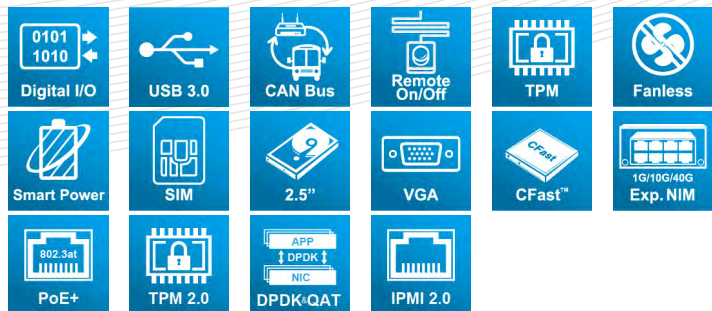


ANR-DNV3N3 Series

Networking 1U Rackmount

- Intel® Denverton® SoC
- 10 GbE Copper
(2-pair bypass, up to optional 4x PoE)
- 2 or 4 10GbE Fibber



User Manual

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

Disclaimer

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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.

Ver: 110-001

Date: Dec. 8, 2020

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.

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1. System Introduction

The ANR-DNV3N3 series networking product is based on Intel Atom® C3000, powerful and scalable for vary application scenarios.

This product provides a flexible system expansion versatility by supporting Intel Atom C3558 to Atom C3958(4-16 core) with 9x GbE copper LANs, 1x GbE fiber and 2x 10G fiber networks(SFP+). Furthermore, it supports up to 4 ports of PoE in those copper LAN ports and one optional NIM or expansion PCIe slot. In the system design, 3x hot swappable 2.5-inch HDD/SSD and one CFast card slot are available for storage in an 1U rackmount chassis.

1.1. Models Description

Model Name	Description
ANR-DNV3N3-04	Intel Atom C3558 (4-core) SoC, 9 GbE Copper (2-pair bypass), 1 SFP and 2 SFP+, 2 USB 3.1, 3x 2.5" SATAIII, 1 VGA and ATX PSU.
ANR-DNV3N3-08	Intel Atom C3758 (8-core) SoC, 9 GbE Copper (2-pair bypass), 1 SFP and 4 SFP+, 1 NIM/1 PCIe x8 Exp. Slot, 2 USB 3.1, 3x 2.5" SATAIII, 1 VGA and ATX PSU.
ANR-DNV3N3-08P	Intel Atom C3758 (8-core) SoC, 9 GbE Copper (2-pair bypass & 4x PoE), 1 SFP and 4 SFP+, 1 NIM/1 PCIe x8 Exp. Slot, 2 USB 3.1, 3x 2.5" SATAIII, 1 VGA and ATX PSU.
ANR-DNV3N3-12R	Intel Atom C3858 (12-core) SoC, 9 GbE Copper (2-pair bypass), 1 SFP and 4 SFP+, 1 NIM/1 PCIe x8 Exp. Slot, 2 USB 3.1, 3x 2.5" 2.5" SATAIII, 1 VGA and 300W Redundant PSU.
ANR-DNV3N3-16R	Intel Atom C3958 (16-core) SoC, 9 GbE Copper (2-pair bypass), 1 SFP and 4 SFP+, 1 NIM/1 PCIe x8 Exp. Slot, 2 USB 3.1, 1 VGA, 3x 2.5" SATAIII and 300W Redundant PSU.

1.2. Specifications

(Specifications are subject to change without notice.)

General

Thermal Solution	<ul style="list-style-type: none"> • PWM Smart Cooling Fans 															
CPU	<ul style="list-style-type: none"> • Intel® Denverton® C3958 16 cores, 2.2GHz • Intel® Denverton® C3858 12 cores, 2.2GHz • Intel® Denverton® C3758 8 cores, 2.1GHz • Intel® Denverton® C3558 4 cores, 1.5GHz 															
Memory	<ul style="list-style-type: none"> • 4x U-DIMM DDR4-2666 															
BIOS	<ul style="list-style-type: none"> • Support Console Re-direction • Support Bypass Setting <table border="1" data-bbox="468 568 1064 727"> <thead> <tr> <th>Scenario</th> <th>Normal</th> <th>Bypass</th> </tr> </thead> <tbody> <tr> <td>SYS (ON)</td> <td>V</td> <td></td> </tr> <tr> <td>SYS (OFF)</td> <td></td> <td>V</td> </tr> <tr> <td>WDT (Timeout)</td> <td></td> <td>V</td> </tr> <tr> <td>PWR (Lost)</td> <td colspan="2">Remained prior status</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Support PXE boot from all RJ-45 Coppers 	Scenario	Normal	Bypass	SYS (ON)	V		SYS (OFF)		V	WDT (Timeout)		V	PWR (Lost)	Remained prior status	
Scenario	Normal	Bypass														
SYS (ON)	V															
SYS (OFF)		V														
WDT (Timeout)		V														
PWR (Lost)	Remained prior status															
BMC Chipset	<ul style="list-style-type: none"> • ASPEED® AST2510 • ASPEED® AST2500 (for C3858 & C3958) 															

Network Interface

Ethernet (on-board)	<ul style="list-style-type: none"> • 10x GbE, 2/4 SFP+ • Intel i210AT LAN[0] • Intel i211, LAN[1: 8] • Intel i210IS SFP[1] • Up to 4 port PoE(via LAN[5:8]Copper) (For C3758) • SoC embedded SFI x2, SFP+[1:2] or • SoC embedded SFI x4, SFP+[1:4]
LAN bypass (2-pair)	<ul style="list-style-type: none"> • LAN bypass by LAN[1-2, 3-4]

Storage

SATA	<ul style="list-style-type: none"> • 3x SATA socket
CFast	<ul style="list-style-type: none"> • 1x CFast socket

I/O

Front Panel

- 3x 2.5" SATA3 SATA[1:3] Hot-swappable Bay
- 1x Graphic LCM Display
- 1x Navigation Joystick for LCM
- 2x USB 3.0
- 3x SYSTEM LED
- 1x RESET Button
- 1x USB-console (Micro-B)
- 1x RJ-45-console
- 1x GbE RJ-45 Copper LAN[0]
- 8x GbE RJ-45 Copper LAN[1:8]
- 1x GbE SFP Fiber SFP[1] with 4x GbE PoE RJ-45 Copper(For C3758)
- 2x SFP+(10G Fiber) for C3558 or 4x SFP+(10G Fiber) for C3758 or above
- 1x Acrosser Hot-swappable Exp. NIM. (For C3758 and above SoC, not available when PCIe slot is used)

Rear Panel

- 1x Exp. PCIe Gen3 x8 slot (support Full/HalfLen PCIe Add-In Card) (For C3758 and above SoC, not available when Exp. NIM is used)
- 2x Smart Cooling Fan
- 1x Power Switch
- 1x VGA
- Single ATX 250WPSU or 1+1 Redundant 300W PSU (C3858 & C3958)

Internal I/O

- 3x SATA3
- 1x PCIe Gen3 (x8 slot, x8 Signal) (For Expansion module or Exp.PCIe slot)
- ATX 24-pin Power Input
- ATX 12V 8-pin Power Input
- 1x on board pin header for LCM
- 1x on board pin header for PIC update
- 1x on-board pin-header for I2C
- 1x on-board pin-header for PMBus
- 2*5 pin 2.54mm for 8-bit GPIO (4-In, 4-Out)
- 1x on-board pin-header for VGA
- 1x on-board pin-header for SYSTEM LEDs

Other Features

Watchdog Timer

- Software programmable 0~255 Seconds, 0=disable timer.

