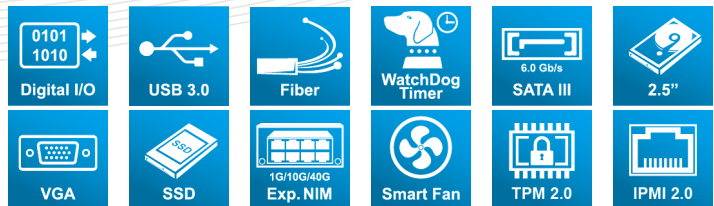# ANR-W480Ax

Networking 1U Rackmount

- *Intel [R] Xeon[R] W/Comet lake-S Embedded SKUs*
- *W480 PCH*
- *9 GbE & 2x SFP w/2-pair Bypass*
- *Exp. 2 NIM*

0101 1010 Digital I/O	USB 3.0	Fiber	WatchDog Timer	6.0 Gb/s SATA III	2.5"
VGA	SSD	1G/10G/40G Exp. NIM	Smart Fan	TPM 2.0	IPMI 2.0

User Manual

Acrosser Technology Co., Ltd.
www.acrosser.com

Industrial & Embedded Solutions

Disclaimer

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The product names appear in this manual are for identification purpose only. The trademarks and product names or brand names appear in this manual are the property of their respective owners.

Purpose

This document is intended to provide the information about the features and use of the product.

Audience

The intended audiences are technical personnel, not for general audiences.

WARNING

Danger of explosion if batteries are incorrectly replaced. Always replace the battery with the same specifications. Dispose of used batteries according to the manufacturer's instructions.

Before running the system, make sure the power cord is firmly plugged into the socket.

CAUTION

IEC 60417-6042 (2010-11)   IEC 60417-6172 (2012-09)

All power cords must be disconnected during product repair.

Ver: 100-006
Date: Dec. 14, 2022

To read this User Manual on your smart phone, you will have to install an APP that can read PDF file format first. Please find the APP you prefer from the APP Market.

Table of Contents

1. Introduction

The ANR-W480Ax networking product is based on Intel 10th Gen Core CPU and W480E PCH.

This networking appliance is highly flexible and suitable for several networking application like SD-WAN or Universal CPE, SDN server or enterprise firewall.

This product provides a compact but powerful system capability by supporting 8x GbE copper LANs and 2x GbE fiber networks(SFP). In addition, this appliance supports 2 NIM bay which can support 8x GbE copper or fiber port or even up to 2x 40GbE fiber ports. Please check your vendor for more information to meet your demand.

1.1. Specifications

System

Thermal Solution	• Hot-swappable PWM Smart Cooling Fans
CPU	• Intel® Xeon® W-1290E, 3.1GHz • Intel® Xeon® W-1270E, 3.2GHz • Intel® Comet Lake-S Core™ i9-10900E, 3.0GHz • Intel® Comet Lake-S Core™ i7-10700E, 3.0GHz • Intel® Comet Lake-S Core™ i5-10500E, 3.2GHz • Intel® Comet Lake-S Core™ i3-10100E, 3.2GHz
Chipset	• Intel® W480/W480E PCH
System Memory	• 4x UDIMM DDR4-2666 (up to 64GB) with mounting holes for DIMM fastener on PCB
BIOS	• Support Console Re-direction • Support Bypass Setting

Scenario	Normal	Bypass
SYS (ON)	V	
SYS (OFF)		V
WDT (Timeout)		V
PWR (Lost)	Remained prior status	

	• Support PXE boot via RJ-45
BIOS Function	• Support SSID

Network Interface

Ethernet (on-board)	• Intel® I210 (10/100/1000Mbps), LAN[1:9] LAN[9] as the Management Port. • Intel® I210-IS (10/100/1000Mbps), SFP[1:2]
LAN bypass	• 1st LAN bypass by LAN[1:2] • 2nd LAN bypass by LAN[3:4]

Storage

HDD	• 2x 2.5"/3.5" SATA-III Internal HDD Bay
M.2	• 1x M.2 Socket B-Key (2242, 2280)

Others

Watchdog Timer	• Software Programmable 0 ~ 255 Secs.
Battery	• Lithium Battery, 3V 220mAH (CR2032)
Hardware Monitoring	• CPU Voltage • CPU & SYS Temperature • FAN Speed
Security & Mgmt.	• On-board TPM 2.0
OS support	• Linux Kernel 5.2 & above, (64-bit) • CentOS 8 (CentOS 8 kernel need to be replaced with Linux Kernel 2.1 or above after installation)

Mechanical & Environment

Chassis Dimension	• 440 (W) x 44 (H) x 470 (D) mm
Operating Temperature	• 0 ~ 40°C (32 ~ 104°F)
Storage Temperature	• -20 ~ 80°C (-4 ~ 176°F)
Relative Humidity	• 0 ~ 90% @40°C, non-condensing
Power Supply Unit	• PSU For ANR-W480A1/2
Power Requirements	• ATX Circuit as AT Mode with Power On/Off Switch

EMC & Safety

Certification	• CE, FCC Class A, RoHS 2, cULus
Drop Test	• ISTA-2A 2006

1.2. Packing List

Check if the following items are included in the package.

Item	Q'ty
☐ ANR-W480Ax	1
☐ Power Cord	1/2 (2pcs for 1+1 RPSU)
☐ SATA Cables	2
☐ Ear Bracket set	1
☐ Screw Kits	1

1.3. ANR-W480Ax Comparison Table

	ANR-W480A1	ANR-W480A2
Typical Deployment	UTM/NGFW/NFV Server	UTM/NGFW/NFV Server
CPU Platform	• Intel 10th Gen. CPU (Comet Lake)	• Intel 10th Gen. CPU (Comet Lake)
PCH	• W480	• W480
Data path Interfaces	• 9x GbE RJ-45 (Include 1x Mgmt. port) • 2x SFP • 2x NIM (X8 Signal)	• 9x GbE RJ-45 (Include 1x Mgmt. port) • 2x SFP • 2x NIM (X8 & X4 Signal)
LAN Bypass	• 2 pair	• 2 pair
Memory	• 4x UDIMM	• 4x UDIMM
Display Interface	• VGA	• VGA
IPMI	• Optional IPMI 2.0 Card (AST2500)	• Optional IPMI 2.0 Card (AST2500)
Power	• 300W ATX PSU or 1+1 RPSU	• 300W ATX PSU or 1+1 RPSU
Storage	• 2x SATA3/M.2	• 2x SATA3/M.2
Console Port	• RJ-45/Micro USB	• RJ-45/Micro USB
TPM	• 2.0 (Infineon)	• 2.0 (Infineon)
LCM	• Optional	• Optional
Exp. PCIe Slot	• N/A	• One X8

Note: *Model ANR-W480A2 is not compatible with NIM x4 add-on cards ACC-NM1Z1-10F4, ACC-NM1Z1-40F1, or ACC-NM1Z1-40F2.*

1.4. Layout & Dimension

(Illustration model: Redundant 300W 1+1)
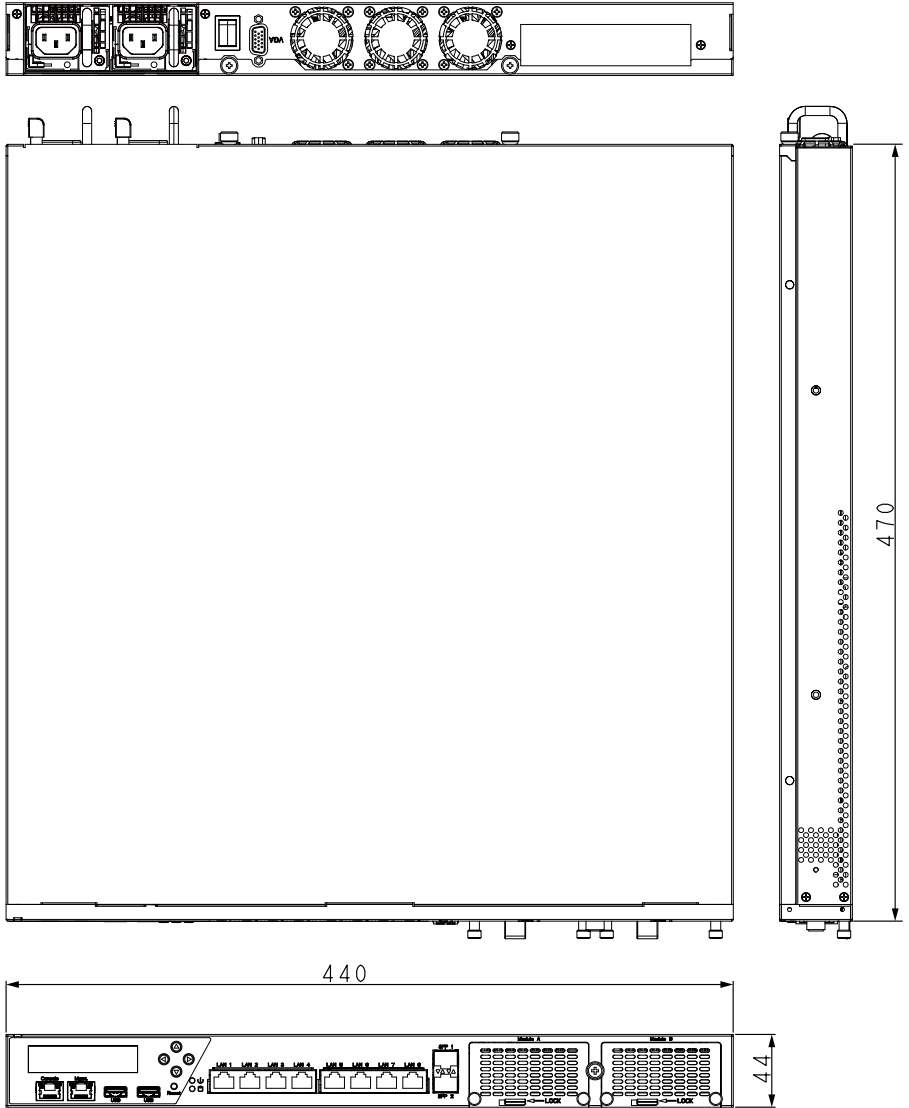
1.5. Front Panel
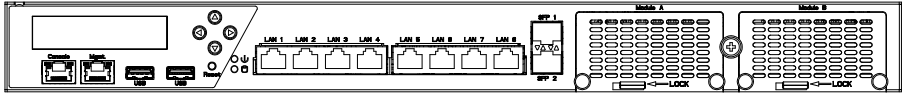
1.5.1. Module A/B: Network expansion module connector
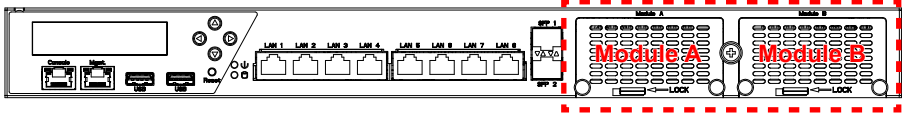
Note: *Inssert NIM x4 add-on card to Module B only.*

Available LAN Modules:

Note: *The model name, type number, or layout design of these options might change due to product revision.*

