



Video Intelligent Surveillance NRP14162 Series

Note: The manual is subject to change without notice

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CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- Support Intel 8th Generation Intel Atom® processor X series and Intel® Celeron® J series
- Max. 32GB DDR4 supported
- Dual display of HDMI and DVI-I
- 2 x 3.5" SATA HDD support RAID 0, 1
- 1 x 2.5" SATA SSD/HDD, 1 x M.2 2242 SATA SSD
- 1 x 10/100/1000 Intel® Ethernet
- 1 x 2.5G Intel® Ethernet
- 16 x 10/100 PoE (240W max PSE)
- Support TPM 2.0 onboard
- Support eMMC onboard (option)

Hardware Specifications

CPU Support

- Intel 8th Gen Intel® Celeron® J6412, Quad Core, 2.0GHz base frequency, 2.6 GHz burst frequency (compatible with other Intel 8th Gen Intel Atom® (Elkhart Lake) processor X Series and Intel® Celeron® J Series)

Main Memory

- Dual channel DDR4 3200 MHz SDRAM, max. 32GB

I/O Interface-Front

- 2 x USB 2.0 ports
- Power & HDD status LED
- PoE 16 ports status LED

I/O Interface-Rear

- 2 x RJ45 (1 x 1GbE + 1 x 2.5GbE)
- 2 x USB 3.1 Gen1 ports
- 2 x USB 2.0 ports
- 1 x HDMI 2.0b (supports max. resolution 4096 x 2160 @ 60Hz)
- 1 x DVI-I
- 1 x UART port (RS-232/485 setting from BIOS)
- 1 x Min-in & 1 x Line-Out & 1 x MIC
- Power on/off switch
- 16 x Ethernet PoE port
 - 802.3af/at compliance with total 240W max (PSE)
 - 802.3af support 16 ports @ 15W
 - 802.3at support 8 ports @30W
- 1 x 4DI/2DO (relay type) terminal block or 4DI/4DO GPIO DB15 port (option)

Storage

- 2 x 3.5" SATA HDD support RAID 0,1
- 1 x 2.5" SATA HDD or SSD
- 1 x M.2 2242 Key B SATAIII
- 1 x eMMC 32GB (option)

Power Input

- AC 100V~240V 410W power supply

Dimensions

- 430mm (W) x 44.5mm (H) x 348mm (D)

Environment

- Operating Temperature:
Ambient with air flow: 0°C to 40°C
- Storage temperature: -20°C to 70°C
- Relative humidity: 10% to 90% (non-condensing)

Certifications

- CE approval
- FCC Class A
- UL 62368 compliance

Knowing Your NRP14162 Series Front Panel

LED Indicators

Indicates the power status of the system.
Indicates the status of the hard drive.

Dual USB Ports

Used to connect USB 2.0 devices.

PoE LAN LED Indicators

Indicates the status of the LAN ports.

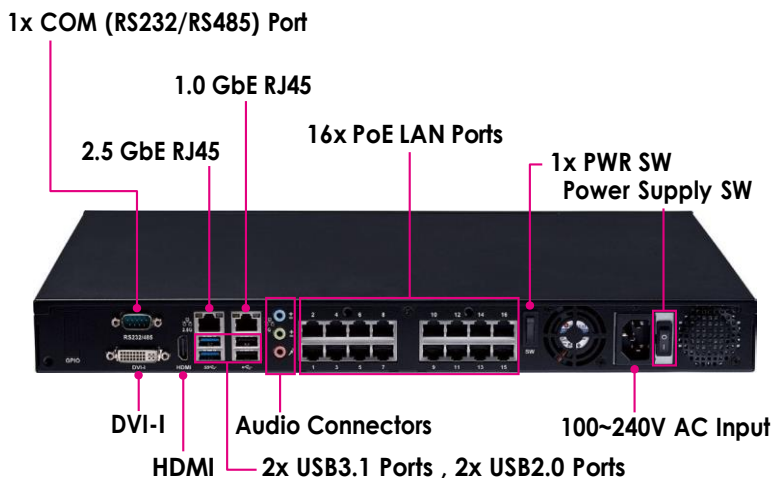
LED Indicators



2x USB 2.0 Ports

PoE LAN LED Indicators

NRP14162 Rear Panel



1x COM (RS232/RS485) Port (BIOS Support)

Supports RS232 and RS485 compatible serial devices.

DVI-I

Used to connect a digital LCD panel.

HDMI

Used to connect a high-definition display.

1.0 GbE RJ45/2.5 GbE RJ45

Used to connect the system to a local area network.

2x USB3.1 Ports (Under 2.5GbE) & 2x USB2.0 Ports (Under 1GbE)

Four USB ports to connect the system with USB devices.

Audio Connectors (Line in/Line out/MIC in)

Line in: Receives audio signal input

Line out: Provides audio signal output

MIC-in: Used to connect an external microphone

16x PoE LAN Ports RJ45 Connectors

Enables communication among network clients and delivers power using the same RJ45 to PoE-enabled edge devices.

Power Switch/Power Supply SW

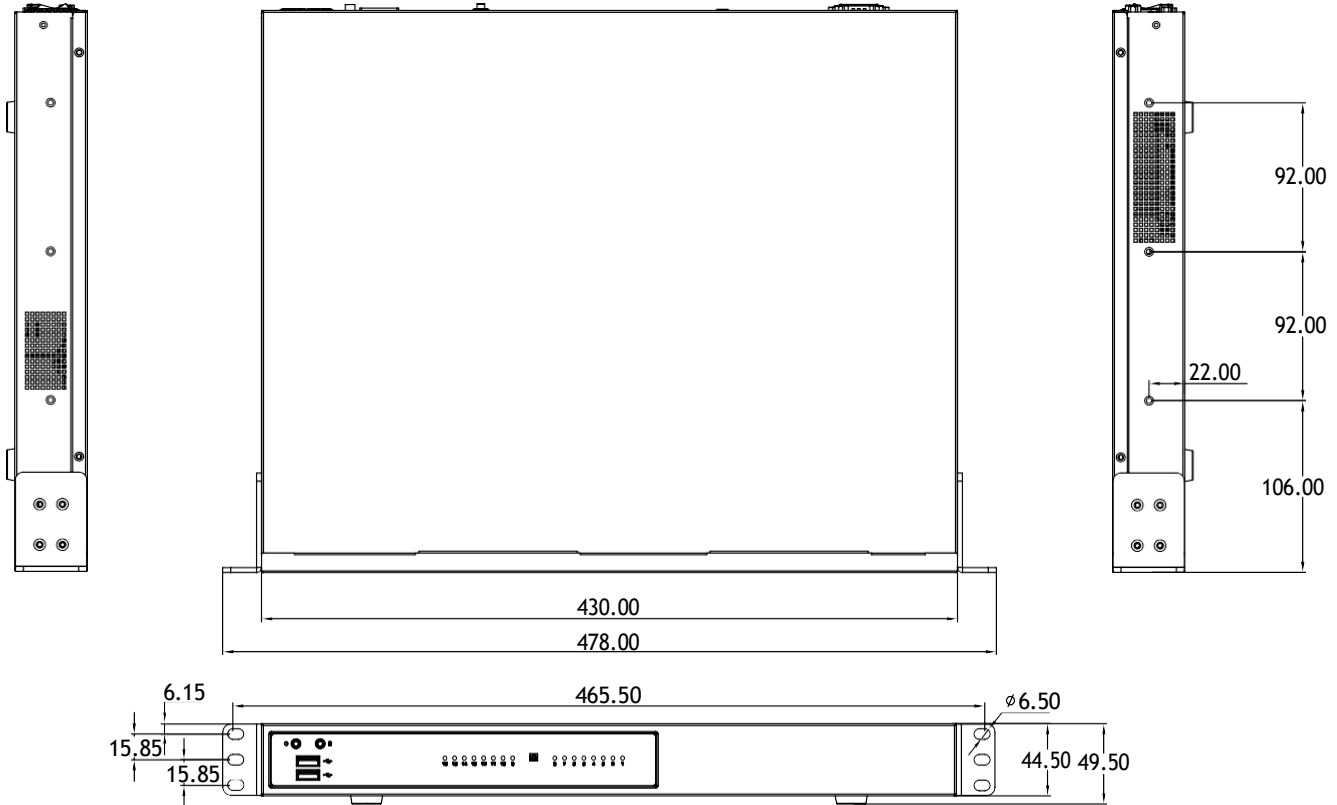
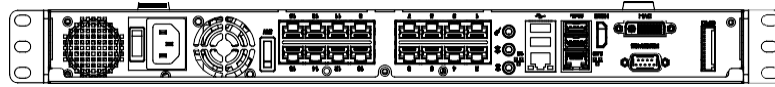
Press to power on the device/Press for power from power source.

100~240V AC Input

Used to plug a AC power cord.

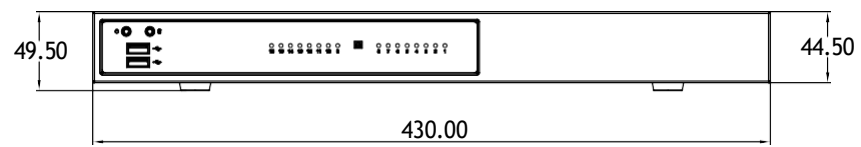
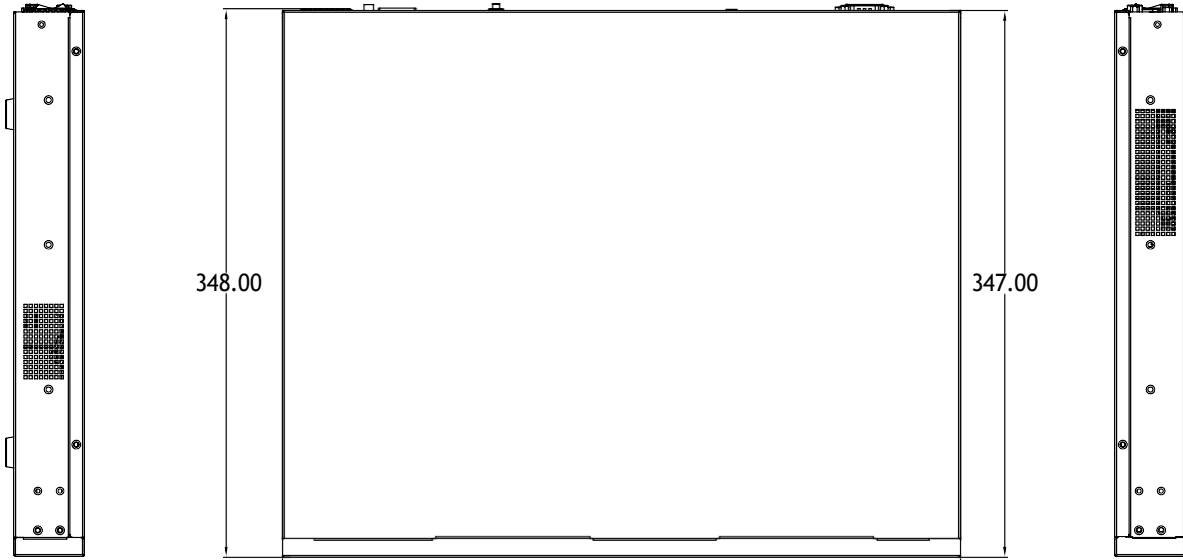
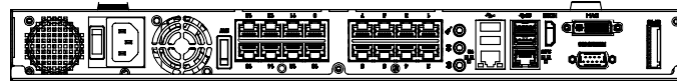
Mechanical Dimensions

Rackmount Model



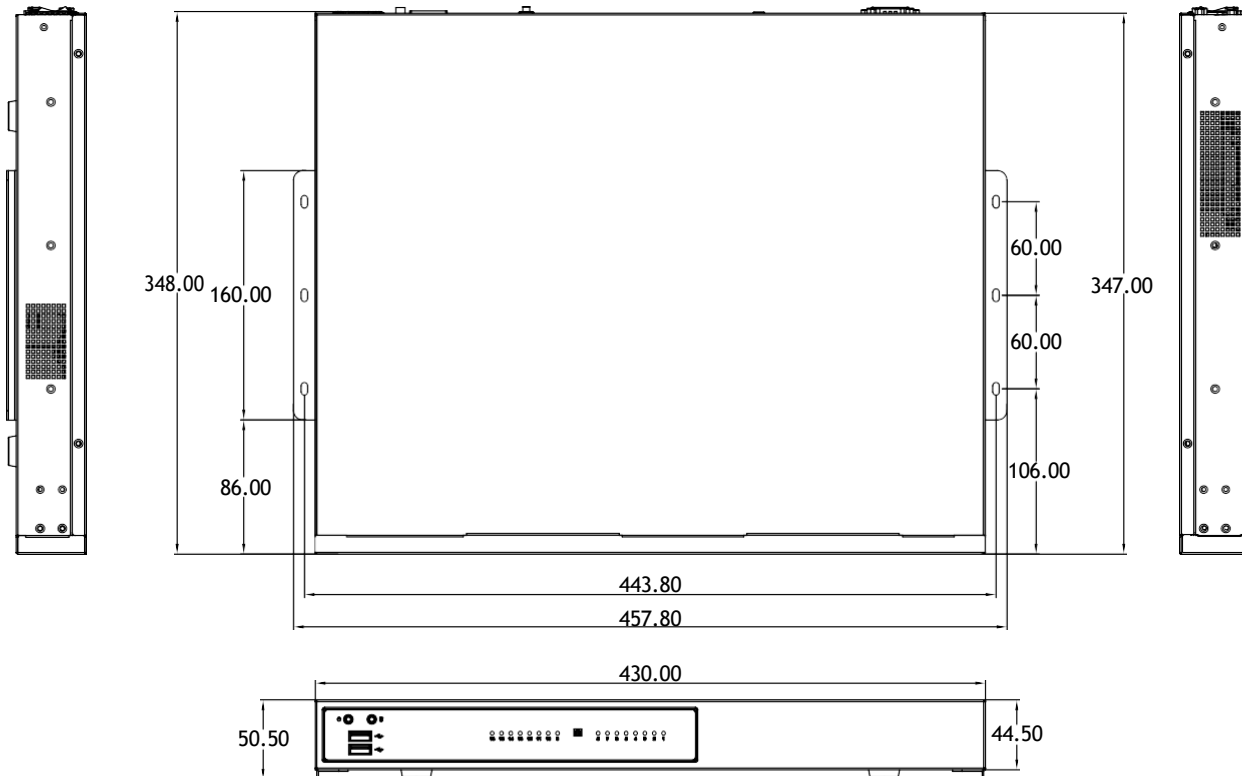
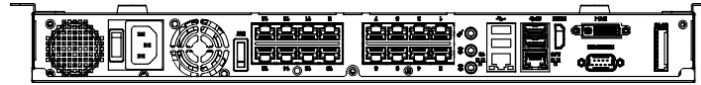
Mechanical Dimensions