Battery

- Lithium Battery, 3V 220mAH (CR2032), for RTC

-
- | | |
|----------------------------|--|
| Hardware Monitoring | <ul style="list-style-type: none">• CPU Voltage• CPU Temperature• System Temperature |
|----------------------------|--|
-

- | | |
|-----------------------------|---|
| Security & Mgmt. | <ul style="list-style-type: none">• On-board TPM 2.0• IPMI 2.0 Compliance• Chassis Intrusion Detection (default: Disable) |
|-----------------------------|---|
-

Software

- | | |
|-------------------|--|
| OS Support | <ul style="list-style-type: none">• Linux Kernel 4.8 & above, (64-bit) |
|-------------------|--|
-

Mechanical & Environment

- | | |
|------------------|--|
| Dimension | <ul style="list-style-type: none">• 430(L) x 400(W) x 44(H) mm |
|------------------|--|
-

- | | |
|------------------------------|---|
| Operating Temperature | <ul style="list-style-type: none">• 0 ~ 40°C (32 ~ 104°F) |
|------------------------------|---|
-

- | | |
|----------------------------|---|
| Storage Temperature | <ul style="list-style-type: none">• -20 ~ 80°C (-4 ~ 176°F) |
|----------------------------|---|
-

- | | |
|--------------------------|--|
| Relative Humidity | <ul style="list-style-type: none">• 0 to 90% @40°C, non-condensing |
|--------------------------|--|
-

EMC & Safety

- | | |
|----------------------|--|
| Certification | <ul style="list-style-type: none">• CE, FCC Class A, RoHS 2, cULus |
|----------------------|--|
-

- | | |
|-----------------------|--|
| Vibration Test | <ul style="list-style-type: none">• IEC 60068-2-64, 5~500Hz, 3GRMS |
|-----------------------|--|
-

- | | |
|------------------|--|
| Drop Test | <ul style="list-style-type: none">• ISTA-2A 2006 |
|------------------|--|
-

1.3. Package Contents

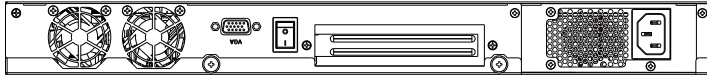
Check if the following items are included in the package.

	Item	Q'ty
<input type="checkbox"/>	ANR-DNV3N3 Series System	1
<input type="checkbox"/>	Console Cable (RJ-45 to Serial)	1
<input type="checkbox"/>	Rackmount Bracket	2
<input type="checkbox"/>	CD with Driver and Manual	1
<input type="checkbox"/>	Power Cord	1
<input type="checkbox"/>	Screw Pack	1

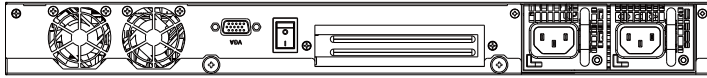
1.4. System Dissection

1.4.1. Dimensions

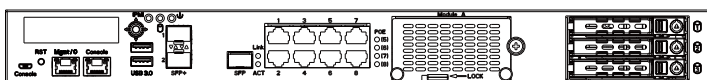
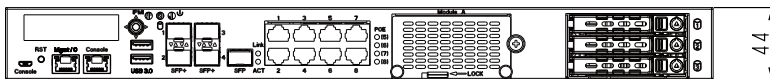
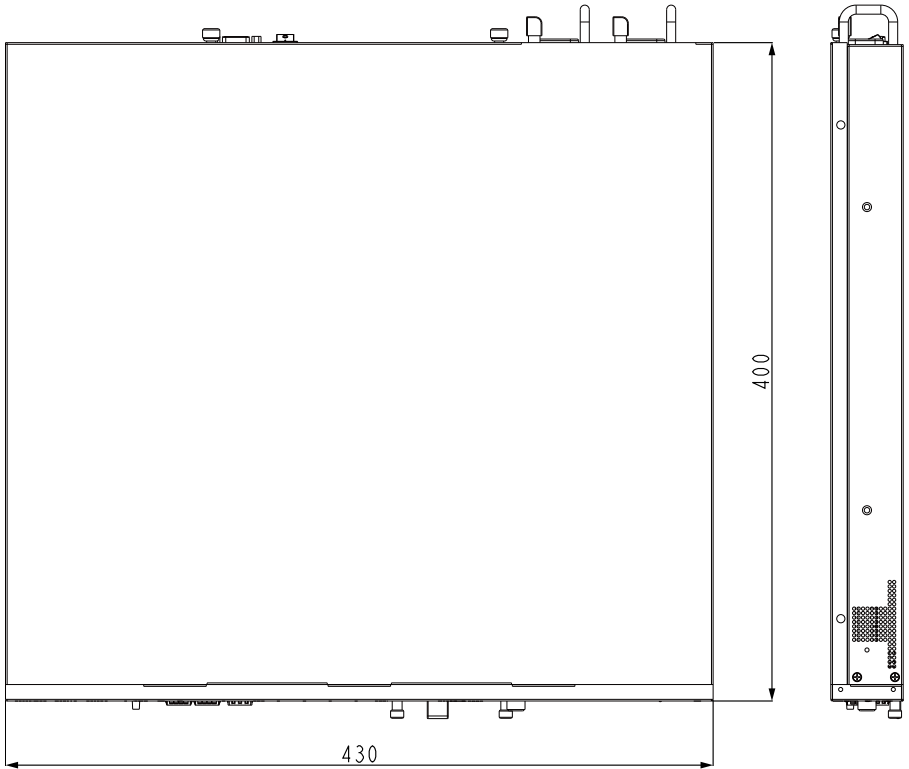
(Unit: mm)



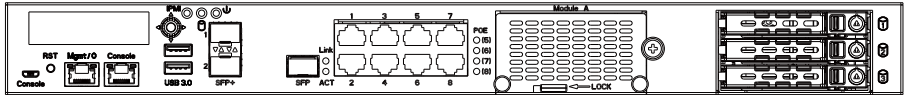
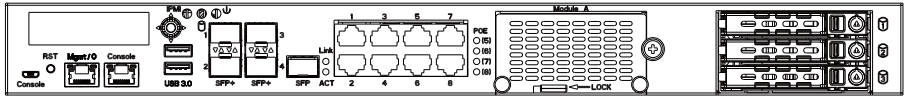
Single Power



Redundant Power



1.4.2. Front I/O Panel

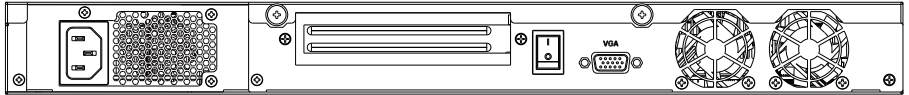


- **Console**
Console Port (Micro USB)
- **RST**
Reset Button
- **Mgmt / O**
LAN 0 Port
- **Console**
Console Port (RJ45)
- **Navigation Joystick**
LCM menu control buttons
- **IPMI**
IPMI Indicator (Green)
- **HDD**
HDD Activity Indicator (Yellow)
- **PWR**
Power Indicator (Green)
- **Bypass**
LAN Bypass LED
- **USB 3.0**
USB 3.0 Port
- **SFP+ 1 ~ 4**
SFP+ LAN Port