1. ACC-NM1Z1-01C8B: 1G Copper x8 (RJ-45 w/ 4-pair Bypass)
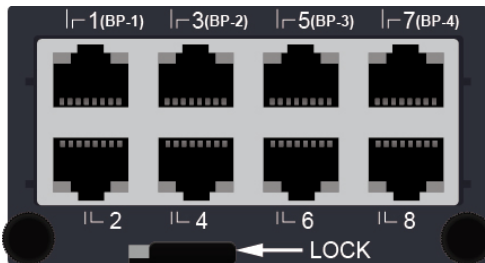
2. ACC-NM1Z1-01C8: 1G Copper x8 (RJ-45)
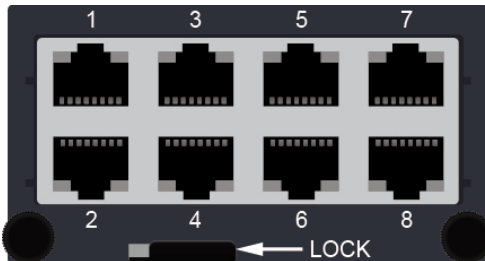
3. ACC-NM1Z1-01F8: 1G Fiber x8 (SFP)
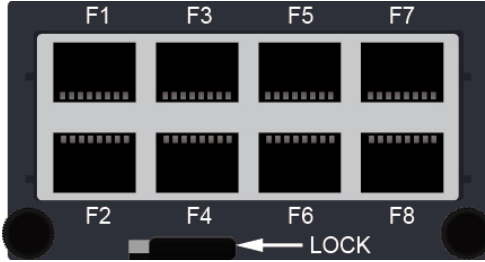
4. ACC-NM1Z1-01H8B: 1G Hybrid x8 (SFP + RJ-45 w/ 2-pair Bypass)
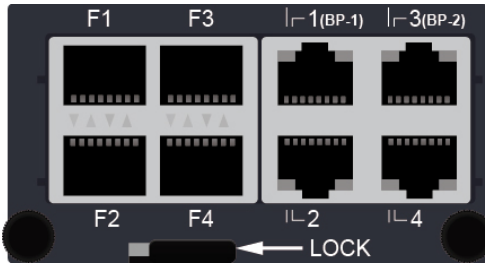
5. ACC-NM1Z1-01H8: 1G Hybrid x8 (SFP + RJ-45)
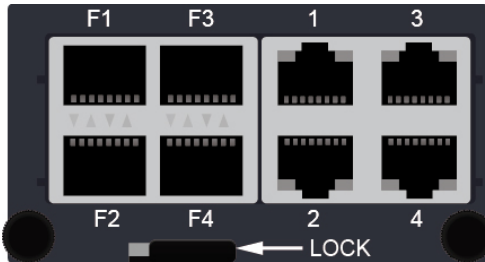
6. ACC-NM1Z1-10F2: 10G Fiber x2 (SFP+)
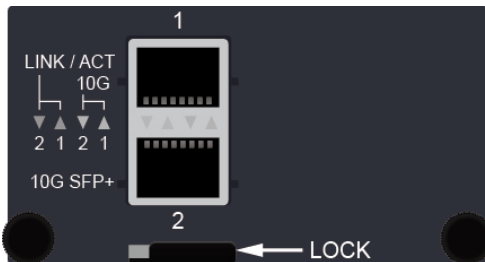
7. ACC-NM1Z1-10F4: 10G Fiber x4 (SFP+) (Support NIM x8 signal)
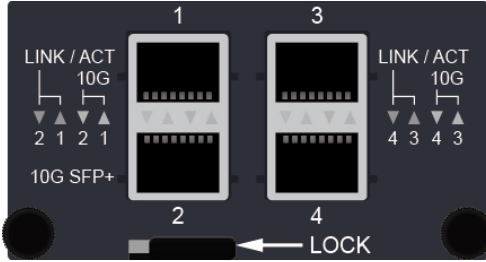
8. ACC-NM1Z1-40F1: 40G Fiber x1 (QSFP+) (Support NIM x8 signal)

9. ACC-NM1Z1-40F2: 40G Fiber x2 (QSFP+) (Support NIM x8 signal)
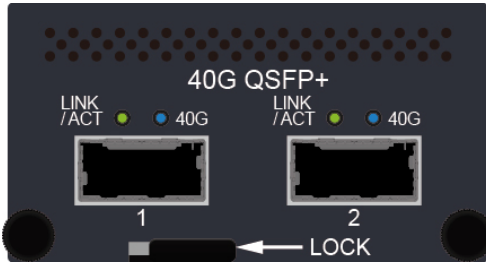
10. ACC-NM1Z1-01C4B: 1G Copper x4 (RJ-45 w/ 2-pair Bypass)
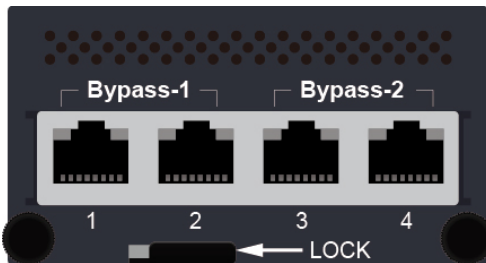
11. ACC-NM1Z1-01C4: 1G Copper x4 (RJ-45)
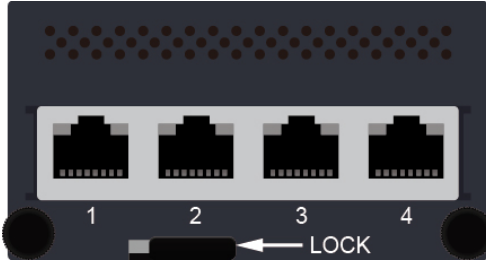
12. ACC-NM1Z1-01F4: 1G Fiber x4 (SFP)
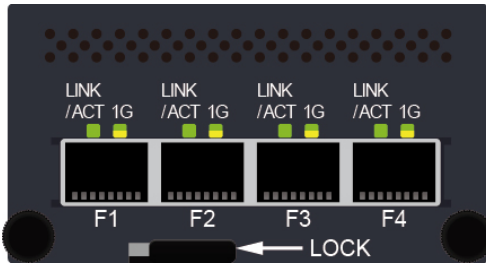
1.5.2. SFP LAN Ports
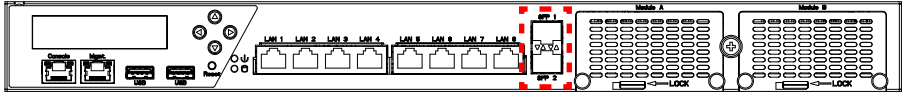
LED		No Link	10M	100M	1G
Left	Link	OFF	Green	Green	Green
	Active	OFF	Blinking	Blinking	Blinking
Right	Speed	OFF	OFF	OFF	Green

1.5.3. LAN 1 ~ LAN 4, LAN 5 ~ LAN 8
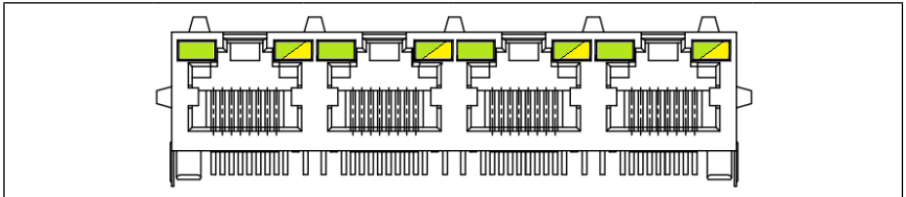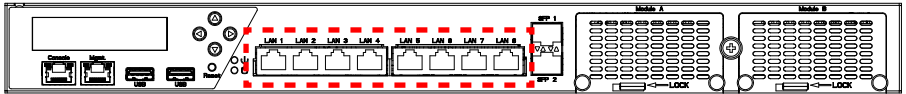
LED		No Link	10M	100M	1G
Left	Link	OFF	Green	Green	Green
	Active	OFF	Blinking	Blinking	Blinking
Right	Speed	OFF	OFF	Yellow	Green

1.5.4. LAN / Console / 2x USB 3.1 / Reset
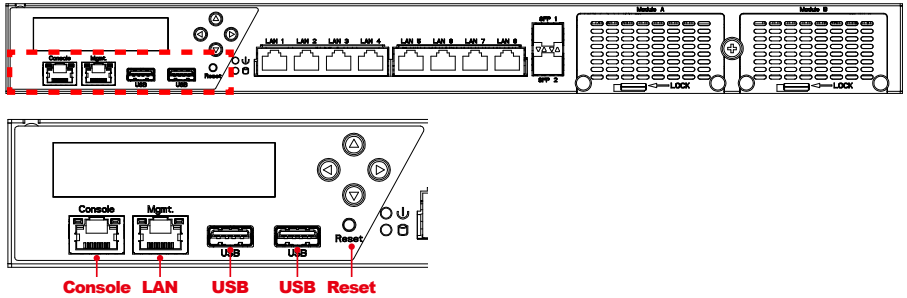
- **Console (RJ45)**

	Pin #	Signal	Pin #	Signal
	1	RTS	5	GND
	2	DTR	6	SIN
8 1	3	SOUT	7	DSR
	4	GND	8	CTS

- **Mgmt./LAN**

LED		No Link	10M	100M	1G
Left	Link	OFF	Green	Green	Green
	Active	OFF	Blinking	Blinking	Blinking
Right	Speed	OFF	OFF	Yellow	Green

- **USB**

  Standard USB 3.1 Type-A connector

- **Reset**

  System Reset Button

1.5.5. LCM Display / Navigation Joystick / Indicators
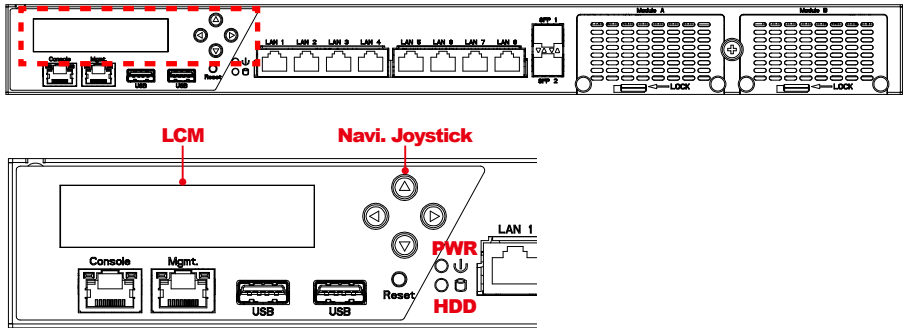
- **LCM Display**

    128 * 32 Pixels Graphic mode only

- **Navigation Joystick**

    LCM menu control buttons (Up/Down/Left/Right/Center)

- **PWR**

    Power indicator (Green)

- **HDD**

    HDD activity indicator (Yellow)

1.6. Rear Panel

(Illustration model: Redundant 300W 1+1)
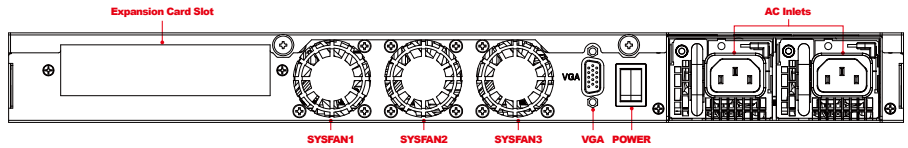
- **Expansion Card Slot**
  1x PCI express card insert slot

- **System Fan**
  3x Smart Cooling Fans

- **VGA**
  VGA connector

- **POWER**
  Power on/off switch

- **AC Inlets**
  1+1 CRPS 2U Redundant ATX PSU

2. Installation

The products shown in the procedule are used for illustration only, may not reflect the exact outlooks.

