



**NEXCOM International Co., Ltd.**

**IoT Automation Solutions Business Group**

**PC-based Factory Automation System**

**NIFE 104/104M**

User Manual

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# PREFACE

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## Acknowledgements

NIFE 104 and NIFE 104M are trademarks of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

## 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



### **NEXCOM RoHS Environmental Policy and Status Update**

NEXCOM 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, NEXCOM 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 NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM 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 NEXCOM 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 NEXCOM naming convention.

## Warranty and RMA

### NEXCOM Warranty Period

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

### NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the “NEXCOM 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 “NEXCOM 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, NEXCOM 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 NEXCOM 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

NEXCOM 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: NEXCOM 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 NEXCOM 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, NEXCOM will return it to the customer without any charge.

#### Board Level

- Component fee: NEXCOM 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, NEXCOM 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.

## 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.

## 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 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. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. 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.
15. Do not place heavy objects on the equipment.
16. 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.
17. **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 NEXCOM products, visit NEXCOM's website at [www.nexcom.com](http://www.nexcom.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.



**Safety Warning:** This equipment is intended for installation in a Restricted Access Location only.

## Global Service Contact Information

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## Package Contents

Before continuing, verify that the NIFE 104 series package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Description	Qty
1	60111A0614X00	Outside Carton for NIFE 104 VER:A YIGIA	1
2	60111A0615X00	Inner Carton for NIFE 104 VER:A YIGIA	1
3	6013301147X00	EPE for NIFE 104 VER:A SENTENEL	2
4	19J70010400X0 or 19J70010401X0	NIFE 104 ASSY or NIFE 104M ASSY	1
5	6012200052X00	PE Zipper Bag #8	1
6	5040450045X00	AL DIN Rail Clip for NIFE 200 VER:A SHYUNG SHUHN	1
7	6012200053X00	PE Zipper Bag #3	2
8	50311F0095X00	Flat Head Screw LONG FEI:F6#32Tx5 Nylok NIGP	4
9	50311F0330X00	Round Head Screw LONG FEI:P2x3 ISO+Nylon	2
10	50311F0213X00	Flat Head Screw LONG FEI:F3x4ISO+Nylok NIGP	3
11	4NCPF00309X00	Terminal Blocks 3P Phoenix Contact:1827716	1
12	4NCPF01012X00	Terminal Blocks 10P Phoenix Contact:1821177	1
13	60177A0676X00	NIFE 104 Quick Reference Guide VER:A SIZE:A4	1
14	602DCD1593X00	NIFE 104 DVD Driver VER:1.0	1

## Ordering Information

The following information below provides ordering information for the NIFE 104 series

### **NIFE 104 (P/N: 10J70010400X0)**

Intel Atom® E3826 (Bay Trail) Factory Automation Fanless System in palm size with 2G memory and 16G eMMC onboard

### **NIFE 104M (P/N: 10J70010401X0)**

Intel® Celeron® J1900 (Bay Trail) Factory Automation Fanless System in palm size with 4G memory onboard (no eMMC)

- **24V, 60W AC/DC power adapter w/o power cord  
(P/N: 7440060001X00)**

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



Top View



Bottom View

## Key Features

- Palm size form factor design
- Onboard Intel Atom® E3826 processor with 2GB DDR3L RAM (NIFE 104)
- Onboard Intel® Celeron® J1900 processor with 4GB DDR3L RAM (NIFE 104M)
- 2 x Intel® I211 GbE LAN ports; support WoL and PXE
- 1 x RS232/485 with auto flow control
- Support +24VDC input  $\pm 20\%$
- TPM 2.0 onboard

## Hardware Specifications

### CPU Support

- NIFE 104: On-board Intel Atom® processor E3826, Dual Core 1.46GHz
- NIFE 104M: On-board Intel® Celeron® processor J1900, Quad Core 2GHz

### Main Memory

- NIFE 104: On-board DDR3L 2GB (E3826)
- NIFE 104M: On-board DDR3L 4GB (J1900)

### Display Output

- HDMI

### I/O Interface - Front

- LED for power, battery, TX, RX, WWAN, WLAN, GPO1, GPO2
- 1 x RS-232/485 with auto flow control (support 2.5KV isolation protection)
- 2 x Intel® I211 GbE LAN controller (both jumbo frame: 9KB)
- 1 x USB 3.0 port (900mA per each)
- 1 x USB 2.0 port (500mA per each)

### I/O Interface - Top

- 1 x HDMI port
- 1 x System reset button
- 1 x 4-in/4-out 5V GPIO via 10-pin terminal block (5V/TTL type)

### Storage Device

- NIFE 104: On-board 16GB eMMC
- NIFE 104M: Optional mSATA module (no eMMC on-board)

### Expansion Options

- 1 x Full size mini-PCIe socket
  - NIFE 104: USB & PCIe signal
  - NIFE 104M: USB & mSATA signal
- 1 x Half size mini-PCIe socket for optional Wi-Fi/4G/3.5G/LTE modules (USB signal & PCIe signal)

### Power Requirements

- Power input: typical +24VDC  $\pm$ 20%
- 1 x Optional 24V, 60W power adapter

### Dimensions

- 56.5mm (W) x 100mm (D) x 130mm (H)

### Construction

- Aluminum and metal chassis with front access design

### Environment

- Operating temperature:
  - Ambient with air flow: -5~55°C for NIFE 104
  - Ambient with air flow: -5~50°C for NIFE 104M (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C~80°C
- Relative humidity: 10%~93% (non-condensing)
- Shock protection:
  - mSATA/eMMC: 50G, half sine, 11ms, IEC60068-27
- Vibration protection w/ mSATA or eMMC condition:
  - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
  - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6
- Altitude: Up to 2000m



## Certifications

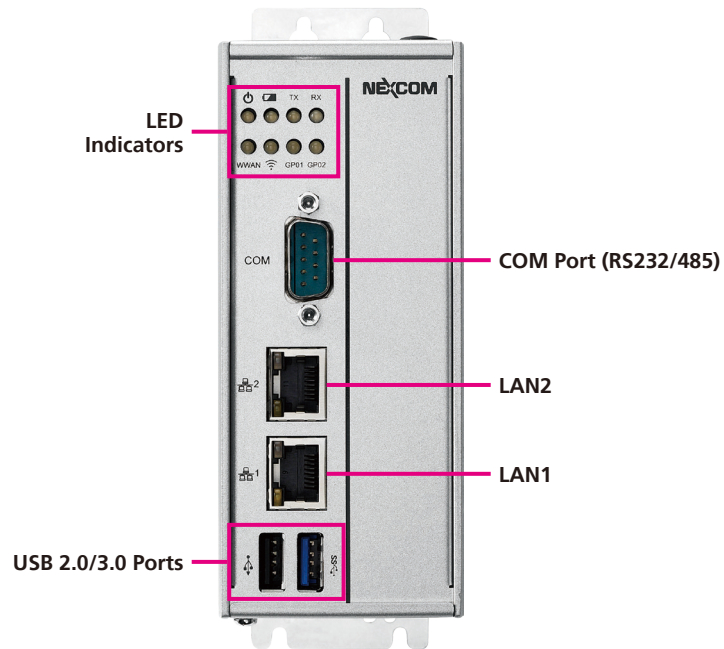
- CE Approval
  - EN61000-6-2
  - EN61000-6-4
- FCC Class A

## Support OS

- Windows 10 IoT Enterprise, 64-bit
- Windows Embedded Standard 7, 32-bit/64-bit
- Linux Kernel version 3.8.0
- Ubuntu 14.04

# Knowing Your NIFE 104 Series

## Front View



### LED Indicators

Indicates the power, battery, TX/RX, WWAN, WLAN and GPO activity of the system.

### COM Port

DB9 port used to connect RS232/485 compatible devices.

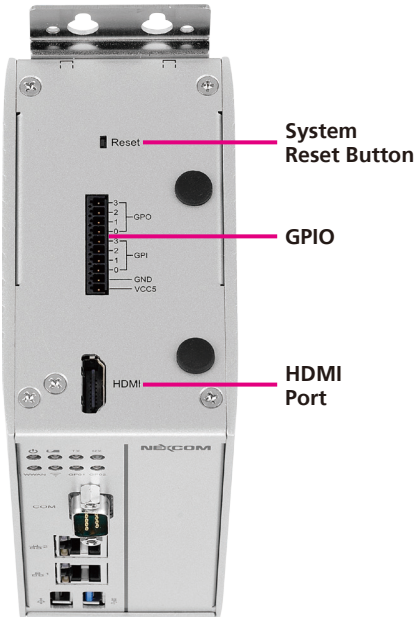
### LAN1 and LAN2 Ports

Two LAN ports used to connect the system to a local area network.

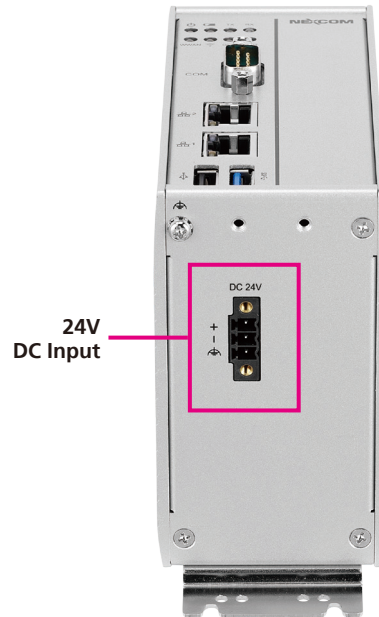
### USB 2.0/3.0 Ports

USB 2.0/3.0 ports to connect the system with USB devices.

### Top View



### Bottom View



### System Reset Button

Press to restart the system.

### GPIO

The GPIO connector supports 4 digital input and 4 digital output.

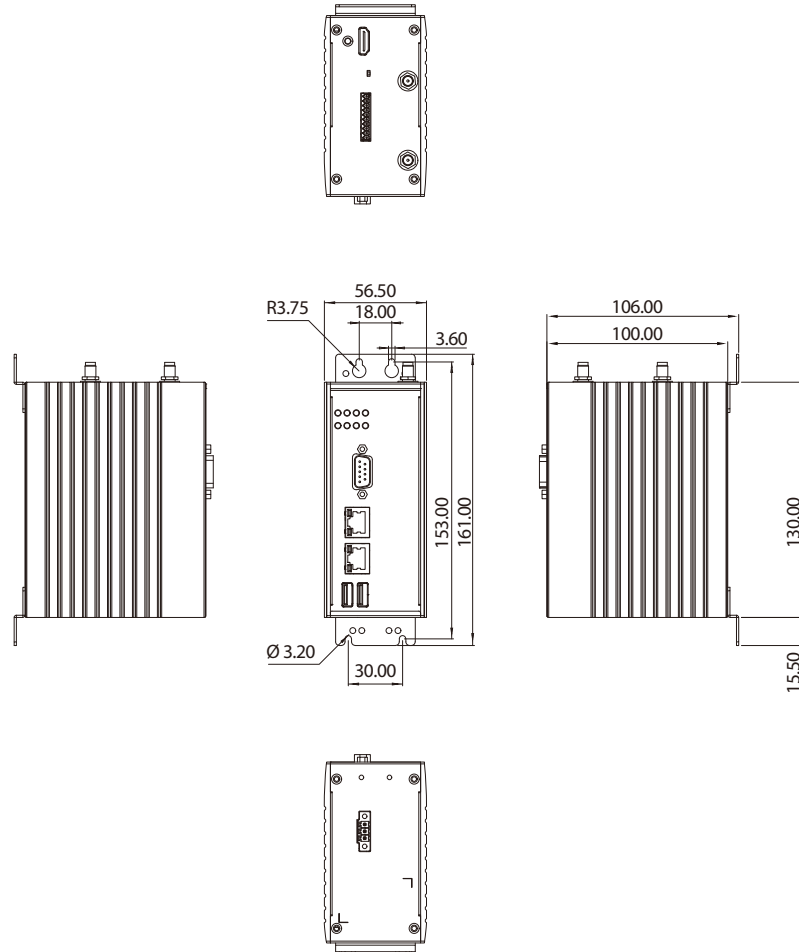
### HDMI Display port

Used to connect a high-definition display.