Desktop Model



Mechanical Dimensions

Wallmount Model



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NRP14162 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:

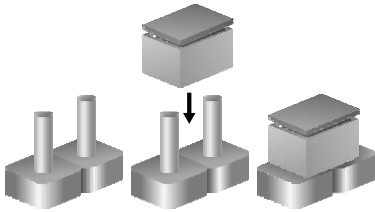
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

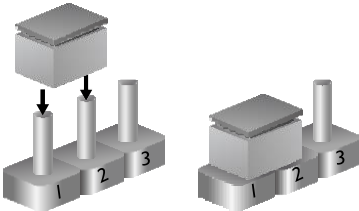
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

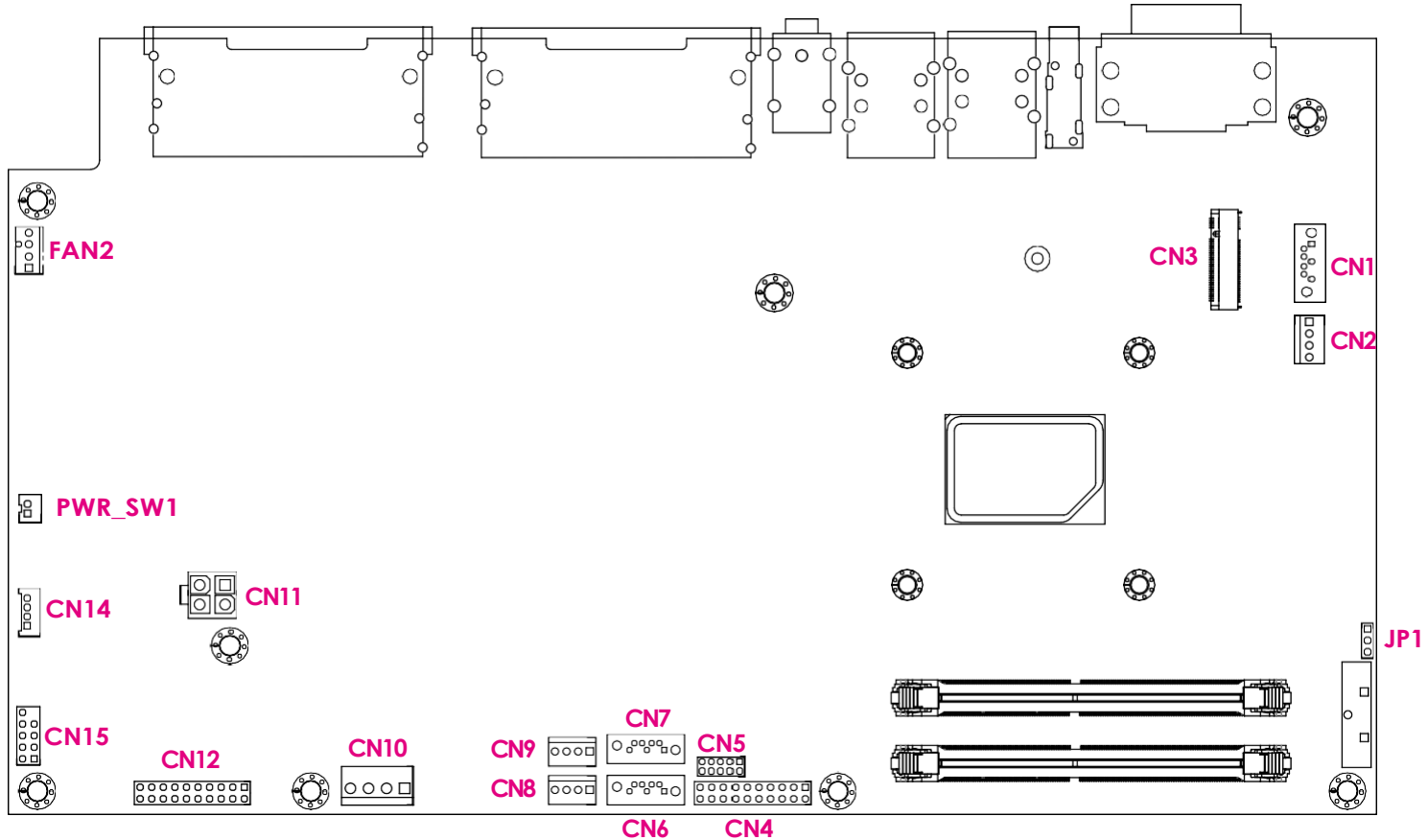


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.



Jumpers

Clear CMOS

Connector type: 1x3 3-pin header

Connector location: JP1



Pin	Settings
1-2	Normal
2-3	Clear CMOS

1-2 On: default

Connector Pin Definitions

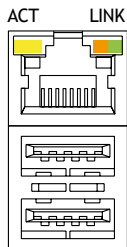
External I/O Interfaces

LAN1 Connector and USB 3.1 Ports

Connector type: RJ45 port with LEDs

Dual USB3.1 ports

Connector location: CON3



Act	Status
Yellow	Data activity
Off	No activity

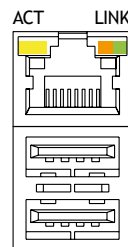
Link	Status
Steady Green	2.5Gbps network link
Steady Orange	1000Mbps network link
Off	100Mbps or no link

LAN2 Connector and USB 2.0 Ports

Connector type: RJ45 port with LEDs

Dual USB2.0 ports

Connector location: CON4

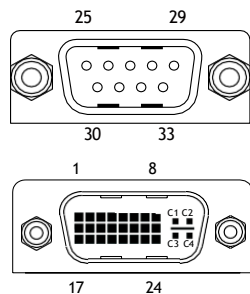


Act	Status
Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1Gbps network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

DVI-I and RS485 Connector

Connector location: CON1



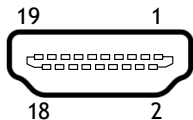
Pin	Definition	Pin	Definition
1	DVI_D2_N	2	DVI_D2_P
3	DVI_CHECK	4	NC
5	NC	6	DVI_DDC_SCL
7	DVI_DDC_SDA	8	VGA_VSYNC_C
9	DVI_D1_N	10	DVI_D1_P
11	GND	12	NC
13	NC	14	+DVI_5V
15	GND	16	DVI_HPD_C
17	DVI_D0_N	18	DVI_D0_P
19	GND	20	VGA_DDCCLK_C
21	VGA_DDCDATA_C	22	GND
23	DVI_CK_P	24	DVI_CK_N
25	SP1_DCD_N	26	SP1_RXD
27	SP1_TXD	28	SP1_DTR_N
29	GND	30	SP1_DSR_N
31	SP1_RTS_N	32	SP1_CTS_N

Pin	Definition	Pin	Definition
33	SP1_R1_N	C1	VGA_RED_C
C2	VGA_GREEN_C	C3	VGA_BLUE_C
C4	VGA_HSYNC_C	C5A	VGA_GND
C5B	GND		

HDMI Connector

Connector type: HDMI

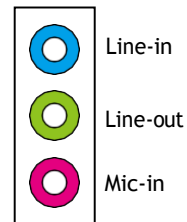
Connector location: CON2



Pin	Definition	Pin	Definition
1	HDMI_TX2_DP_CM	2	GND
3	HDMI_TX2_DN_CM	4	HDMI_TX1_DP_CM
5	GND	6	HDMI_TX1_DN_CM
7	HDMI_TX0_DP_CM	8	GND
9	HDMI_TX0_DN_CM	10	HDMI_CLK_DP_CM
11	GND	12	HDMI_CLK_DN_CM
13	NC	14	NC
15	HDMI_RT_SCL_SNK	16	HDMI_RT_SDA_SNK
17	GND	18	V5P0_HDMI
19	HDMI_RT_HPD_SNK		

Audio Connectors

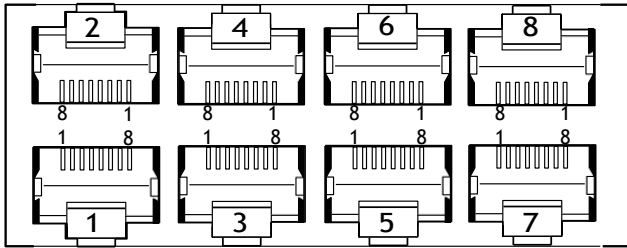
Connector location: AUDIO1



PoE LAN 8 Ports RJ45 Connector

Connector type: Phone Jack RJ45 2x4 Port PoE

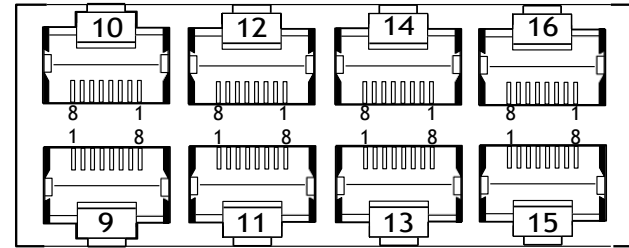
Connector location: CON5



PoE LAN 8 Ports RJ45 Connector

Connector type: Phone Jack RJ45 2x4 Port PoE

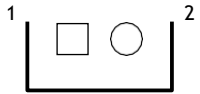
Connector location: CON6



Power SW Connector

Connector type: 1x2 2-pin header

Connector location: PWR_SW1



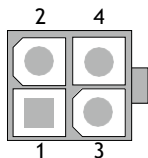
Pin	Definition	Pin	Definition
1	GND	2	PWRBTN_N

Internal Connectors

54V Power In Connector

Connector type: 2x2 4-pin header

Connector location: CN11

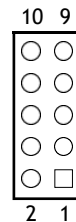


Pin	Definition	Pin	Definition
1	P_GND_D	2	P_GND_D
3	DC JACK IN P	4	DC JACK IN P

GPIO Connector

Connector type: 2x5 10-pin header

Connector location: CN5

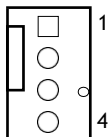


Pin	Definition	Pin	Definition
1	5.0V	2	GND
3	GPIO80	4	GPIO84
5	GPIO81	6	GPIO85
7	GPIO82	8	GPIO86
9	GPIO83	10	GPIO87

System Fan 2

Connector type: 1x4 4-pin header

Connector location: FAN2

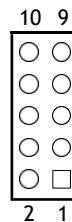


Pin	Definition	Pin	Definition
1	GND	2	+12V
3	SYS2_FAN_TACO	4	SYS2_FAN_PWM

USB 2.0 Connector

Connector type: 2x5 10-pin header

Connector location: CN15

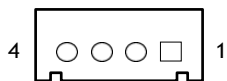


Pin	Definition	Pin	Definition
1	V5P0_USB2_HDR	2	V5P0_USB2_HDR
3	USB2_4_DN_CM	4	USB2_5_DN_CM
5	USB2_4_DP_CM	6	USB2_5_DP_CM
7	GND	8	GND
9	X	10	N/C

HDD/PWR LED Wire

Connector type: 1x4 4-pin header

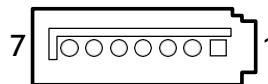
Connector location: CN14



Pin	Definition	Pin	Definition
1	LED_PWR_PU	2	LED_PWR_LOGIC_N
3	LED_HDD_LOGIC_N	4	LED_HDD_PU

SATA Connector

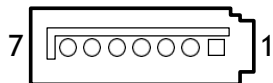
Connector location: CN1



Pin	Definition	Pin	Definition
1	GND	2	SATA_CON2_TXP
3	SATA_CON2_TXN	4	GND
5	SATA_CON2_RXN	6	SATA_CON2_RXP
7	GND		

RAID SATA Connector

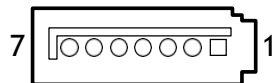
Connector location: CN7



Pin	Definition	Pin	Definition
1	GND	2	RSATA_CON1_TXP
3	RSATA_CON1_TXN	4	GND
5	RSATA_CON1_RXN	6	RSATA_CON1_RXP
7	GND		

RAID SATA Connector

Connector location: CN6

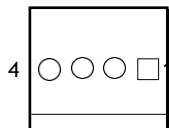


Pin	Definition	Pin	Definition
1	GND	2	RSATA_CON2_TXP
3	RSATA_CON2_TXN	4	GND
5	RSATA_CON2_RXN	6	RSATA_CON2_RXP
7	GND		