2.1. HDD Screws Assembly

Step 1:   Prepare the screw pack. There should be 8 screws in the pack.
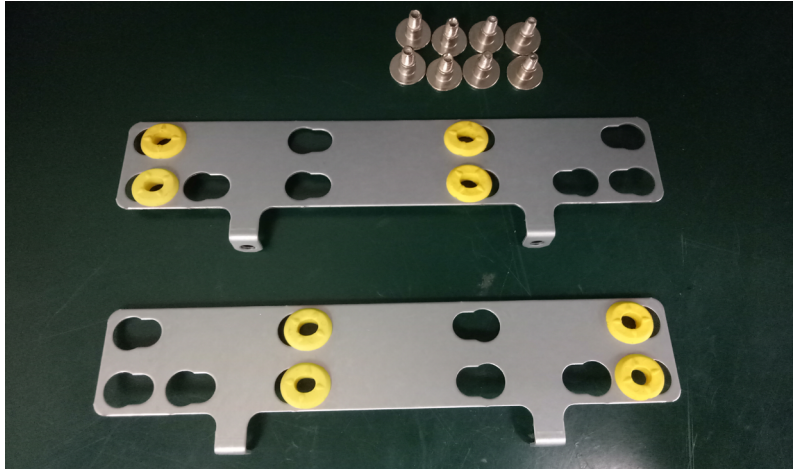
Step 2:   Mount the anti-vibration rubber ring as shown. Push the rubber ring sideward. Do not leave the rubber ring inward.
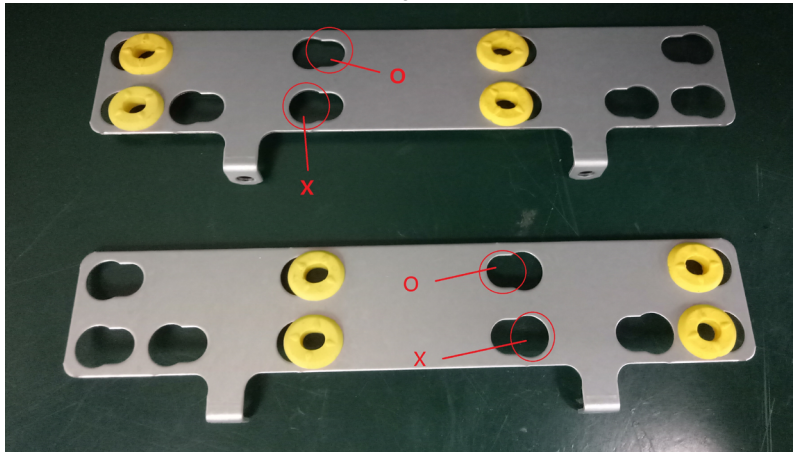
2.2.   Center HDD Bay Assembly

Step 1:   As shown below, install your HDD with screws into the bracket.
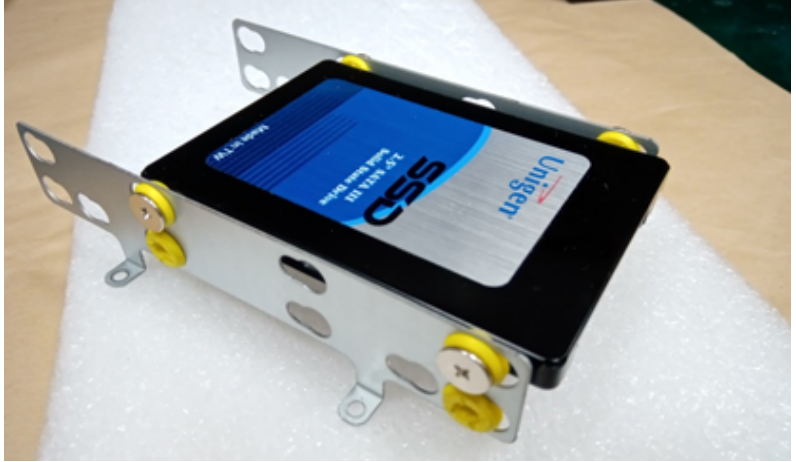
Step 2:   Plug in the SATA1, SATA2 cable, & HDD power connector.

Step 3: Fix the HDD+bracket with screws onto the PCB.

2.3. PCI-E Add-on Card Assembly

Step 1:   Unscrew the handscrew counterclockwise, and then pull back to open the top cover.

Step 2:   Remove the fixing screws of the transfer card bracket.
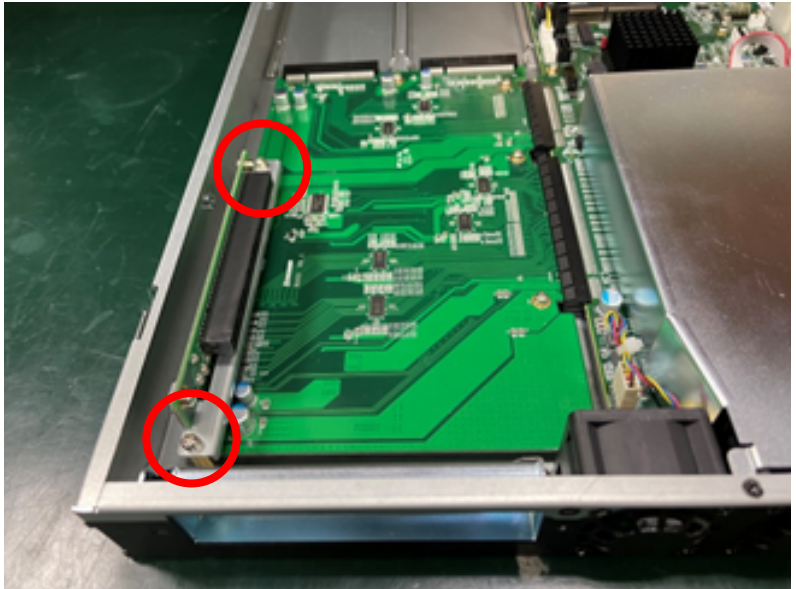
Step 3:   Take out the PCI-E riser set for adapter card.
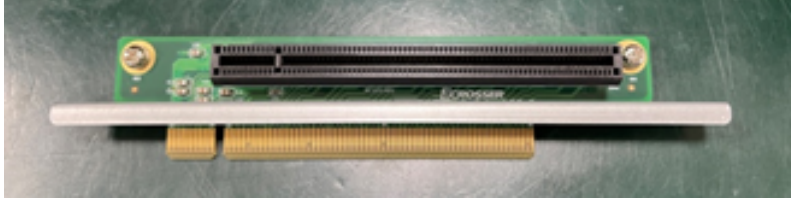
Step 4:   Remove the baffle bracket screws.
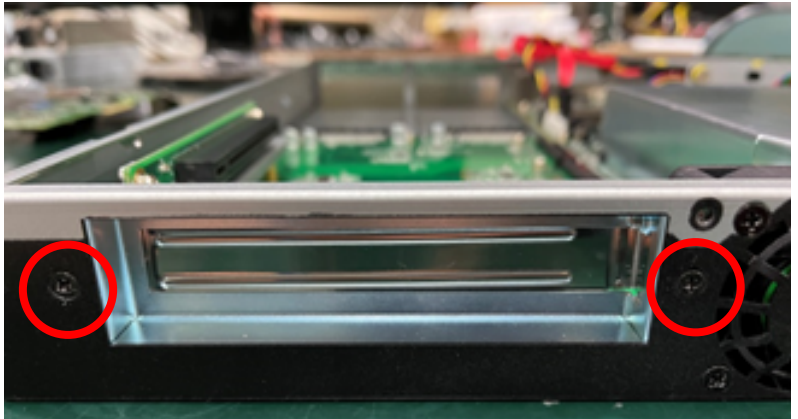
Step 5:   Take out the baffle bracket.
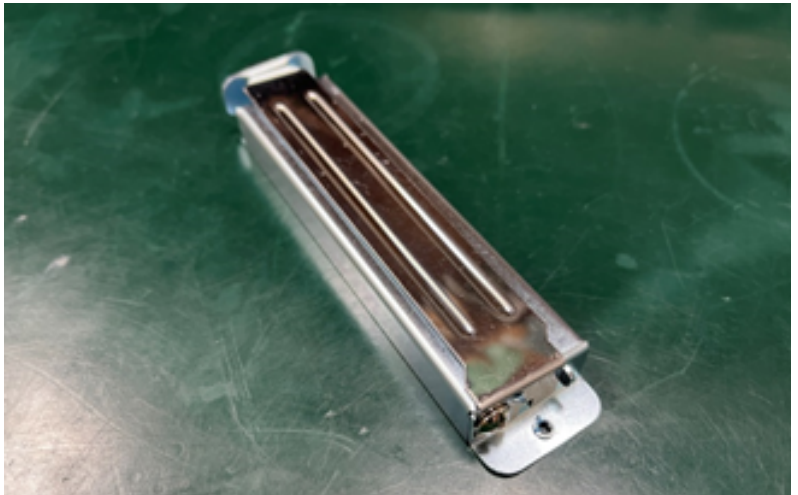
Step 6:   Remove the screw of the baffle. Keep it for later use. Remove the baffle.

Step 7:   Use the baffle screw to lock the PCIe Slot module to the bracket.
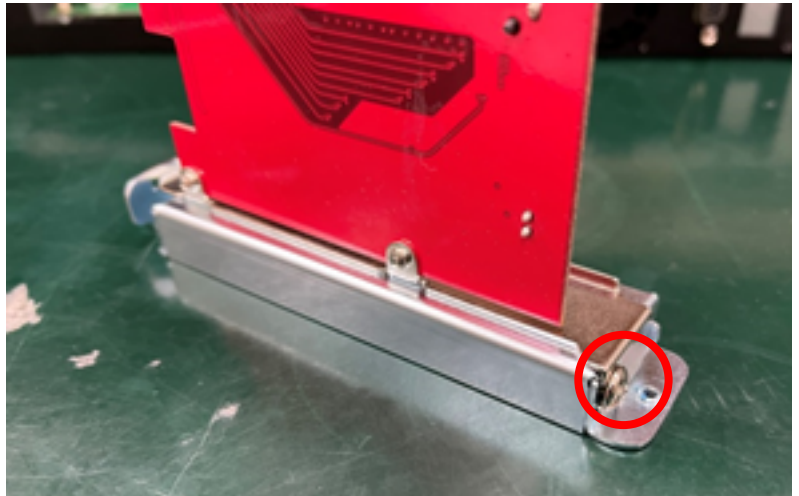
Step 8:   Assemble the PCIe Slot module onto the transfer card.

