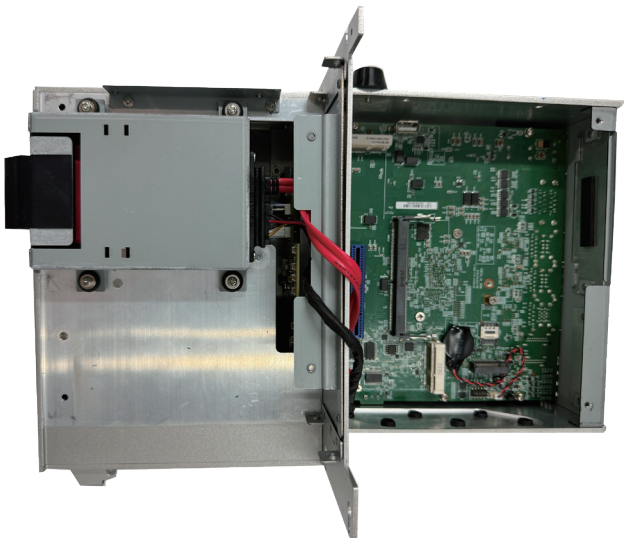
4. Remove the two screws circled below, located on the rear cover of NIFE 210-E11/E12.



5. Gently lift the side cover.



6. Now you can access all the modules located on the motherboard for add-on modules installation.



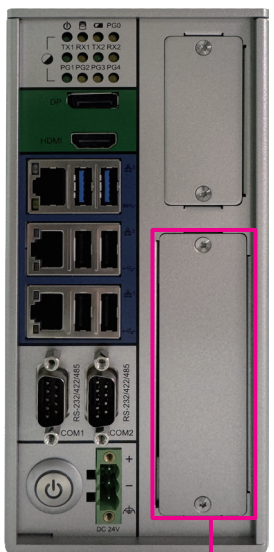
CAUTION!

Do not pinch or squeeze the cables during installation.

Installing a 2.5” SATA HDD/SSD

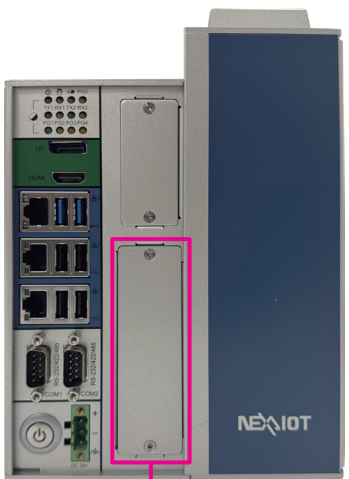
1. Locate the HDD/SSD drive bay cover on the front panel or the top side (NIFE 210-E11/E12 only).

NIFE 210-E01/E02



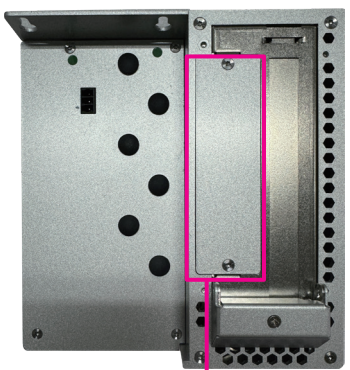
HDD/SSD Bay Cover

NIFE 210-E11/E12 Front Side



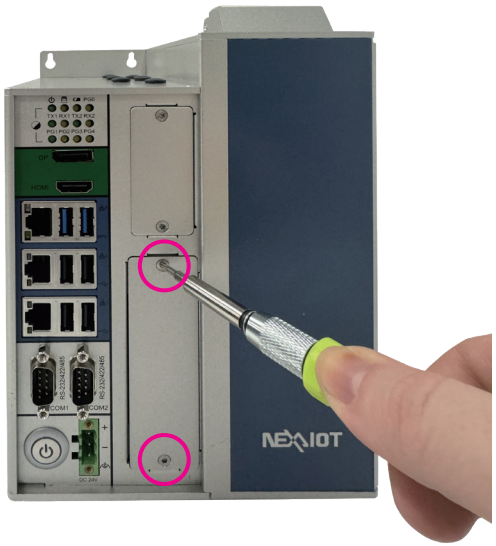
HDD/SSD Bay Cover

NIFE 210-E11/E12 Top Side



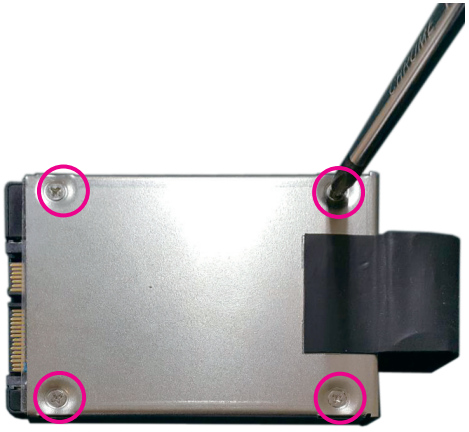
HDD/SSD Bay Cover

2. Remove the screws on the HDD/SSD drive bay cover.



3. Pull out the HDD/SSD bracket by pulling the tape.

4. Install the 2.5” HDD/SSD into the bracket and secure it with screws.

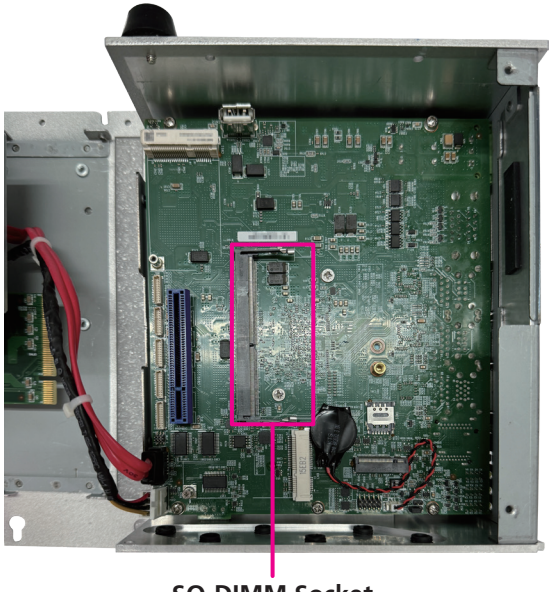


5. Place the HDD/SSD bracket back to its original location.

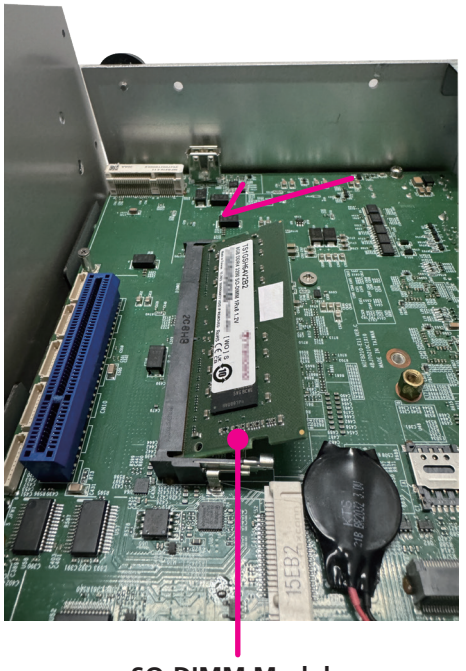
6. Secure the HDD/SSD drive bay cover with screws.