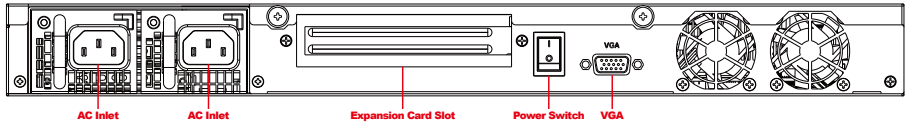
- **SFP**
SFP Port, Link/Active LED
- **LAN 1~8**
LAN 1~8 Port
- **PoE Power**
PoE Power LED

1.4.3. Rear I/O Panel

Single Power



Redundant Power



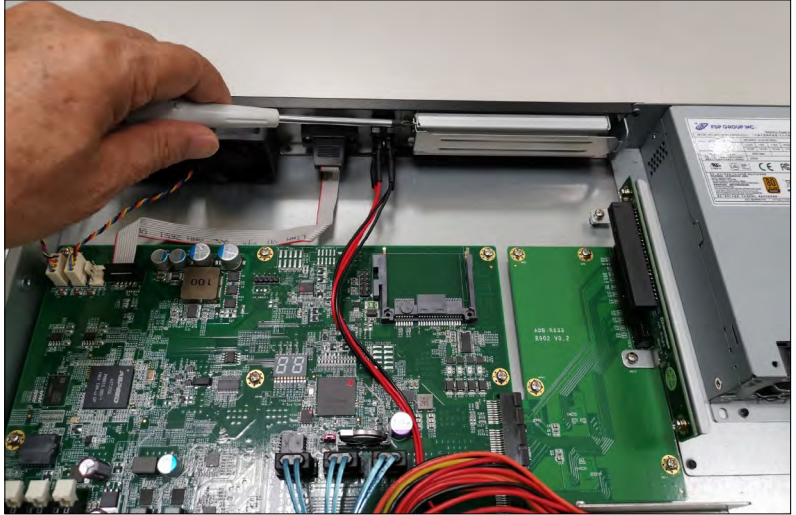
- **AC Inlet**
1U Redundant ATX PSU
- **VGA**
VGA connector
- **Power Switch**
Power on/off switch
- **Expansion Card Slot**
1x PCI express card insert slot

2. Components Assembly

Please follow the instruction to install the inner modules.

2.1. PCIe Card Installation

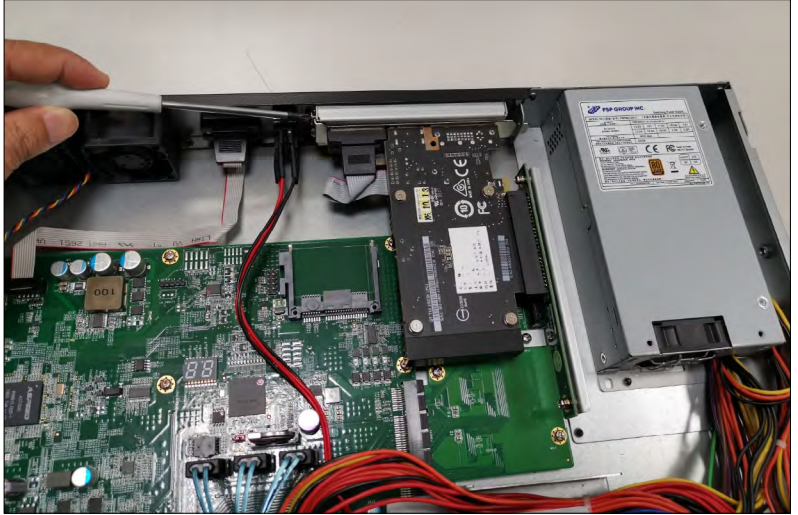
Step 1: Remove the screw that lock the cover shield. Take out the cover shield.



Step 2: Install your PCIe card. Pay attention to its orientation.



Step 3: Secure the PCIe card by #1 head screw driver.



2.2. NIM Module Insertion

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

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.



2.3. HDD Installation

To install your HDD into the system:

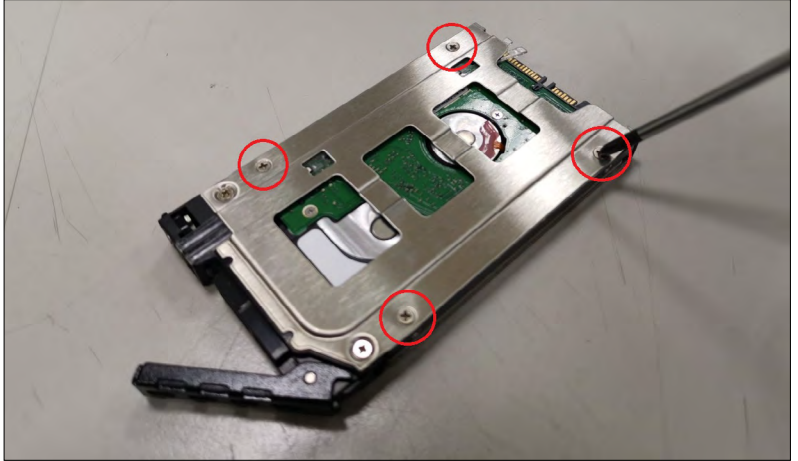
Step 1: Push the latch right to open the HDD's cover.



Step 2: Insert your HDD into the HDD bracket from aside. Pay attention to its orientation. The pin side should face inward.



Step 3: Prepare the screw pack. Fasten the HDD with 4 screws.



Step 4: Ready to insert your HDD assembled with bracket into the system.



- Step 5: Firmly push the HDD bracket into the chassis. Make sure to close the door hatch.



- Step 6: Take the door key from the screw pack to lock the HDD bracket.



2.4. Rack Installation

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



3. BIOS Settings

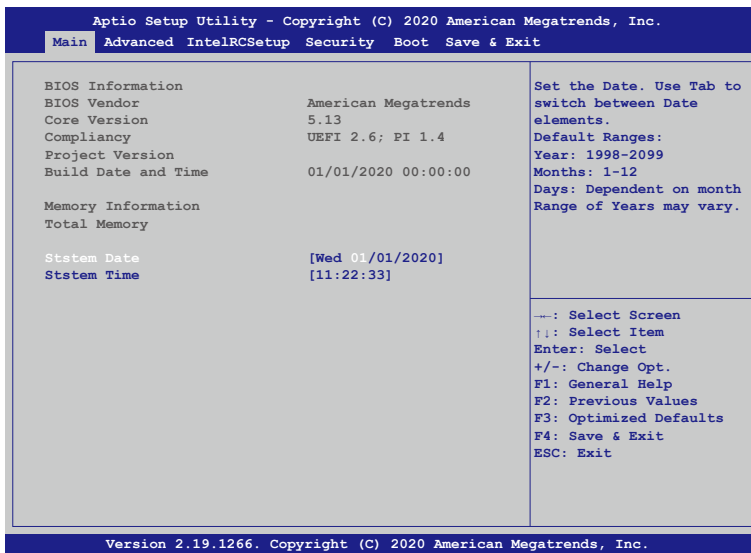
This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get the system up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- Main Setup
- Advanced Setup
- IntelRCSetup 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.