Step 9: Assemble the module, bracket and transfer card into the system, and lock up the transfer card bracket with screws.
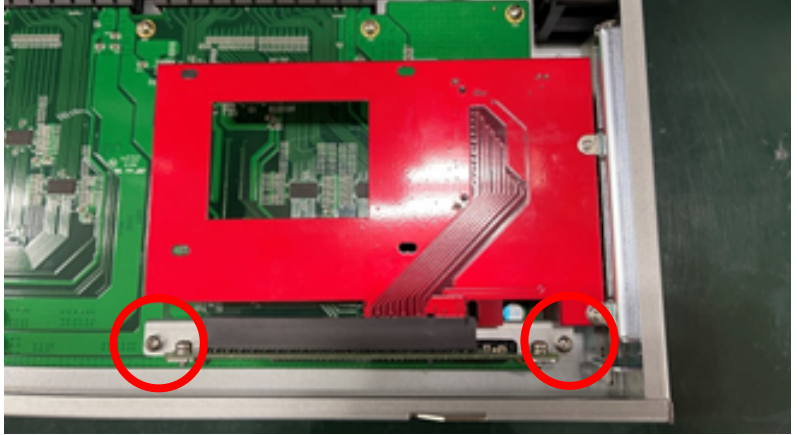
Step 10: Lock the baffle bracket with screws.
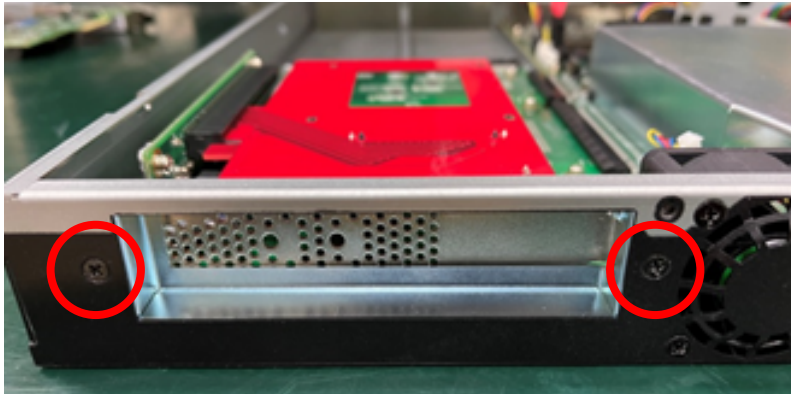
Step 11: Push the top cover back in the system and tighten with hand screws.
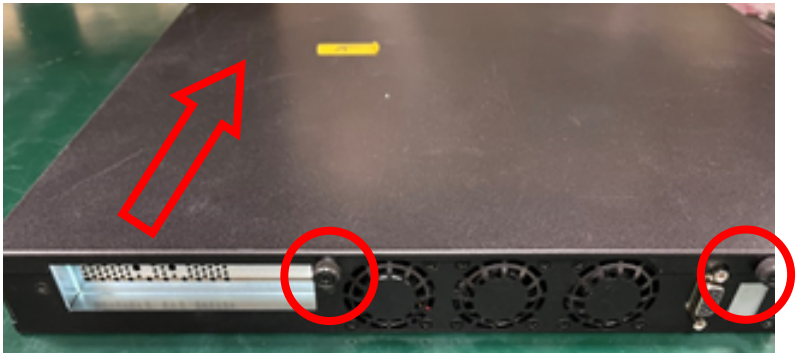
2.4. NIM Module Insertion

To install the NIM module into the system:

Step 1:   Remove the screw that lock the dummy cover on **Module A** slot.

Step 2:   Open the dummy cover.

Step 3:   Insert your NIM module into the **Module A** slot. Firmly push it all the way in.

Step 4:   Push the latch left. This will lock the module.

Step 5:   Use your fingers to lock back the screw.

Or you may use a screw driver to lock back the screw.

2.5. Rack Installation

Step 1: Secure both left and right 1U mounting ears to the server's front panel chassis with your Phillips screwdriver.

2.6. Recommended Memory Installation
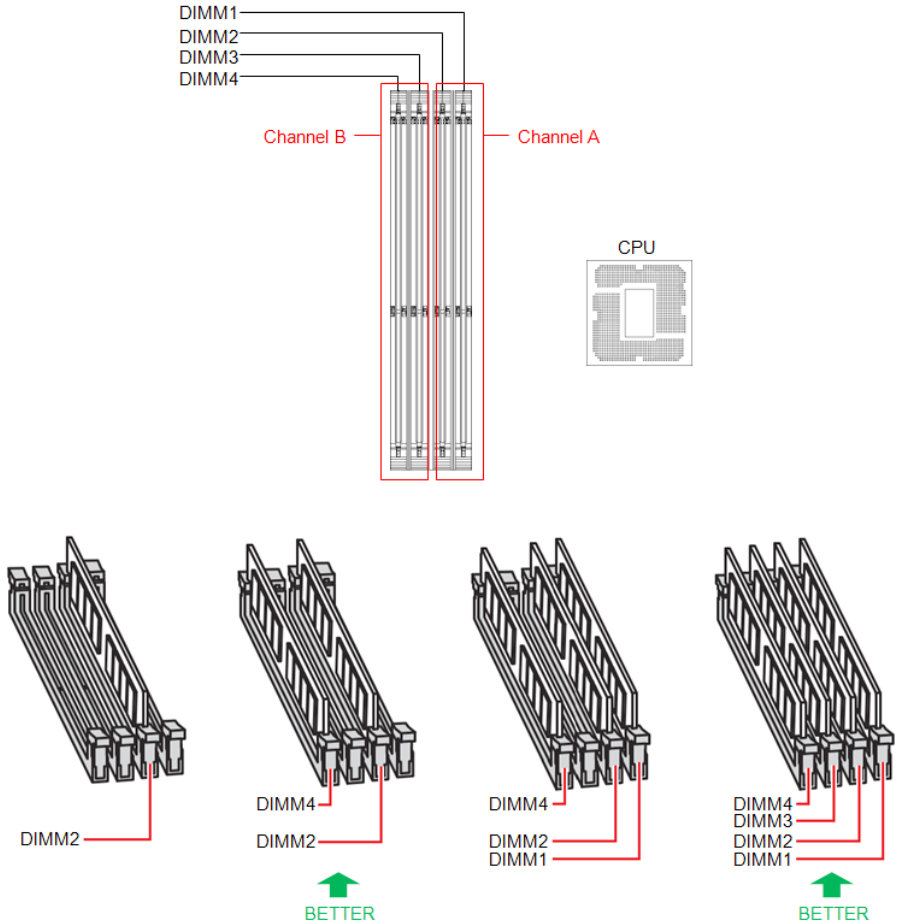
Note 1:	*Always insert memory in DIMM2 slot first.*
Note 2:	*Install the memory module of same capacity, speed, and manufacturer.*
Note 3:	*Paired memory installation for better performance.*

3. BIOS Settings

This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get the system up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- Main Setup
- Advanced Setup
- Chipset Setup
- Security Setup
- Boot Setup
- Save & Exit Setup

Once you enter the Award BIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. Use the arrow keys to highlight the item and then use the <Pg Up> <Pg Dn> keys to select the value you want in each item.

3.1. Main Setup

The BIOS setup main menu includes some options. Use the [Up/Down] arrow key to highlight the option, and then press the <**Enter**> key to select the item and configure the functions.

```
                              Aptio Setup - AMI
        Main   Advanced  Chipset   Security   Boot   Save & Exit

        BIOS Information                                      Set the Date. Use Tab to
        BIOS  Vendor              American Megatrends         switch between Date
        Core Version              5.17                        elements.
        Compliancy                UEFI 2.7; PI 1.6            Default Ranges:
        Project Version           ARM-W480A 100-001           Year: 1998-9999
        Build Date and Time       01/01/2021 00:00:00         Months: 1-12
                                                              Days: Dependent on month
        Processor Information     CometLake DT                Range of Years may vary.
        Name                      Intel(R) Core(TM)
        Type                      15-10500E CPU @ 3.10GHz

        Total Memory              8192 MB
        Memory Frequency          2667 MHz

                                                              →←: Select Screen
                                                              ↑↓: Select Item
        Ststem Date               [Fri 01/01/2021]            Enter: Select
        Ststem Time               [11:22:33]                  +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit

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```

Note: *Listed at the bottom of the menu are the control keys. If you need any help with the item fields, you can press <**F1**> key, and it will display the relevant information.*

- **System Date**
  Set the system date. Use Tab to switch between Date elements.

- **System Time**
  Set the system time. Use Tab to switch between Time elements.

3.2. Advanced Setup

```
                         Aptio Setup - AMI
      Main   Advanced   Chipset   Security   Boot   Save & Exit

 ► CPU Configuration                          CPU Configuration
 ► Trusted Computing                          Parameters
 ► OnBoard Bypass Controller
 ► Networking Interface Module A
 ► Networking Interface Module B
 ► W83627DHG Super IO Configuration
 ► W83627DHG HW Monitor
 ► Serial Port Console Redirection
 ► USB Configuration
 ► Network Stack Configuration
 ► CSM Configuration

                                              →←: 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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```

- **CPU Configuration**
  CPU configuration parameters

- **Trusted Computing**
  Set trusted computing settings

- **OnBoard Bypass Controller**
  Set the OnBoard Bypass controller.

- **W83627DHG Super IO Configuration**
  Set System super IO chip parameters.

- **W83627DHG HW Monitor**
  Dsiplay hardware monitor status.

- **Serial Port Console Redirection**
  Set serial port console redirection.

- **USB Configuration**
  Set the USB configuration parameters.

- **Network Stack Configuration**
  Set the UEFI Network Stack parameters.

- **CSM Configuration**
  Compatibility Support Module Configuration. Enable/Disable Option ROM execution settings, etc.

3.2.1. CPU Configuration

```
                          Aptio Setup - AMI
      Advanced

   Intel (VMX) Virtualization    [Enabled]        When enabled, a VHM can
   Technology                                     utilize the additional
   Hyper-Threading               [Enabled]        hardware capabilities
                                                  provided by Vanderpool
                                                  Technology




                                                  →←: 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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```
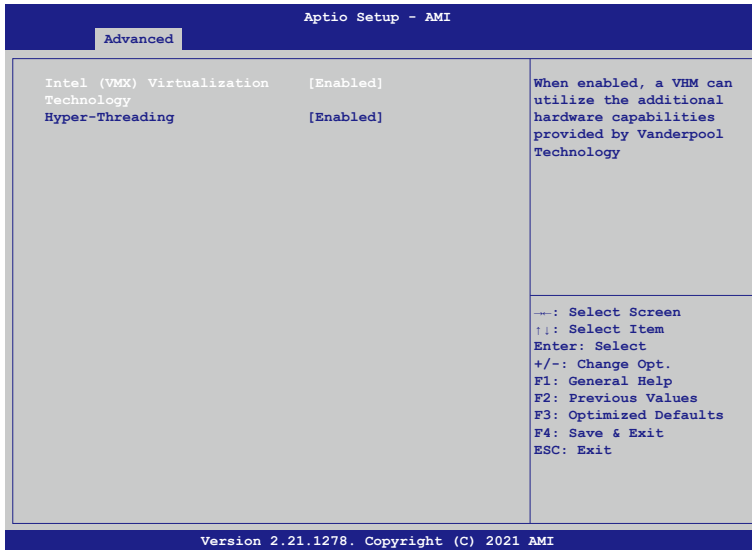
- **Intel (VMX) Virtualization Technology**
  Enables or disables Intel® Virtualization Technology, which will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

- **Hyper-Threading**
  The Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads, thereby improving performance.

3.2.2. Trusted Computing

```
                              Aptio Setup - AMI
           Advanced

    TPM20 Device Found                                    Enables or disables BIOS
    Firmware Version:          5.63                       support for security
    Vendor:                    IFX                        device. O.S. will not
                                                          show Security Device. TCG
    Security Device Support    [Enabled]                  EFI protocol and INT1A
    Active PCR Banks           SHA-1,SHA256               interface will not be
    Available PCR Banks        SHA-1,SHA256               available.

    SHA-1 PCR Bank             [Enabled]
    SHA256 PCR Bank            [Enabled]

    Pending Operation          [None]
    Platform Hierarchy         [Enabled]
    Storage Hierarchy          [Enabled]
    Endorsement Hierarchy      [Enabled]                  →←: Select Screen
    TPM2.0 UEFI Spec Version   [TCG_2]                    ↑↓: Select Item
    Physical Presence Spec Version [1.3]                  Enter: Select
    TPM 20 Interface Type      [TIS]                      +/-: Change Opt.
    Device Select              [Auto]                     F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

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```

- **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.