Installing a SO-DIMM Memory Module

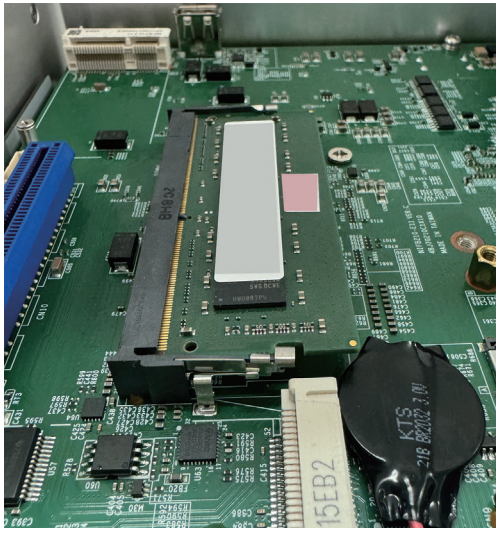
1. Remove the side cover, then locate the SO-DIMM socket.



2. Insert the module into the socket at an approximately 30-degree angle. Push the module down until the clips on both sides of the socket lock into position. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



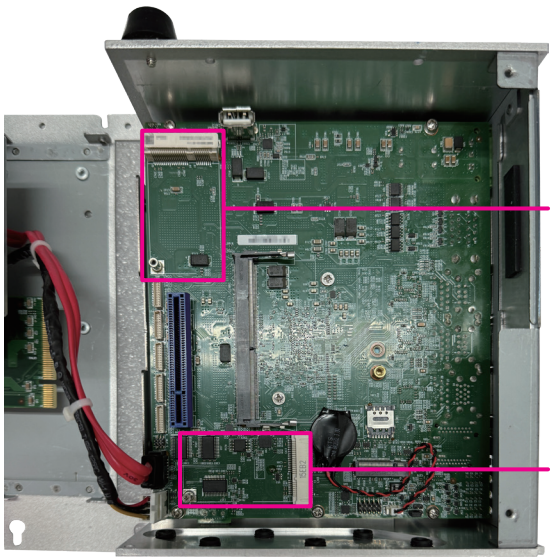
3. Ensure the memory module is secured properly into the socket.



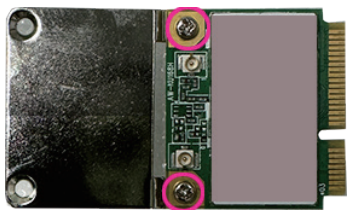
Installing a Mini-PCIe Module (Half-Size)

The mini-PCIe bracket comes in the packing of the NIFE 210 series system.

1. Remove the side cover, and locate the mini-PCIe slots (CN8/CN11) on the motherboard.

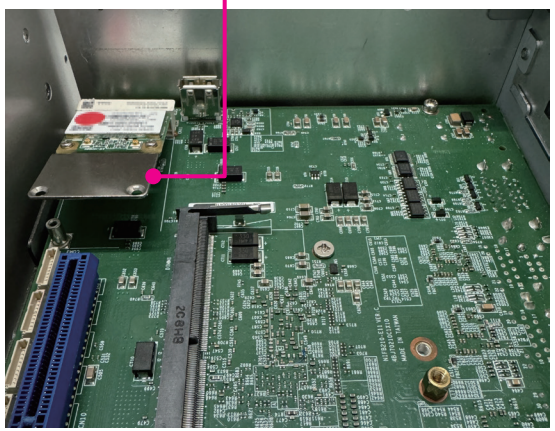


2. Screw the mini-PCIe bracket to the mini-PCIe module.

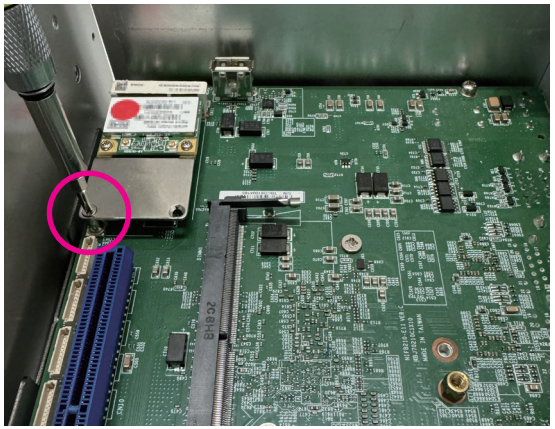


3. Insert the mini-PCIe module into the mini-PCIe slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.

Mini-PCIe card (half-size) secured on the bracket



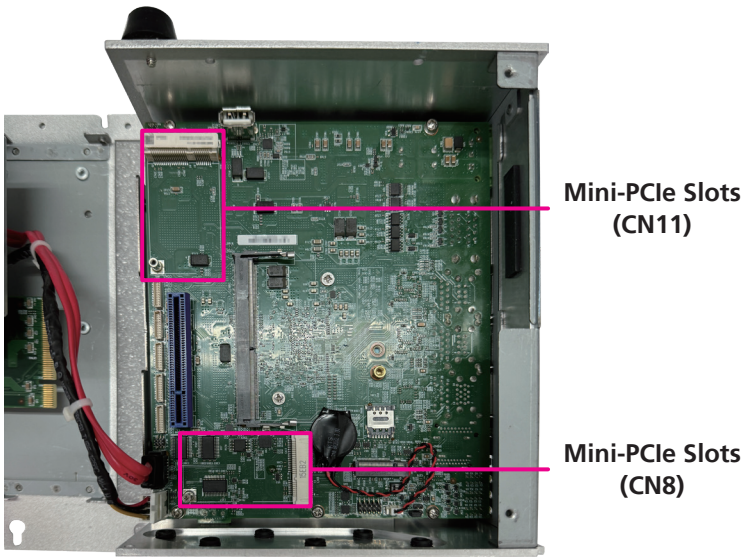
4. Push the module down and secure it with a screw.



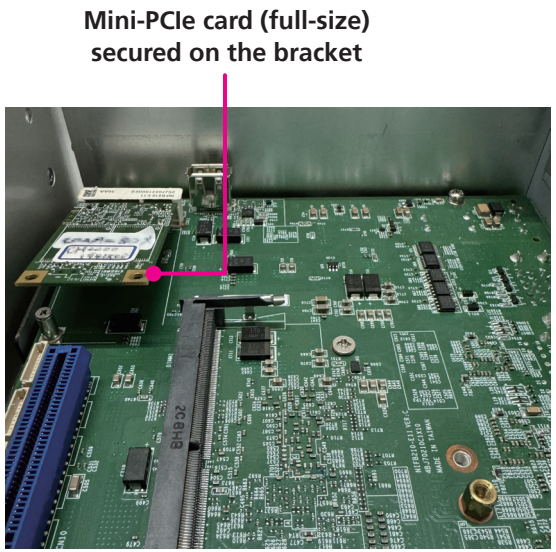
Installing a Mini-PCIe Module (Full-Size)

The mini-PCIe bracket comes in the packing of the NIFE 210 series system.

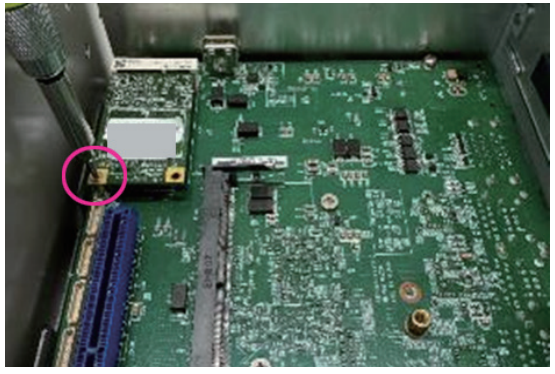
1. Remove the side cover, and locate the mini-PCIe slots (CN8/CN11) on the module.