### 24V DC Input

Used to plug a DC power cord.

# Mechanical Dimensions



## CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NIFE 104 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:

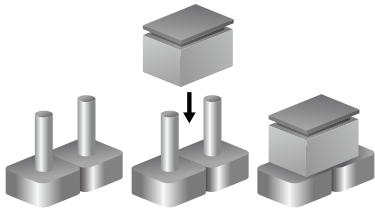
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal 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

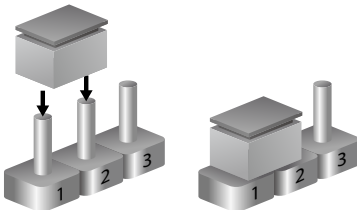
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

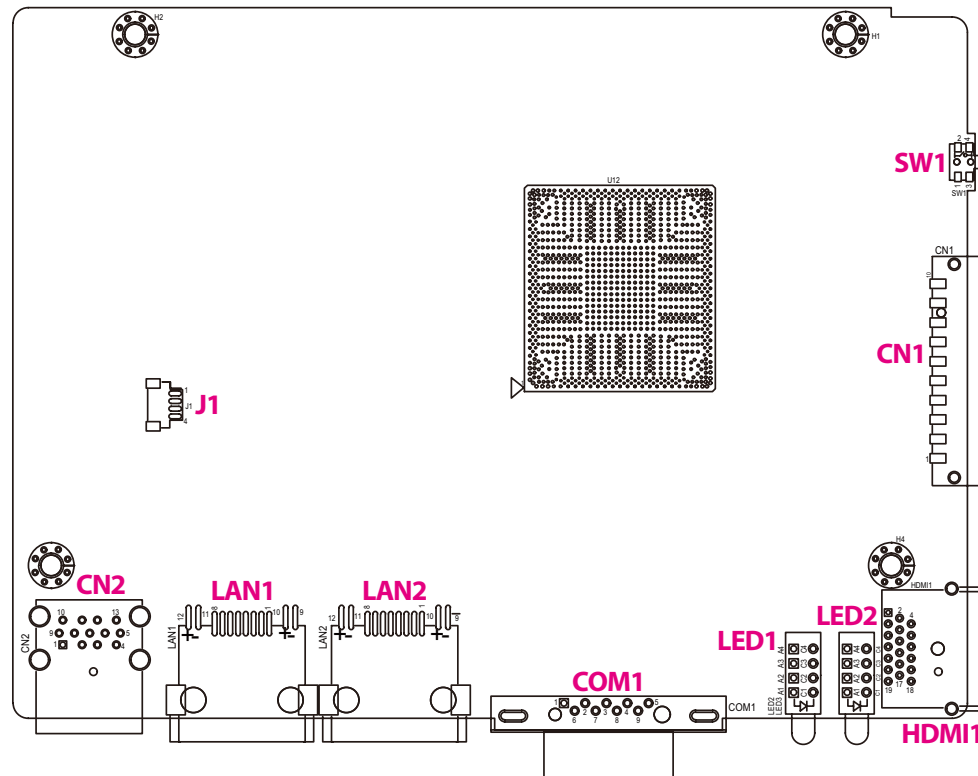


## NIFE 104/104M System Components

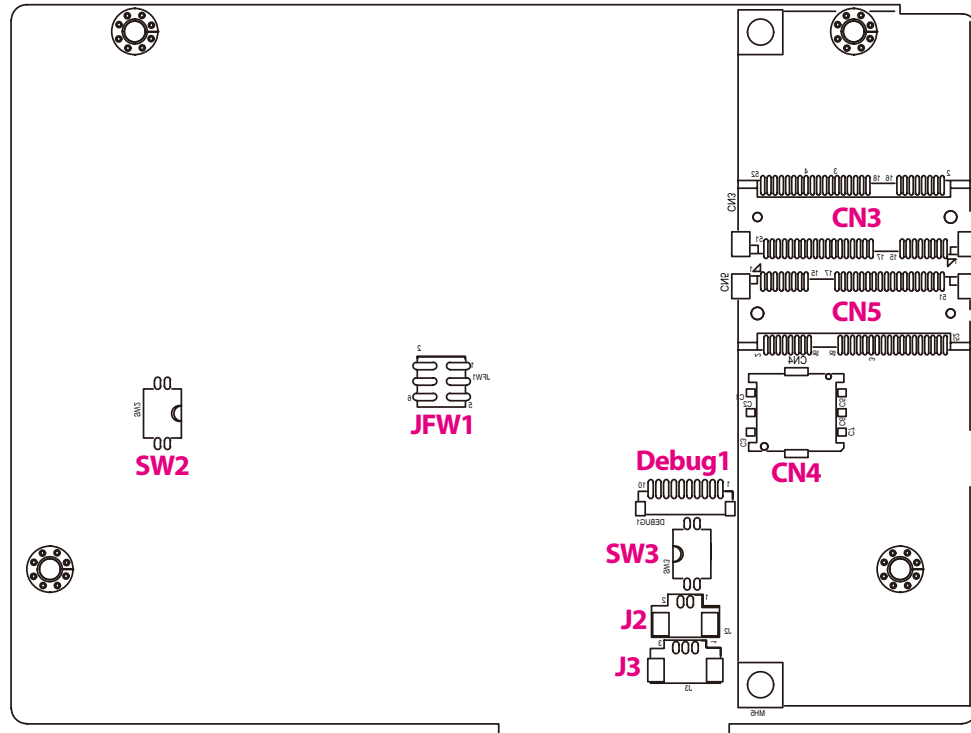
The NIFE 104/104M system is made up of a NIFB104 motherboard. This chapter lists the location and pinout assignment of the jumpers and connectors on each component.

### Locations of the DIP Switches and Connectors for NIFE 104/104M

Top View



### Bottom View





## Connector Pin Definitions for NIFB104

### DIP Switch

#### Power Type Select

Connector type: 2-pin On/Off DIP switch

Connector location: SW2



Pin	Definition
1	AT_ATX_SELECT
2	NC
3	GND
4	GND

#### Clear CMOS

Connector type: 2-pin On/Off DIP switch

Connector location: SW3



Pin	Definition
1	RTC_TEST#
2	SRTC_RST#
3	GND
4	GND

## External I/O Interfaces

### WWAN/WLAN/GPO LED Indicators

Connector location: LED1



Pin	Definition	Pin	Definition
A1	VCC3	C1	GPO_LED2
A2	VCC3	C2	GPO_LED1
A3	VCC3	C3	WLAN_LED
A4	VCC3	C4	WWAN_LED

### Power/Battery/TX/RX LED Indicators

Connector location: LED2

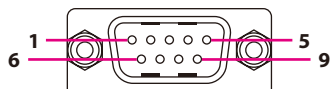


Pin	Definition	Pin	Definition
A1	VCC5	C1	LED_RXD
A2	VCC5	C2	LED_TXD
A3	3VSB	C3	BATTERY_LED
A4	VCC3	C4	PWR_LED

## COM1 Connector

Connector type: DB-9 port, 9-pin D-Sub

Connector location: COM1

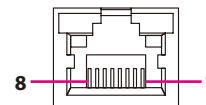


Pin	Definition	Pin	Definition
1	SP1_DCD	2	SP1_RXD
3	SP1_TXD	4	SP1_DTR
5	GND	6	SP1_DSR
7	SP1_RTS	8	SP1_CTS
9	SP1_RI		

## LAN1 Port

Connector type: RJ45 port with LEDs

Connector location: LAN1

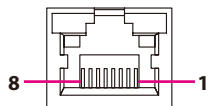


Pin	Definition	Pin	Definition
1	LANTXDP0	2	LANTXDN0
3	LANTXDP1	4	LANTXDP2
5	LANTXDN2	6	LANTXDN1
7	LANTXDP3	8	LANTXDN3
9	LAN_LED_ACT#	10	LAN1_ACTPW
11	LAN_LED_LINK1G#	12	LAN1_LINK

## LAN2 Port

Connector type: RJ45 port with LEDs

Connector location: LAN2

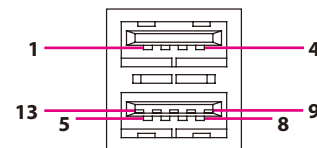


Pin	Definition	Pin	Definition
1	LAN2TXDP0	2	LAN2TXDN0
3	LAN2TXDP1	4	LAN2TXDP2
5	LAN2TXDN2	6	LAN2TXDN1
7	LAN2TXDP3	8	LAN2TXDN3
9	LAN2_LED_ACT#	10	LAN2_ACTPW
11	LAN2_LED_LINK1G#	12	LAN2_LINK

## USB 2.0 and USB 3.0 Port

Connector type: USB 2.0 and USB 3.0 port

Connector location: CN2

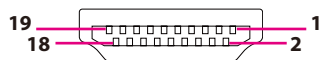


Pin	Definition	Pin	Definition
1	5VSB	2	SOC_USB0N
3	SOC_USB0P	4	GND
5	USB3_RX0_N_C	6	USB3_RX0_P_C
7	GND	8	USB3_TX0_N_C
9	USB3_TX0_P_C	10	5VSB
11	SOC_USB2N	12	SOC_USB2P
13	GND		

## HDMI

Connector type: HDMI port

Connector location: HDMI1

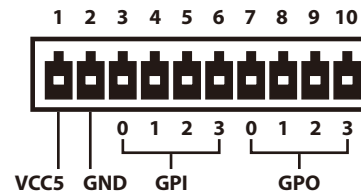


Pin	Definition	Pin	Definition
1	HDMI_DATA2_P_C	2	GND
3	HDMI_DATA2_N_C	4	HDMI_DATA1_P_C
5	GND	6	HDMI_DATA1_N_C
7	HDMI_DATA0_P_C	8	GND
9	HDMI_DATA0_N_C	10	HDMI_CLK_P_C
11	GND	12	HDMI_CLK_N_C
13	TP1	14	NA
15	HDMI_CTRL_CLK	16	HDMI_CTRL_DAT
17	GND	18	HDMI_PWR
19	HDMI_HPD_R		

## GPIO Connector

Connector type: 10-pin switch

Connector location: CN1



Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	ICH_GPI0_IN	4	ICH_GPI1_IN
5	ICH_GPI2_IN	6	ICH_GPI3_IN
7	ICH_GPO0_OUT	8	ICH_GPO1_OUT
9	ICH_GPO2_OUT	10	ICH_GPO3_OUT

## Reset Button

Connector location: SW1



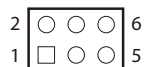
Pin	Definition	Pin	Definition
1	PM_RESET#_J	2	PM_RESET#_J
3	GND	4	GND

## Internal Connectors

### BIOS Flash Pin Header

Connector type: 2x3 6-pin header, 2.0mm pitch

Connector location: JFW1

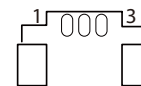


Pin	Definition	Pin	Definition
1	BIOS_SPI_CS#0	2	BIOS_SPI_SO
3	VSPI	4	GND
5	BIOS_SPI_SI	6	BIOS_SPI_CLK
7	BIOS_HOLD#	8	VSPI

### Power Button Connector

Connector type: 1x3 3-pin header

Connector location: J3



Pin	Definition
1	GND
2	EC_PWRBT#
3	S3_OUT

## Debug Port Connector

Connector type: 1x10 10-pin header, 1.0mm pitch

Connector location: Debug1

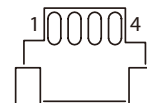


Pin	Definition	Pin	Definition
1	GND	2	PLTRST_3P3#
3	LPC_CLK1_Debug	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_ADO
9	LPC_SERIRQ	10	VCC3