- **SHA-1 PCR Bank**
  Enables or Disables SHA-1 PCR Bank.

- **SHA256 PCR Bank**
  Enables or Disables SHA256 PCR Bank.

- **Pending Operation**
  Schedule 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 Pateform Hierarchy.

- **Storage Hierarchy**
  Enables or Disables Storage Hierarchy.

- **Endorsement Hierarchy**
  Enables or Disables Endorsement Hierarchy.

- **TPM2.0 UEFI Spec Version**
  Select the TCG2 Spec Version Support,

  TCG_1_2: The Compatible mode for Win8/Win10.

  TCG_2: Support new TCG2 protocol and event format for Win10 or later.

- **Physical 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. TPM2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM2.0 devices if not found, TPM1.2 devices will be enumerated

3.2.3. OnBoard Bypass Controller

```
                        Aptio Setup - AMI
         Advanced

     Model Name                MW489A              Set System On Bypass
     Firmware Version          010-001             State

     Pair0 System On           [Normal]
     Pair0 System Off          [Bypass]
     Pair0 WDT Timeout         [Bypass]

     Pair1 System On           [Normal]
     Pair1 System Off          [Bypass]
     Pair1 WDT Timeout         [Bypass]


                                                   →←: 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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```

- **Pair0 System On, Pair1 System On**
  Each Pair Lan[a] and Lan[b] Bypass State Setting, System On /System off /WDT timeout State.

  [Normal] Lan[a] and Lan[b] work on normal mode.

  [Bypass] Lan[a] data will bypass to Lan[b].

3.2.4. W83627DHG Super IO Configuration

```
                        Aptio Setup - AMI
        Advanced

   W83627DHG Super IO Configuration                Set Parameters of Serial
                                                   Port 1 (COMA)
   Super IO Chip                W83627DHG
 ► Serial Port 1 Configuration
 ► Serial Port 2 Configuration




                                                   ──: 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
```
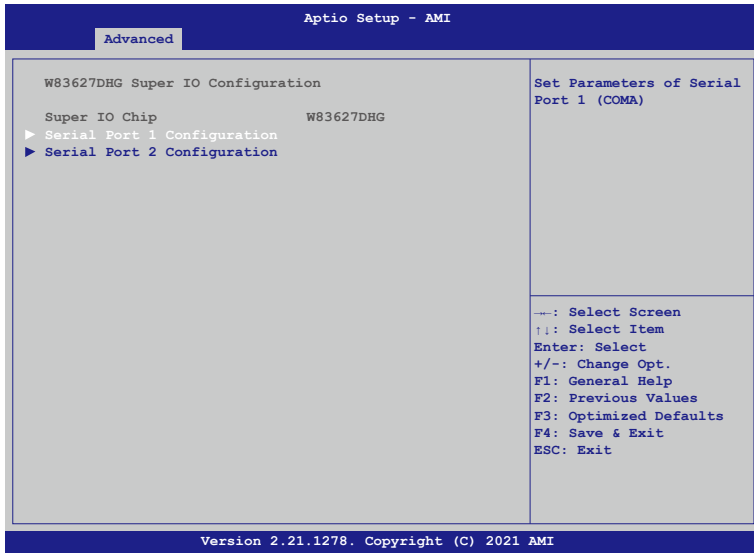
- **Serial Port 1 Configuration**
  Serial Port 1 for System Can bus device.

- **Serial Port 2 Configuration**
  Serial Port 2 for System Power Sub system device.

```
                        Aptio Setup - AMI
        Advanced

   Serial Port 1 Configuration                     Enable or Disable
                                                   Serial Port (COM)
   Serial Port              [Enabled]
   Device Settings          IO=3F8h; IRQ=4;

   Change Settings          [Auto]




                                                   ──: 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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```
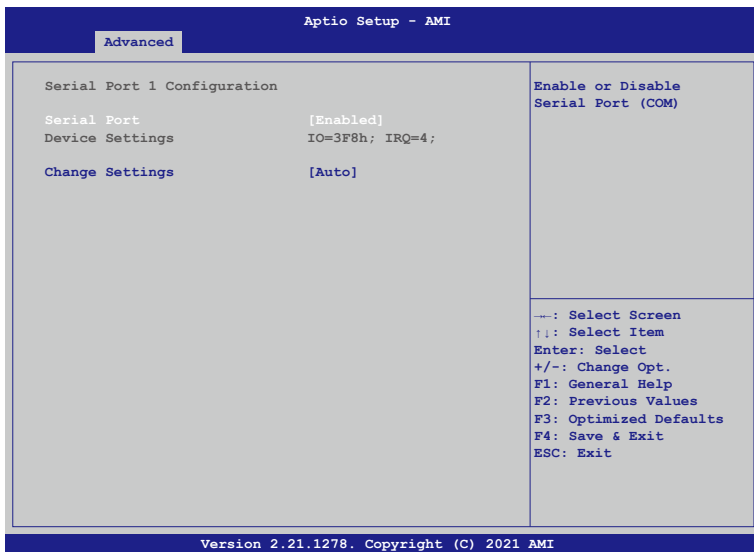
- **Serial Port**
  Select Enabled to enable the onboard serial port.

- **Change Settings**
  This option specifies the base I/O port address and the interrupt Request address of Serial Port.

  Select [Auto] to let the BIOS automatically assign the base I/O and IRQ address.

3.2.5. **W83627DHG HW Monitor**

```
                         Aptio Setup - AMI
        Advanced

    Pc Health Status                                   Enable or Disable Smart
                                                       Fan
    Smart Fan Function           [Enabled]
  ▶ Smart Fan Mode Configuration
    CPU temperature              : +41'C
    System temperature1          : +28'C
    System temperature2          : +27'C
    System Fan1 Speed            : N/A
    System Fan2 Speed            : N/A
    System Fan3 Speed            : 7031 RPM
    +5V                          : +5.068 V
    +12V                         : +12.328 V
    VCORE                        : +0.928 V
                                                       →←: 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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```

- **Smart Fan Mode Configuration**
  Smart Fan Mode Select.

```
                              Aptio Setup - AMI
         Advanced

        Smart Fan Mode Configuration                        Smart Fan Mode Select

        Smart Fan Mode              [Thermal Cruise Mode]
        FAN Target Temperatur       45
        FAN Tolerance               2




                                                            →←: 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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```

- **Smart Fan Mode**
  [Thermal Cruise Mode]: You can adjust FAN Target Temperatur and FAN Tolerance manually. If CPU temp is lower than target temp-tolerance, the fan will run at low fan speed. If CPU temp ishigherer than target temp+tolerance, the fan will run at full fan speed.

  [Manual Mode] : You can set fixed fan speed.

- **FAN Target Temperature**
  Input a target temperature between 0 ~ 127°C.

- **FAN Tolerance**
  Input a target temperature tolerance.

3.2.6. Serial Port Console Redirection

```
                          Aptio Setup - AMI
        Advanced

   COM0                                        Console Redirection
   Console Redirection         [Enabled]       Enable or Disable.
 ▶ Console Redirection Settings








                                               →←: 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
```
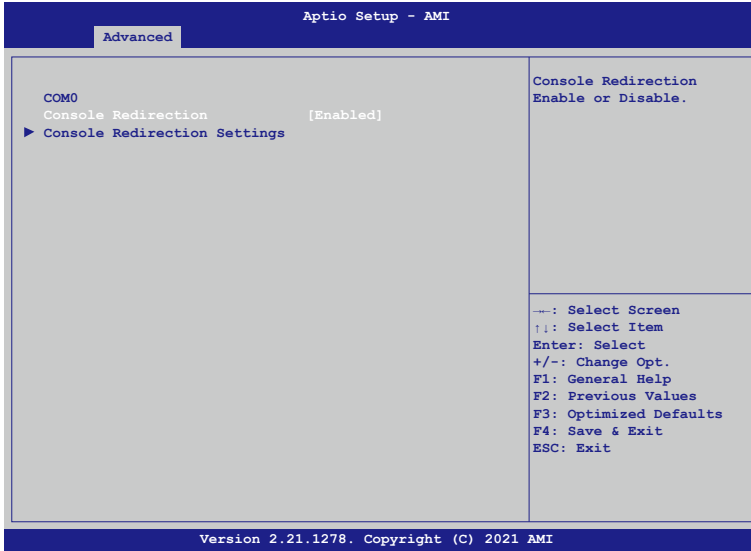
• **Console Redirection**

Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.

```
                          Aptio Setup - AMI
        Advanced

   COM0                                        Emulation: ANSI:
   Console Redirection Settings                Extended ASCII char
                                               set. VT100: ASCII char
   Terminal Type               [VT100+]        set. VT100+: Extends
   Bits per second             [115200]        VT100 to support color,
   Data Bits                   [8]             function keys, etc.
   Parity                      [None]          VT-UTF8: Uses UTF8
   Stop Bits                   [1]             encoding to map Unicode
   Flow Control                [None]
   VT-UTF8 Combo Key Sup       [Enabled]
   Recorder Mode               [Disabled]
   Resolution 100x31           [Disabled]
   Putty KeyPad                [VT100

                                               →←: 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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```

- **Terminal Type**
  Use this item to select the preferred terminal emulation type for out-of-band management.

- **Bits per second**
  Use this item to select the serial port transmission speed. The speed used in the hostcomputer and the client computer must be the same. Long or noisy lines may require lowertransmission speed. he options include [9600], [19200], [57600] and [115200].

- **Data Bits**
  Use this item to set the data transmission size. he options include [7] and [8] (Bits).

- **Parity**
  Use this item to select the parity bit. he options include [None], [Even], [Odd], [Mark] and [Space].

- **Stop Bits**
  The item indicates the end of a serial data packet. he standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.

- **Flow Control**
  Use this item to set the f low control to prevent data loss from buffer overf low. Whensending data, if the receiving bufers are full, a "stop" signal can be sent to stop the datalow. Once the bufers are empty, a "start" signal can be sent to restart the low. Hardwarelow uses two wires to send start/stop signals. he options include [None] and [HardwareRTS/CTS].

- **VT-UTF8 Combo Key Sup**
  Use this item to enable or disable the VT-UTF8 Combo Key Support for ANSI/VT100 terminals.

- **Recorder Mode**
  Use this item to enable or disable Recorder Mode to capture terminal data and send it astext messages.

- **Resolution 100x31**
  Use this item to enable or disable extended terminal resolution support.

- **Putty KeyPad**
  Use this item to select Function Key and Keypad on Putty.

3.2.7. USB Configuration

```
                          Aptio Setup - AMI
         Advanced

   USB Configuration                              Enables Legacy USB
                                                  support. AUTO option
   USB Module Version          24                 disables legacy support
                                                  if no USB devices are
   USB Controllers:                               connected. DISABLE
        1 XHCI                                    option will keep USB
   USB Devices:                                   devices available only
        1 Keyboard                                for EFI applications.

   Legacy USB Support          [Enabled]
   XHCI Hand-off               [Enabled]
   USB Mass Storage Driver Support [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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```

- **Legacy USB Support**
  Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only.

- **XHCI Hand-off**
  This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver.

- **USB Mass Storage Driver Support**
  Select Enabled for USB Mass Storage Driver support.