2. Insert the mini-PCIe module into the mini-PCIe slot at a 45-degree angel until the gold-plated connector on the edge of the module completely disappears into the slot.

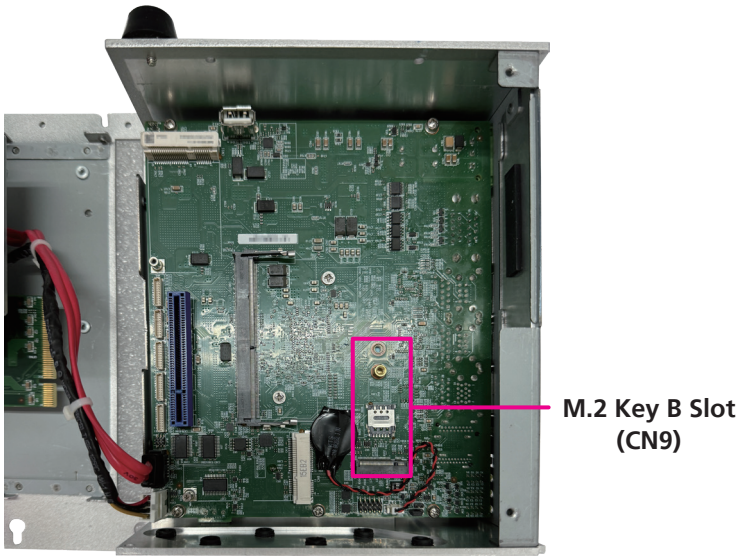


3. Push the module down and secure it with a screw.

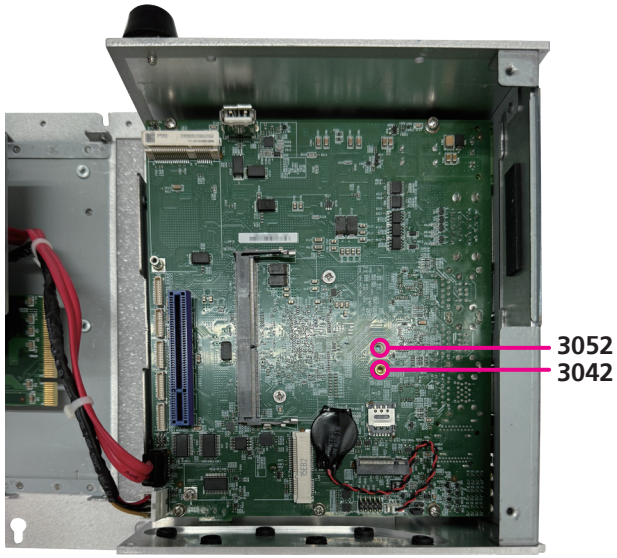


Installing an M.2 Key B Module

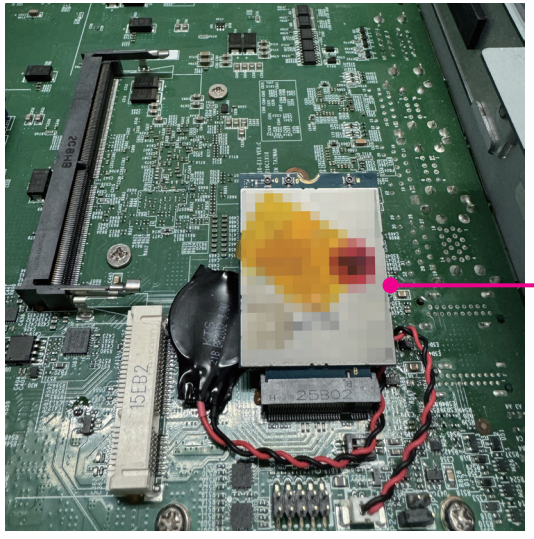
1. Remove the side cover, and locate the M.2 Key B (CN9) slot on the module.



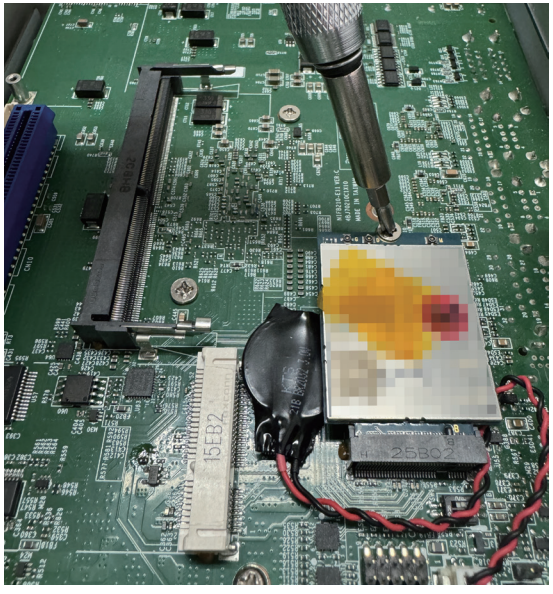
2. Secure the M.2 standoff into the appropriate mounting hole on the motherboard, matching its length with the M.2, using a screwdriver.



3. Insert the module into the M.2 slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.

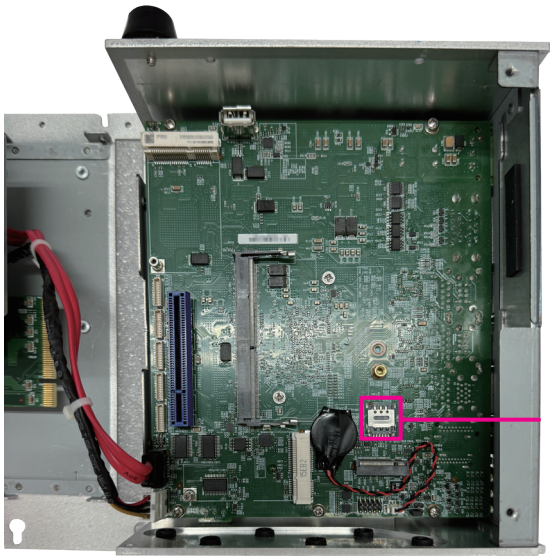


4. Fasten a screw into the M.2 standoff mounting hole to secure the module in place.

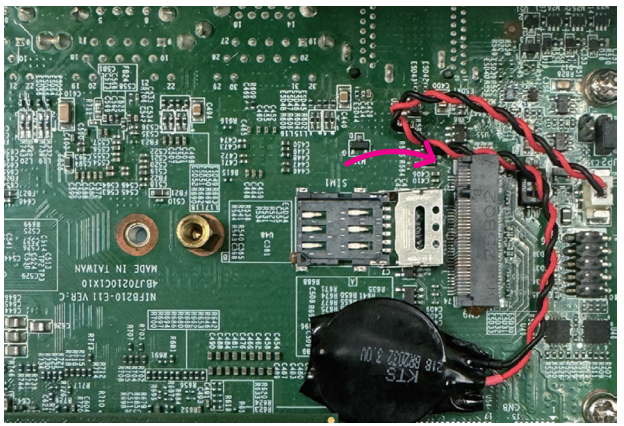


Installing a SIM Card

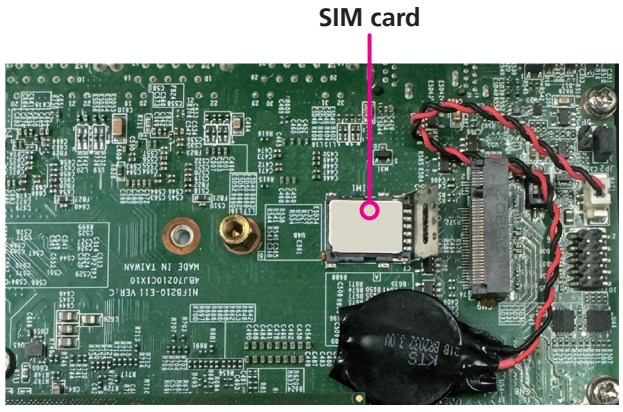
1. Remove the side cover, and locate the SIM card holder (SIM1) on the motherboard.