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.

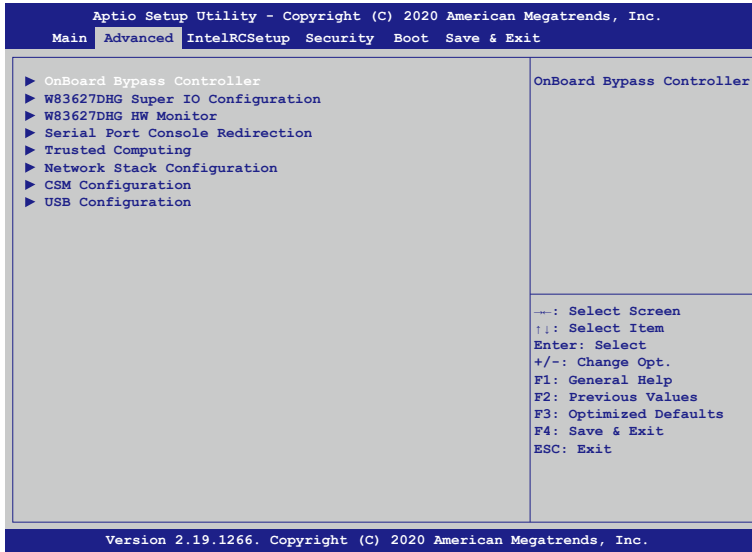
- **Total Memory**

This item displays the total size of memory available in the system.

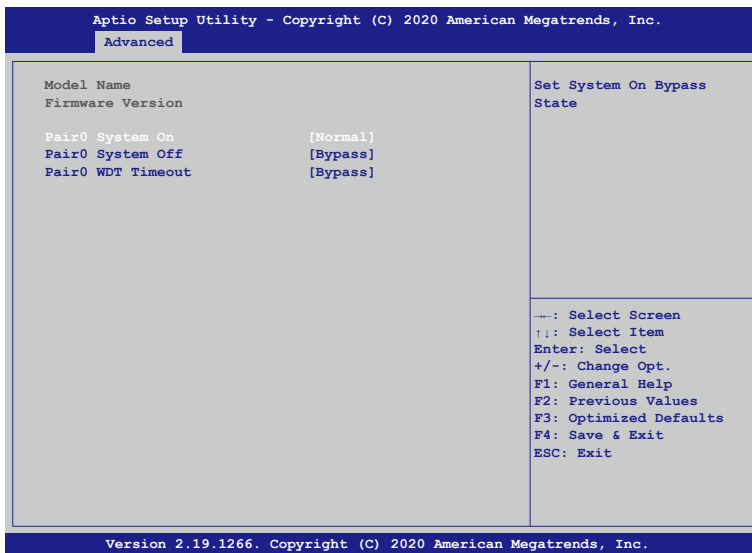
- **System Date/System Time**

Use this option to change the system date and time. Highlight System Date or System Time using the arrow keys. Enter new values using the keyboard. Press the key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

3.2. Advanced Setup



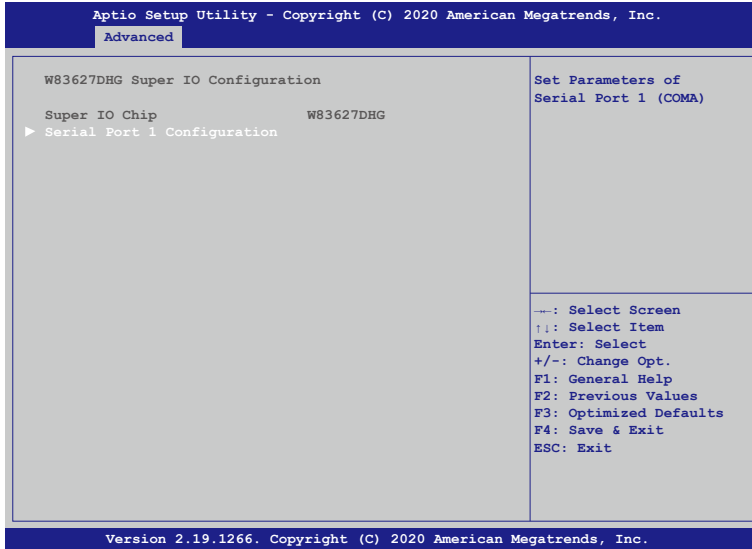
3.2.1. Advanced Setup: OnBoard Bypass Controller



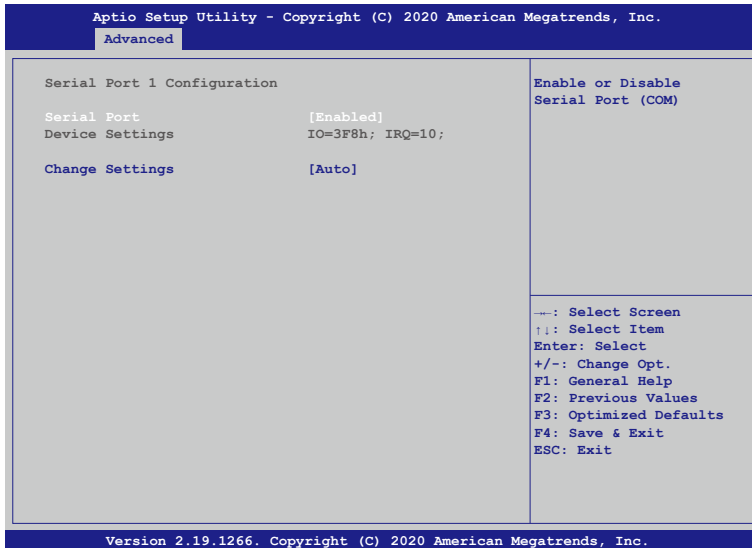
- **Pair0 System On**
 Each Pair Lan[a] and Lan[b] Bypass State Setting, System On /System off /WDT timeout State.

[Normal] Lan[a] and Lan[b] work on normal mode.
 [Bypass] Lan[a] data will bypass to Lan[b].

3.2.2. Advanced Setup: W83627DHG Super IO Configuration



- **Serial Port 1 Configuration**
 Set Parameters of Serial Port 1 (COMA).