3.2.8. Network Stack Configuration

```
                          Aptio Setup - AMI
      Advanced

  Network Stack                [Enabled]           Enable/Disable UEFI
  Ipv4 PXE Support             [Disabled]          Network Stack
  Ipv4 HTTP Support            [Disabled]
  Ipv6 PXE Support             [Disabled]
  Ipv6 HTTP Support            [Disabled]
  PXE boot wait time           0
  Media detect count           1






                                                 ←→: 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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```

- **Network Stack**
  Enable or disable the UEFI Network Stack.

- **Ipv4 PXE Support**
  Enable or disable the Ipv4 PXE support.

- **Ipv4 HTTP Support**
  Enable or disable the Ipv4 HTTP support.

- **Ipv6 PXE Support**
  Enable or disable the Ipv6 PXE support.

- **Ipv6 HTTP Support**
  Enable or disable the Ipv6 HTTP support.

- **PXE boot wait time**
  Click ESC key to cancel the PXE boot wait time.

- **Media detect count**
  Set up the media detecting wait time by seconds.

3.2.9. CSM Configuration

```
                        Aptio Setup - AMI
        Advanced

     Option ROM execution                           Controls the execution of
                                                    UEFI and Legacy Network
     Network                 [Do not launch]        OpROM
     Storage                 [UEFI]
     Video                   [UEFI]




                                                    →←: 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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```
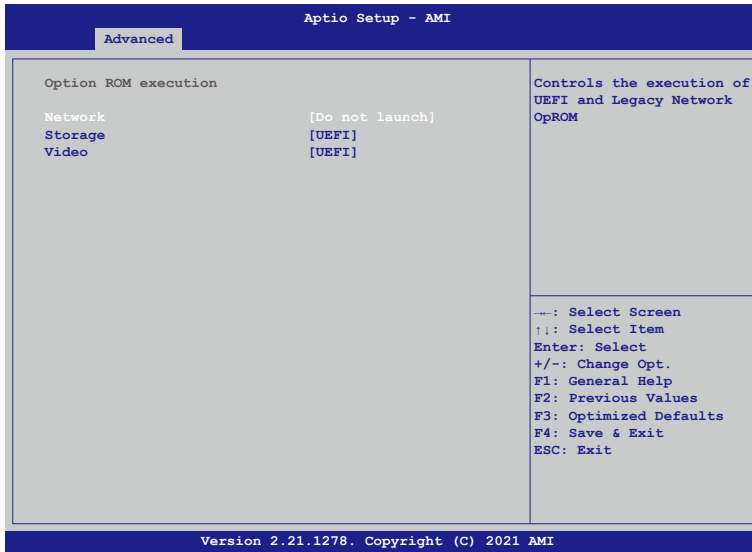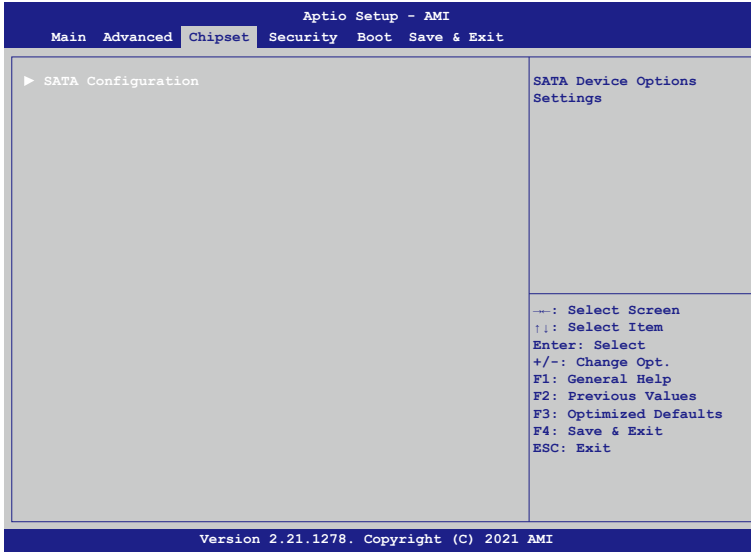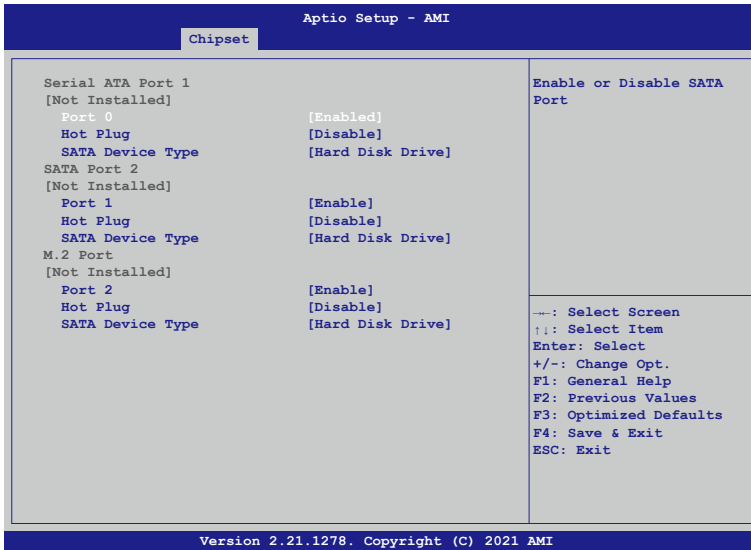
- **Network**
  This item provides control of the operation UEFI and regular PXE/Storage/Video, ramdomly read memory (OpROM). Options are: [UEFI], [Legacy], [Do not Launch].

- **Storage**
  Controls the execution of UEFI and Legacy Storage OpROM.

- **Video**
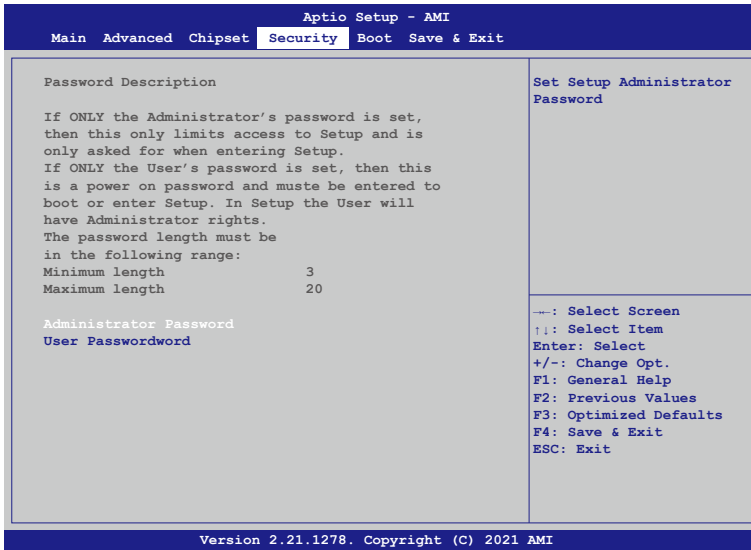 Controls the execution of UEFI and Legacy Video OpROM.

3.3. Chipset Setup

```
                         Aptio Setup - AMI
        Main  Advanced  Chipset  Security  Boot  Save & Exit

 ► SATA Configuration                          SATA Device Options
                                               Settings





                                               →←: 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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```

3.3.1. SATA Configuration

```
                         Aptio Setup - AMI
                 Chipset

  Serial ATA Port 1                            Enable or Disable SATA
  [Not Installed]                              Port
    Port 0                  [Enabled]
    Hot Plug                [Disable]
    SATA Device Type        [Hard Disk Drive]
  SATA Port 2
  [Not Installed]
    Port 1                  [Enable]
    Hot Plug                [Disable]
    SATA Device Type        [Hard Disk Drive]
  M.2 Port
  [Not Installed]
    Port 2                  [Enable]            →←: Select Screen
    Hot Plug                [Disable]           ↑↓: Select Item
    SATA Device Type        [Hard Disk Drive]   Enter: Select
                                                +/-: Change Opt.
                                                F1: General Help
                                                F2: Previous Values
                                                F3: Optimized Defaults
                                                F4: Save & Exit
                                                ESC: Exit


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```

- **Port 0, 1, 2**
  Enable/Disable SATA Port device.
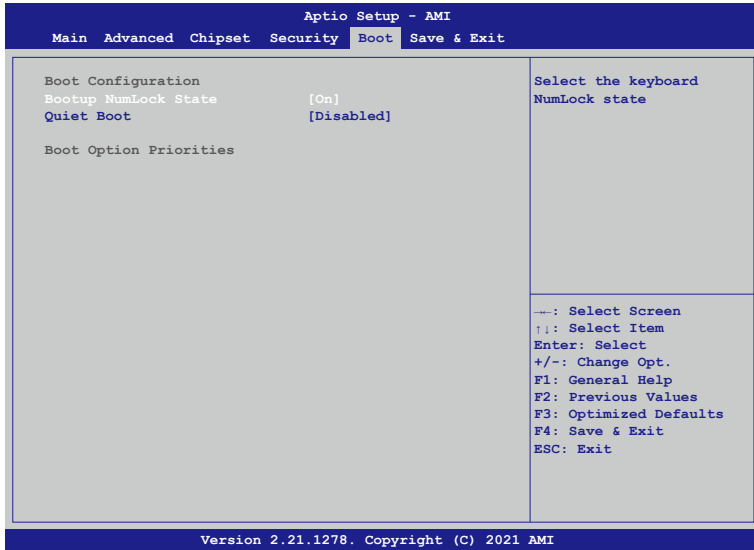
- **Hot Plug**
  Enable/Disable HDD Hot-Plug function.

- **SATA Device Type**
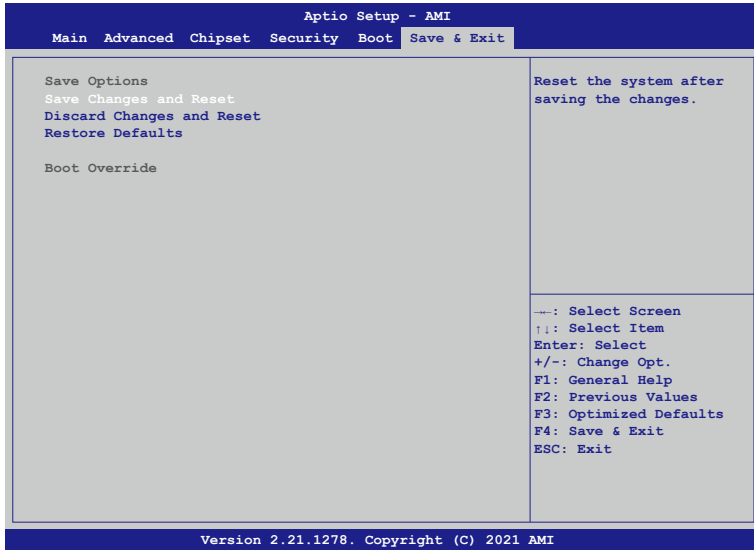 Select SATA Device Type HDD/SSD.

3.4. Security Setup

```
                         Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit

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


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```

- **Setup Administrator Password**
  Press Enter to create a new, or change an existing Administrator password.

- **User Password**
  Press Enter to create a new, or change an existing User password.

3.5. Boot Setup

```
                         Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   Boot Configuration                              Select the keyboard
   Bootup NumLock State          [On]              NumLock state
   Quiet Boot                    [Disabled]

   Boot Option Priorities




                                                   →←: 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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```

- **Bootup NumLock State**
  This feature selects the Power-on state for the Numlock key.

- **Quiet Boot**
  Use this feature to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages.

- **Boot Option Priorities**
  This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots from during startup.