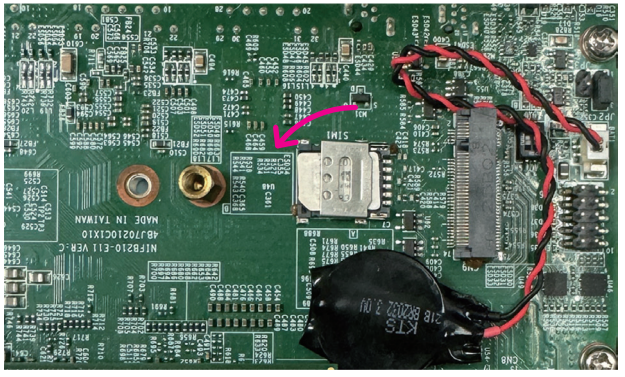
2. Flip up the SIM card holder cover.



3. Place the SIM card onto the holder.



4. Close the cover and secure it to the original position.

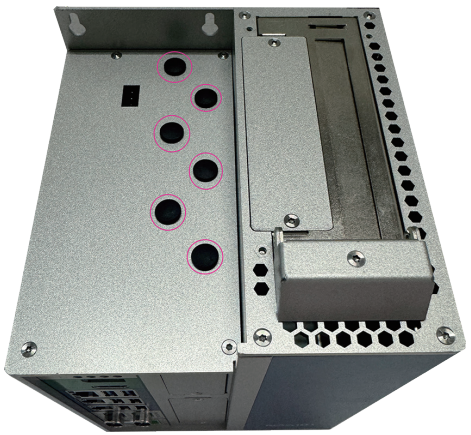


Installing an Antenna

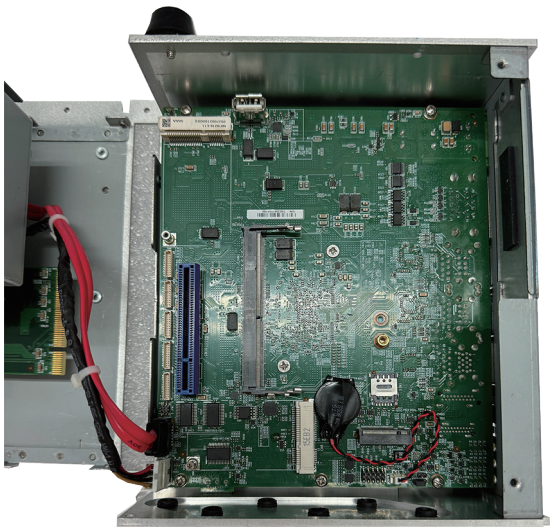
1. Remove the antenna hole covers located on the top side of the NIFE 210 system.

NIFE 210-E01/E02

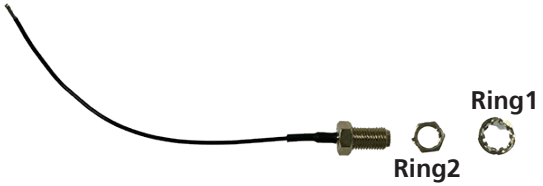
NIFE 210-E11/E12



2. Remove the side cover of the chassis, and follow the instructions for NIFE 210-E01/E02 or NIFE 210-E11/E12 accordingly.

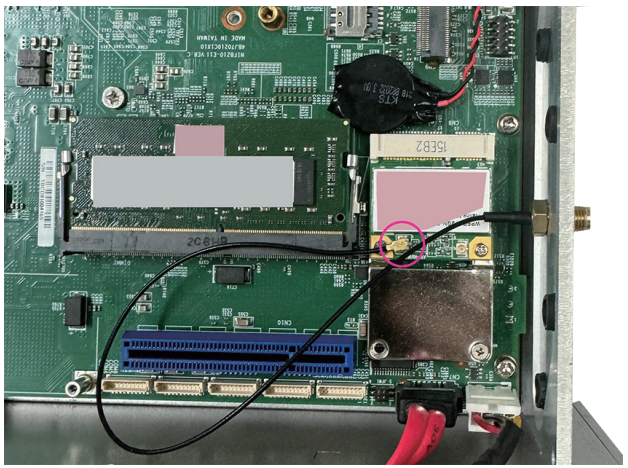


3. Separate the 2 rings (ring 1 and ring 2) from the antenna jack.



4. Insert the antenna jack through the antenna hole, and then install Ring 1 and Ring 2 onto the antenna jack, respectively.

5. Attach the antenna cable end to the module.

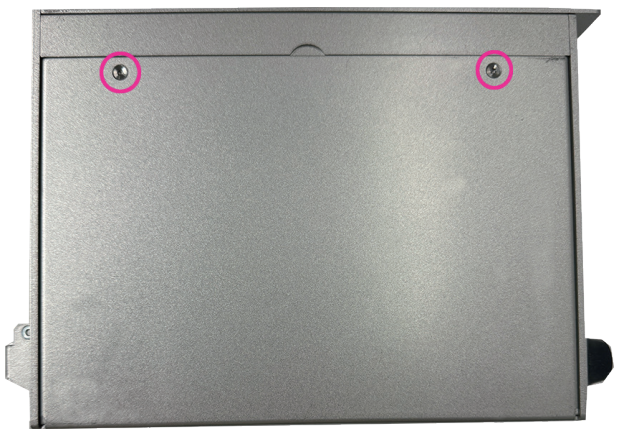


Installing a PCIe Card

This section is only available for the NIFE 210-E11/E12.

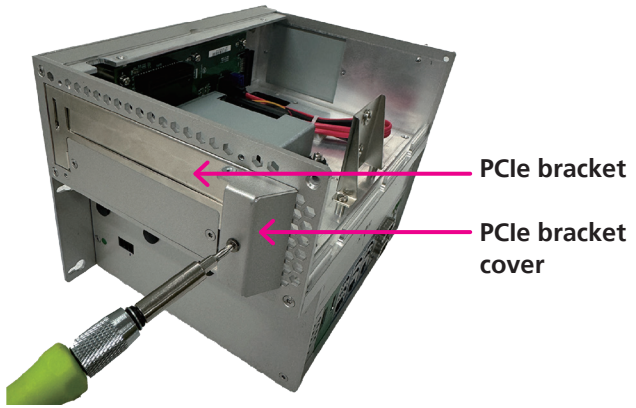
Before you install the PCI/PCIe card, please make sure that the card has isolation.