SATA Power Connector

Connector type: 1x4 4-pin header

Connector location: CN2

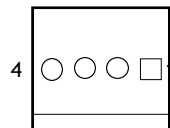


Pin	Definition	Pin	Definition
1	V12P0_SATA	2	GND
3	GND	4	V5P0_SATA

SATA Power Connector

Connector type: 1x4 4-pin header

Connector location: CN8

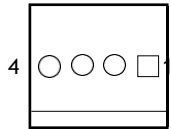


Pin	Definition	Pin	Definition
1	V12P0_RAID_1	2	GND
3	GND	4	V5P0_RAID_1

SATA Power Connector

Connector type: 1x4 4-pin header

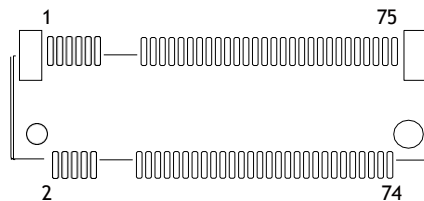
Connector location: CN9



Pin	Definition	Pin	Definition
1	V12P0_RAID_0	2	GND
3	GND	4	V5P0_RAID_0

NGFF M2 Connector Connector 1

Connector location: CN3



Pin	Definition	Pin	Definition
1	NC	2	V3P3A_M2E
3	GND	4	V3P3A_M2E
5	GND	6	NC
7	NC	8	NC
9	NC	10	M2_SATA_LED_N
11	NC	12	CONNECTOR KEY
13	CONNECTOR KEY	14	CONNECTOR KEY
15	CONNECTOR KEY	16	CONNECTOR KEY
17	CONNECTOR KEY	18	CONNECTOR KEY
19	CONNECTOR KEY	20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC

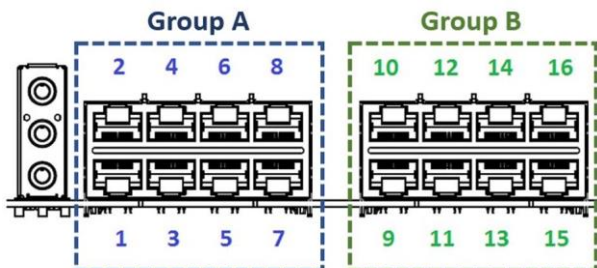
Pin	Definition	Pin	Definition
33	GND	34	NC
35	NC	36	NC
37	NC	38	SATA_DEVSLP0
39	GND	40	NC
41	M2_SATA_RP	42	NC
43	M2_SATA_RN	44	NC
45	GND	46	NC
47	M2_SATA_TN	48	NC
49	M2_SATA_TP	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	MFG_DATA
57	GND	58	MFG_CLK
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	M2E_SUSCLK
69	M2E_SEL_N	70	V3P3A_M2E
71	GND	72	V3P3A_M2E
73	GND	74	V3P3A_M2E
75	NC		

PoE Switch Action Guidance

NRP14162 have a total of 16ch PoE ports 10/100 Mbps, 802.3af/at compliance with a total of 240W max (PSE).

- 802.3af support 16 ports @ 15W
- 802.3at support 8 ports @ 30W
- **Note: The 16ch PoE ports of NRP14162 are divided into 2 groups (A&B) of 8ch PoE switch and the deployment of Group A and Group B are independent and cannot be mixed. For the following example, the PoE switch deployment guidance will be based on group A and Group B.

PoE Switch Connector Define (Rear IO)



PoE Switch LED Indicator Status (Front Side)

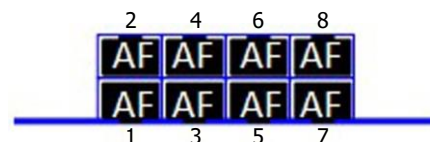


- When the cable is plugged into the PoE port and if the device is detected, then the LED will indicate the corresponding port.
- When PoE overload >120W, the LED of the last plug in PoE port will blink.

PoE Switch Deployment

1. AF Mode

Group A: Port 1, 2, 3, 4, 5, 6, 7, 8



Group B: Port 9, 10, 11, 12, 13, 14, 15, 16

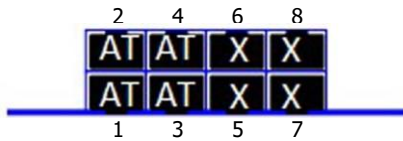




2. AT Mode

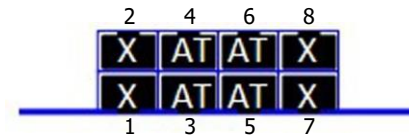
Condition 1:

Group A: Port 1, 2, 3, 4

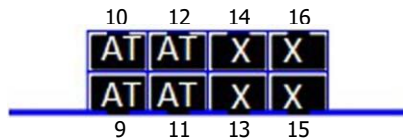


Condition 2:

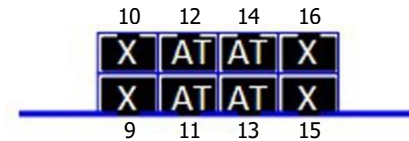
Group A: Port 3, 4, 5, 6



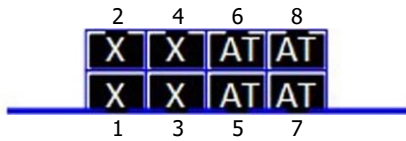
Group B: Port 9, 10, 11, 12



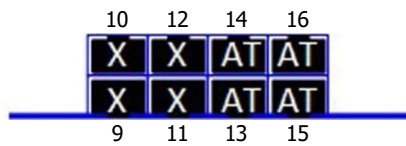
Group B: Port 11, 12, 13, 14



Condition 3:
Group A: Port 5, 6, 7, 8



Group B: Port 13, 14, 15, 16

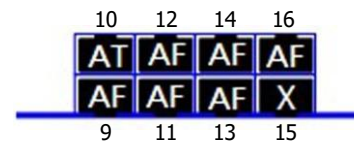


3. AF/AT Multi-mode

Condition 1:
Group A: 1AT + 6AF



Group B: Port: 1AT + 6AF

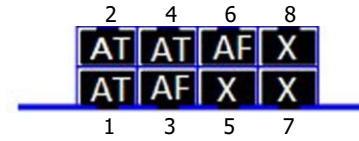




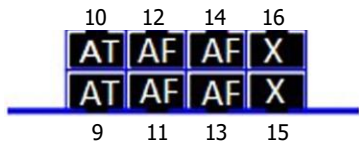
Condition 2:
Group A: 2AT + 4AF



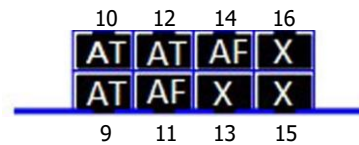
Condition 3:
Group A: 3AT + 2AF



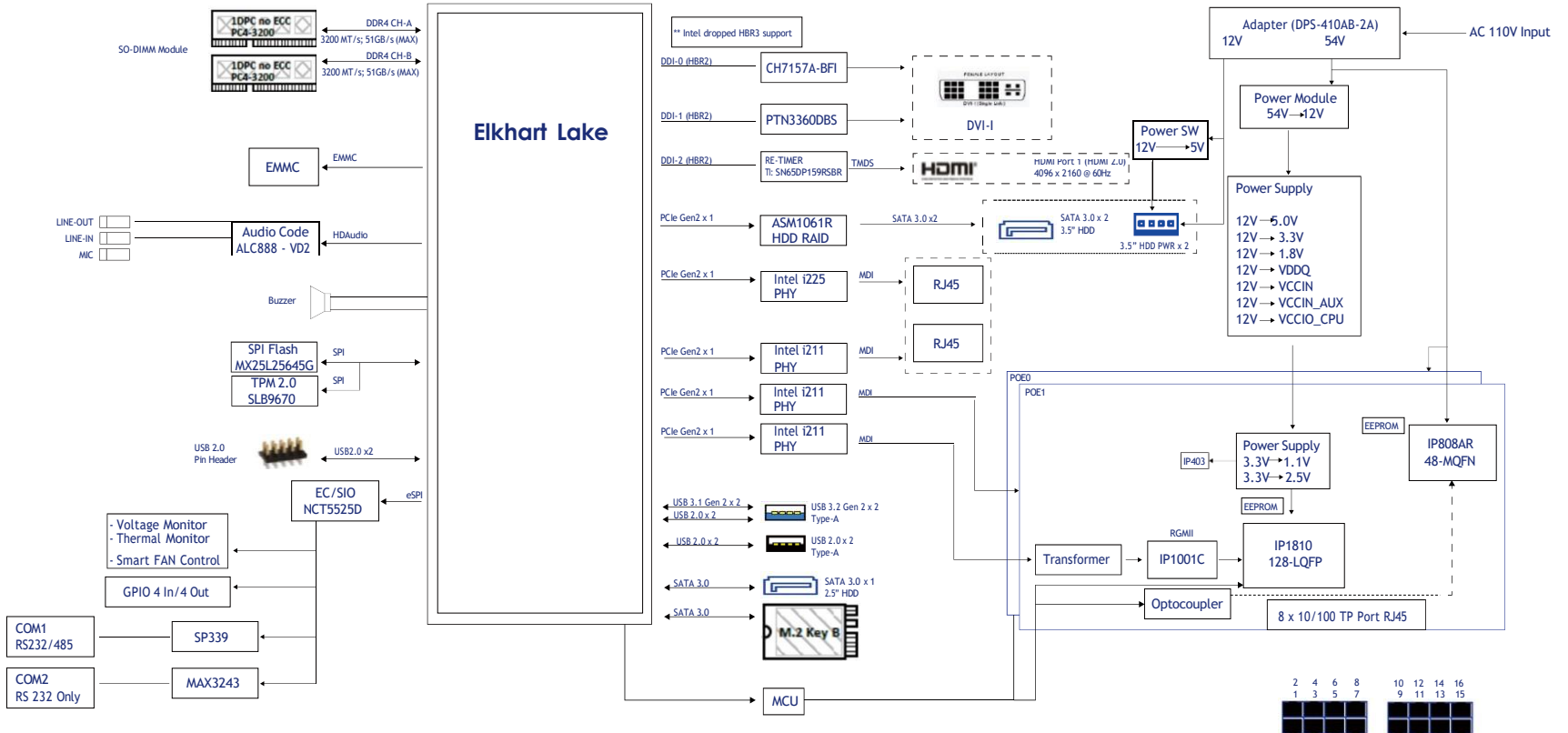
Group B: 2AT + 4AF



Group B: 3AT + 2AF



Block Diagram



CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover

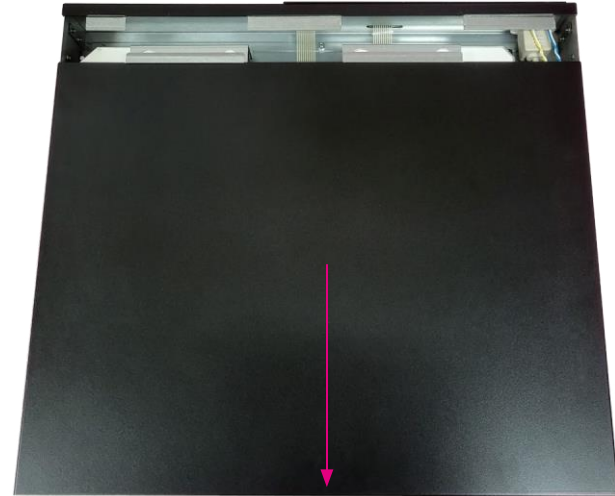


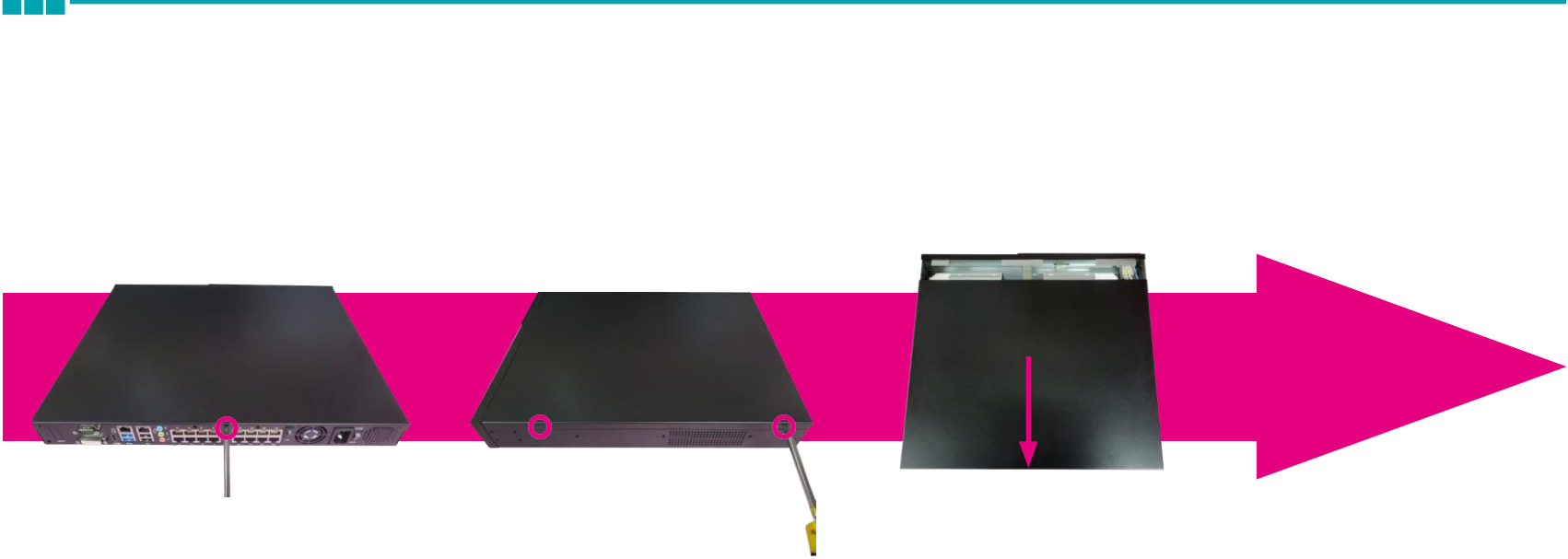
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Remove the 5 screws on the system's top cover.