3.6. Save & Exit Setup

```
                        Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit

      Save Options                              Reset the system after
      Save Changes and Reset                    saving the changes.
      Discard Changes and Reset
      Restore Defaults

      Boot Override




                                                →←: 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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```

- **Save Changes and Reset**
  When you have completed the system configuration changes, select this option to save all changes made and reset the system.

- **Discard Changes and Reset**
  Select this option to quit the BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

- **Restore Defaults**
  To set this feature, select Restore Optimized Defaults and press <Enter>. These are factory settings designed for maximum system performance but not for maximum stability.

- **Boot Override**
  This feature allows the user to override the Boot Option Priorities sequence in the Boot menu and immediately boot the system with another device specified by the user. This is a onetime override.

4. Software Installation and Programming Guide

4.1. Introduction

4.1.1. Environment

This test utility develop based on Ubuntu 20.04 Server and Centos 8 (Must update kernel to 5.2 above after installation).

4.1.2. GPIO

The ANR-W480Ax provides GPIO interface. Users can use the GPIO APIs to Control GPO Pin.

4.1.3. Watchdog

The ANR-W480Ax provides a Watchdog timer. Users can use the Watchdog APIs to configure and to access the Watchdog timer. The Watchdog timer can be set to 1~255 seconds. Setting the timer to zero disables the timer. The remaining seconds of the timer to reboot can be read from the timer.

4.1.4. LAN Bypass Subsystem

Four pairs of LAN ports on ANR-W480Ax implements the bypass function. Users can invoke the LAN Bypass APIs to control the bypass states of the LAN ports.

1. Get bypass firmware version.
2. Set bypass wdt.
3. Set bypass wdt action.
4. Get bypass wdt action.
5. Set bypass power on action.
6. Get bypass power on action.
7. Set bypass power off action.
8. Get bypass power off action.
9. Set bypass current action.
10. Get bypass current action.

4.1.5. LCD Control Module

The LCM (short for LCD Control Module) APIs provide interfaces to control the module. By invoking these APIs, programmers can implement the applications which have the functions listed below:

1. Clear LCM screen.
2. Turn on or off the cursor on the screen.
3. Move the cursor on the screen.
4. Turn on or off the backlight on the screen (LCD panel only).
5. Get the identification of the pressed key of the LCM.
6. Show the text on the screen (text mode only).
7. Get LCM PIC Version.
8. Back space on the screen.
9. Get the LCM mode (text or graphic).
10. Set cursor Position (Graphic mode only).
11. Get cursor Position (Graphic mode only).

4.1.6. Power Supply Unit

The Power supply APIs provide two protocols, pmbus and i2c, to control the module. By invoking these APIs, programmers can implement the applications which have the functions listed below:

Pmbus:
1. Read vout 12v.
2. Read vout 3.3v.
3. Read vout 5v.
4. Get power supply unit status.

I2c:
1. Get power supply unit temperature.
2. Read vout 12v.
3. Read vout 3.3v.
4. Read vout 5v.
5. Get power supply unit fan status.
6. Get power supply unit status.

4.2. File Descriptions

4.2.1. GPIO/Watchdog/LCD Control Module

1. TestUtility.exe

The Watchdog, LAN Bypass Subsystem, Power Supply Unit, LCD Control Module and chassis open. Graphic user interface bin binary.

2. Libw83627.h

This file includes the declarations of the APIs and macro definitions.

3. Libw83627.a

The static library for linux.

4. Libw83627.so

The dynamic library for linux.

5. Install_driver

This file is linux shell script file. Run this file can help you install environment and modprobe driver on linux.

6. readme

Use this utility first. Please read the readme file first.

4.3. API List and Descriptions

4.3.1. GPIO

Syntax:	Get_gpi_status(int pin)
Description:	Get the status of GPIO input pins status.
Parameters:	This function fills in an integer variable as the parameter. The pin0 ~ pin3 is the status of the input pins.
Return Value:	1:HIGH, 0:LOW.

Syntax:	Get_gpo_status(int pin)
Description:	Get the status of GPIO output pins status.
Parameters:	This function fills in an integer variable as the parameter. The pin0 ~ pin3 is the status of the output pins.
Return Value:	1:HIGH, 0:LOW.

Syntax:	Set_gpo(int pin, int value)
Description:	Set the status of GPIO Output value.
Parameters:	Set value 0 is Low, 1 is High
Return Value:	If the function sets the values successfully, it returns 0 or -1, any other returned value stands for error.

4.3.2. Watchdog

Syntax:	Void wdt_start(int _timevalue)
Description:	This function gets the watchdog timer register to the time value and starts to count down.
Parameters:	The parameter 'val' is the value to set to watchdog timer register. The range is 1 ~ 255.
Return Value:	This function returns the value of the time counter and returns it to the caller as an unsigned integer.

Syntax:	Int get_wdt_count(void)
Description:	This function reads the value of the watchdog time counter.
Parameters:	None.
Return Value:	This function returns the value of the time counter.

Syntax:	Void wdt_stop(void)
Description:	This function sets the watchdog timer stop.
Parameters:	None.
Return Value:	None.

4.3.3. LAN Bypass Subsystem

Syntax:	int get_bypass_firmware_ver(char *ver)
Description:	This function can get bypass firmware version and data to save in char pointer.
Parameters:	char pointer, this pointer to 7 character array.
Return Value:	0: Successful, -1: fail.

Syntax:	int set_bypass_wdt(int pair, int time)
Description:	This function can set which pair bypass Wdt timer.
Parameters:	pair: 1-4 , time: 1-255(sec), 0: stop.
Return Value:	0: Successful, -1: fail.

Syntax:	int set_bypass_wdt_action(int pair, int action)
Description:	This function can set which pair bypass Wdt time up action.
Parameters:	pair: 1-4, action: 0: bypass, 1: normal.
Return Value:	0: Successful, -1: fail.

Syntax:	int get_bypass_wdt_action(int pair)
Description:	This function can get which pair bypass Wdt time up action.
Parameters:	pair: 1-4.
Return Value:	0: bypass, 1: normal, -1: fail.

Syntax:	int set_bypass_poweron_action(int pair, int action)
Description:	This function can set which pair bypass power on action.
Parameters:	pair: 1-4, action: 0: bypass, 1: normal.
Return Value:	0: Successful, -1: fail.

Syntax:	int get_bypass_poweron_action(int pair)
Description:	This function can get which pair bypass power on action.
Parameters:	pair: 1-4.
Return Value:	0: bypass, 1: normal, -1: fail.

Syntax:	int set_bypass_poweroff_action(int pair, int action)
Description:	This function can set which pair bypass power off action.
Parameters:	pair: 1-4, action: 0: bypass, 1: normal.
Return Value:	0: Successful, -1: fail.

Syntax:	int get_bypass_poweroff_action(int pair)
Description:	This function can get which pair bypass power off action.
Parameters:	pair: 1-4.
Return Value:	0: bypass, 1: normal, -1: fail.

Syntax:	int set_bypass_current_action(int pair, int action)
Description:	This function can set which pair bypass current action.
Parameters:	pair: 1-4, action: 0: bypass, 1: normal.
Return Value:	0: Successful, -1: fail.

Syntax:	int get_bypass_current_action(int pair)
Description:	This function can get which pair bypass current action.
Parameters:	pair: 1-4.
Return Value:	0: bypass, 1: normal, -1: fail.

4.3.4. LCD Control Module

Syntax:	i32 clrscrLcm(void)
Description:	Clear the screen of the LCM.
Parameters:	None.
Return Value:	0 after the screen is cleared.

Syntax:	i32 cursorLcm(bool mode)
Description:	According to the argument 'mode', show the cursor on the LCM screen or eliminate the cursor on the LCM screen. The position of the cursor is unchanged. mode = true, show the cursor. mode = false, eliminate the cursor.
Parameters:	None.
Return Value:	0 after the cursor has been shown or eliminated.

Syntax:	i32 cursorActionLcm(i32 type)
Description:	According to the argument 'type', move the cursor to the indicated position. The displayed text is not altered.
	type = HOME, move the cursor to row 0, column 0.
	type = MOVERIGHT, move the cursor to the column which is to the right of its original position if the original column < 15.
	type = MOVELEFT, move the cursor to the column which is to the left of its original position if the original column > 0.
	type = MOVEBACK, move the cursor to the column which is to the left of its original position and delete the character at the new position if the original column > 0.
Parameters:	None.
Return Value:	0 after the cursor is moved.

Syntax:	i32 displayLcm(bool mode)
Description:	Show the text on the LCM screen or eliminate the text on the LCM screen. The content of the text is not altered.
	mode = true, show the text.
	mode = false, eliminate the text.
Parameters:	None.
Return Value:	0 after the text has been shown or eliminated.

Syntax:	i32 getKeyLcm(void)
Description:	Scan the LCM and return the identification of the pressed direction key.
Parameters:	None.
Return Value:	'UP' if the 'up' direction key is pressed.
	'RIGHT' if the 'right' direction key is pressed.
	'LEFT' if the 'left' direction key is pressed.
	'DOWN' if the 'down' direction key is pressed.
	'NONE' if none of the keys is pressed.

Syntax:	i32 getPositionLcm(i32 *row, i32 *column)
Description:	Get the position of the cursor and write the coordinate to the memory pointed at by arguments 'row' and 'column'.
Parameters:	None.
Return Value:	0 if the request for the coordinate has been served.

Syntax:	i32 setPositionLcm(i32 row, i32 column)