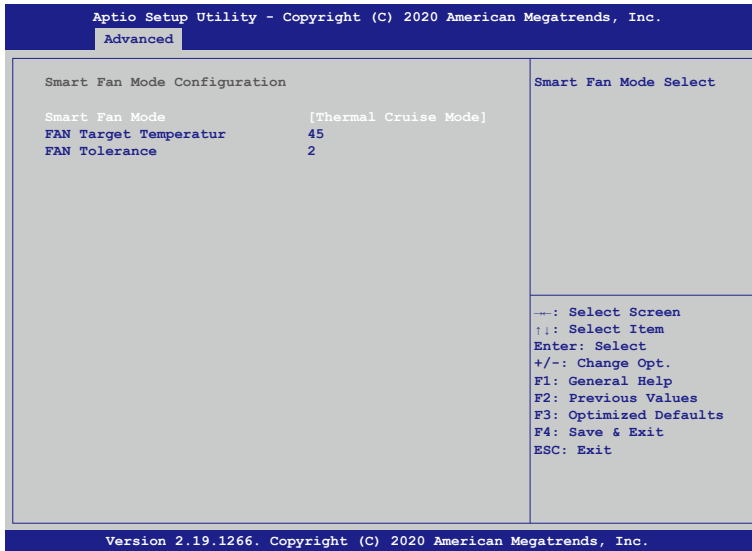


- **Serial Port**
Select Enabled to enable the onboard serial port.
- **Change Settings**
This option specifies the base I/O port address and the interrupt Request address of Serial Port.
Select [Auto] to let the BIOS automatically assign the base I/O and IRQ address.

3.2.3. Advanced Setup: W83627DHG HW Monitor

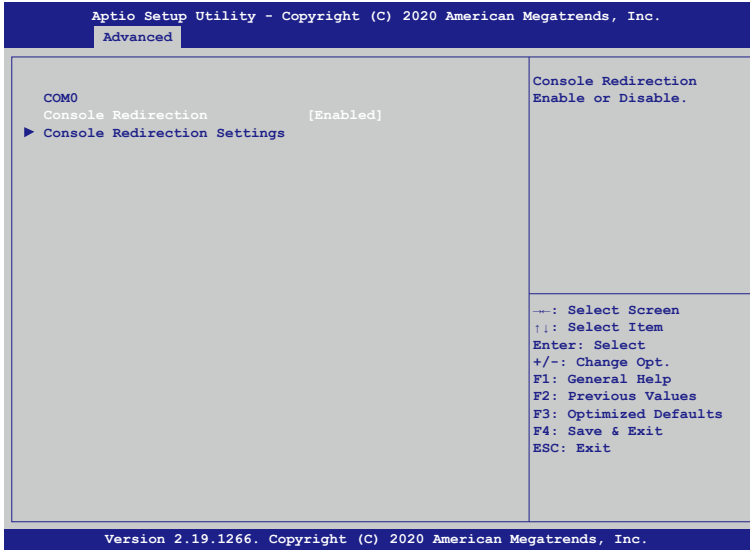


- **Smart Fan Mode Configuration**
Enable or Disable Smart Fan.



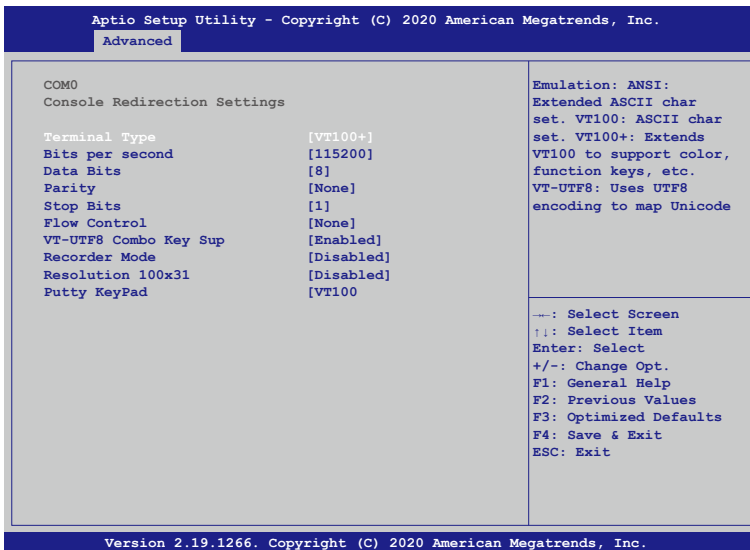
- **Smart Fan Mode**
 [Thermal Cruise Mode] : You can adjust FAN Target Temperatur and FAN Tolerance manually. If CPU temp is lower than target temp-tolerance, the fan will run at low fan speed. If CPU temp is higher than target temp+tolerance, the fan will run at full fan speed.
 [Manual Mode] : You can set fixed fan speed.
- **FAN Target Temperature**
 Input a target temperature between 0 ~ 127°C.
- **FAN Tolerance**
 Input a target temperature tolerance.

3.2.4. Advanced Setup: Serial Port Console Redirection



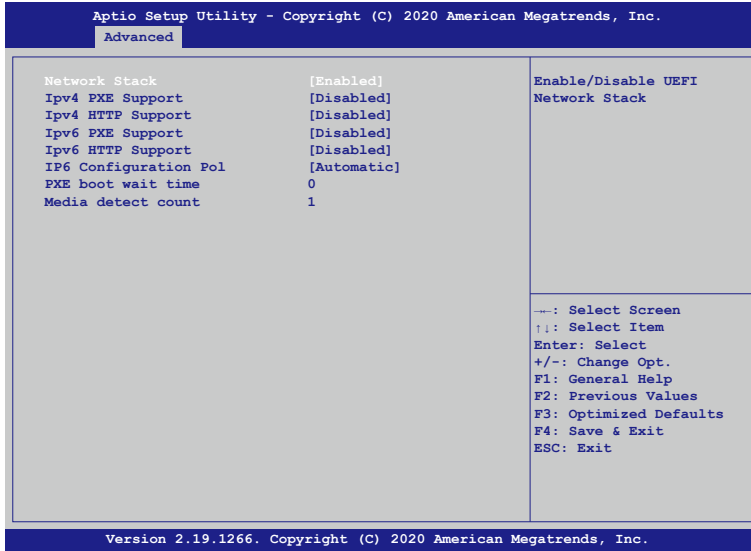
- **Console Redirection**

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.



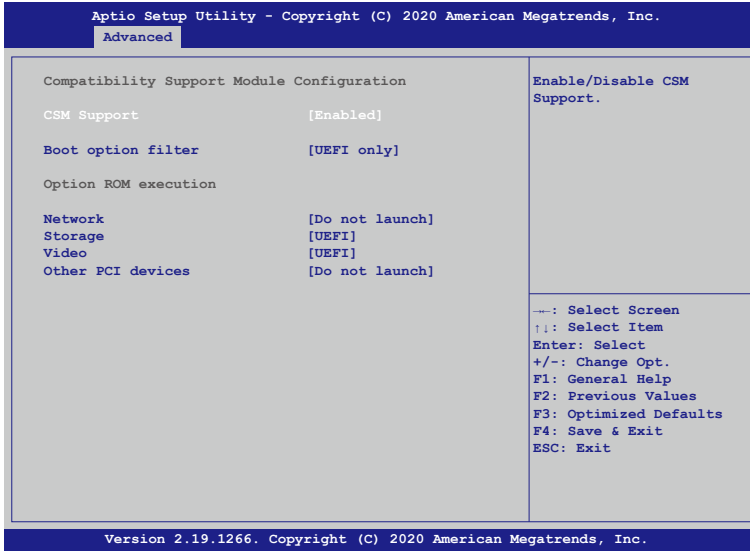
- **Terminal Type**
Use this item to select the preferred terminal emulation type for out-of-band management.
- **Bits per second**
Use this item to select the serial port transmission speed. The speed used in the hostcomputer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [57600] and [115200].
- **Data Bits**
Use this item to set the data transmission size. The options include [7] and [8] (Bits).
- **Parity**
Use this item to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space].
- **Stop Bits**
The item indicates the end of a serial data packet. The standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.
- **Flow Control**
Use this item to set the flow control to prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None] and [HardwareRTS/CTS].
- **VT-UTF8 Combo Key Support**
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 as text 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.