2. Remove the top cover.



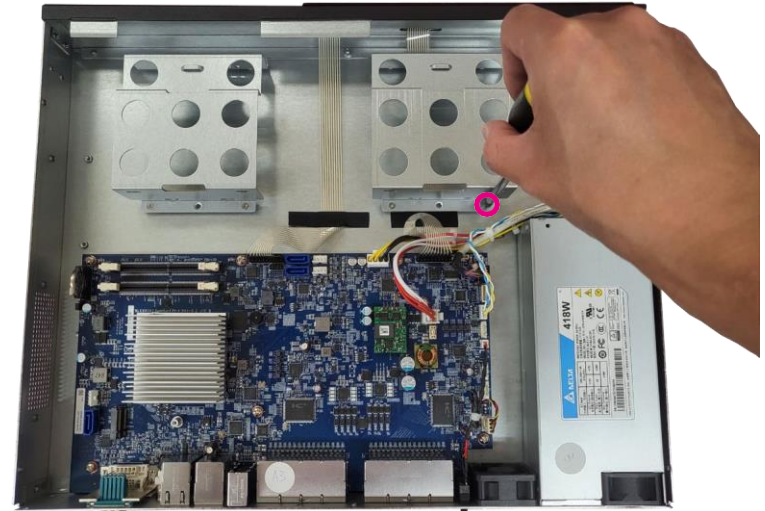
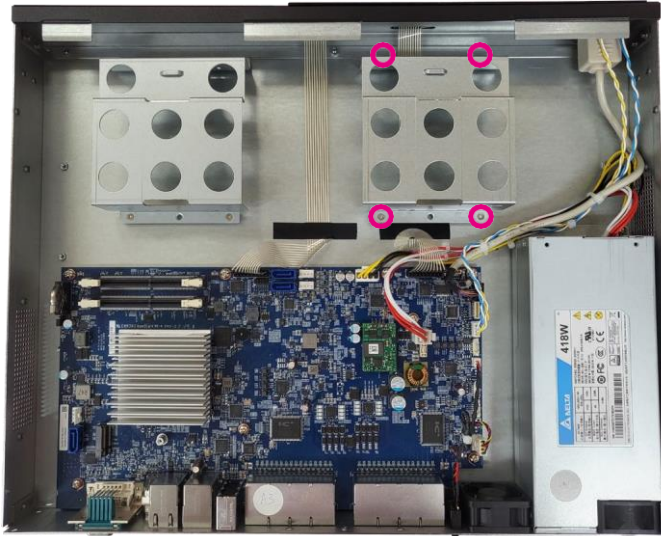


Complete!

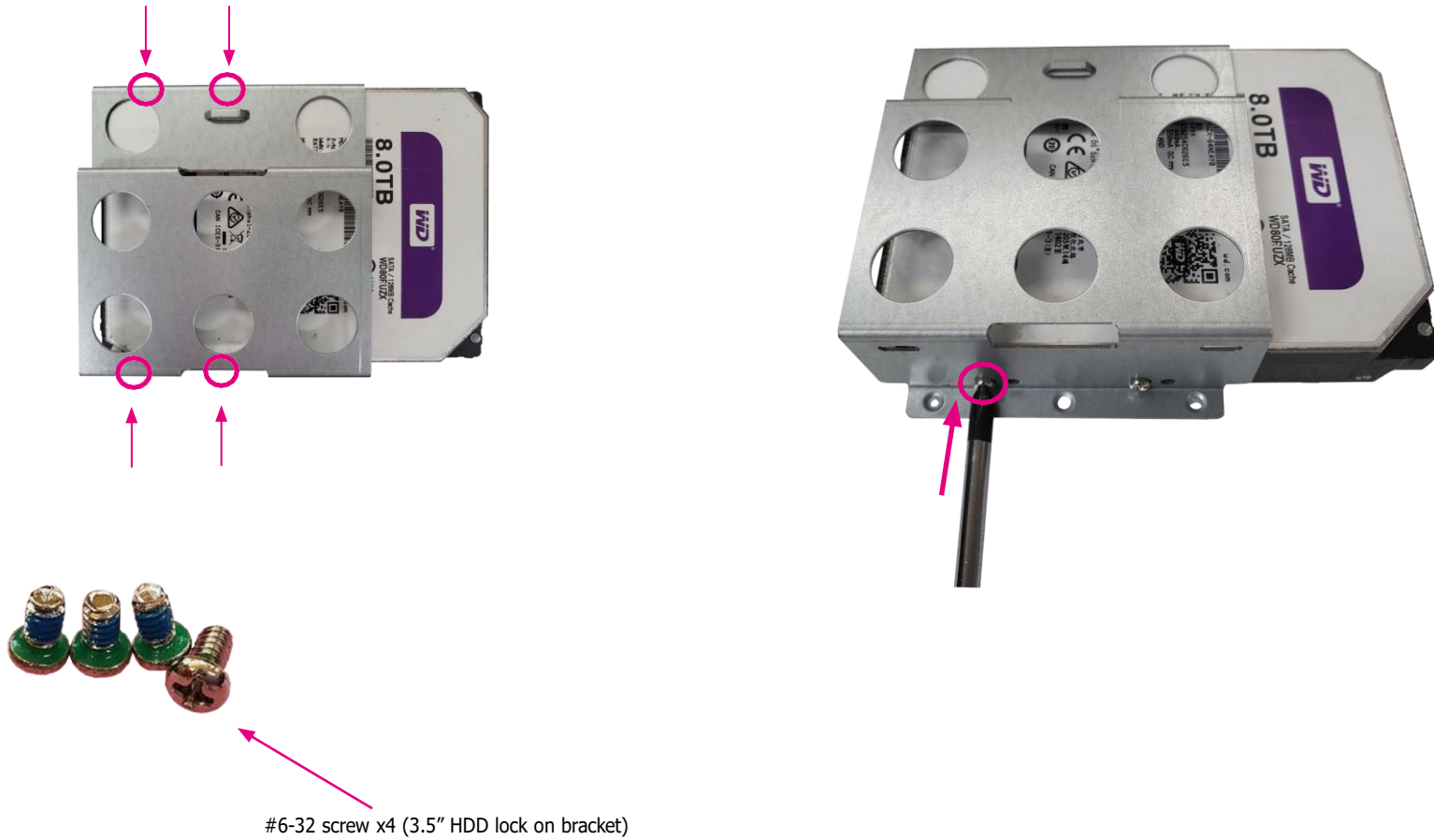


Installing the 3.5" HDD

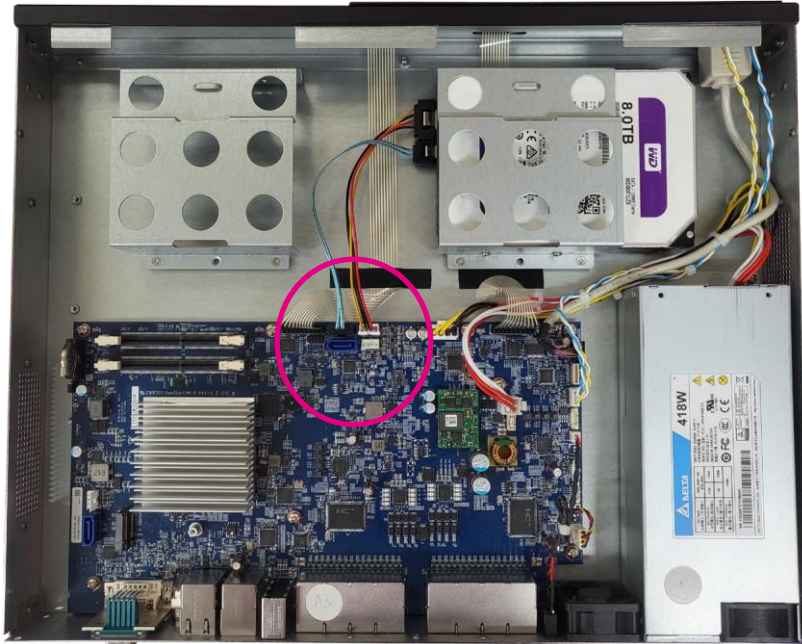
1. Remove the HDD bracket.



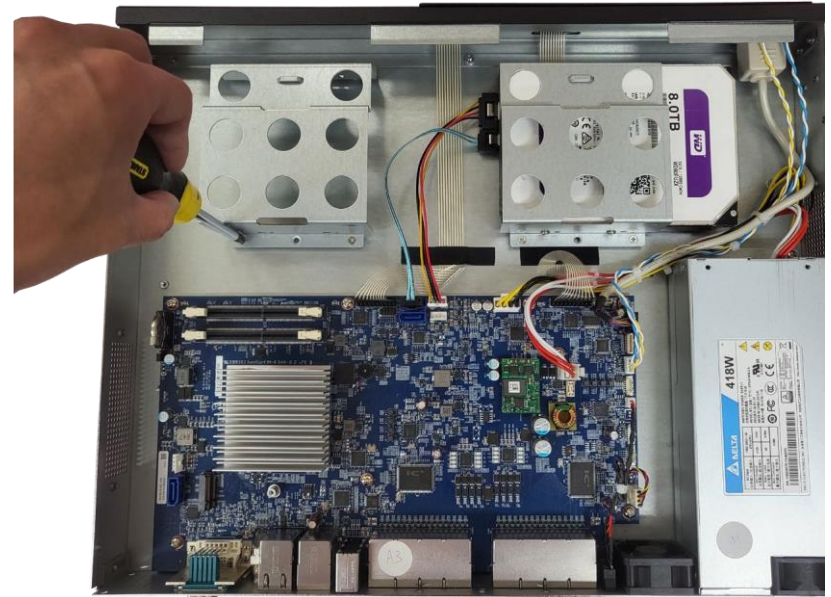
2. Set 3.5" HDD into the HDD bracket. (Use #6-32 type screw)



3. Plug in the HDD SATA cable** and SATA power cable*, lock the screw into the system.

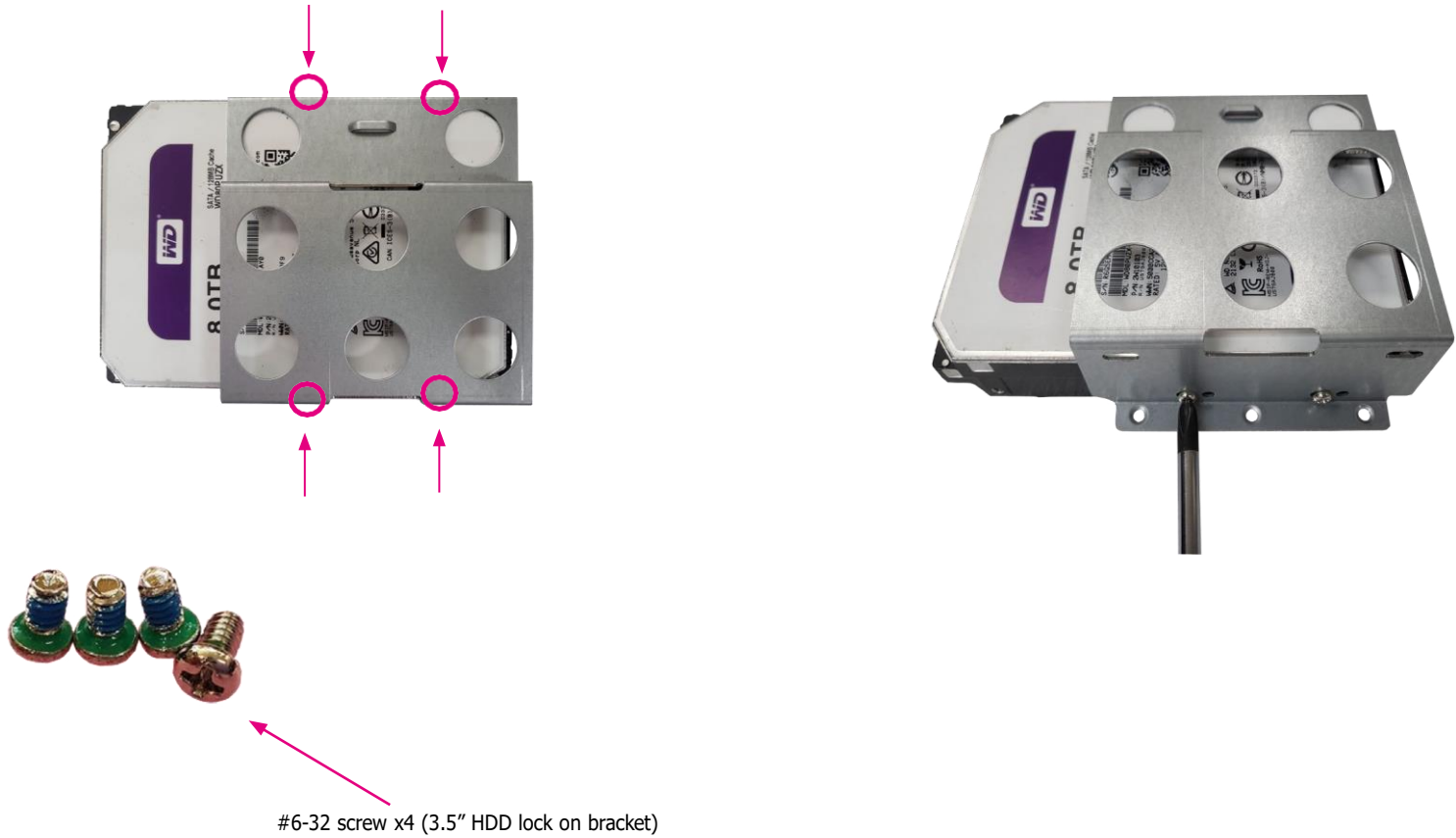


4. Remove the HDD bracket (Left).

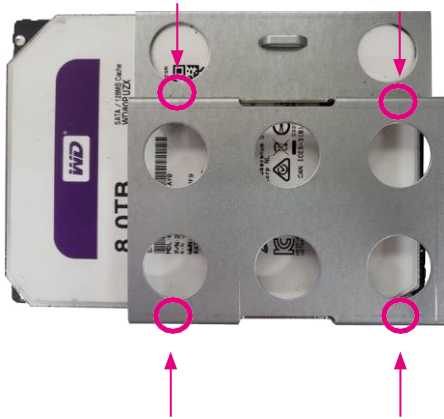


Note: HDD SATA cable should be installed at CN6 of the mainboard. SATA power cable should be installed at CN8 of the mainboard.