1. Remove the side cover by loosening the six screws indicated in the images below and on the right side.

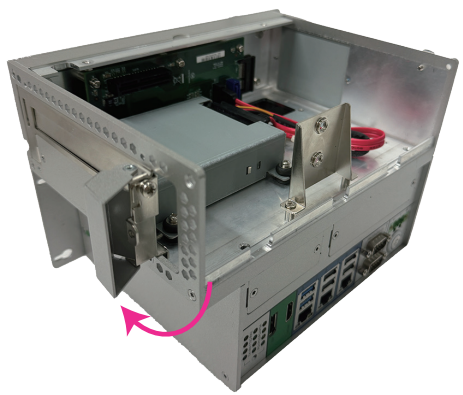


2. Open the side cover.

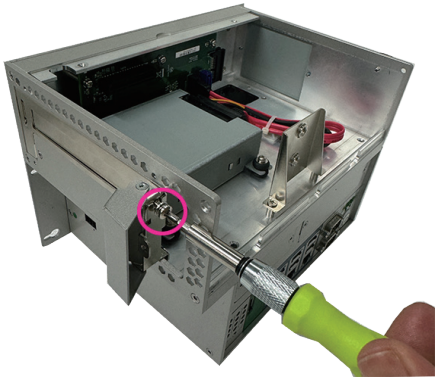
3. Locate and remove the screw on the PCIe bracket cover.



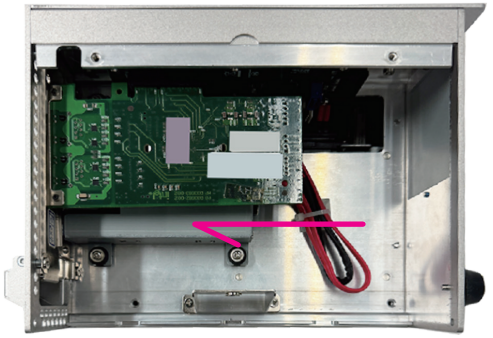
4. Lift the bracket cover.



5. Remove the screw that is locked on the PCIe bracket.

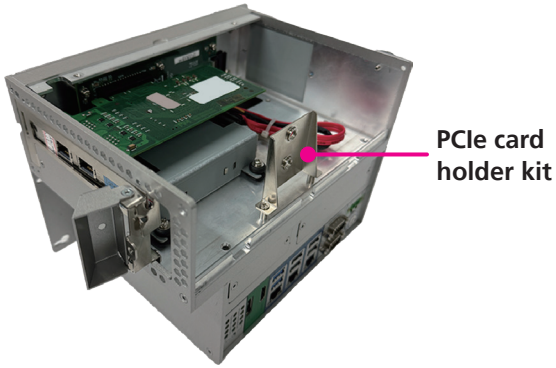


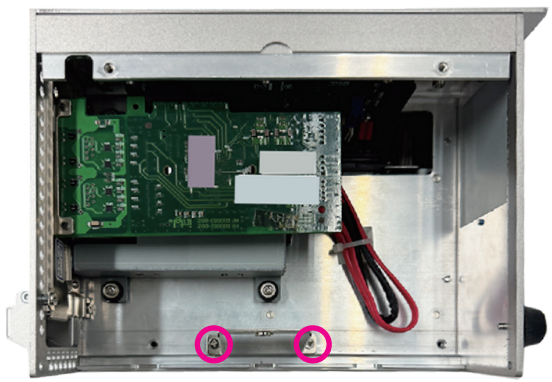
6. Install the PCIe card into the slot.



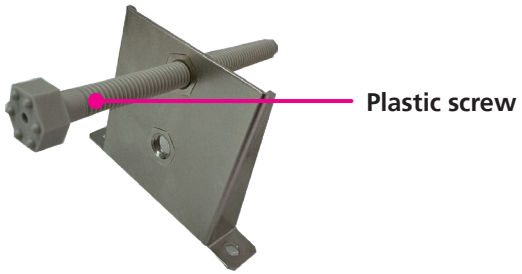
7. Use the screw removed in step 5 to secure the PCIe card.

8. Remove two screws and the PCIe card holder kit.

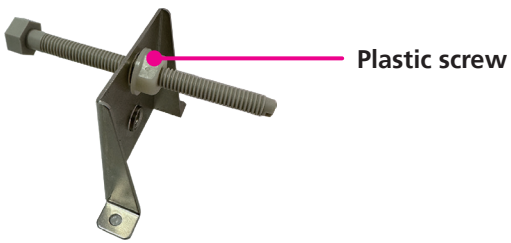




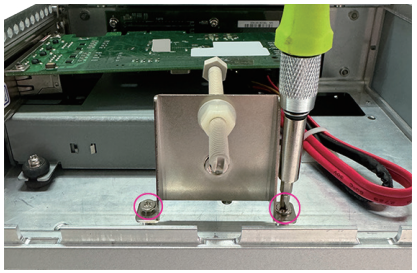
9. Install the plastic screw into the PCIe card holder kit.



10. Install the plastic nut into the PCIe card holder kit.

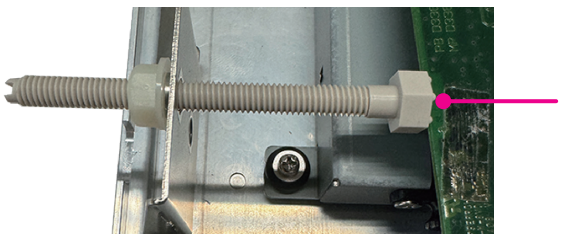


11. Secure the PCIe card holder kit with screws to fix the PCIe card.

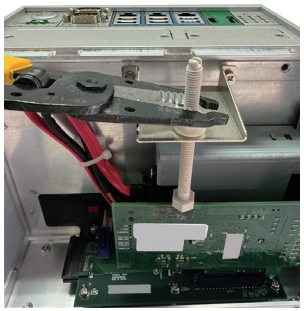


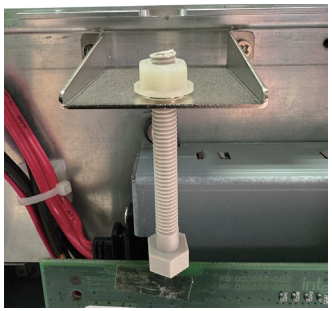
12. Install the plastic screw until it touches the edge of the PCIe card and fix the plastic nut. Check if the plastic screw is fixed correctly to the edge of the PCIe card. There should be three positioning dots on each side.

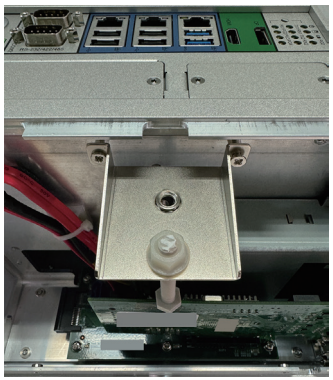
Do not squeeze or apply too much force down on the PCIe card since the purpose of having the plastic screw is to help position the PCIe card.



13. Cut off the extra length of the plastic screw. The cutting position should be the same height as the edge of the plastic nut.







14. Do a final check to ensure the PCIe card has been firmly in place and not installed crooked.

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the NIFE 210 Series. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXAIOT website at www.nexaiot.com

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure items such as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

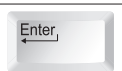
- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup.

Press the 

key to enter Setup:

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press 

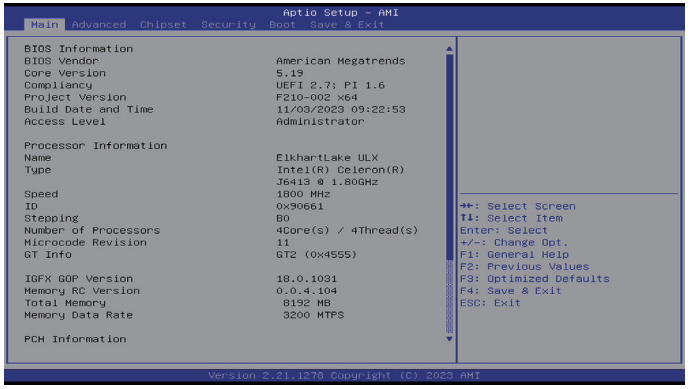
.