## MCU F/W Connector

Connector type: 1x4 4-pin header, 1.0mm pitch

Connector location: J1



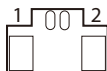
Pin	Definition	Pin	Definition
1	GND	2	SBW_TDIO
3	SBW_TCK	4	3VSB



## CMOS Battery Connector

Connector type: 1x2 2-pin header, 1.25mm pitch

Connector location: J2

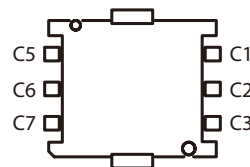


Pin	Definition
1	GND
2	VBAT_L

## Nano SIM Card Connector

Connector type: Nano SIM Card

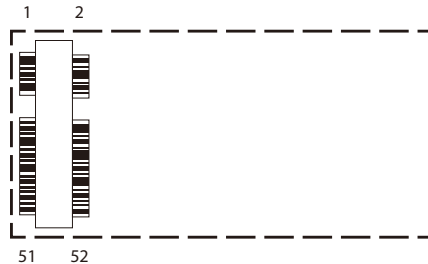
Connector location: CN4



Pin	Definition	Pin	Definition
C1	UIM2_PWR	C5	GND
C2	UIM2_RESET	C6	UIM2_VPP
C3	UIM2_CLK	C7	UIM2_DATA

## Mini-PCIe Connector

Connector location: CN5

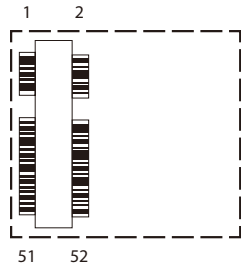


Pin	Definition	Pin	Definition
1	PCIE_WAKE#	2	3VSB
3	NC	4	GND
5	NC	6	V1P5S_2
7	MINI_3GCLKREQ3#	8	UIM2_PWR
9	GND	10	UIM2_DATA
11	PCIE_CLKN3_C	12	UIM2_CLK
13	PCIE_CLKP3_C	14	UIM2_RESET
15	GND	16	UIM2_VPP
17	NC	18	GND
19	NC	20	EC_MC509_DISABLE
21	GND	22	EC_MC509_RESET
23	PCIE_SATA_RXP1_C	24	3VSB
25	PCIE_SATA_RXN1_C	26	GND

Pin	Definition	Pin	Definition
27	GND	28	V1P5S_2
29	GND	30	SMB_CLK
31	PCIE_SATA_TXN1_C	32	SMB_DATA
33	PCIE_SATA_TXP1_C	34	GND
35	GND	36	MINI2USBN
37	GND	38	MINI2USBP
39	3VSB	40	GND
41	3VSB	42	WWLAN_LED
43	GND	44	NC
45	NC	46	NC
47	NC	48	V1P5S_2
49	NC	50	GND
51	NC	52	3VSB

## Mini-PCIe Connector (Half-Size)

Connector location: CN3



Pin	Definition	Pin	Definition
1	PCIE_WAKE#	2	3VSB
3	NC	4	GND
5	PCIE_CLKREQ2#	6	V1P5S_3
7	MINICARD1CLKREQ#	8	NC
9	GND	10	NC
11	PCIE_CLKN2_C	12	NC
13	PCIE_CLKP2_C	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	EC_WIFI_DISABLE
21	GND	22	MINI_PCIE_RESET
23	PCIE_SATA_RXP2_C	24	3VSB
25	PCIE_SATA_RXN2_C	26	GND

Pin	Definition	Pin	Definition
27	GND	28	V1P5S_3
29	GND	30	SMB_CLK
31	PCIE_SATA_TXN2_C	32	SMB_DATA
33	PCIE_SATA_TXP2_C	34	GND
35	GND	36	SOC_USB1N
37	GND	38	SOC_USB1P
39	3VSB	40	GND
41	3VSB	42	NC
43	GND	44	WLAN_LED
45	NC	46	WPAN_LED
47	NC	48	V1P5S_3
49	NC	50	GND
51	NC	52	3VSB

## CHAPTER 3: SYSTEM SETUP

### Removing the Chassis Cover



Prior to 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. Remove the screws on the top chassis.



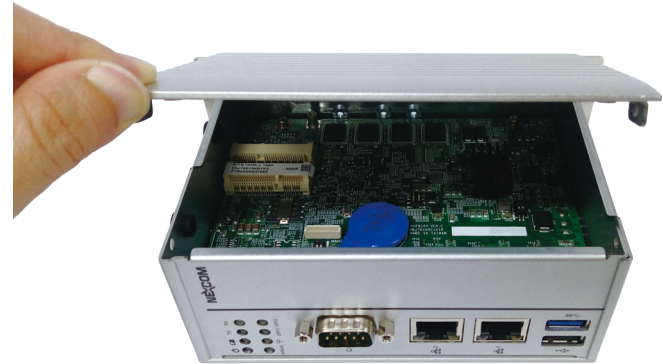
2. Remove the screws on the bottom chassis.



3. Remove the screws on the rear chassis.

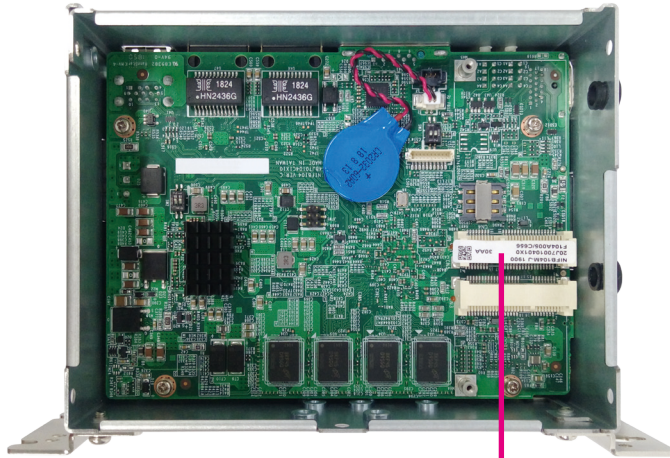


4. Gently lift up the cover.

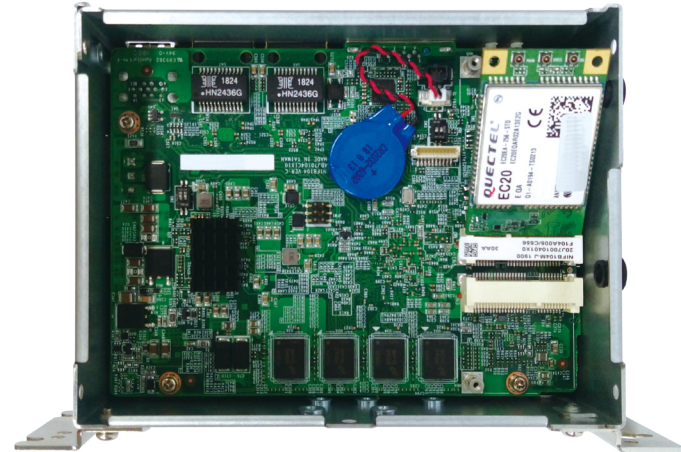


## Installing an mSATA/4G/3.5G/LTE Module

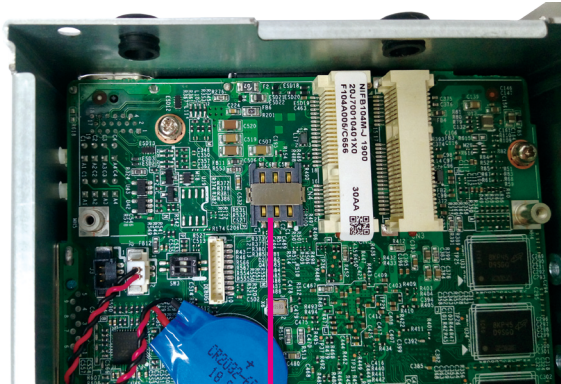
1. Locate the mini-PCIe slot for the mSATA, 4G/3.5G or LTE modules. The SIM card is located in the middle of the mini-PCIe slot.
2. Insert the 4G module into the mini-PCIe slot at 45 degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.



Mini-PCIe Slot



3. When installing a 4G/3.5G/LTE module, make sure to install the SIM card first.



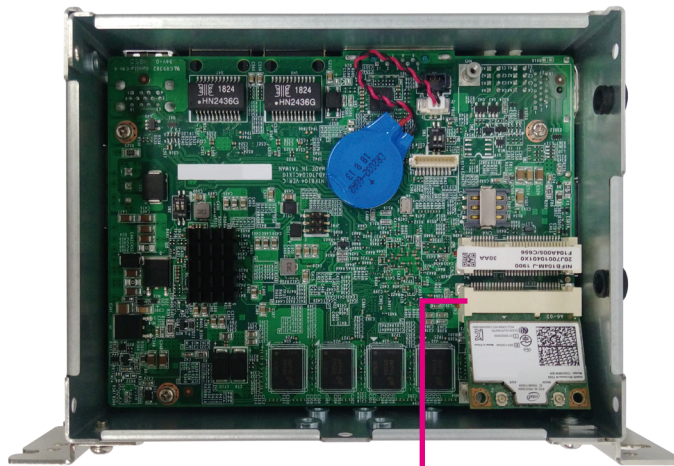
SIM Card Slot

4. Push the module down and secure it with a screw. Ensure the screw is fixed tightly to the slot.

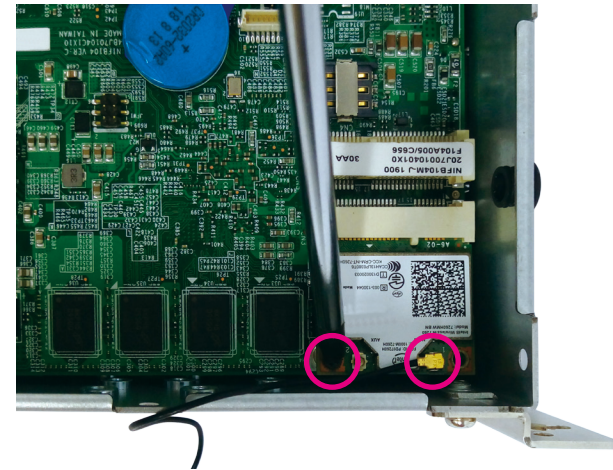


## Installing a Wi-Fi Module

1. Locate the half-size mini-PCIe slot on the board for the Wi-Fi module. Insert the Wi-Fi module into the slot at 45 degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.
2. Push the module down and secure it with a screw. Ensure the screw is fixed tightly to the slot. Then attach the RF cable to the RF connector on the module.



Half-Size  
Mini-PCIe Slot



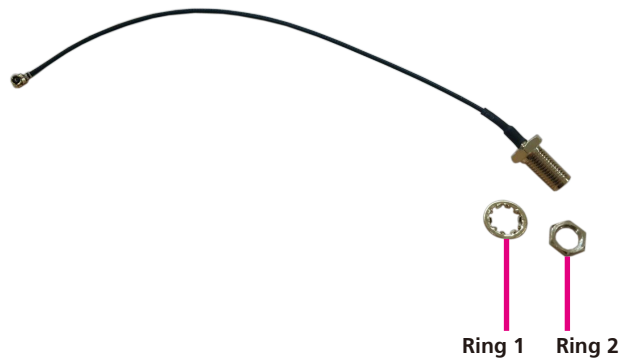


## Installing an Antenna

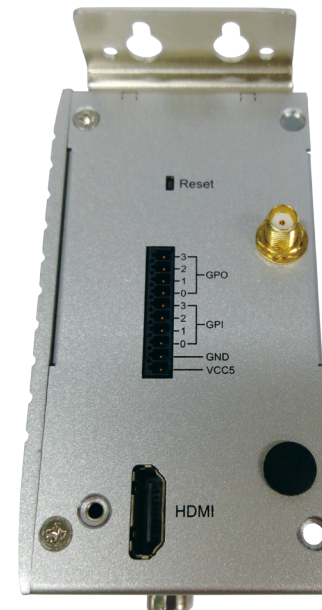


Before installing an antenna, make sure that the Wi-Fi/4G/3.5G/LTE module is installed into the slot first.