5. Set 3.5" HDD into the HDD bracket (use #6-32 type screw).

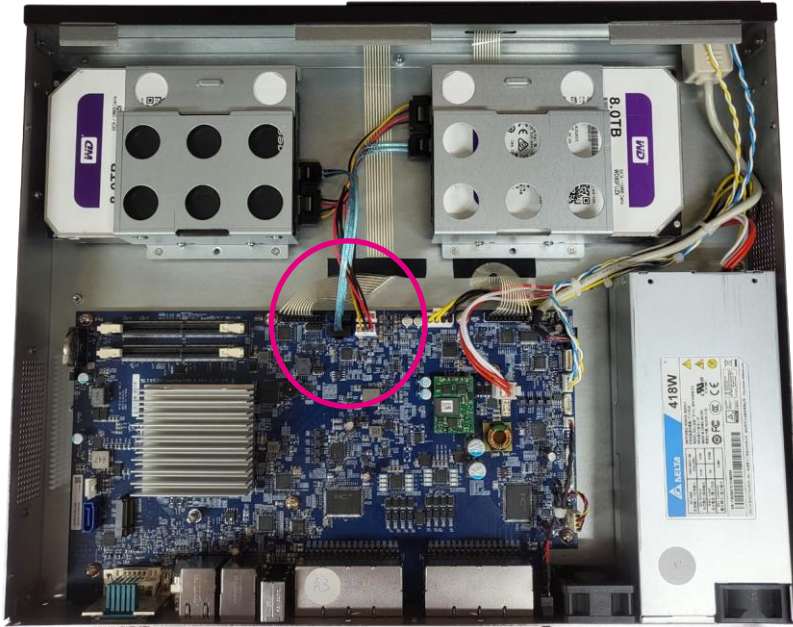


6. Set 2.5" SSD into the HDD bracket (use M3 type screw).



M3 screw x4 (2.5" HDD lock on bracket)

7. Plug in the HDD SATA cable** and SATA power cable*, lock the screw into the system.



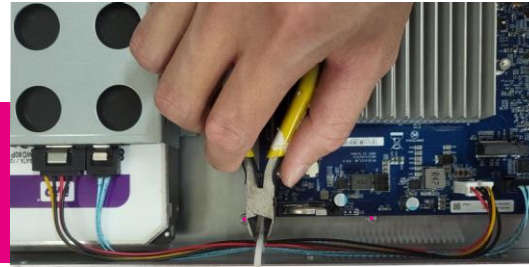
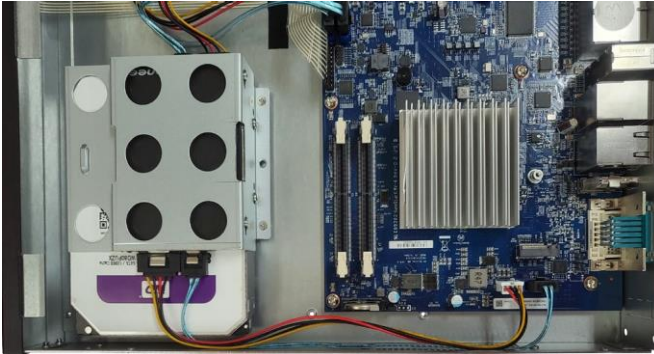
Note: HDD SATA cable should be installed at CN7 of the mainboard. SATA power cable should be installed at CN9 of the mainboard.

8. Plug in the SSD SATA cable** and SATA power cable*.

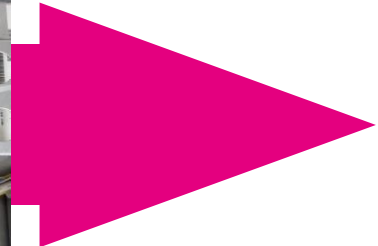
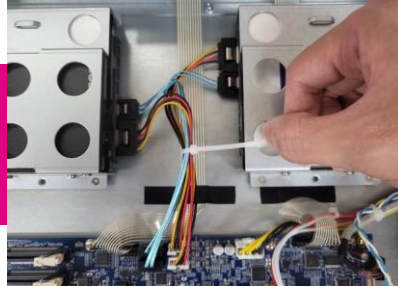
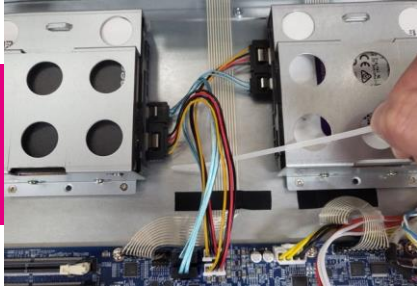


Note: 2.5" SSD/HDD SATA cable should be installed at CN1 of the mainboard. 2.5" SSD/HDD SATA power cable should be installed at CN2 of the mainboard.

9. Tightening the cable for 2.5" SSD.



9. Tightening the cable for 3.5" SSD.

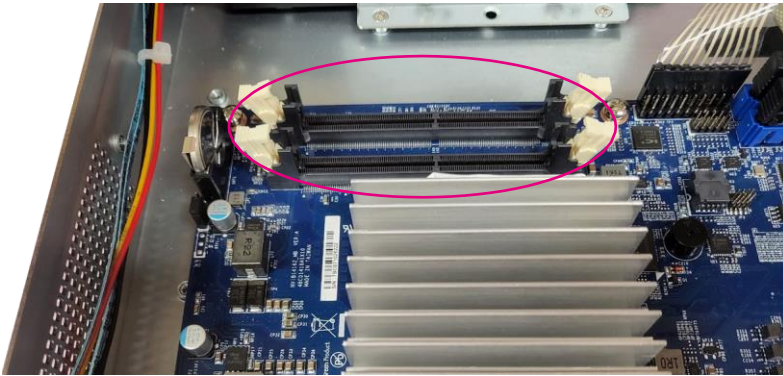


Complete!

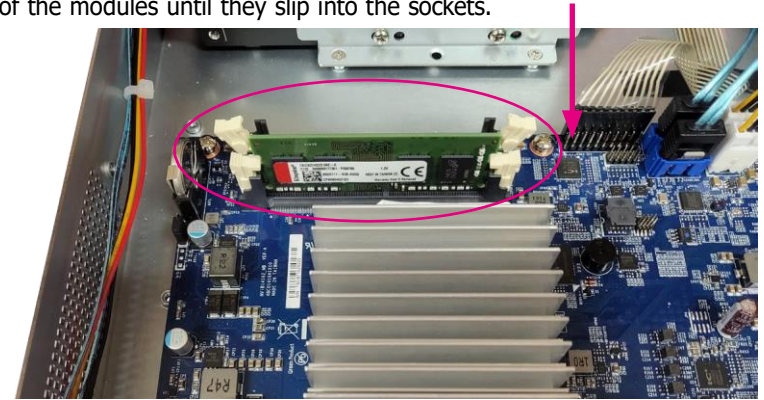


Installing Memory SO-DIMM (Use DDR4 SO-DIMM)

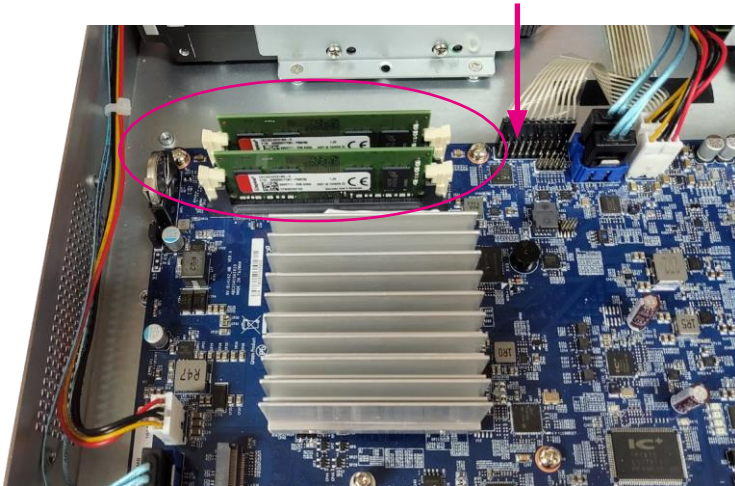
1. Locate the DIMM memory sockets.



2. Release the locks on the DIMM memory sockets. Insert the modules into the sockets at a 90 degree angle. Apply firm even pressure to each end of the modules until they slip into the sockets.

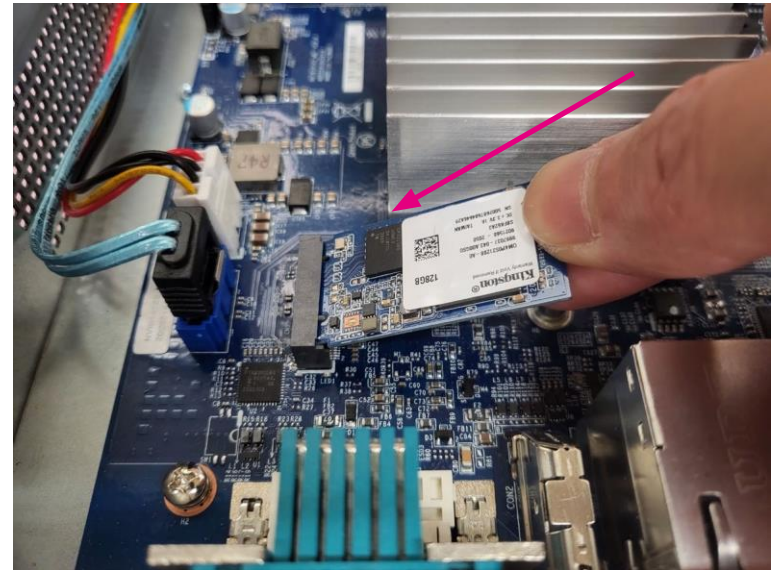
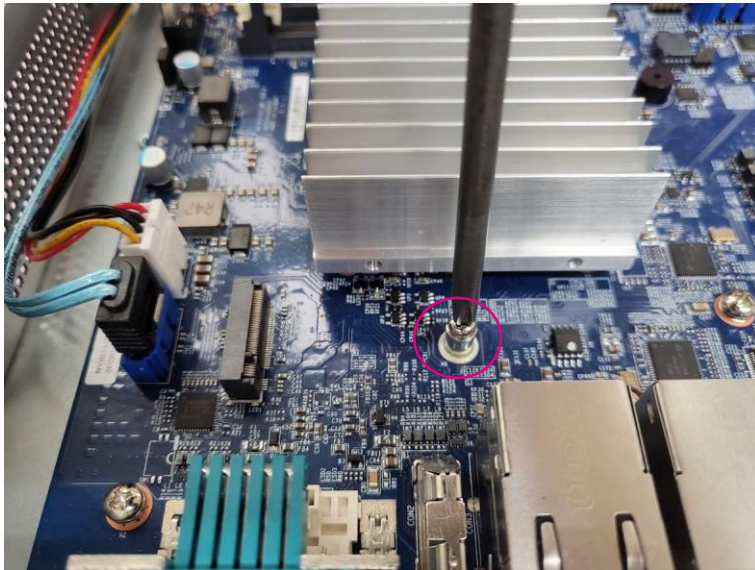


3. Release the locks on the second DIMM memory sockets. Insert the other module into the sockets also at a 90 degree angle. Apply firm even pressure to each end of the modules until they slip into the sockets.



Installing M.2 SSD

1. First, remove the screw on the board.
2. Insert the M.2 SSD into the M.2 slot at a 45 degree angle until the gold -plated connector on the edge of the module completely disappears inside the slot.