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



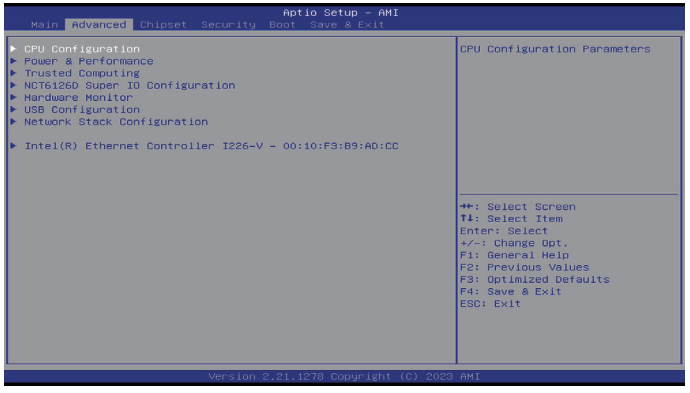
System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

Advanced

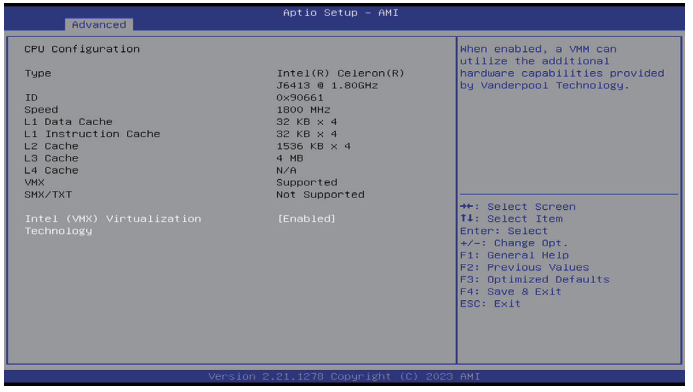
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to configure the CPU.

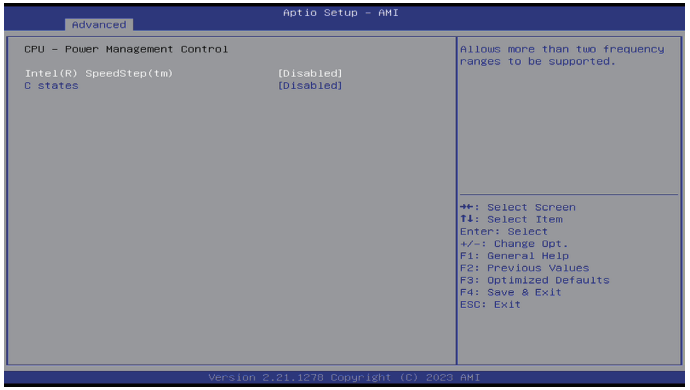


Intel® (VMX) Virtualization Technology

Enables or disables Intel® Virtualization technology. When enabled, a VMM can utilize the additional hardware capabilities provided y Vanderpool Technology.

Power & Performance

This section is used to configure the serial ports.



Intel SpeedStep

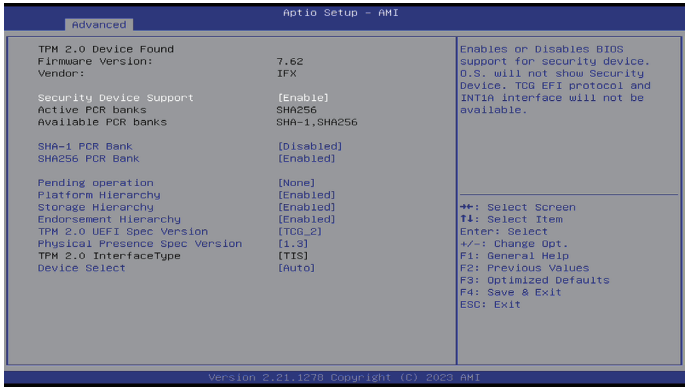
Allows more than two frequency ranges to be supported.

C states

Enables or disables CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

Trusted Computing

This section is used to configure the Trusted Computing settings.



Firmware Version
Shows firmware version

Vendor
Shows vendor name

Security Device Support
Enables or disables BIOS support for Security Device.

SHA-1 PCR Bank
Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank
Enables or disables SHA256 PCR Bank.

Pending Operation
Schedules an operation for the Security Device. Note your computer you reboot during restart in order to change state of Security Device.

Platform Hierarchy
Enables or disables Platform Hierarchy.

Storage Hierarchy
Enables or disables Storage Hierachy.

Endorsement Hierarchy
Enables or disables Endorsement Hierarchy.

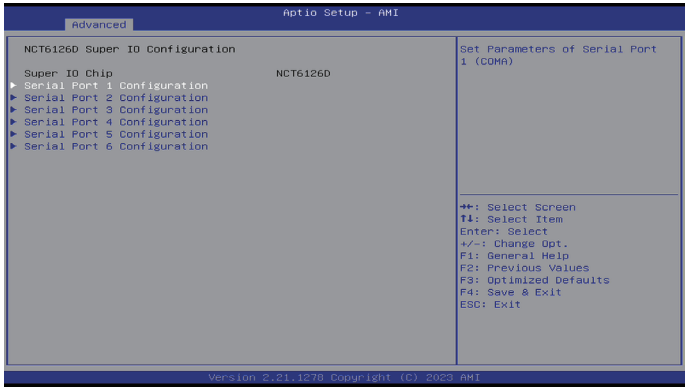
TPM 2.0 UEFI Spec Version
Selects the TCG2 spec version support
TCG_1_2: the compatible mode for Win8/Win10.
TCG_2: Support new TCG2 protocol and event format for Win10 or later.

Physical Present Spec Version
Selects to tell OS to support PPI spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

Device Select
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0 devices with the default set to TPM 2.0 devices if not found, and TPM 1.2 devices will be enumerated.

NCT6126D Super IO Configuration

This section is used to configure the serial ports.

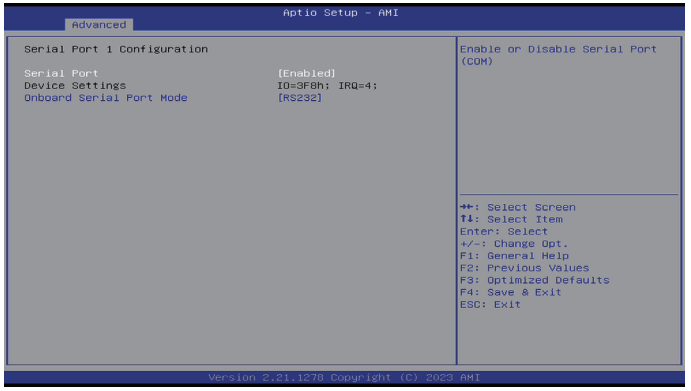


Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

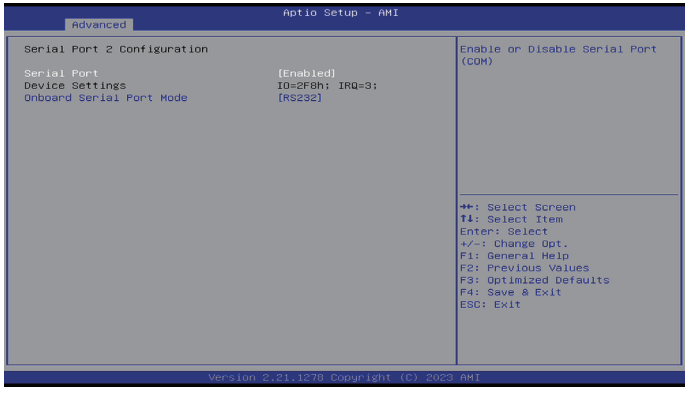
Enables or disables the serial port.