1. Prepare the antenna cable for the Wi-Fi/4G/3.5G/LTE module.



2. Locate the antenna hole on the front panel and insert the antenna jack through the antenna hole. Fix the antenna jack with ring 1 then ring 2.



3. Connect an external antenna to the antenna jack.



## How to Wall Mount the System

1. Install the wall mount bracket to the rear chassis and make sure the wall mount bracket screws are fasten tightly.
2. On a flat surface where the NIFE 104/104M will be installed, align the mounting holes on the wall mount bracket to the holes on the surface and tighten screws into the mounting holes to secure the system.



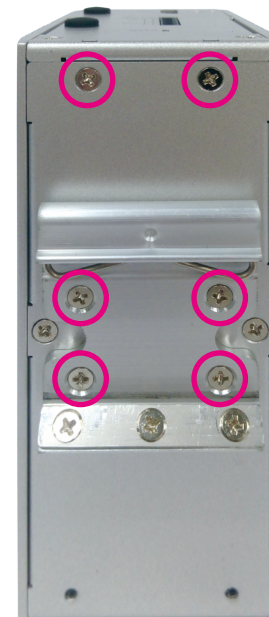
Screw Specifications:  
4 x round head screws, P3x6.

## How to Install a DIN Rail Kit (Optional)

1. Unscrew and remove the wall mount bracket on the rear chassis.



2. Install the DIN rail bracket on the rear of NIFE 104/104M with the screws properly tighten.

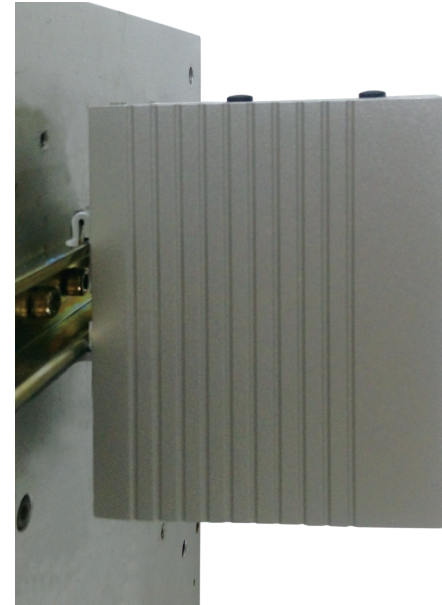


Screw Specifications:  
4 x F head screws, F6#32x6.

3. Install NIFE 104/104M on the DIN rail from top of the bracket and make sure the hook is properly connected with the DIN rail.



4. Push NIFE 104/104M back to connect the bracket with the DIN rail and complete installation.



## CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NIFE 104 and NIFE 104M. 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 NEXCOM website at [www.nexcom.com.tw](http://www.nexcom.com.tw).

### 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 such items 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 for NIFE 104

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  to accept or enter the submenu.

### Main

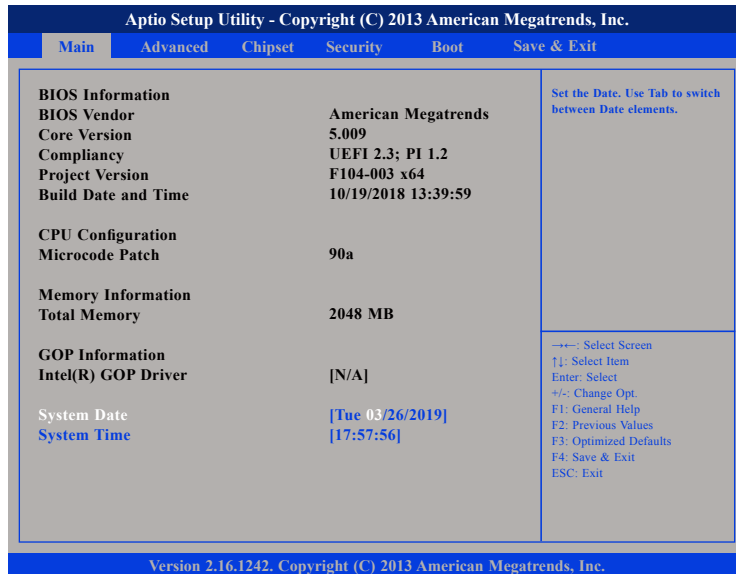
The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

### 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.

### System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.



The screenshot shows the Aptio Setup Utility Main menu. The title bar reads "Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc." The menu has tabs for Main, Advanced, Chipset, Security, Boot, and Save & Exit. The Main menu is selected, showing the following information:

BIOS Information		Set the Date. Use Tab to switch between Date elements.
BIOS Vendor	American Megatrends	
Core Version	5.009	
Compliance	UEFI 2.3; PI 1.2	
Project Version	F104-003 x64	
Build Date and Time	10/19/2018 13:39:59	
CPU Configuration		---: Select Screen [ ]: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Microcode Patch	90a	
Memory Information		
Total Memory	2048 MB	
GOP Information		
Intel(R) GOP Driver	[N/A]	
System Date	[Tue 03/26/2019]	
System Time	[17:57:56]	

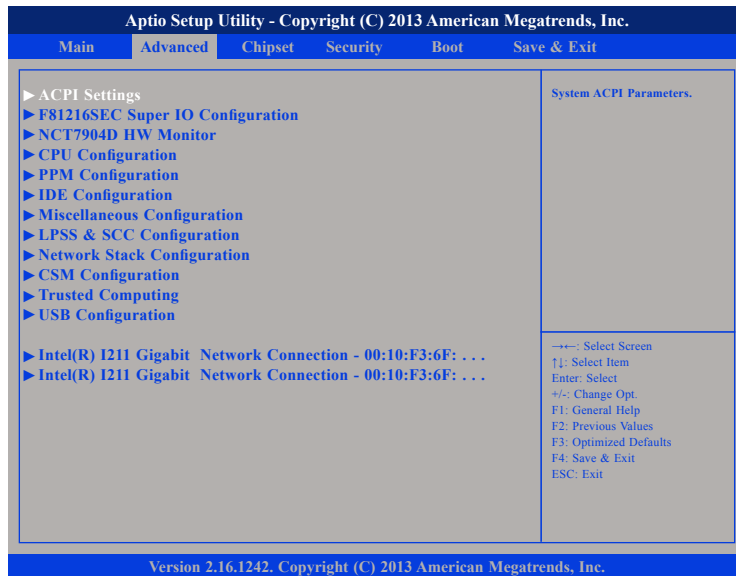
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

## 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.

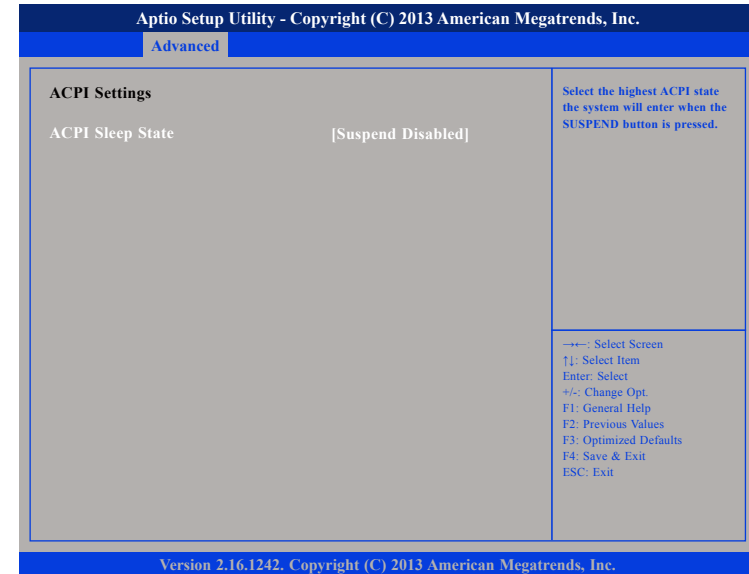


Setting incorrect field values may cause the system to malfunction.



## ACPI Settings

This section is used to configure ACPI Settings.

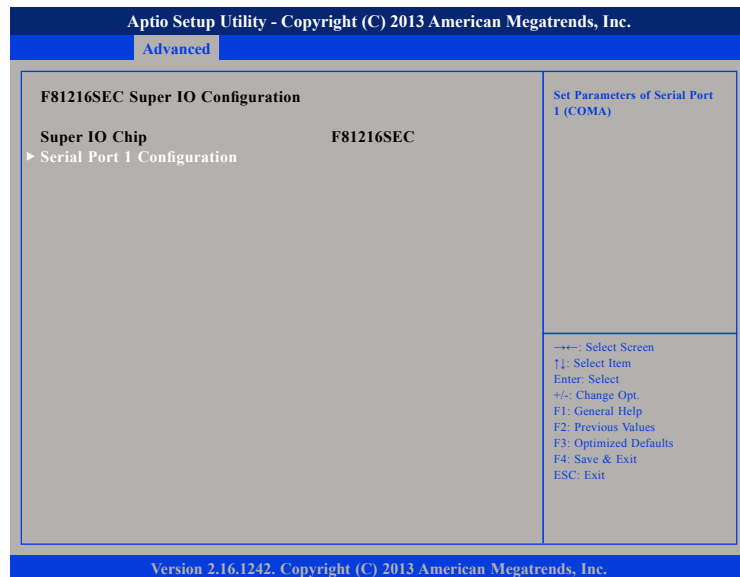


### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

## F81216SEC Super IO Configuration

This section is used to configure the serial port.



### 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

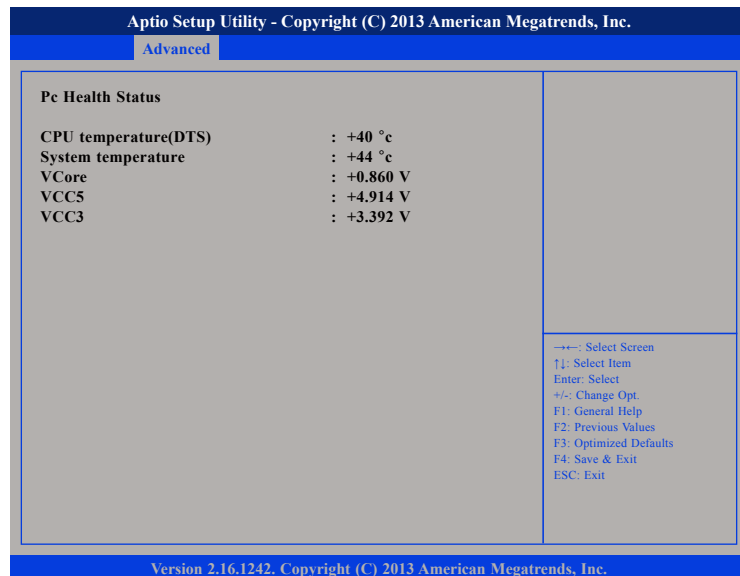
Enables or disables the serial port.

### RS485 AUTO

Configures the serial port operating mode. The options are RS232, RS485 and RS485 AUTO.

## NCT7904D HW Monitor

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



### VCC5

Detects and displays the 5V voltage.

### VCC3

Detects and displays the 3.3V voltage.

### CPU temperature(DTS)

Detects and displays the current CPU temperature.

### System temperature

Detects and displays the current system temperature.

### VCore

Detects and displays the Vcore CPU voltage.

## CPU Configuration

This section is used to configure the CPU.



### Active Processor Core

Select the number of cores to enable in each processor package.

### Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

### Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

### Intel® Virtualization Technology

Enables or disables Intel® Virtualization technology.