3. With the module fully inserted, tighten a screw into the mounting hole on the module to secure it.



4. Complete!



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the NRP14162 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 Diviotec website at diviotec.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 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 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

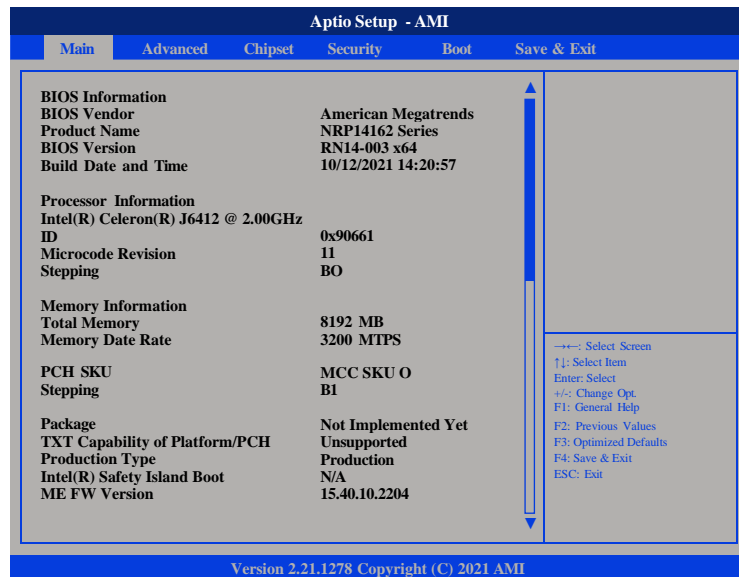
When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

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.

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.

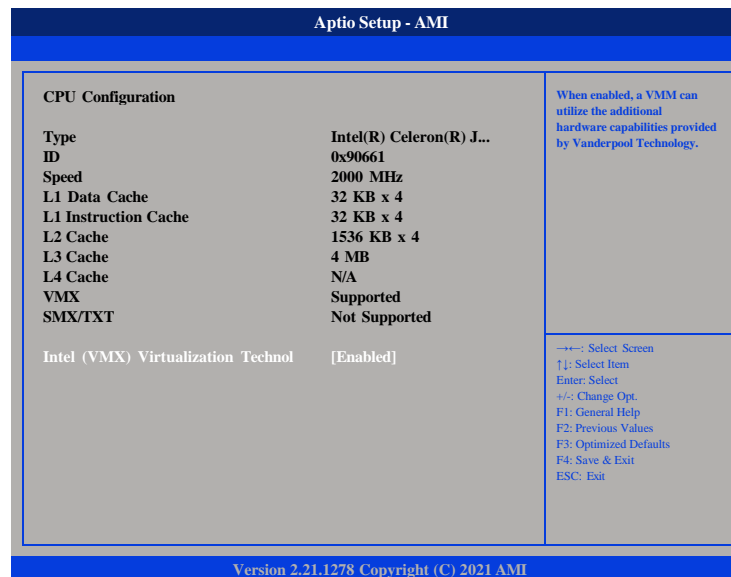


Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to view CPU status and configure CPU parameters.

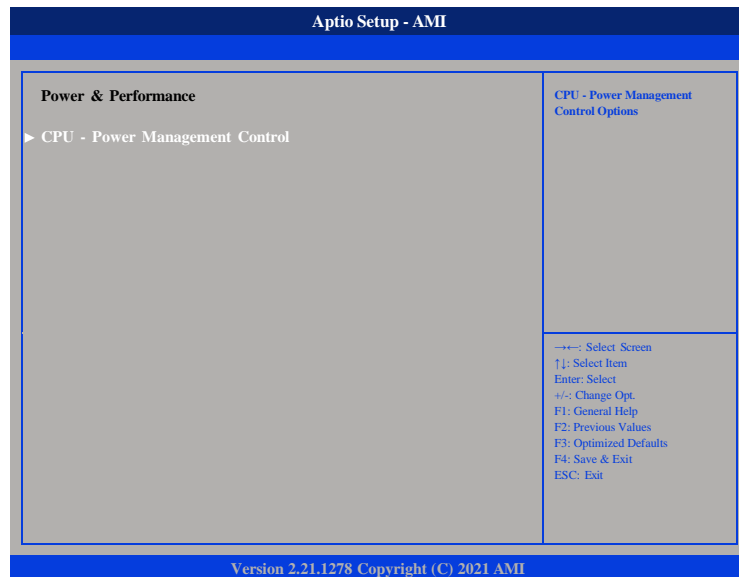


Intel® (VMX) Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Power & Performance

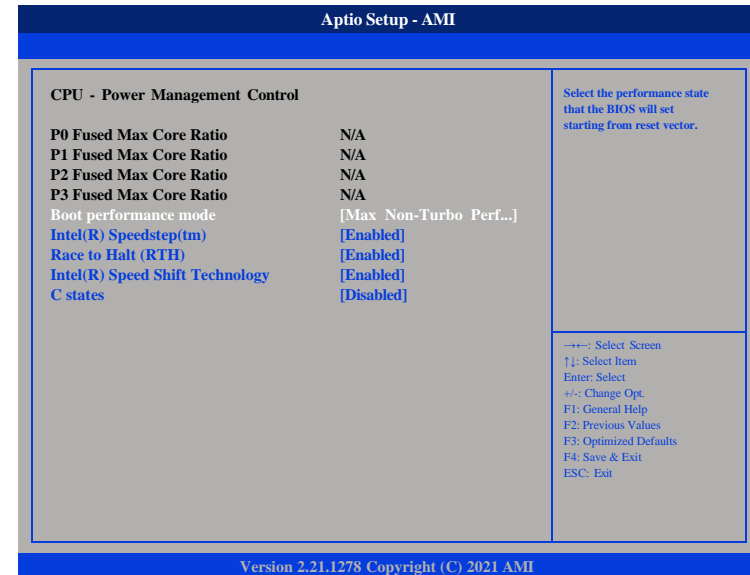
This section is used to configure the power management features of the CPU.



CPU - Power Management Control

Enters the CPU - Power Management Control sub-menu.

CPU - Power Management Control



Boot Performance Mode

Configures the performance state that the BIOS will set before OS handoff.

Intel® Speedstep™

Enables or disables Intel SpeedStep technology.

Race to Halt (RTH)

Enables or disables RTH feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power.

Intel® Speed Shift Technology

Enables or disables Intel Speed Shift Technology support. Enabling it will expose the CPPC v2 interface to allow hardware controlled P-states.

C states

Enables or disables CPU C states support for power saving.

Trusted Computing

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

Aptio Setup - AMI		
TPM 2.0 Device Found		Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available.
Firmware Version:	7.62	
Vendor:	IFX	
Security Device Support	[Enabled]	
Active PCR banks	SHA256	
Available PCR banks	SHA-1, SHA256	
SHA-1 PCR Bank	[Disabled]	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	
Endorsement Hierarchy	[Enabled]	
TPM 2.0 UEFI Spec Version	[TCG_2]	
Physical Presence Spec Version	[L3]	
TPM 2.0 InterfaceType	[TIS]	
Device Select	[Auto]	
		←→ Select Screen ↑↓ Select Item Enter: Select ←/→ Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278 Copyright (C) 2021 AMI		

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

Scheduling an operation for the security device.

Note: Your computer will reboot during restart in order to change state of security device.

Platform Hierarchy

Enables or disables platform hierarchy.

Storage Hierarchy

Enables or disables storage hierarchy.

Endorsement Hierarchy

Enables or disables endorsement hierarchy.

TPM 2.0 UEFI Spec Version

Select the TCG 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 Presence Spec Version

Select to tell O.S. to support PPI Spec Version 1.2 or 1.3.

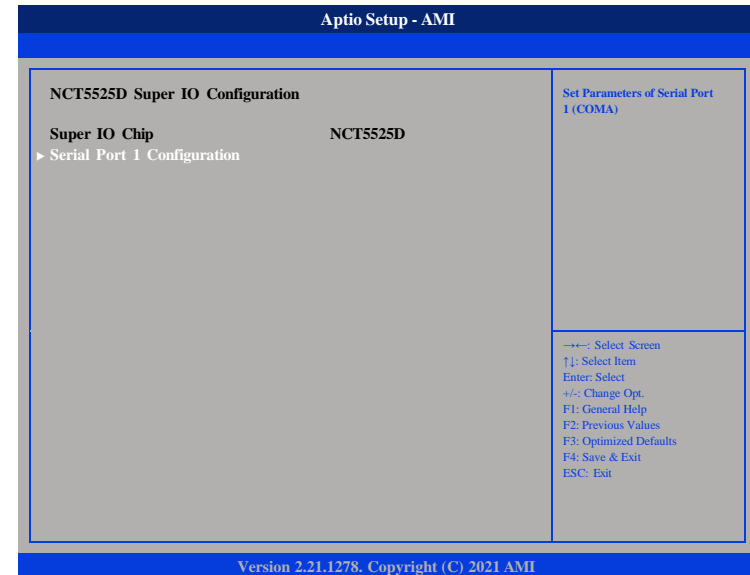
Note some HCK tests might not support 1.3.

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 with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

NCT5525D Super IO Configuration

This section is used to configure the serial port.

**Super IO Chip**

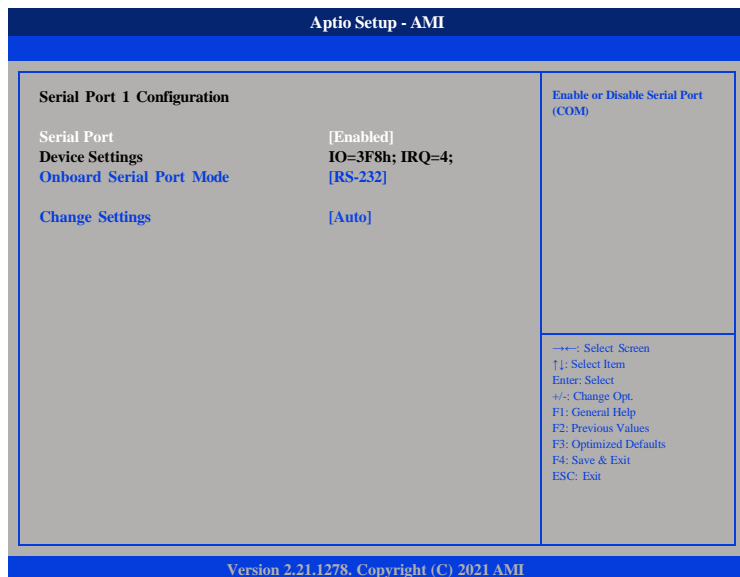
Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

Configuration settings for serial port 1.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

Enables or disables serial port.

Onboard Serial Port Mode

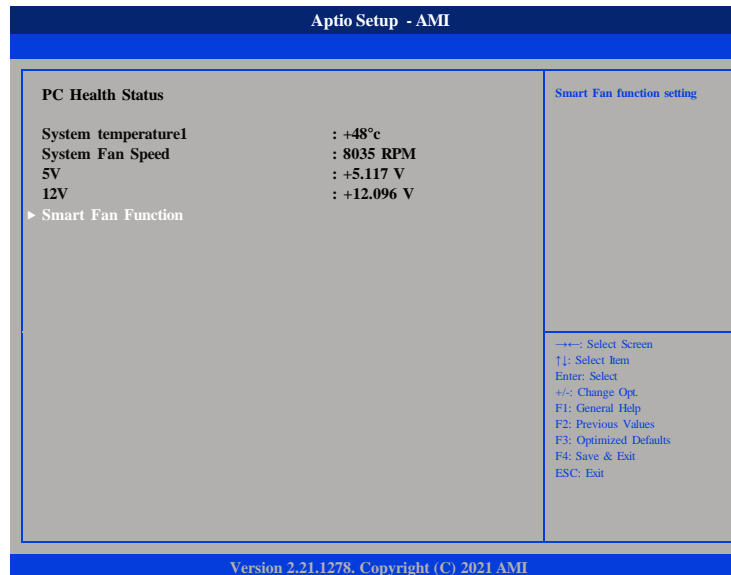
This field is used to configure the mode of serial port as RS232 or RS485.

Change Settings

Select an optimal settings for Super IO Device.

Hardware Monitor

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



System temperature

Detects and displays current system temperature.

System Fan Speed

Detects and displays current system fan speed.

5V to 12V

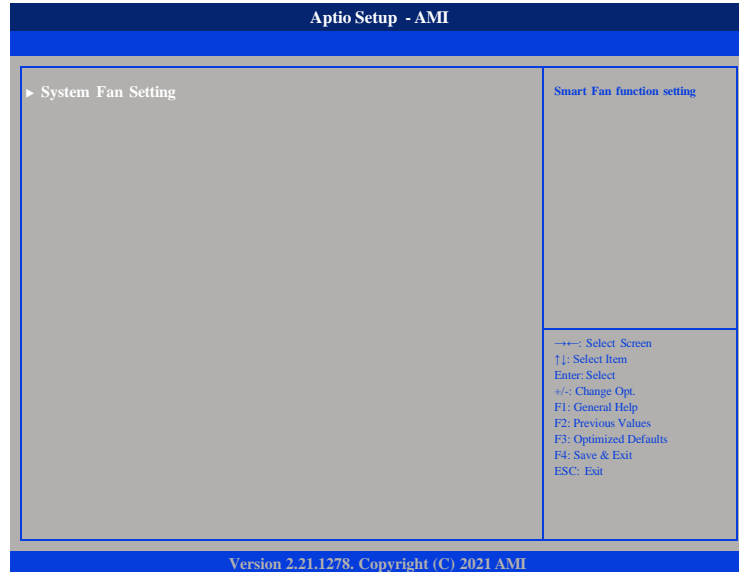
Detects and displays the output voltages.