3.2.5. Advanced Setup: Network Stack Configuration



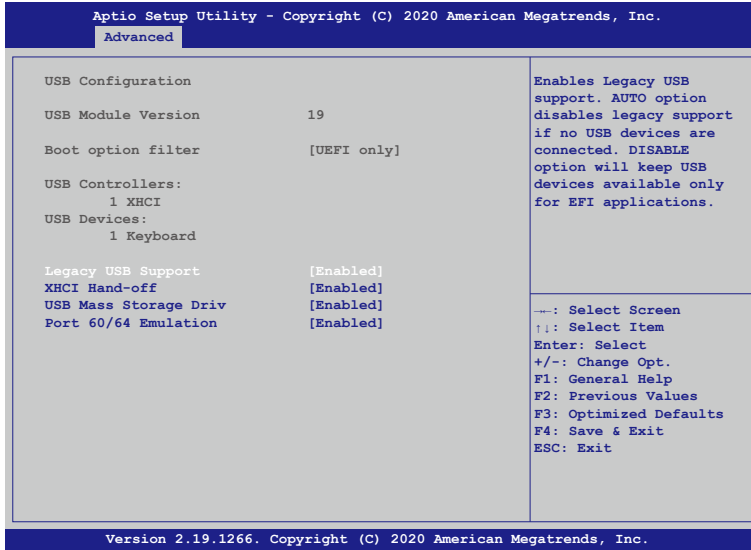
- **Ipv4 PXE Support**
Enable or disable the Ipv4 PXE support.
- **Ipv4 HTTP Support**
Enable or disable the Ipv4 HTTP support.
- **Ipv6 PXE Support**
Enable or disable the Ipv6 PXE support.
- **Ipv6 HTTP Support**
Enable or disable the Ipv6 HTTP support.
- **PXE boot wait time**
Click ESC key to cancel the PXE boot wait time.
- **Media detect count**
Set up the media detecting wait time by seconds.

3.2.6. Advanced Setup: CSM Configuration



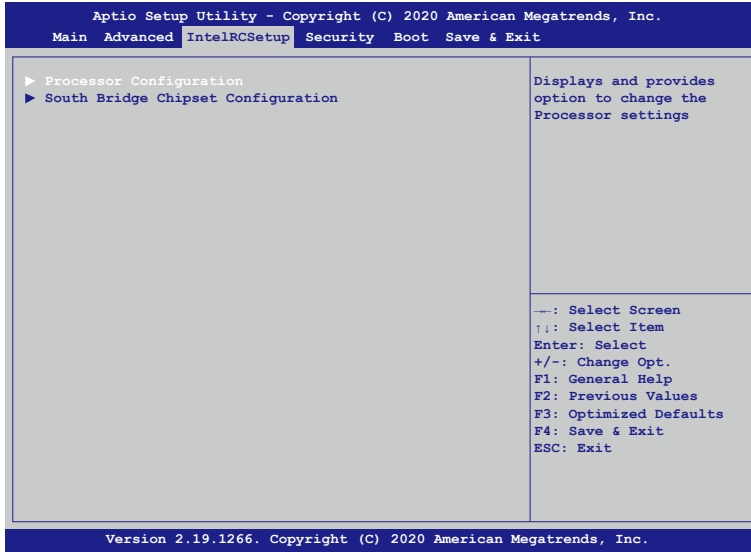
- **CSM Support**
Use this feature to set the compatibility Option ROM. The options are Enabled, and Disabled. Disabled is the default option.
- **Boot option filter**
Use this item to control the Legacy/UEFI memory sequence. Options are: [UEFI and Legacy], [Legacy only], [UEFI only].
- **Network**
This item provides control of the operation UEFI and regular PXE/Storage/Video, randomly read memory (OpROM). Options are: [UEFI], [Legacy], [Do not Launch].

3.2.7. Advanced Setup: USB Configuration



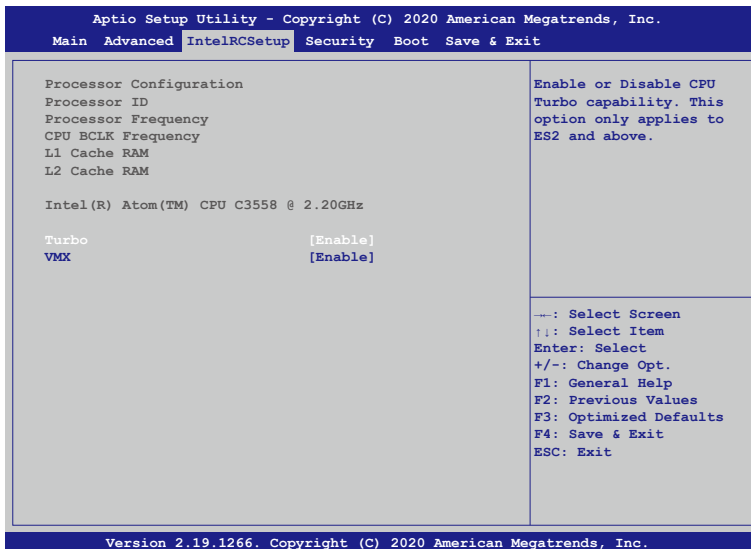
- Legacy USB Support**
 Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only.
- XHCI Hand-off**
 This is a work-around solution for operating systems 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 Driv**
 Select Enabled for USB Mass Storage Driver support.
- Port 60/64 Emulation**
 Select Enabled for I/O port 60h/64h emulation support, which in turn, will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices.

3.3. IntelRCSetup



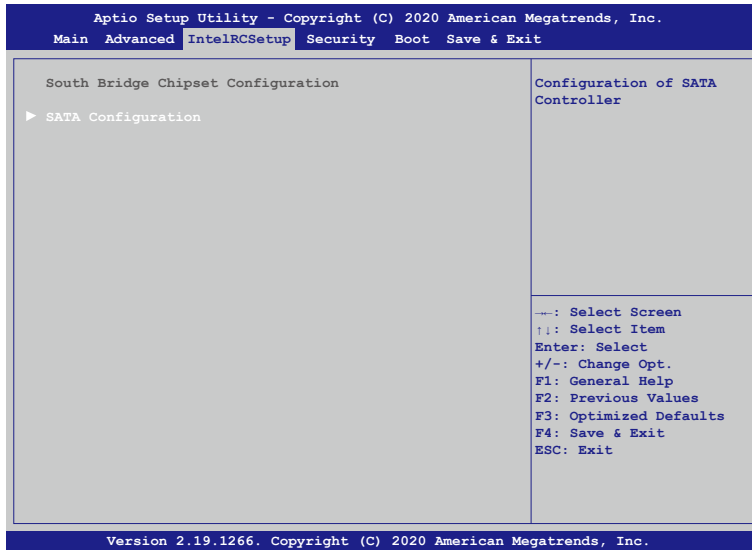
- **Processor Configuration**
 Displays and provides option to change the Processor Settings.