### Socket 0 CPU Information

This section displays the information of the CPU installed in Socket 0.

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Advanced

Socket 0 CPU Information	
Intel(R) Atom(TM) CPU E3826 @ 1.46GHz	
CPU Signature	30679
Microcode Patch	90a
Max CPU Speed	1460 MHz
Min CPU Speed	533 MHz
Processor Cores	2
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
L1 Data Cache	24 kB x 2
L1 Code Cache	32 kB x 2
L2 Cache	1024 kB x 1
L3 Cache	Not Present

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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### PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.

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Advanced

PPM Configuration	
EIST	[Disabled]

Enable/Disable Intel SpeedStep

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

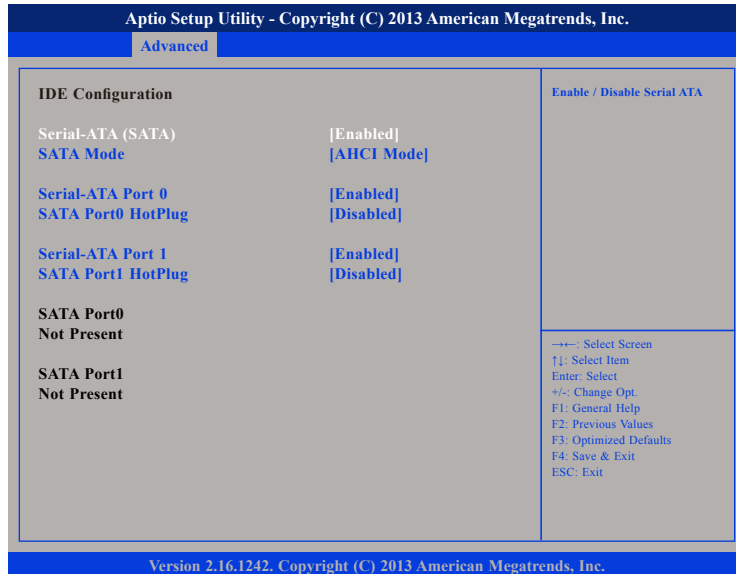
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

#### EIST

Enables or disables Intel® SpeedStep.

## IDE Configuration

This section is used to configure the SATA drives.



### Serial-ATA (SATA)

Enables or disables SATA device.

### SATA Mode

Configures the SATA as IDE or AHCI mode.

### Serial-ATA Port 0 and Serial-ATA Port 1

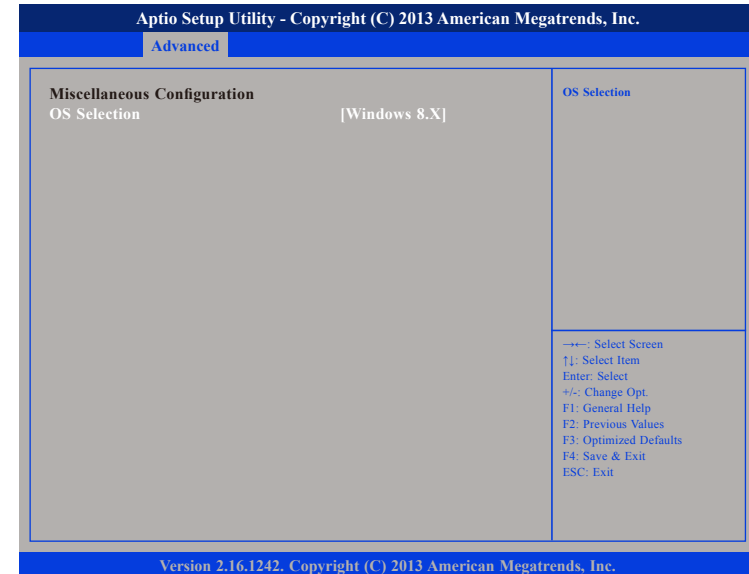
Enables or disables SATA port 0 and SATA port 1.

### SATA Port0 Hotplug and SATA Port1 Hotplug

Enables or disables hotplug support on SATA port 0 and SATA port 1.

## Miscellaneous Configuration

This section is used to configure other miscellaneous settings.

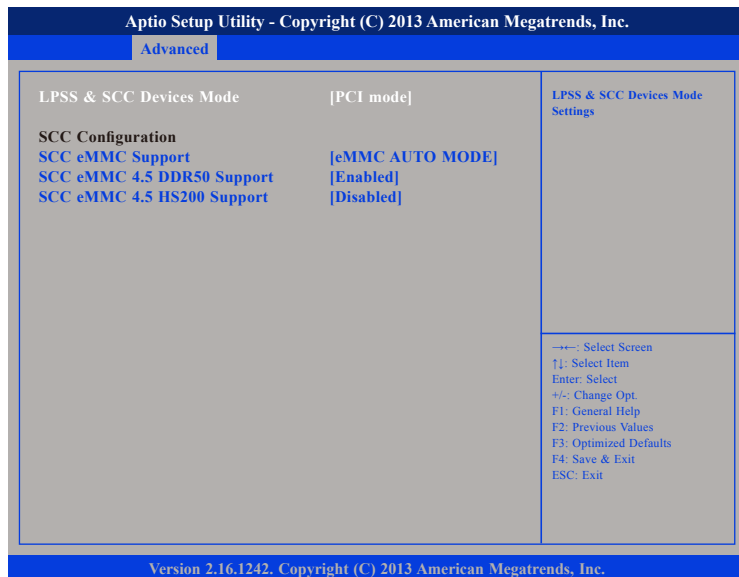


### OS Selection

Configures the operating system type.

### LPSS & SCC Configuration

This section is used to configure LPSS and SCC settings.



#### LPSS & SCC Devices Mode

Selects the LPSS and SCC device mode as ACPI mode or PCI mode.

#### SCC eMMC Support

Enables or disables SCC eMMC support.

#### SCC eMMC 4.5 DDR50 Support

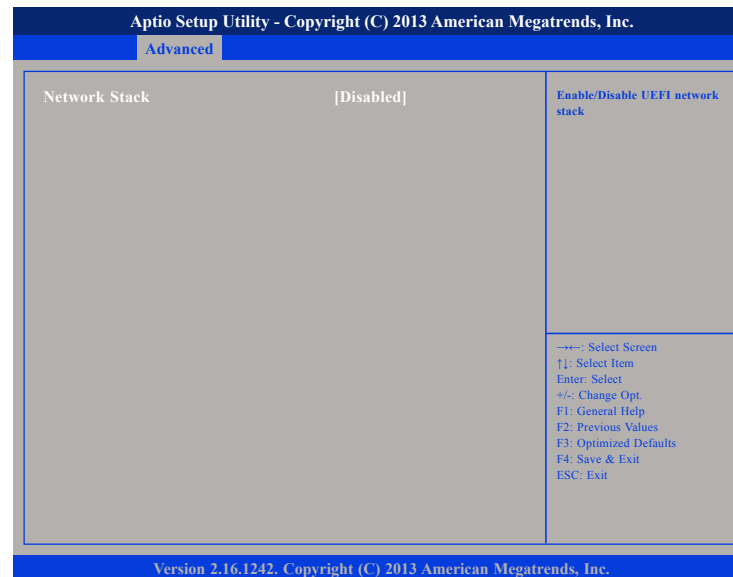
Enables or disables SCC eMMC 4.5 DDR50 support.

#### SCC eMMC 4.5 HS200 Support

Enables or disables SCC eMMC 4.5 HS200 support.

### Network Stack

This section is used to configure the network stack.



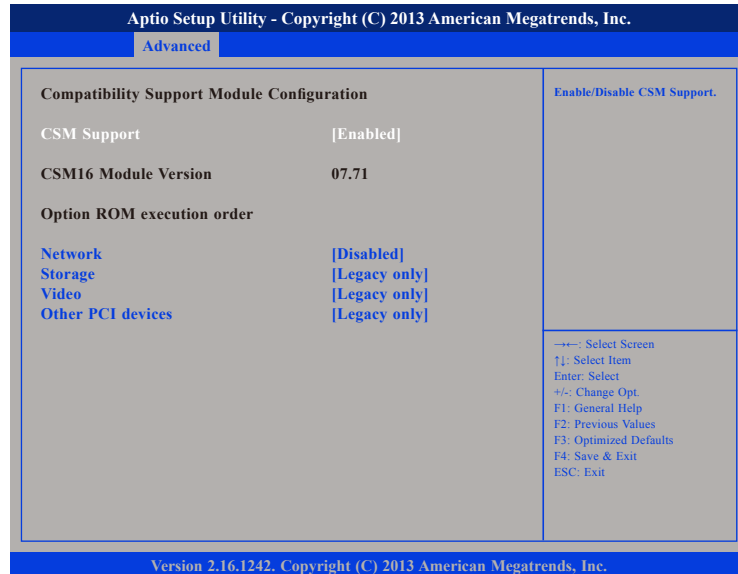
#### Network Stack

Enables or disables UEFI network stack.



## CSM Configuration

This section is used to configure the compatibility support module features.



### CSM Support

Enables or disables CSM support.

### Network

Controls the execution of UEFI and legacy PXE OpROM.

### Storage

Controls the execution of UEFI and legacy storage OpROM.

### Video

Controls the execution of UEFI and legacy video OpROM.

### Other PCI Devices

Determines OpROM execution policy for devices other than network, storage or video.

## Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.

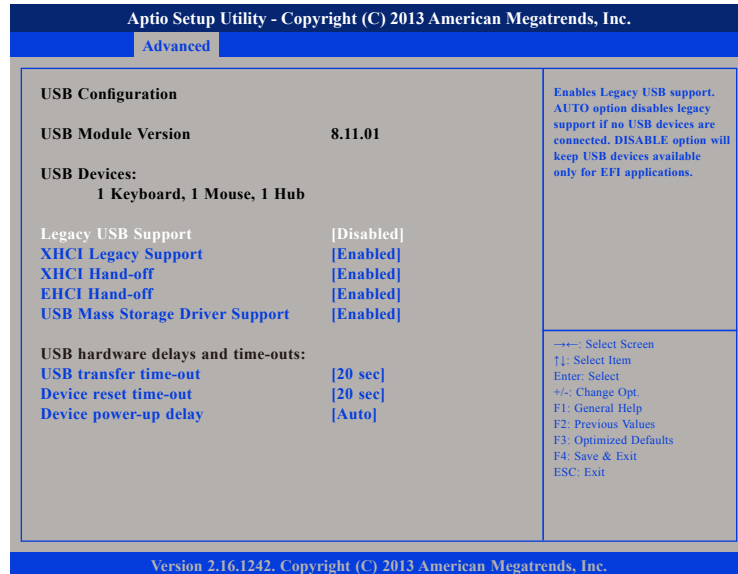


### Security Device Support

Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

## USB Configuration

This section is used to configure the USB.



### Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

### XHCI Legacy Support

Enables or disables XHCI controller legacy support.

### XHCI Hand-off and EHCI Hand-off

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

### 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

Selects the USB mass storage device's start unit command timeout.

### Device power-up delay

Maximum time the value 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.

## Intel® I211 Gigabit Network Connection

This section displays the network information of the LAN port.

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**Advanced**

▶ **NIC Configuration** Click to configure the network device port.