Smart Fan Function

Configures the smart fan function settings.

System Fan Setting

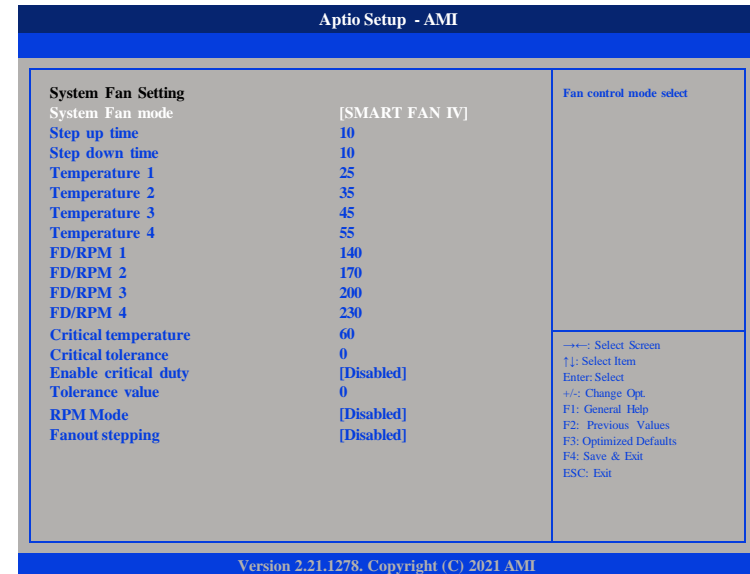
This section is used to configure system fan settings.



System Fan Setting

Configures smart fan function settings.

System Fan Setting



System Fan mode

Configures the fan mode. The options are Manual Mode, Thermal Cruise Mode (automatic fan mode), Speed Cruise Mode or Smart Fan IV Mode.

Step up time

The amount of time fan takes to increase its value by one step. (Units are intervals of 0.1 second)

Step down time

The amount of time fan takes to decrease its value by one step. (Units are intervals of 0.1 second)

Temperature 1 to Temperature 4

Configures the temperature setting.

FD/RPM 1 to FD/RPM 4

The value of Fan Duty/RPM when temperature is T1 to T4.

Critical temperature

Configures the time that Fan Out requires for reducing its value by one step.

Critical tolerance

Configures the tolerance of critical temperature.

Enable critical duty

Enables critical duty, if enabled, it will use critical duty value for fan out. If not will use full speed for fan out.

RPM Mode

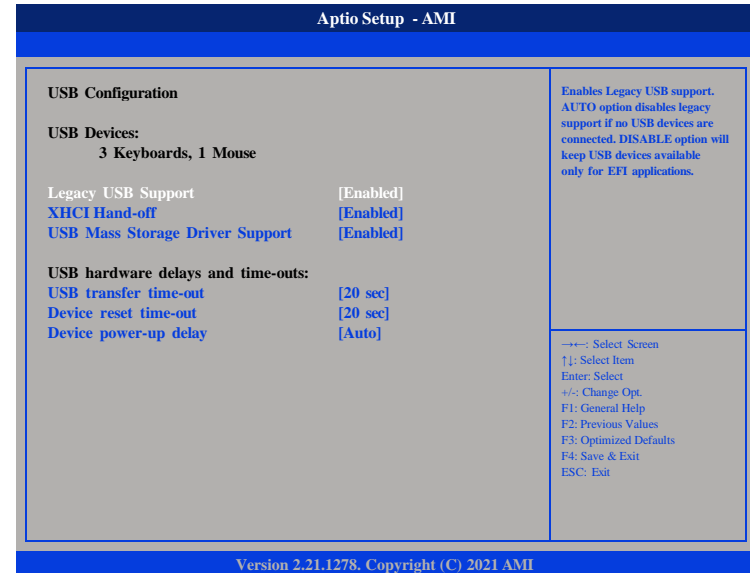
Enables or disables Smart Fan IV close loop fan control RPM Mode.

Fanout stepping

Enables or disables Smart Fan IV stepping.

USB Configuration

This section is used to configure USB parameters.



Legacy USB Support

Enables Legacy USB.

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

Disable Keeps USB devices available only for EFI applications

XHCI Hand-off

This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should be claimed by 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

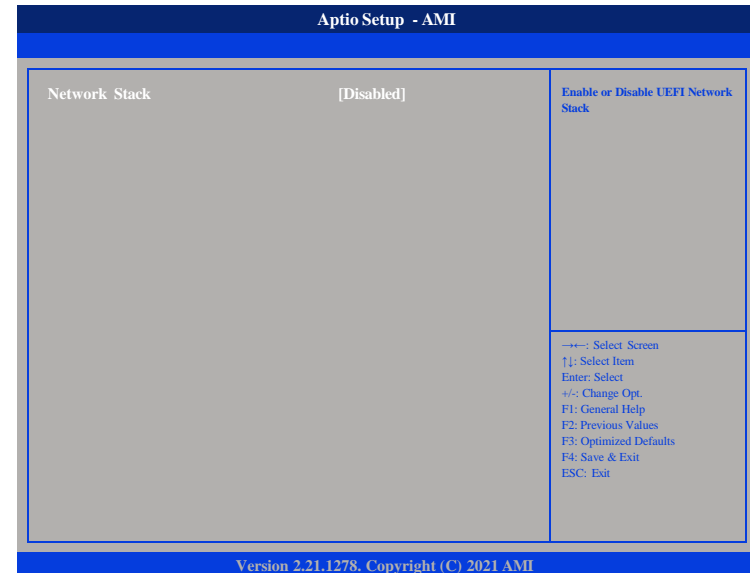
Selects the USB mass storage device start unit command time-out.

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 100ms, for a Hub port the delay is taken from Hub descriptor.

Network Stack

This section is used to configure the network stack.

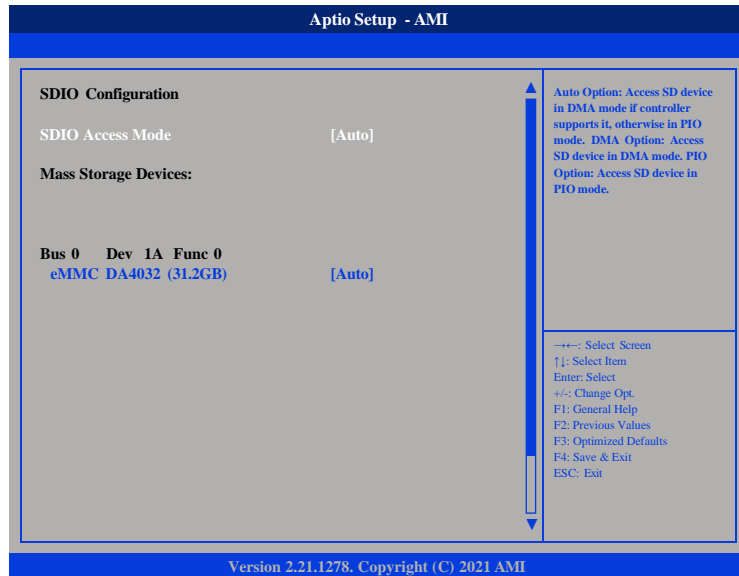


Network Stack

Enables or disables UEFI network stack.

SDIO Configuration

This section is used to configure the SDIO access mode.



SDIO Access Mode

Auto option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode.

DMA option: Access SD device in DMA mode.

PIO option: Access SD device in PIO mode.

eMMC DA4032 (31.2GB)

Mass storage device emulation type. 'Auto' enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD.

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.



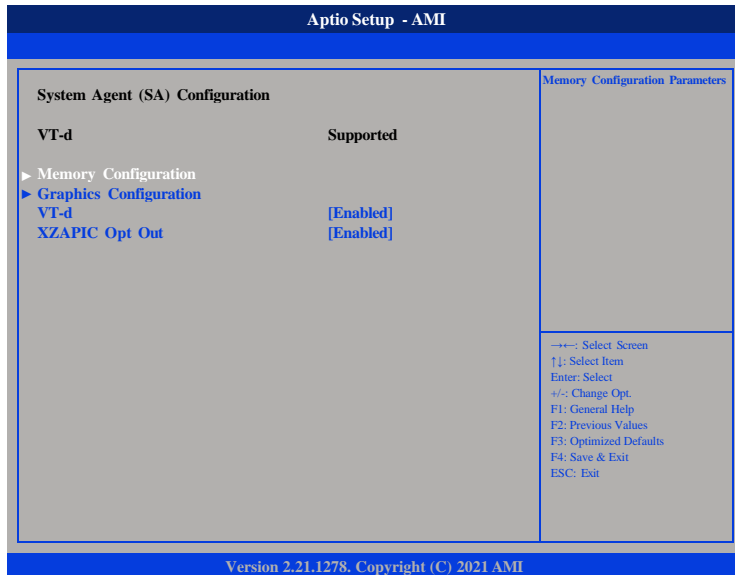
System Agent (SA) Configuration

System Agent (SA) parameters.

PCH-IO Configuration

PCH-IO parameters.

System Agent (SA) Configuration



Memory Configuration

Configures the memory settings.

Graphics Configuration

Configures the graphics chip settings.

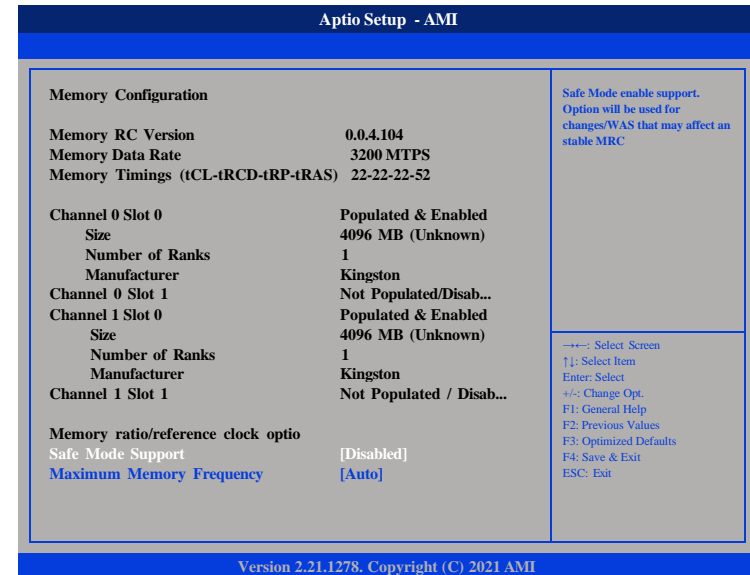
VT-d

Enables or disables the VT-d.

X2APIC Opt Out

Enables or disables X2APIC mode.

Memory Configuration



Memory Configuration

Detects and displays information of the memory installed in the system.

Safe Mode Support

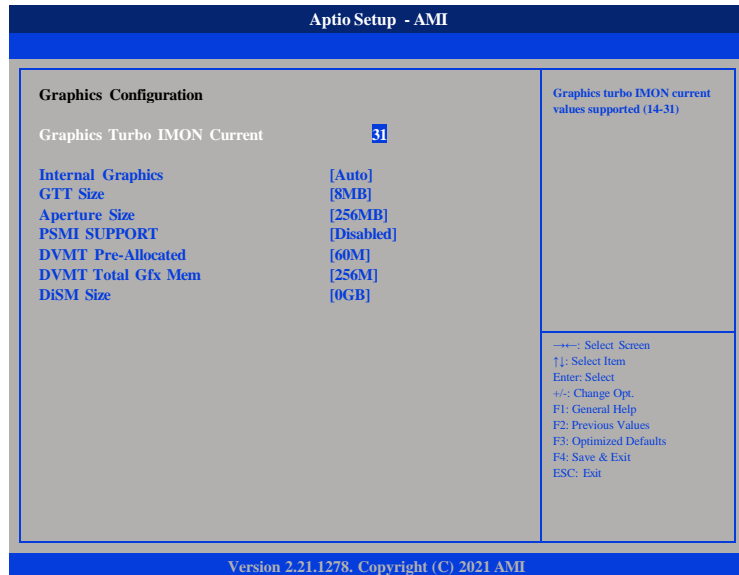
Safe Mode enables support.

Option will be used for changes/WAS that may affect an stable MRC.

Maximum Memory Frequency

Configures the maximum frequency of the memory.

Graphics Configuration



Graphics Turbo IMON Current

Configures the graphics turbo IMON value. The supported range is 14 to 31.

Internal Graphics

Keep IGFX enabled based on the setup options.

GTT Size

Configures the GTT memory size.

Aperture Size

Configures the Aperture size.

Note: above 4MB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

PSMI Support

Enables or disables PSMI.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem

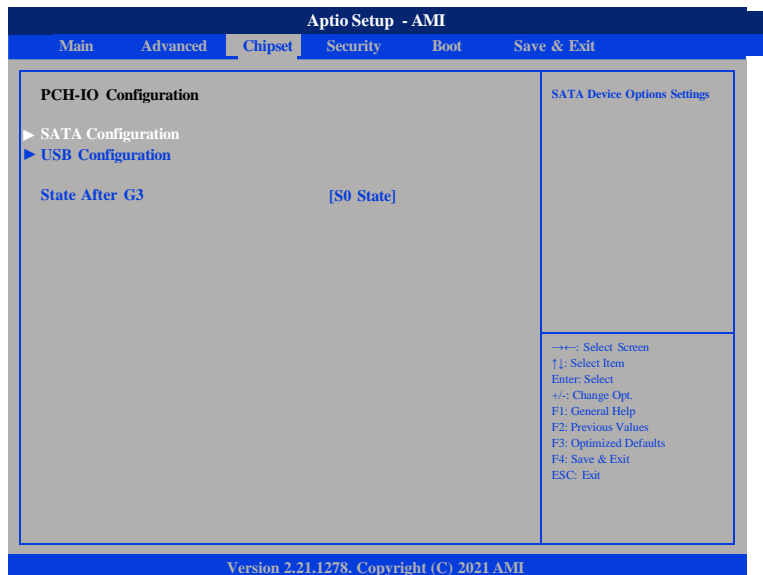
Configures the DVMT5.0 Total Graphic Memory size used by the IGD.