3.3.1. IntelRCSetup: Processor Configuration



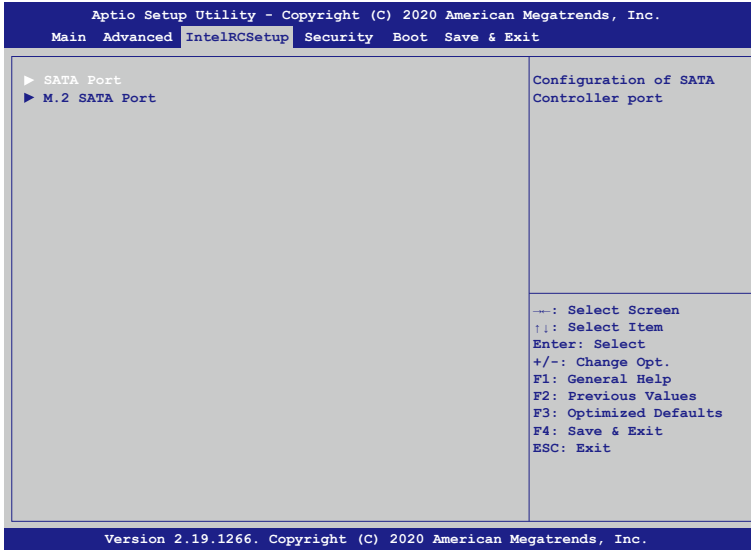
- **Turbo**
This feature allows processor cores to run faster than marked frequency in specific conditions.
- **VMX**
Enable or Disable Intel Virtual Machine Extensions (VMX) for IA-32 processors that support Intel® Vanderpool Technology.

3.3.2. IntelRCSetup: South Bridge Chipset Configuration



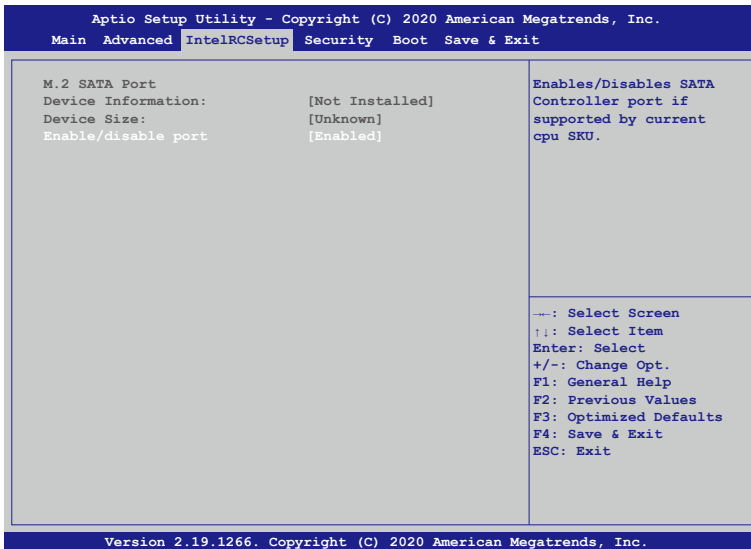
- **SATA Configuration**
Configuration of SATA Controller.

3.3.3. IntelRCSetup: SATA Port



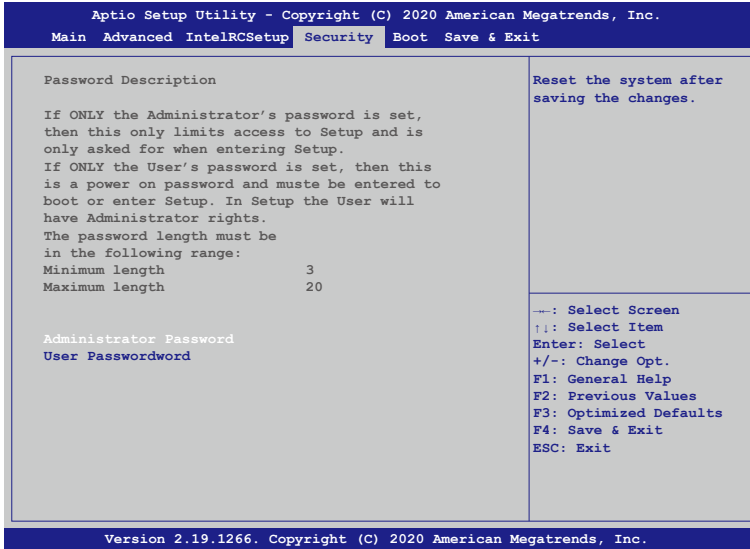
- **SATA Port**
Configuration of SATA Controller port.

3.3.4. IntelRCSetup: M.2 SATA Port



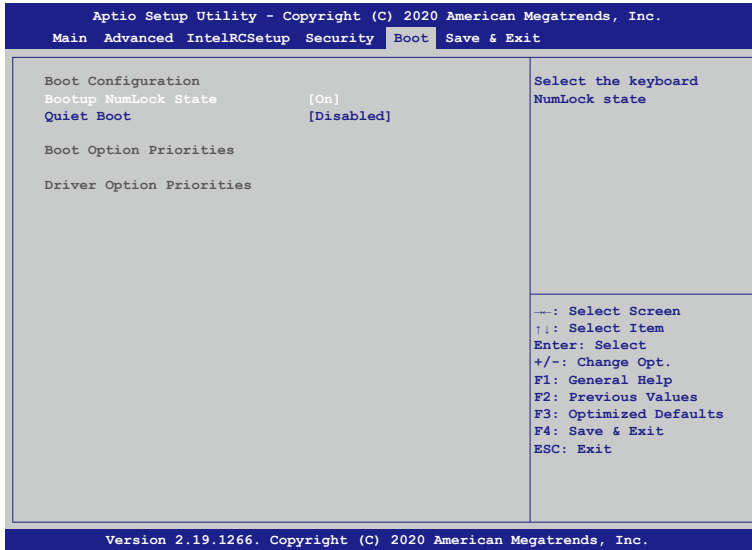
- **Enable/disable port**
Enables/Disables SATA Controller port if supported by current cpu SKU.

3.4. Security Setup



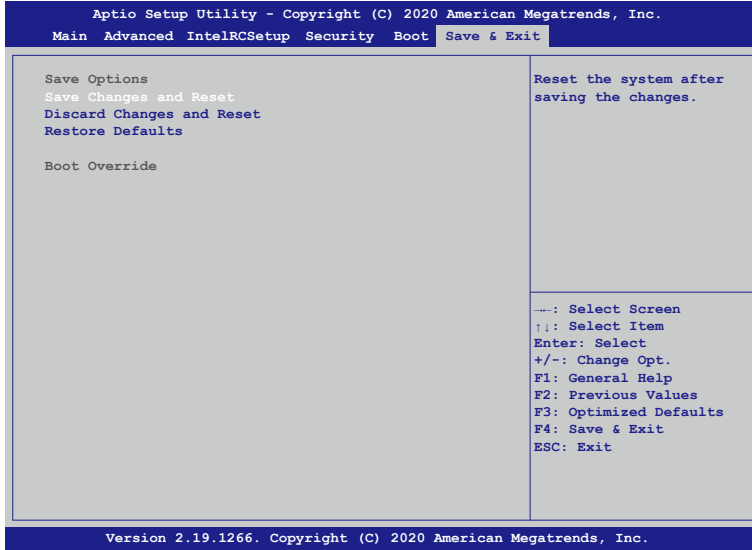
- **Setup Administrator Password**
Press Enter to create a new, or change an existing Administrator password.
- **User Password**
Press Enter to create a new, or change an existing User password.