<b>Blink LEDs</b>	0
<b>UEFI Driver</b>	Intel(R) PRO/1000 7.1.07
<b>Adapter PBA</b>	
<b>Device Name</b>	Intel(R) I211 Gigabit N
<b>Chip Type</b>	Intel i211
<b>PCI Device ID</b>	1539
<b>PCI Address</b>	01:00:00
<b>Link Status</b>	[Disconnected]
<b>MAC Address</b>	00:10:F3:75:19:C2

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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## NIC Configuration

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**Advanced**

<b>Link Speed</b>	[Auto Negotiated]	Specifies the port speed for the selected boot protocol
<b>Wake On LAN</b>	[Enabled]	

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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### Link Speed

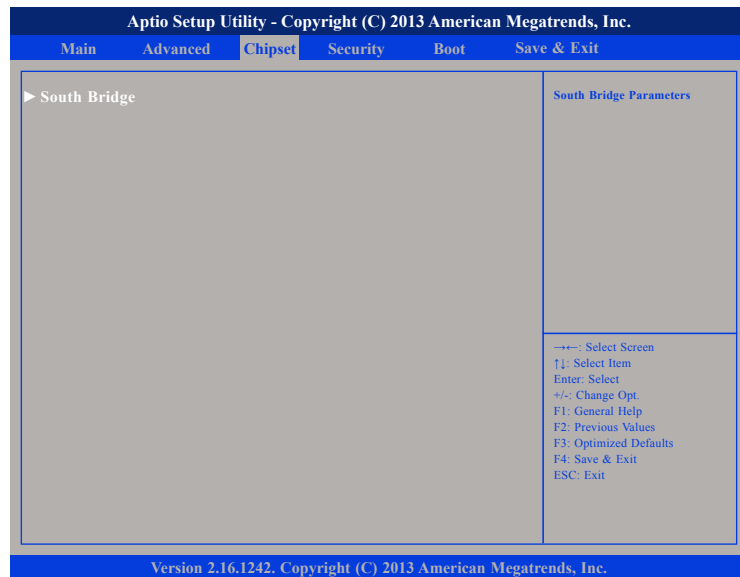
Specifies the port speed for the selected boot protocol.

### Wake On LAN

Enables or disables integrated LAN to wake the system.

## 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.



## South Bridge

This section is used to configure the south bridge features.



### High Precision Timer

Enables or disables the high precision event timer.

### Restore AC Power Loss

Power Off	When power returns after an AC power failure, the system's power is off. You must press the power button to power-on the system.
Power On	When power returns after an AC power failure, the system will automatically power-on.
Last State	When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

### Azalia HD Audio



#### Azalia

Control detection of the Azalia device.

Disabled	Azalia will be unconditionally disabled.
Enabled	Azalia will be unconditionally enabled.

#### Azalia HDMI Codec

Enables or disables internal HDMI codec for Azalia.

## USB Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
<b>USB Configuration</b>		Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.
XHCI Mode	[Disabled]	
USB 2.0(EHCI) Support	[Enabled]	
USB RMH Mode	[Enabled]	
USB EHCI debug	[Disabled]	
USB Power State in S5	[Power On]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.		

### USB 2.0(EHCI) Support

Enables or disables the Enhanced Host Controller Interface (USB 2.0), one EHCI controller must always be enabled.

### USB RMH Mode

Enables or disables PCH USB rate matching hubs mode.

### USB EHCI Debug

Enables or disables PCH EHCI debug capability.

### USB Power State in S5

Configures the USB power state in S5.

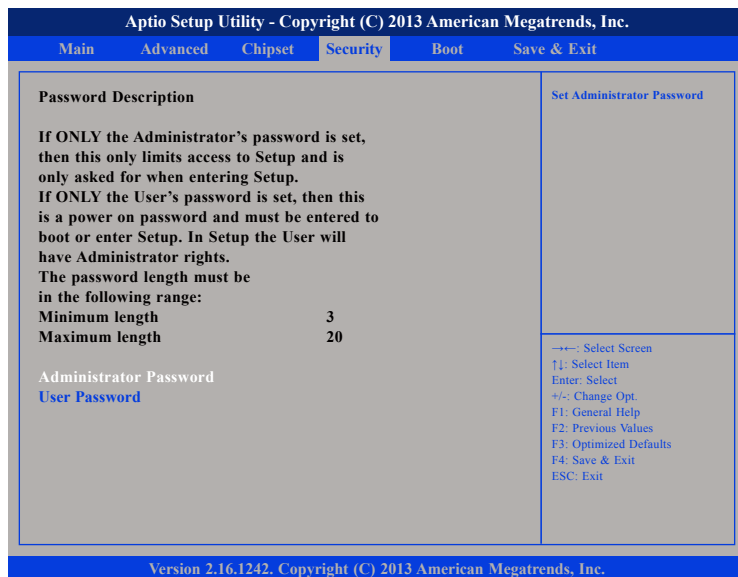
## PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
<b>PCI Express Configuration</b>		Enable or Disable the PCI Express Port 0 in the Chipset.
PCI Express Port 0	[Enabled]	
PCI Express Port 1	[Enabled]	
PCI Express Port 2	[Enabled]	
PCI Express Port 3	[Enabled]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.		

### PCI Express Port 0 to PCI Express Port 3

Enables or disables the PCI Express ports 0 to 3 on the chipset.

## Security



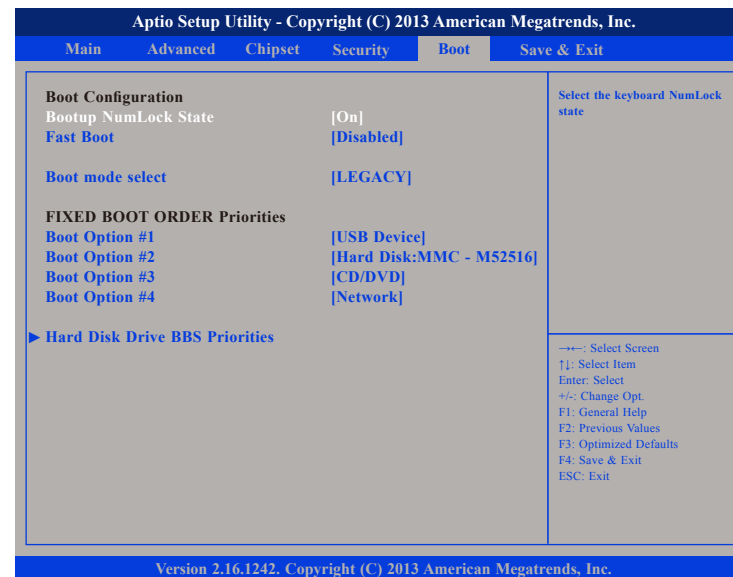
### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Boot



### Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### Fast Boot

When enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.



## Boot mode select

Configures the boot mode option.

### FIXED BOOT ORDER 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.

## 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 and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

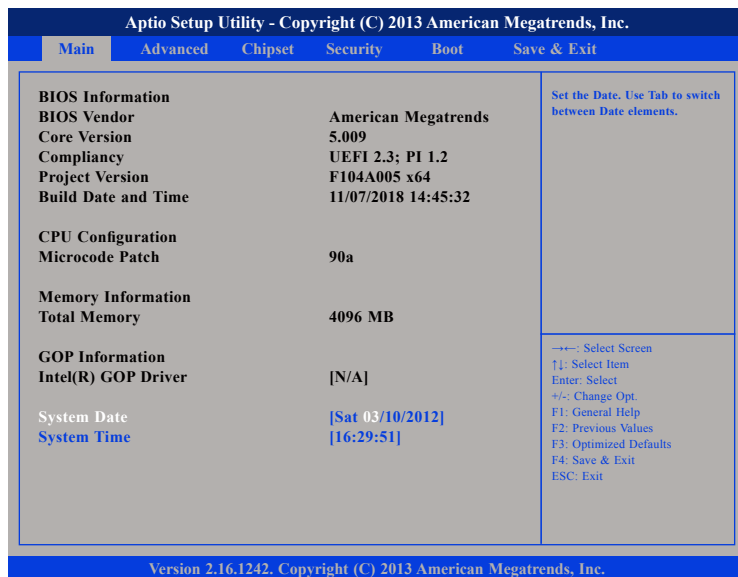
### Restore Defaults

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

## BIOS Setup Utility for NIFE 104M

### Main

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



Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Main	Advanced Chipset Security Boot Save & Exit
<b>BIOS Information</b>	
BIOS Vendor	American Megatrends
Core Version	5.009
Compliance	UEFI 2.3; PI 1.2
Project Version	F104A005 x64
Build Date and Time	11/07/2018 14:45:32
<b>CPU Configuration</b>	
Microcode Patch	90a
<b>Memory Information</b>	
Total Memory	4096 MB
<b>GOP Information</b>	
Intel(R) GOP Driver	[N/A]
System Date	[Sat 03/10/2012]
System Time	[16:29:51]
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

### 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.

### System Time

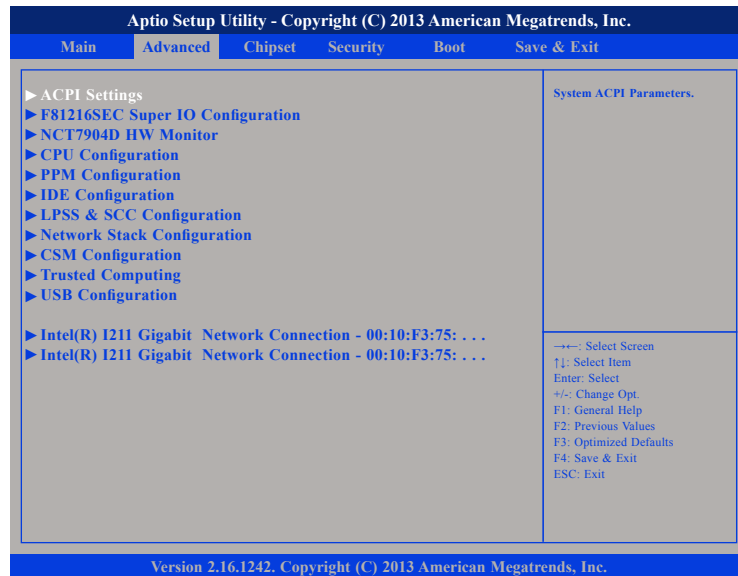
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

## 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.

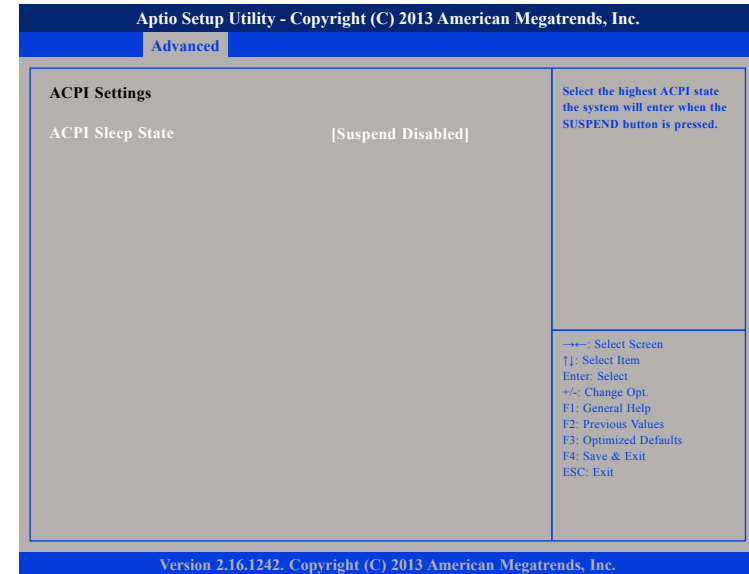


Setting incorrect field values may cause the system to malfunction.



## ACPI Settings

This section is used to configure ACPI Settings.



### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

### F81216SEC Super IO Configuration

This section is used to configure the serial port.