Onboard Serial Port Mode

Selects this to change the serial port mode to RS232, RS422, RS485, or RS485 Auto.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

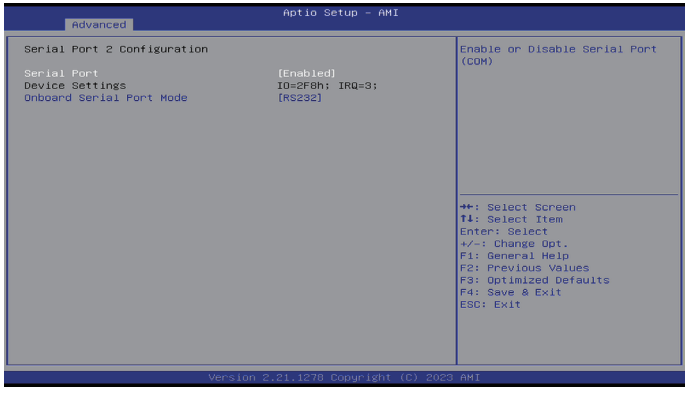
Enables or disables the serial port.

Onboard Serial Port Mode

Selects this to change the serial port mode to RS232, RS422, RS485, or RS485 Auto.

Serial Ports 3 to 6 Configuration

This section is used to configure serial ports 3 to 6.

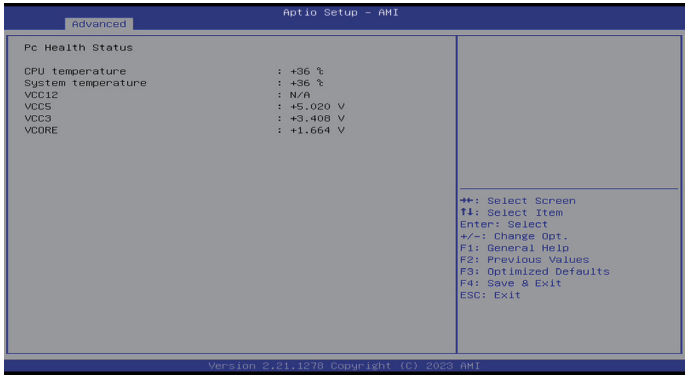


Serial Port

Enables or disables the serial port.

Hardware Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature
Detects and displays the current CPU temperature.

System Temperature
Detects and displays the current system temperature.

VCC12
Detects and displays 12V voltage.

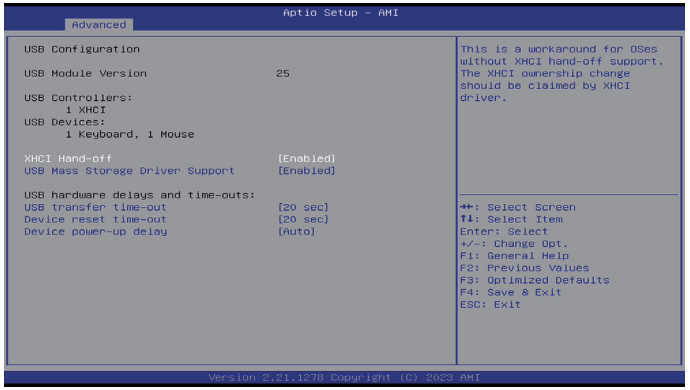
VCC5
Detects and displays 5V voltage.

VCC3
Detects and displays 3.3V voltage.

VCore
Detects and displays the Vcore CPU voltage.

USB Configuration

This section is used to configure the USB.



XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

USB Transfer Time-out

The time-out value for control, bulk, and interrupt transfers.

Device Reset Time-out

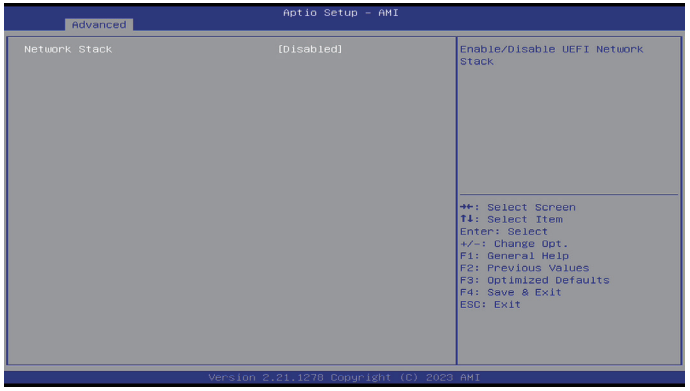
USB mass storage device start unit command time-out.

Device Power-up Delay

Maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Network Stack Configuration

This section is used to configure the network stack settings.



Network Stack

Enables or disables Network Stack function.

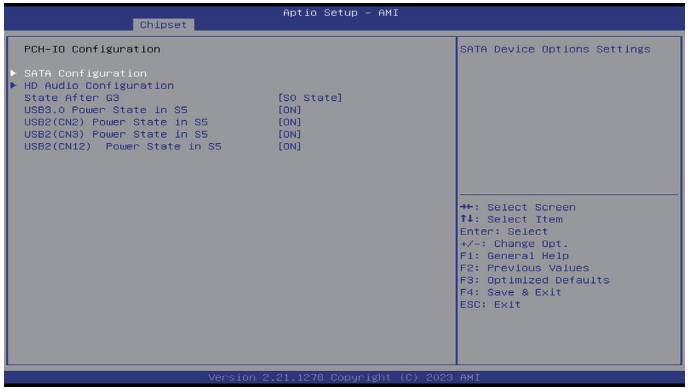
Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.

PCH-IO Configuration
Enters the PCH-IO Configuration submenu.

PCH-IO Configuration

This section is used to configure the network stack settings.



SATA Configuration
Enters the SATA Configuration submenu.

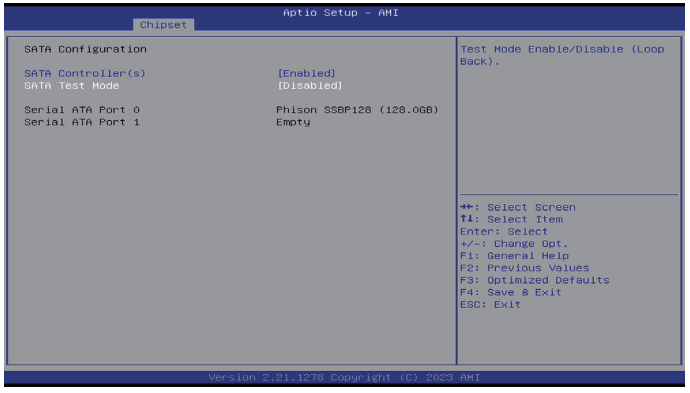
HD Audio Configuration
Enters the HD Audio Configuration submenu.

State After G3
Configures the power state when power is re-applied after a power failure (G3 state).

USB3.0 Power State in S5 / USB2(CN2) Power State in S5 / USB2(CN3) Power State in S5 / USB2(CN12) Power State in S5
Selects USB power state in S5.