3.5. Boot Setup



- 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



- 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 Exit**
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 Optimized 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 kernel 4.8 above (Ubuntu 18.04.1 Desktop 64bit).

4.1.2. GPIO

The ANR-DNV3N3 provides GPIO interface. Users can use the GPIO APIs to Control GPO Pin.

4.1.3. Watchdog

The ANR-DNV3N3 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. 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. Get the identification of the pressed key of the LCM.
4. Get LCM PIC Version.
5. Get the LCM mode.
6. Graphic write on LCM.

4.1.5. LAN Bypass Subsystem

Two pairs of LAN ports on ANR-DNV3N3 implement 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.

4.1.6. Chassis Opened

The chassis supply APIs provide to control the module. By invoking these APIs, programmers can implement the applications which have the functions listed below.

1. Get chassis opened status.
2. Set chassis opened (Enabled or Disabled).

4.1.7. Power Supply Unit

The Power supply APIs provide pmbus protocol 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.

4.2. File Descriptions

4.2.1. GPIO/Watchdog/LAN Bypass Subsystem/LCM

1. **TestUtility.exe**

The GPIO, Watchdog, Power Supply Unit, LCM Control Module, and chassis open. Console 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 ~ pin1 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 ~ pin1 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:	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 16 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: bypass, 1: normal, -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: bypass, -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:	Void clear_lcm_display(void)
Description:	Clear the screen of the LCM.
Parameters:	None.
Return Value:	None.

Syntax:	Void graphicwritelcm (unsigned char *data)
Description:	Graphci Lcm show display function
Parameters:	unsigned char pointer 512bytes pointe hex
Return Value:	None.

Syntax:	Void get_lcm_mode_type(unsigned char *data)
Description:	This function can get lcm type mode
Parameters:	unsigned char pointer 10bytes data, the lcm type mode will save to pointer data.
Return Value:	None.

Syntax:	int get_lcm_key_code(unsigned char *data)
Description:	Scan the LCM and return the identification of the pressed direction key.
Parameters:	unsigned char pointer one byte, the key code will save to pointer data.
Return Value:	'0: Success -1:Fail The pointer data : 0x1E is Center key 0x1D is Up key 0x1B is Right key 0x17 is Left key 0x0F is Down key

Syntax:	void set_lcm_displayoff(void)
Description:	This function can turn off lcm display.
Parameters:	None.
Return Value:	None.

Syntax:	Void set_lcm_displayon(void)
Description:	This function can turn on lcm display.
Parameters:	None.
Return Value:	None.

Syntax:	Void get_lcm_firmware_ver(unsigned char *data)
Description:	This function can get LCM PIC Version.
Parameters:	lcm pic version will save the unsigned char pointer parameters.
Return Value:	None.
Syntax:	Void set_lcm_default_graphic(void)
Description:	This function can set LCM setting to default.
Parameters:	None.
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
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_REVISION	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	READ_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

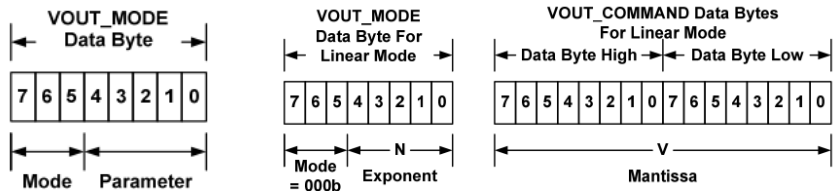
Note 2: *READ_TEMPERATURE_1 should provide the PDB Inlet Ambient temperature.*

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 2ⁿ***

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_REVISION	A0 ~ Z9
9Eh	MFR_SERIAL	Code = 12 (ex. T201XXG00001)
A7h	MFR_POUT_MAX	280 (W)
A8h	MFR_TAMBIENT_MAX	40 (°C)

I²C Address Set Table:

PDB MCU Device	4A
FRU Device (Option)	AC

4.3.7. Chassis Opened

Syntax:	int get_chassis_open_status(void)
Description:	This function can get chassis status.
Parameters:	None.
Return Value:	0: Disabled, 1: Enabled.

Syntax:	void set_chassis_open(int value)
Description:	This function can set chassis opened.
Parameters:	0: Disabled, 1: Enabled.
Return Value:	None.

4.3.8. Notes

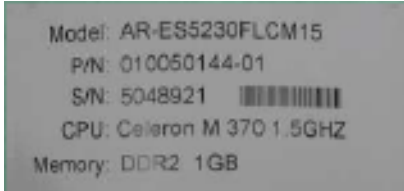
Syntax:	int libw83627_init(void)
Description:	use the watchdog, gpio function before, must be call this function first.
Parameters:	None.
Return Value:	0: Successful, -1: Fail

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

5. FAQ

Q 1. *Where is the serial number located on my system?*

- The serial number (S/N) is an alpha-numeric character located on the bottom or side chassis.



(for reference only)

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- Your Contact Info: _____ Phone Number: _____
- Your E-Mail Address: _____
- Your Company Address: _____

- Acrosser Model Name: _____
- Acrosser Serial Number: _____

Describe System Configuration

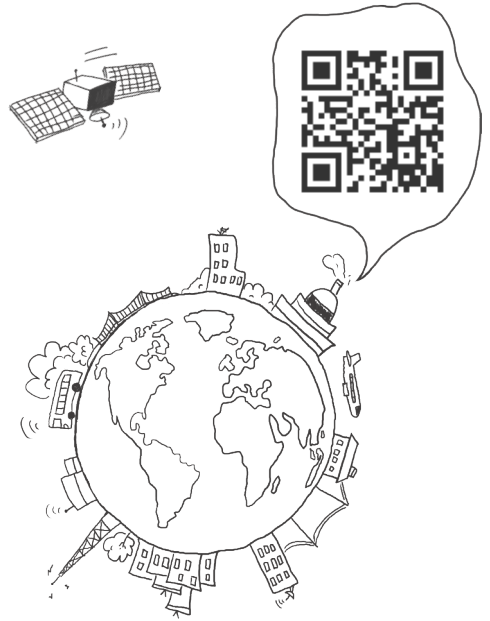
- CPU Type: _____
- Memory Size: _____
- Storage Device (e.g. HDD, CF, or SSD): _____
- Additional Peripherals (e.g. Graphic Card): _____
- Operating System & Version (e.g. Windows 7 Embedded): _____
- Special API or Driver: _____
(If yes, please provide it for debug.)
- Running Applications: _____
- Others: _____

Describe Your Problems or Questions:

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