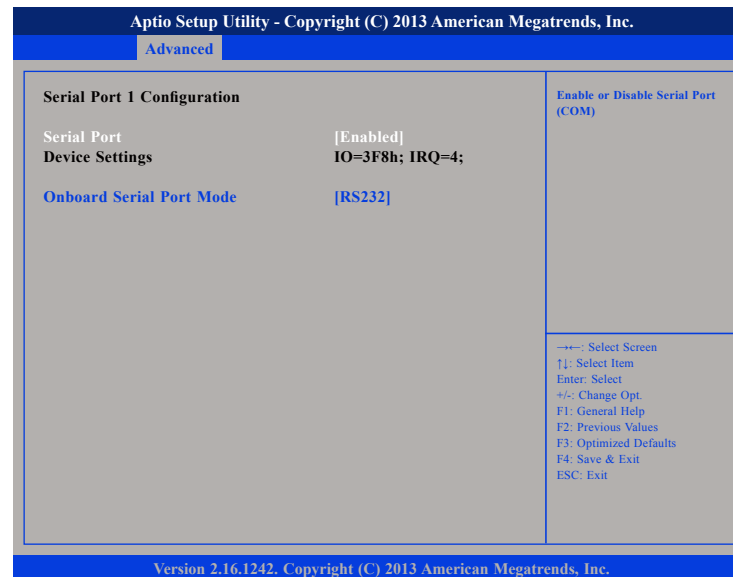


#### Super IO Chip

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

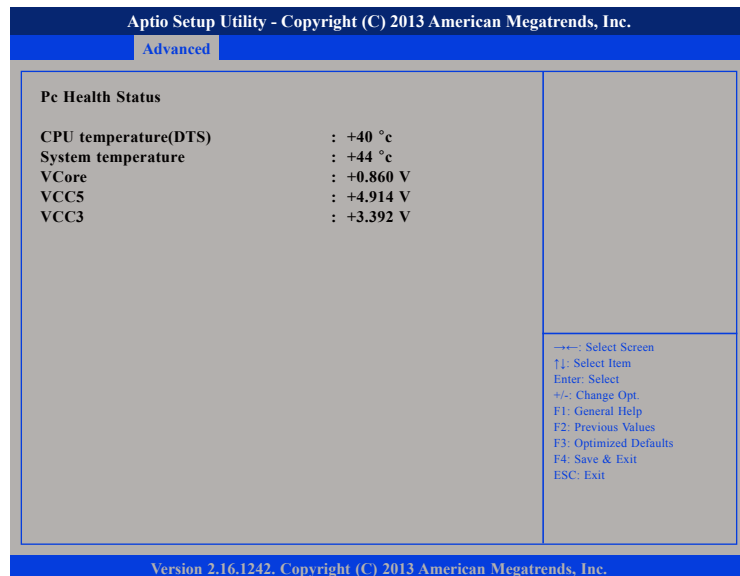
Enables or disables the serial port.

#### RS485 AUTO

Configures the serial port operating mode. The options are RS232, RS485 and RS485 AUTO.

## NCT7904D HW Monitor

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



### VCC5

Detects and displays the 5V voltage.

### VCC3

Detects and displays the 3.3V voltage.

### CPU temperature(DTS)

Detects and displays the current CPU temperature.

### System temperature

Detects and displays the current system temperature.

### VCore

Detects and displays the Vcore CPU voltage.

## CPU Configuration

This section is used to configure the CPU.



### Active Processor Core

Select the number of cores to enable in each processor package.

### Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

### Execute Disable Bit

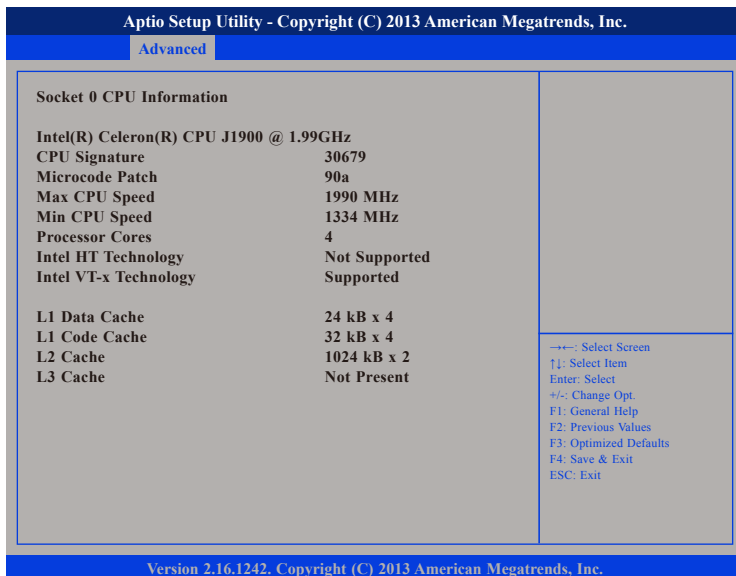
When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

### Intel® Virtualization Technology

Enables or disables Intel® Virtualization technology.

## Socket 0 CPU Information

This section displays the information of the CPU installed in Socket 0.



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Advanced

**Socket 0 CPU Information**

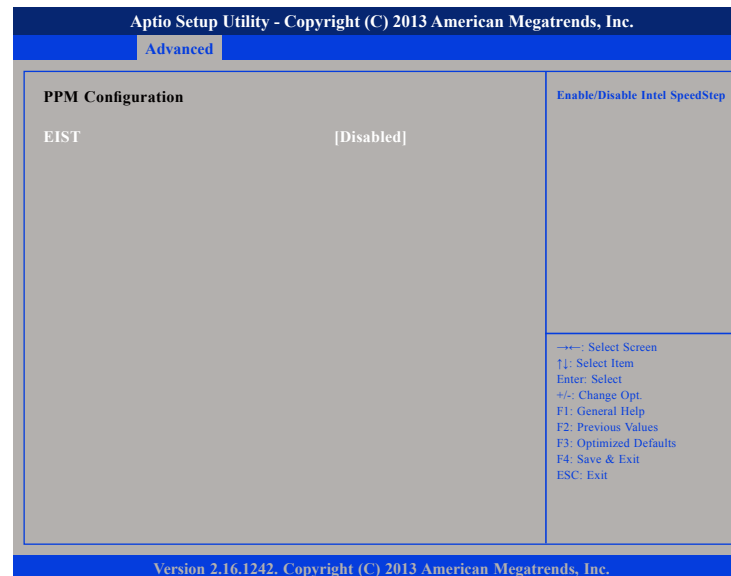
Intel(R) Celeron(R) CPU J1900 @ 1.99GHz	
CPU Signature	30679
Microcode Patch	90a
Max CPU Speed	1990 MHz
Min CPU Speed	1334 MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
L1 Data Cache	24 kB x 4
L1 Code Cache	32 kB x 4
L2 Cache	1024 kB x 2
L3 Cache	Not Present

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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## PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.



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Advanced

**PPM Configuration**

EIST [Disabled]

Enable/Disable Intel SpeedStep

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

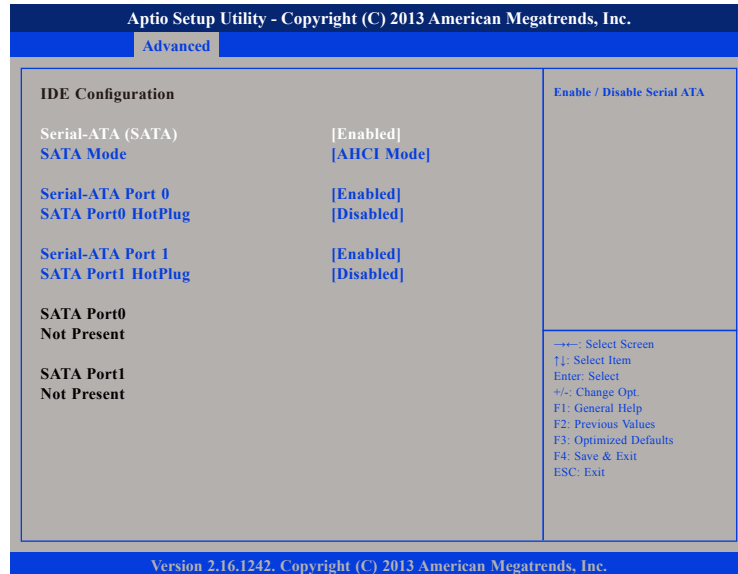
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

### EIST

Enables or disables Intel® SpeedStep.

## IDE Configuration

This section is used to configure the SATA drives.



### Serial-ATA (SATA)

Enables or disables SATA device.

### SATA Mode

Configures the SATA as IDE or AHCI mode.

### Serial-ATA Port 0 and Serial-ATA Port 1

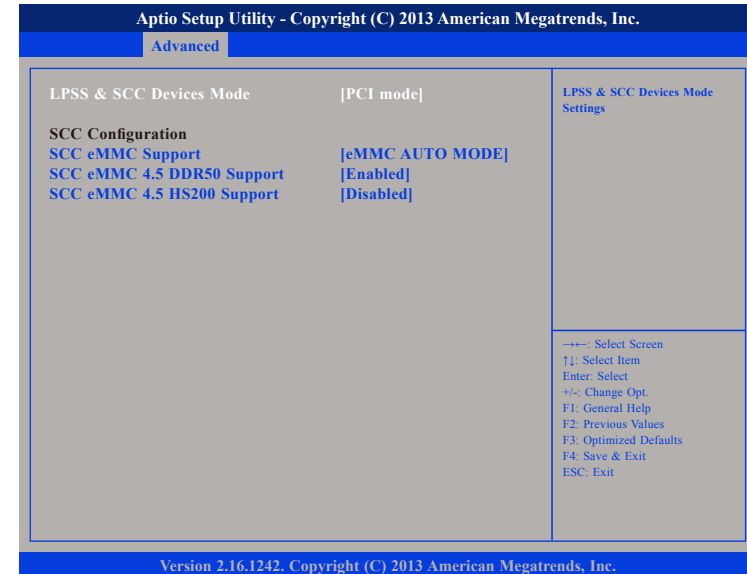
Enables or disables SATA port 0 and SATA port 1.

### SATA Port0 Hotplug and SATA Port1 Hotplug

Enables or disables hotplug support on SATA port 0 and SATA port 1.

## LPSS & SCC Configuration

This section is used to configure LPSS and SCC settings.



### LPSS & SCC Devices Mode

Selects the LPSS and SCC device mode as ACPI mode or PCI mode.

### SCC eMMC Support

Enables or disables SCC eMMC support.

### SCC eMMC 4.5 DDR50 Support

Enables or disables SCC eMMC 4.5 DDR50 support.

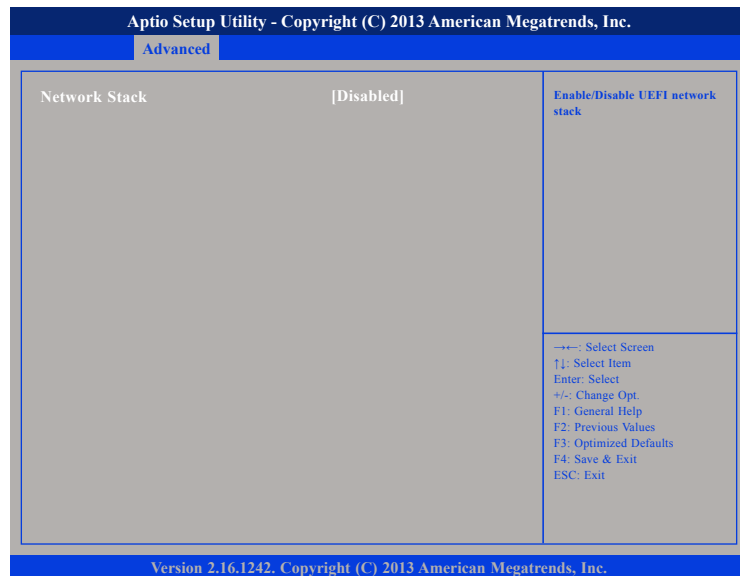
### SCC eMMC 4.5 HS200 Support

Enables or disables SCC eMMC 4.5 HS200 support.



## Network Stack

This section is used to configure the network stack.