SATA Configuration

This section is used to configure the network stack settings.



SATA Controller(s)

Enables or disables SATA device.

SATA Test Mode

Enables or disables SATA test mode.

Serial ATA Port 0

Enables or disables SATA port 1.

Serial ATA Port 1

Enables or disables the M.2 slot.

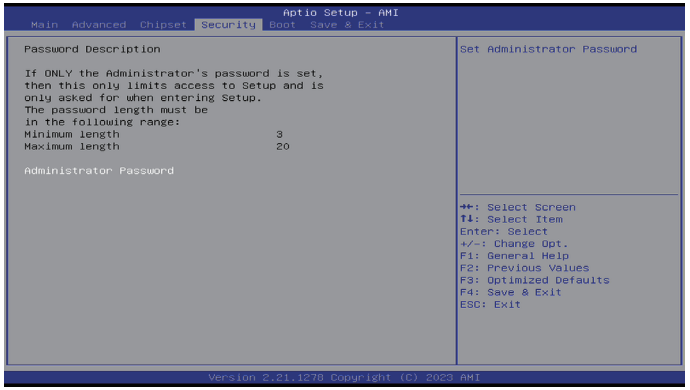
HD Audio Configuration

This section is used to configure HD audio settings.

HD Audio

Control detection of the HD-Audio device.
Disable = HDA will be unconditionally disabled
Enabled = HDA will be unconditionally enabled.

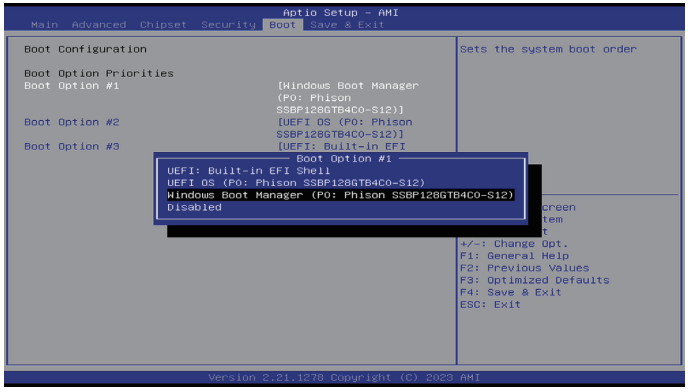
Security



Administrator Password

Select this to reconfigure the administrator's password.

Boot



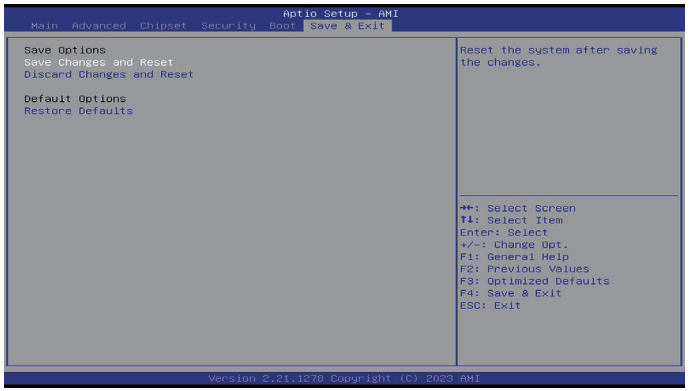
Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth. Each boot option provides four boot sources:

UEFI: Built-in EFI Shell
UEFI OS (P0: Phison SSBP128GTB4C0-S12)
Windows Boot Manager (P0: SSBP128GTB4C0-S12)
Disabled

The screen will display the device you have connected. The model shown in the image above is an example for reference.

Save & Exit



Save Changes and Reset
To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset
To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Default Option
To restore the BIOS to user default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecing Yes.

Restore Defaults
To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Appendix A: Power Consumption

Power Consumption Management

Purpose
The purpose of the power consumption test is to verify the power dissipation of system, and the loading of power supply.

Test Equipment
PROVA CM-07 AC/DC CLAMP METER

Device Under Test
DUT: sys#1/

Test Procedure
1. Power up the DUT, boot into Windows 7 x32 Professional.
2. Entering standby mode (HDD power down).
3. Measure the power consumption and record it.
4. Run Burn-in test program to apply 100% full loading.
5. Measure the power consumption and record it.

Test Data

BIOS Mode Power Consumption		Total (W)
Voltage (V)	Current (A)	
24 V	0.759 A	18.22 W
ACPI Sleep Mode Power Consumption		
24 V	0.187 (Without USB load)	4.49 W
100% Full Loading Mode Power Consumption		
24 V	1.806 A	43.34 W

Appendix B: GPI/O Programming Guide

GPI/O (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPI/O pins in the NIFE 210 series. The pin definition is shown in the following table:

First Set A30h to 0x03

Pin No.	GPI/O Mode	PowerOn Default	Address	Pin No.	GPI/O Mode	Address
1	VCC	-	-	2	GND	-
3	GPO0	Low	A32h (Bit4)	4	GPI0	A32h (Bit0)
5	GPO1	Low	A32h (Bit5)	6	GPI1	A32h (Bit1)
7	GPO2	Low	A32h (Bit6)	8	GPI2	A32h (Bit2)
9	GPO3	Low	A32h (Bit7)	10	GPI3	A32h (Bit3)

CN6-GPI/O Connector

First Set A30h to 0x08

Pin No.	GPI/O Mode	PowerOn Default	Address
A4	GPO	High	A32h (Bit5)
A3	GPO	High	A32h (Bit6)
A1	GPO	High	A32h (Bit7)

LED1-GPO LED

First Set A30h to 0x06

Pin No.	GPI/O Mode	PowerOn Default	Address
A2	GPO	High	A32h (Bit3)

LED2-GPO LED

First Set A30h to 0x06

Pin No.	GPI/O Mode	PowerOn Default	Address
A1	GPO	High	A32h (Bit4)

LED3-GPO LED

The bit is Set/Clear indicated output High/Low.

Appendix C: Watchdog Timer Setting

NCT6126D WatchDog Programming Guide

```
#define SUPERIO_PORT 0x2E
#define WDT_SET 0xF0
#define WDT_VALUE 0xF1

void main(void)
{
    #Enter SuperIO Configuration
      outportb(SUPERIO_PORT, 0x87);
      outportb(SUPERIO_PORT, 0x87);

    # Set LDN
      outportb(SUPERIO_PORT, 0x07);
      outportb(SUPERIO_PORT+1 ,0x08);

    # Set WDT setting
      outportb(SUPERIO_PORT, WDT_SET);
      outportb(SUPERIO_PORT+1, 0x00);      # Use the second
                                           # Use the minute, change value to 0x08

    # Set WDT sec/min
      outportb(SUPERIO_PORT, WDT_VALUE);
      outportb(SUPERIO_PORT+1, 0x05);      #Set 5 seconds
}
```

Appendix D: LED Programming Guide

LEDs are provided for custom system design. This appendix provides definitions and its default setting for the LEDs in the NIFE 210. The LED definition is shown in the following table:

Pin	PowerOn Default	Address
GPO-PR0	High	A07h (Bit5)
GPO-PR1	High	A07h (Bit4)
GPO-PR2	High	A07h (Bit3)
GPO-PR3	High	A07h (Bit2)
GPO-PR4	High	A07h (Bit6)

Control the GPO (PR0/PR1/PR2/PR3/PR4) level from I/O port A07h bit (5/4/3/2/6).
The bit is Set/Clear indicated output High/Low.