Description:	Set the position of the cursor according to the arguments 'row' and 'column'.
Parameters:	None.
Return Value:	0 after the position has been set.
	-1 if the argument 'row' or 'column' meets any of the following conditions:
	(1) row is not 0.
	(2) row is not 1.
	(3) column is less than 0.
	(4) column is greater than 15.

Syntax:	i32 showLcm(i32 length, u8 *info)
Description:	Start from the current position of the cursor; print the text pointed at by 'info' to the LCM screen. The number of characters to be printed is at most 'length'. If the remaining columns available for printing the text is less than 'length', the number of the characters to be printed is:
	16 – (column number of the current position of the cursor).
Parameters:	None.
Return Value:	0 after the text is printed.

Syntax:	i32 getLCMPICVER(unsigned char *ver)
Description:	This function can get LCM PIC Version.
Parameters:	lcm pic version will save the unsigned char pointer parameters.
Return Value:	None.

Syntax:	int setBacklight(int mode)
Description:	This function can set LCM backlight, but only support LCD panel, not support OLED panel.
Parameters:	mode: 0: Turn off backlight, 1: Turn on backlight
Return Value:	None.

4.3.5. Power Supply Unit (PMBUS)

Syntax:	float pmbus_read_vout_12V(void)
Description:	This function can get power supply unit Vout 12V.
Parameters:	None.
Return Value:	float Vout 12V

Syntax:	float pmbus_read_vout_3V3(void)
Description:	This function can get power supply unit Vout 3.3V.
Parameters:	None.
Return Value:	float Vout 3.3V

Syntax:	float pmbus_read_vout_5V(void)
Description:	This function can get power supply unit Vout 5V.
Parameters:	None.
Return Value:	float Vout 5V

Syntax:	int get_pmbus_psu_status(int psu)
Description:	This function can get which power supply unit status.
Parameters:	psu: 0-1
Return Value:	0: Good, 1: Fail

4.3.6. Pmbus Command Code Summary

Support Command Code Table:

Command Code	Command Name	Data Format	Number of Data Bytes
03h	CLEAR_FAULTS(1)	Send Byte	0
20h	VOUT_MODE	Read Byte	1
79h	STATUS_WORD	Read Word	2
7Ah	STATUS_VOUT	Read Byte	1
7Bh	STATUS_IOUT	Read Byte	1
7Dh	STATUS_TEMPERATURE	Read Byte	1
80h	STATUS_OF_3V3 And 5V	Read Byte	1
8Bh	READ_+12V_VOUT	Read VOUT Mode	2
8Ch	READ_+12V_IOUT	Read Linear	2

Command Code	Command Name	Data Format	Number of Data Bytes
8Dh	READ_TEMPERATURE_1 (2)	Read Linear	2
96h	READ_+12V_POUT	Read Linear	2
99h	MFR_ID	Read ASCII	6
9Ah	MFR_MODEL	Read ASCII	13
9Bh	MFR_REVSION	Read ASCII	2
9Eh	MFR_SERIAL	Read ASCII	12
A7h	MFR_POUT_MAX	Read Linear	2
A8h	MFR_TAMBIENT_MAX	Read Linear	2
B0h	PSU_STATUS	Read Byte	1
D1h	READ_TOTAL_POUT (3)	Read Linear	2
D2h	READ_3V3_VOUT	Read VOUT Mode	2
D3h	READ_3V3_IOUT	Read Linear	2
D4h	REDA_3V3_POUT	Read Linear	2
D5h	READ_5V_VOUT	Read VOUT Mode	2
D6h	READ_5V_IOUT	Read Linear	2
D7h	READ_5V_POUT	Read Linear	2
FBh	Buzzer_Mute (4)	R/W Byte	1

Note 1: *Status will retain the last occurrence. Latch defined as the status. Must be cleared through the 03h (CLEAR_FAULTS) command. Please See the following Table.*

Command	Status Name	Status action
79h	STATUS_WORD	Latch
7Ah	STATUS_VOUT	Latch
7Bh	STATUS_IOUT	Latch
7Dh	STATUS_TEMPERATURE	Latch
80h	STATUS_OF_3V3 And 5V	Latch
B0h	PSU_STATUS	Automatic recovery

Note 2: *READ_TEMPERATURE_1 should provide the PDB Inlet Ambient temperature.*

Note 3: *Read Total Power command only at +12 V, 3V3, 5V total power.*

Note 4: *Buzzer will alert when any PSU fault occurs. Write 0x20 command in PMBus will be able to mute buzzer alarm. When PSU goes back to normal state, the register will be set at 0x00.*

Contents in 20h (VOUT_MODE) Command Code:

Mode	Bits [7:5]	Bits [4:0] (Parameter)
Linear	000b	Five bit two's complement exponent for the mantissa delivered as the data bytes for an output voltage related command.
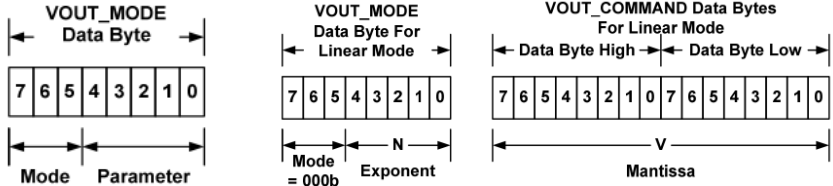
Note: The Mode bits are set to 000b.

The Voltage (ex.+12V_VOUT , 3V3_VOUT , 5V_VOUT), in volts, is calculated from the equation: **Voltage = V x 2^n**

Where:

Voltage is the parameter of interest in volts;

V is a 16 bit unsigned binary integer; and

N is a 5 bit two's complement binary integer.

Contents in 79h (STATUS_WORD) Command Code:

Byte	Bit Number	Status Bit Name	Meaning
Low	[7:0]	Reserved	Return=0
High	7	VOUT	+12V Output voltage warning has occurred = 1 ; Normal = 0
High	6	IOUT	+12V Output current warning has occurred = 1 ; Normal = 0
High	5	Reserved	Return=0
High	4	3V3/5V_VOUT&IOUT	3V3/5V Output voltage warning has occurred =1 ; Normal = 0
High	3	POWER_ GOOD#	The POWER_GOOD signal is OK = 1 ; FAIL = 0
High	[2:0]	Reserved	Return=0

Contents in 7Ah (STATUS_VOUT) Command Code:

Bit Number	Status Bit Name	Meaning
7	Reserved	Return=0
6	+12V_OV_WARNING	VOUT > 13.0V = 1 ; Normal = 0
5	+12V_UV_WARNING	VOUT < 11.0V = 1 ; Normal = 0
[4:0]	Reserved	Return=0

Contents in 7Bh (STATUS_IOUT) Command Code:

Bit Number	Status Bit Name	Meaning
[7:6]	Reserved	Return=0
5	+12V_OC_WARNING	+12V_IOUT > Max Current of 110%@1Sec = 1 ; Normal = 0
[4:0]	Reserved	Return=0

Contents in 7Dh (STATUS_TEMPERATURE) Command Code:

Bit Number	Status Bit Name	Meaning
[7:3]	Reserved	Return=0
3	AMBIENT_OT_FAULT	Ambient temperature >60°C = 1 ; Normal =0
2	AMBIENT_OT_WARNING	Ambient temperature >55°C = 1 ; Normal = 0
[1:0]	Reserved	Return=0

Contents in 80h (STATUS_OF_3V3 And 5V) Command Code:

Bit Number	Status Bit Name	Meaning
7	5V_OC_ FAULT	5V_IOUT > Max Current of 130%@ 1Sec = 1 ; Normal = 0
6	3V3_OC_FAULT	3V3_IOUT > Max Current of 130%@ 1Sec = 1 ; Normal = 0
5	5V_UV_WARNING	VOUT < 4.5V = 1 ; Normal = 0
4	3V3_UV_WARNING	VOUT < 3.0V = 1 ; Normal = 0
3	5V_OV_WARNING	VOUT > 5.5V = 1 ; Normal = 0
2	5V_OC_WARNING	5V_IOUT > Max Current of 110%@ 1Sec = 1 ; Normal = 0
1	3V3_OV_WARNING	VOUT > 3.6V = 1 ; Normal = 0
0	3V3_OC_WARNING	3V3_IOUT > Max Current of 110%@ 1Sec = 1 ; Normal = 0

Contents in B0h (PSU_STATUS) Command Code:

Bit Number	Status Bit Name	Meaning
[7:4]	Reserved	Return=0
3	PSU2 PRESENT	Module Plug OUT = 1 ; Module Plug IN = 0
2	PSU1 PRESENT	Module Plug OUT = 1 ; Module Plug IN = 0
1	PSU2 STATUS	FAIL = 1 ; OK = 0
0	PSU1 STATUS	FAIL = 1 ; OK = 0

MFR Meaning:

Command Code	Command Name	Meaning
99h	MFR_ID	ETASIS
9Ah	MFR_MODEL	EFRP-S2287HPM
9Bh	MFR_REVSION	A0 ~ Z9
9Eh	MFR_SERIAL	Code = 12 (ex. T201XXG00001)
A7h	MFR_POUT_MAX	280 (W)
A8h	MFR_TAMBIENT_MAX	40 (°C)

I^{2}C Address Set Table:

PDB MCU Device	4A
FRU Device (Option)	AC

4.3.7. Power Supply Unit (I^{2}C)

Syntax:	int get_i2c_psu_temperature(void)
Description:	This function can get power supply unit temperature.
Parameters:	None.
Return Value:	power supply temperature.

Syntax:	float get_i2c_psu_vout_3V3(void)
Description:	This function can get power supply unit Vout 3.3V.
Parameters:	None.
Return Value:	float Vout 3.3V.

Syntax:	float get_i2c_psu_vout_5V(void)
Description:	This function can get power supply unit Vout 5V.
Parameters:	None.
Return Value:	float Vout 5V.

Syntax:	float get_i2c_psu_vout_12V(void)
Description:	This function can get power supply unit Vout 12V.
Parameters:	None.
Return Value:	float Vout 12V.

Syntax:	int get_i2c_psu_fan_status(int fan)
Description:	This function can get which power supply fan status.
Parameters:	fan: 0-1.
Return Value:	0: Fail, 1: Good.

Syntax:	int get_i2c_psu_status(int psu)
Description:	This function can get which power supply status.
Parameters:	psu: 0-1.
Return Value:	0: Fail, 1: Good.

4.3.8. Application Notes for R1V2-5275V/I^{2}C

PS Fan Status Monitor:

The value can be obtained by reading CR92 which represents ps fan status.

Bit Number	Meaning
0	If bit 0=0 then ps1 fan fail else fan ok
1	If bit 1=0 then ps2 fan fail else fan ok

PS Status/present Monitor:

The value can be obtained by reading CR92 which represents ps status.

Bit Number	Meaning
0	If bit 0=0 then ps1 fail else ps1 ok
1	If bit 1=0 then ps2 fail else ps2 ok

Note 1: **Bus address Select function:** The Address is 5A.

Note 2: **Temperature Measurement Function:** The value can be obtained by reading CR14, 1LSB = 1 degree.

Note 3: **Voltage Monitor Function:** The VIN value can be obtained by reading CR10-12 which represents +3.3v, +5v, and +12v respectively, 1LSB = 0.0078125V
Example: (Please note that the value of 2, 6, and 11 were derived from component values.)
If CR10 = D7, then the +3.3V voltage = 0.0078125 * D7 * 2 = 3.359V
If CR11 = 6C, then the +5V voltage = 0.0078125 * 6C * 6 = 5.06V
If CR12 = 92, then the monitor +12V voltage = 0.0078125 * 92 * 11 = 12.5V

4.3.9. Notes

Syntax:	int libw83627_init(void)
Description:	use the watchdog, gpio function before, must be call this function first.
Parameters:	None.
Return Value:	0: Successful, -1: Fail

Syntax:	void lib_close(void)
Description:	if watchdog, gpio fuction not use on your program, please call this function.
Parameters:	None.
Return Value:	None.

Syntax:	void i2c_init(void)
Description:	use the psu(i2c), psu(pmbus), chassis, lan bypass, these function before, must be call this function first.
Parameters:	None.
Return Value:	None.

Syntax:	void i2c_close(void)
Description:	if the psu(i2c), psu(pmbus), chassis, lan bypass, these function not use on your program please call this function.
Parameters:	None.
Return Value:	None.

Syntax:	void CloseSerialPort(void)
Description:	if lcm function not use on your program, please call this function.
Parameters:	None.
Return Value:	None.

5.   FAQ

Q 1.   Where can I find the serial number of this product?

- The serial number (S/N) is a label printed with alpha-numeric character. You can find the S/N label on the bottom of this product or on its packing box.

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  (If yes, please provide it for debug.)
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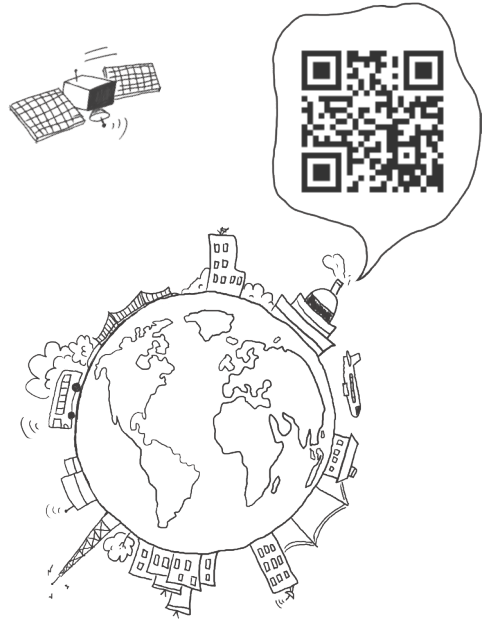
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