DiSM Size

Configures the DiSM Size for 2LM SKu.

PCH-IO Configuration

This section is used to configure PCH-IO configuration.



SATA Configuration

Configures SATA drives.

USB Configuration

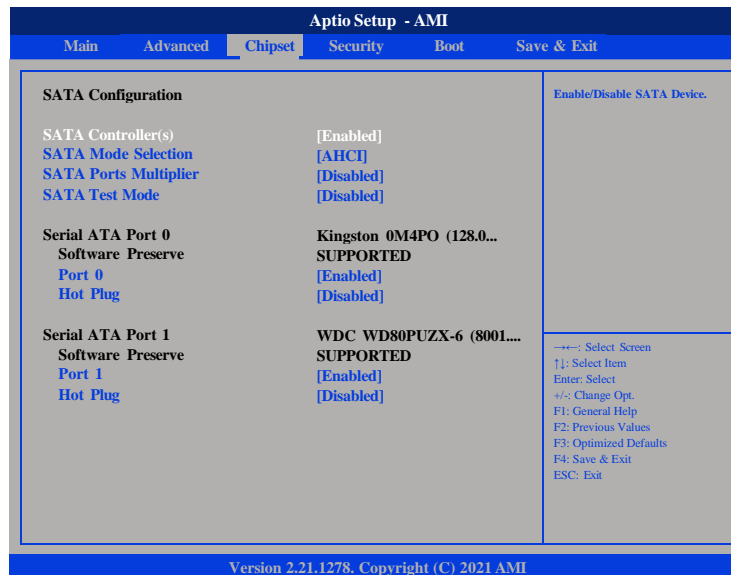
Configures the USB.

State After G3

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

SATA Configuration

This section is used to configure the SATA device option settings.



SATA Controller(s)

Enables or disables the SATA controller.

SATA Mode Selection

Configures the SATA as AHCI mode.

AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

SATA Ports Multiplier

Enables or disables ports multiplier.

SATA Test Mode

Enables or disables test mode.

Port 0 to Port 1

Enables or disables SATA Port 0 to 1.

Hot Plug

Enables or disables hot plugging feature on SATA port 0 to port 1.

USB Configuration

Aptio Setup - AMI		
Main	Advanced	Security Boot Save & Exit
USB Configuration		Option to enable Compliance Mode. Default is to disable Compliance Mode. Change to enabled for Compliance Mode testing.
XHCI Compliance Mode	[Disabled]	
xDCI Support	[Disabled]	←→: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
USB2 PHY Sus Well Power Gating	[Enabled]	
USB3 Link Speed Selection	[GEN2]	
USB PDO Programming	[Enabled]	
USB Overcurrent	[Enabled]	
USB Overcurrent Lock	[Enabled]	
USB Port Disable Override	[Disabled]	
USB Device/HOST Mode Override	[Disabled]	
USB UCSI ACPI device	[Disabled]	
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XHCI Compliance Mode

Option to enable compliance mode, default is to disable compliance mode.

xDCI Support

Enables or disables xDCI (USB OTG Device)

USB2 PHY Sus Well Power Gating

Select 'Enabled' to enable SUS Well PG for USB2 PHY. This option has no effect on PCH-H.

USB3 Link Speed Selection

This option is to select USB3 Link Speed Gen1 or Gen2.

USB PDO Programming

Select 'Enabled' if port disable override functionality is used.

USB Overcurrent

Select 'Disabled' for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.

USB Overcurrent Lock

Select 'Enabled' if overcurrent functionality is used. Enabling this will make xHCI controller consume the overcurrent mapping data.

USB Port Disable Override

Selectively enable or disable the corresponding USB port from reporting a device connection to the controller.

USB Device/HOST Mode Override

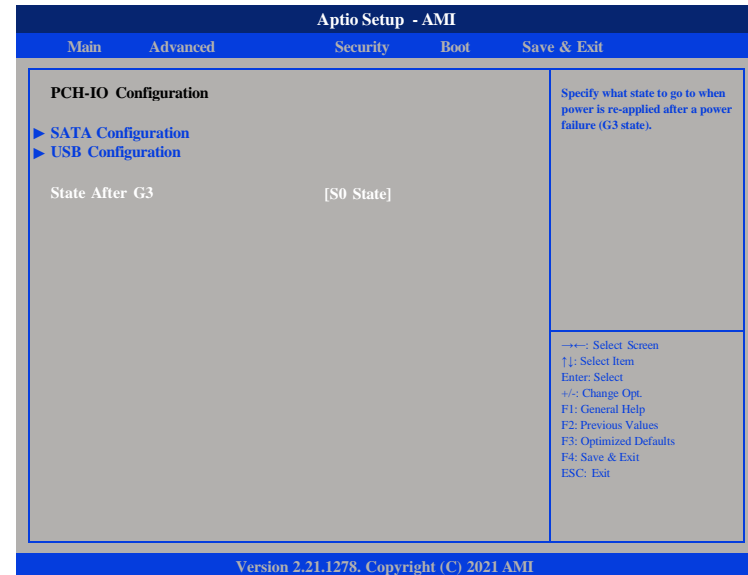
Selectively enable or disable the corresponding USB 2.0 and USB 3.0 port device mode.

USB UCSI ACPI device

Enables or disables USB UCSI ACPI device

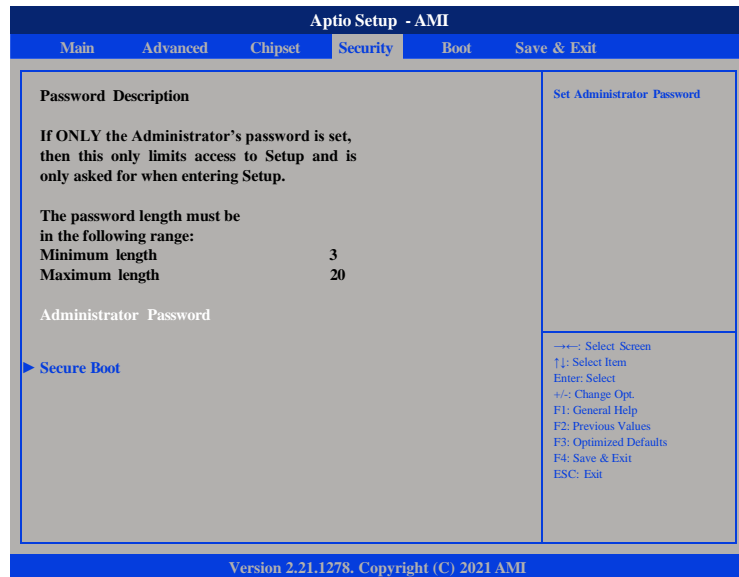
PCH-IO Configuration

This section is used to configure PCH-IO configuration.

**State after G3**

Specify what state to go to when power is re-applied after a power failure.

Security



Administrator Password

Select this to reconfigure the administrator's password.

Secure Boot



Secure Boot

Select this to enable or disable Secure Boot. Secure Boot only works when the system runs in user mode.

Secure Boot Mode

Select this to configure the Secure Boot mode.

Standard

Fixed scure boot policy.

Custom

Secure boot policy variables can be configured by a physically present user without full authentication.

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.

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.

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.

Save & Exit



Save Changes and Reset

To save the changes and restart the system, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Reset

To exit the Setup utility without saving the changes and restart the system, 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.

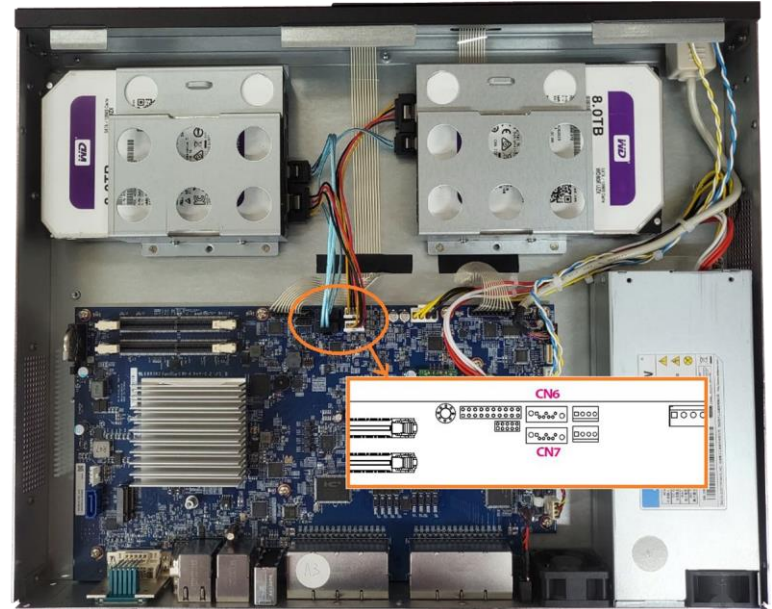
CHAPTER 5: STORAGE RAID SETUP

Hardware Setup

NRP14162 have RAID 0, 1, SPAN mode to enhance the storage management function.

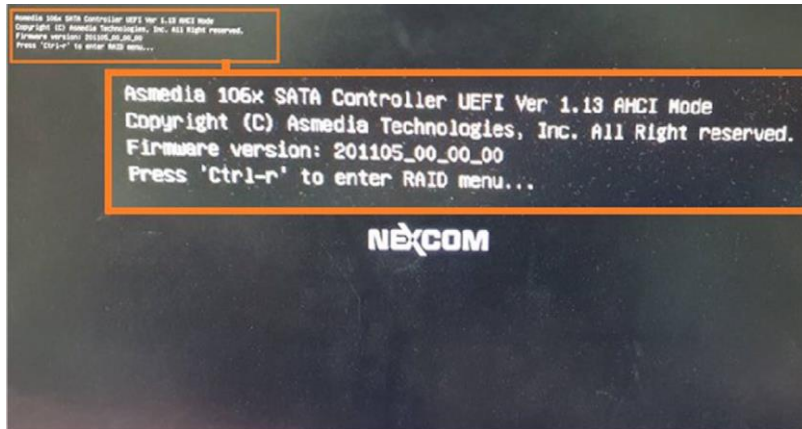
Before setting the RAID function, you must complete the HDD installation first, the corresponding port number as below.

HDD Port No	SATA Channel
P0	CN7
P1	CN6

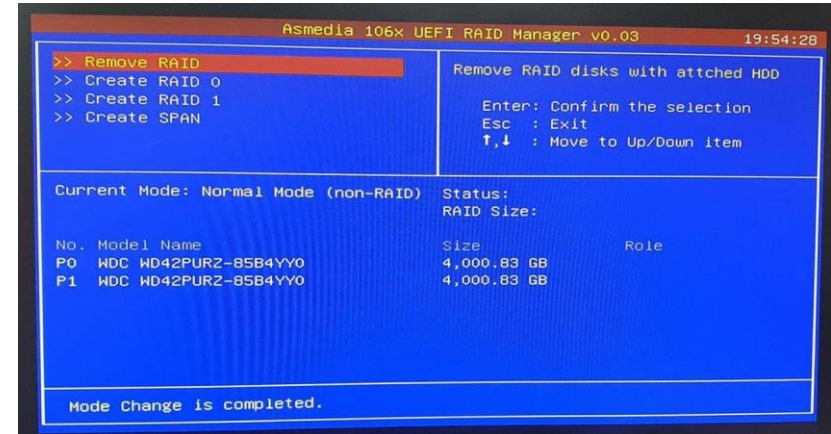


Starting RAID Manager Tool

When powering on the computer, immediately press <Ctrl + R> to access the RAID Manager Tool UI. Here, the user may start building the RAID function on the system.



RAID Program Main Menu



The main menu allows you to select from several setup functions. Use arrow keys to select among the items and press to “enter” to select the function.

```

Enter: Confirm the selection
Esc  : Exit
↑,↓  : Move to Up/Down item

```

Functionality**Remove RAID**

Remove RAID disks with attached HDD

Create RAID 0

Create RAID 0 disks with attached HDD

Create RAID 1

Create RAID 1 disks with attached HDD

Create SPAN

Create SPAN disks with attached HDD

Status

Status	Description
Good	Volume set is healthy. The user's data is accessible.
Degraded	Volume set has seen a problem but the user's data is still accessible by using the array's redundancy data.
Rebuilding	Volume set is currently being rebuilt. The user's data is accessible.
Rebuild Failed	The target of the rebuild operation failed, but the user's data is still available. Another rebuild can be attempted.
Verify Failed	The target of the verify operation failed, but the user's data is still available. Another rebuild or verify can be attempted.
Rebuilding Paused	The target of the rebuild operation was paused. The user's data is accessible.
Verifying Paused	The target of the verify operation was paused. The user's data is accessible.
Not Configured	The array has not been created. The RAID mode can't be determined by firmware (include Conflicting Arrays).
Broken	The user's data is no longer accessible.