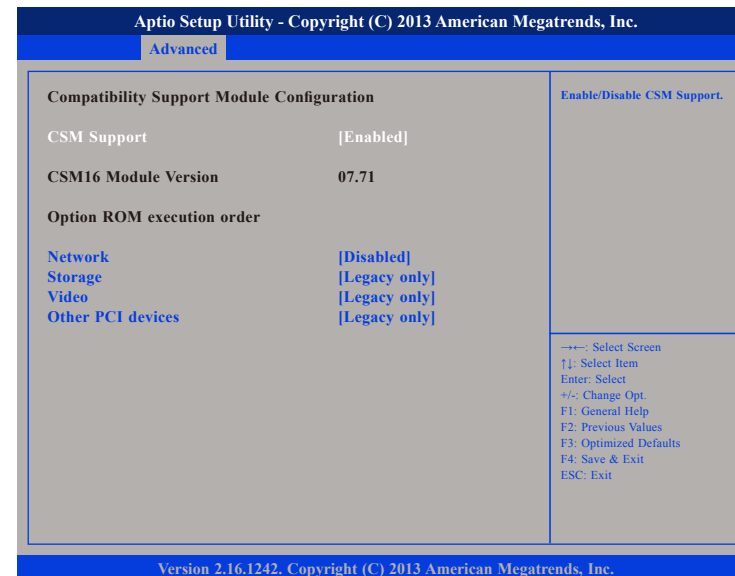


### Network Stack

Enables or disables UEFI network stack.

## CSM Configuration

This section is used to configure the compatibility support module features.



### CSM Support

Enables or disables CSM support.

### Network

Controls the execution of UEFI and legacy PXE OpROM.

### Storage

Controls the execution of UEFI and legacy storage OpROM.

## Video

Controls the execution of UEFI and legacy video OpROM.

## Other PCI Devices

Determines OpROM execution policy for devices other than network, storage or video.

## Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



## Security Device Support

Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

## USB Configuration

This section is used to configure the USB.



### Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

### USB3.0 Support

Enables or disables USB 3.0 controller support.

### XHCI Hand-off and EHCI Hand-off

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

## Intel® I211 Gigabit Network Connection

This section displays the network information of the LAN port.



## NIC Configuration



### Link Speed

Specifies the port speed for the selected boot protocol.

### Wake On LAN

Enables or disables integrated LAN to wake the system.

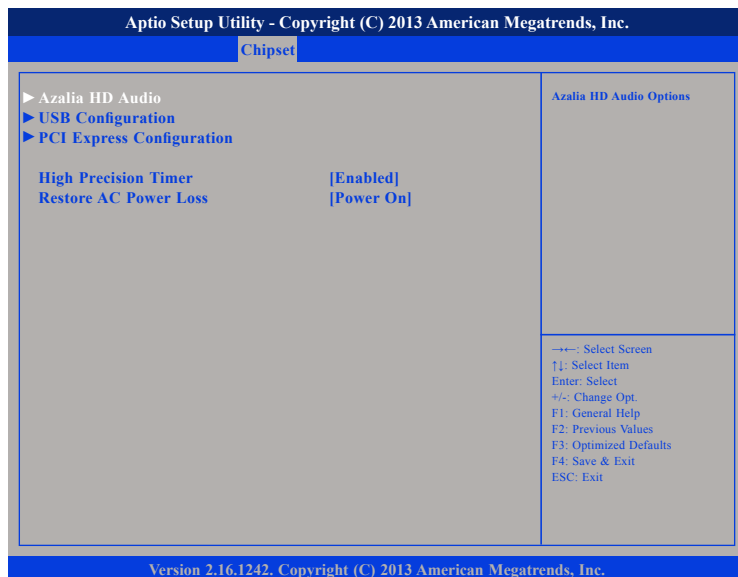
## Chipset

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.



## South Bridge

This section is used to configure the south bridge features.



### High Precision Timer

Enables or disables the high precision event timer.

### Restore AC Power Loss

- |            |  |
|------------|--|
| Power Off  | When power returns after an AC power failure, the system's power is off. You must press the power button to power-on the system.   |
| Power On   | When power returns after an AC power failure, the system will automatically power-on.  |
| Last State | When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns. |

## Azalia HD Audio



### Azalia

Control detection of the Azalia device.

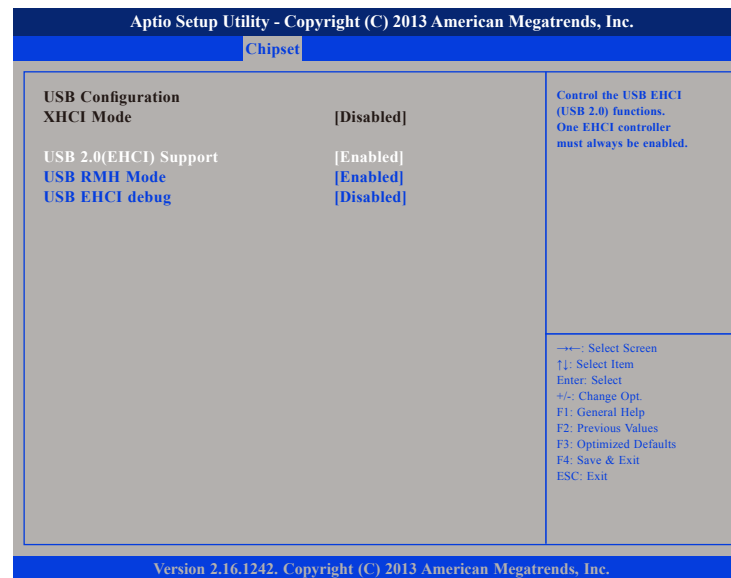
Disabled Azalia will be unconditionally disabled.

Enabled Azalia will be unconditionally enabled.

### Azalia HDMI Codec

Enables or disables internal HDMI codec for Azalia.

## USB Configuration



### USB 2.0(EHCI) Support

Enables or disables the Enhanced Host Controller Interface (USB 2.0), one EHCI controller must always be enabled.

### USB RMH Mode

Enables or disables PCH USB rate matching hubs mode.

### USB EHCI Debug

Enables or disables PCH EHCI debug capability.

## PCI Express Configuration

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Chipset

PCI Express Configuration		Enable or Disable the PCI Express Port 0 in the Chipset.
PCI Express Port 0	[Enabled]	
PCI Express Port 1	[Enabled]	
PCI Express Port 2	[Enabled]	
PCI Express Port 3	[Enabled]	

→←: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F3: Optimized Defaults  
 F4: Save & Exit  
 ESC: Exit

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### PCI Express Port 0 to PCI Express Port 3

Enables or disables the PCI Express ports 0 to 3 on the chipset.

## Security

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Main Advanced Chipset **Security** Boot Save & Exit

Password Description	Set Administrator Password
<p><b>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</b></p> <p><b>If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.</b></p> <p><b>The password length must be in the following range:</b></p> <p><b>Minimum length</b> 3</p> <p><b>Maximum length</b> 20</p>	
<p><b>Administrator Password</b></p> <p><b>User Password</b></p>	<p>→←: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F3: Optimized Defaults            F4: Save &amp; Exit            ESC: Exit</p>

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### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Boot



### Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### Fast Boot

When enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

### 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.

## 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 and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

### Restore Defaults

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



# CHAPTER 5: POWER CONSUMPTION

## Power Consumption Measurement Test

### Purpose

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

### Test Equipment/Software

1. Use maximum consumption CPU & Memory.
2. No need to add card.
3. Room temperature.
4. Run BURN IN+KPOWER at DUT.

### Test Result

Device	Test Case	Voltage/Watt
DUT#2	DC IN (Max Voltage)	26.4V / 25.08W
	DC IN (Min Voltage)	21.6V / 25.92W
	DC IN (General Voltage)	24V / 25.87W

# APPENDIX A: WATCHDOG PROGRAMMING GUIDE

## NCT7904D WatchDog Programming Guide

```
#define NCT7904D_SLAVEADDRESS 0x5A  
#define SMBUS_BASE_ADDRESS 0xE000
```

```
;  
;SmbusWriteByte, Please refer to Smbus Write Byte Protocol  
SmbusWriteByte(0xFF,0x00);
```

```
;  
;enable Soft Watch Dog  
SmbusWriteByte(0xE1,0x01);
```

```
;  
;Setup WDT time-out value, the unit is minute. This demo code is used to program the time-out value with 1 min.  
SmbusWriteByte(0xE3,0x01);
```

```
;  
;enable Soft Watch Dog Timer  
SmbusWriteByte(0xE0,0x55);
```

## APPENDIX B: GPIO MODE CONFIGURATION

GPIO (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPIO pins in NIFE 104/104M. The pin definition is shown in the following table:

Step 1. Set SOC GPIO using memory access

Set IO address 0x580 = 0x1

Step 2. Set GPIO PIN 3/4/5/6 as GPI

Set GPI memory address(bit1) = 1

Step 3. Read/Write GPIO value form blow address mapping

Pin	GPIO Mode	PowerOn Default	Address	Pin	GPIO Mode	PowerOn Default	Address
1	VCC	-	-	2	GND	-	-
3	GPI	-	Memory-FED0E178h (Bit0)	7	GPO	Low	Memory-FED0E168h (Bit0)
4	GPI	-	Memory-FED0E278h (Bit0)	8	GPO	Low	Memory-FED0E158h (Bit0)
5	GPI	-	Memory-FED0E1C8h (Bit0)	9	GPO	Low	Memory-FED0E188h (Bit0)
6	GPI	-	Memory-FED0E1B8h (Bit0)	10	GPO	Low	Memory-FED0E198h (Bit0)

### CN1 – GPIO Connector

Pin	GPIO Mode	PowerOn Default	Address
C2	GPO	Low	SMBUS-EAh (Bit3)
C1	GPO	Low	SMBUS-EAh (Bit4)

### LED2- GPO LED

Control the GPO pin (7/8/9/10) level from Memory address FED0E168h/ FED0E158h/ FED0E188h/ FED0E198h.

Control the GPO (C2/C1) level from SMBUS EAh bit (3/4).

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

## GPIO programming sample code

```
#define MEMORY_BASE_ADDRESS      0xFED0E000
#define NCT7904D_SLAVEADDRESS    0x5A
#define SMBUS_BASE_ADDRESS       0xE000

#define GPO7_HI                   MmioWrite(MEMORY_BASE_ADDRESS+0x168, 0x00000001)
#define GPO7_LO                   MmioWrite(MEMORY_BASE_ADDRESS+0x168, 0x00000000)
#define GPO8_HI                   MmioWrite(MEMORY_BASE_ADDRESS+0x158, 0x00000001)
#define GPO8_LO                   MmioWrite(MEMORY_BASE_ADDRESS+0x158, 0x00000000)
#define GPO9_HI                   MmioWrite(MEMORY_BASE_ADDRESS+0x188, 0x00000001)
#define GPO9_LO                   MmioWrite(MEMORY_BASE_ADDRESS+0x188, 0x00000000)
#define GPO10_HI                  MmioWrite(MEMORY_BASE_ADDRESS+0x198, 0x00000001)
#define GPO10_LO                  MmioWrite(MEMORY_BASE_ADDRESS+0x198, 0x00000000)

//SmbusWriteByte, please refer to Smbus Write Byte Protocol
#define BANK_00                   SmbusWriteByte (0xFF, 0x00)
#define GPOC2_HI                  SmbusWriteByte (0xEA, XXXX1XXXb)
#define GPOC2_LO                  SmbusWriteByte (0xEA, XXXX0XXXb)
#define GPOC1_HI                  SmbusWriteByte (0xEA, XXX1XXXXb)
#define GPOC1_LO                  SmbusWriteByte (0xEA, XXX0XXXXb)

void main(void)
{
    GPO7_HI;
    GPO8_LO;
    GPO9_HI;
    GPO10_LO;

    BANK_00;
    GPOC2_HI;
    GPOC1_LO;
}
```

## APPENDIX C: SELV STATEMENT

If the power supply is used it will be in accordance with IEC/EN61010-1 IEC/, EN61010-2-201 and output meet SELV. All circuits are SELV for system.