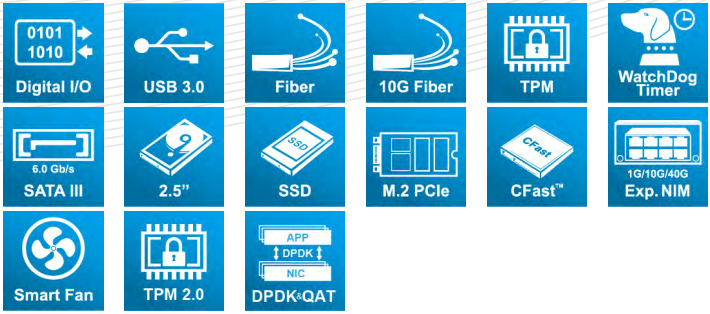
ANR-DNV3N3-8C

Networking 1U Rackmount

- *Intel® Denverton® Atom C3758 SoC*
- *8x GbE Copper*
- *4x 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.

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Date: Dec. 8, 2020

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Table of Contents

1. System Introduction

The ANR-DNV3N3-8C networking product is based on Intel Atom® C3758 SoC, powerful enough for SD-WAN or Universal CPE applications.

This product provides a compact but powerful system capability by supporting 8x GbE copper LANs and 4x 10G fiber networks(SFP+). In the system design, 3x 2.5-inch HDD/SSD and one CFast card slot are available for storage in an 1U rackmount chassis.

1.1. Specifications

(Specifications are subject to change without notice.)

General

Thermal Solution
- PWM Smart Cooling Fans

CPU
- Intel® Denverton® C3758 8 cores, 2.1GHz

Memory
- 2x U-DIMM DDR4

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 from all RJ-45 Coppers

Network Interface

Ethernet (on-board)
- 8x GbE, 4 SFP+
- Intel i211, LAN[1: 8]
- SoC embedded SFI x4, SFP+[1:4]

Storage

SATA
- 3x SATA socket and 3x 2.5” HDD bay

CFast
- 1x CFast socket

I/O

Front Panel	• 2x USB 3.0 • 3x SYSTEM LED • 1x RESET Button • 1x RJ-45-console • 8x GbE RJ-45 Copper LAN[1: 8] • 4x SFP+(10G Fiber) • 1x Acrosser swappable Exp. NIM.
Rear Panel	• 2x Smart Cooling Fan • 1x Power Switch • Single ATX 150 or 250W PSU
Internal I/O	• 3x SATA3 • 1x PCIe Gen3 (x8 slot, x8 Signal) (For Expansion module) • ATX 24-pin Power Input • ATX 12V 8-pin Power Input • 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 SYSTEM LEDs

Other Features

Watchdog Timer	• Software programmable 0~255 Seconds, 0=disable timer.
Battery	• Lithium Battery, 3V 220mAH (CR2032), for RTC
Hardware Monitoring	• CPU Voltage • CPU Temperature • System Temperature
Security & Mgmt.	• Chassis Intrusion Detection (default: Disable)

Software

OS Support	• Linux Kernel 4.8 & above, (64-bit)

Mechanical & Environment

Dimension	• 440(L) x 400(W) x 44(H) mm
Operating Temperature	• 0 ~ 40°C (32 ~ 104°F)
Storage Temperature	• -20 ~ 80°C (-4 ~ 176°F)
Relative Humidity	• 0 to 90% @40°C, non-condensing

EMC & Safety

Certification	• CE, FCC Class A, RoHS 2, cULus
Vibration Test	• IEC 60068-2-64, 5~500Hz, 3GRMS
Drop Test	• ISTA-2A 2006

1.2. Package Contents

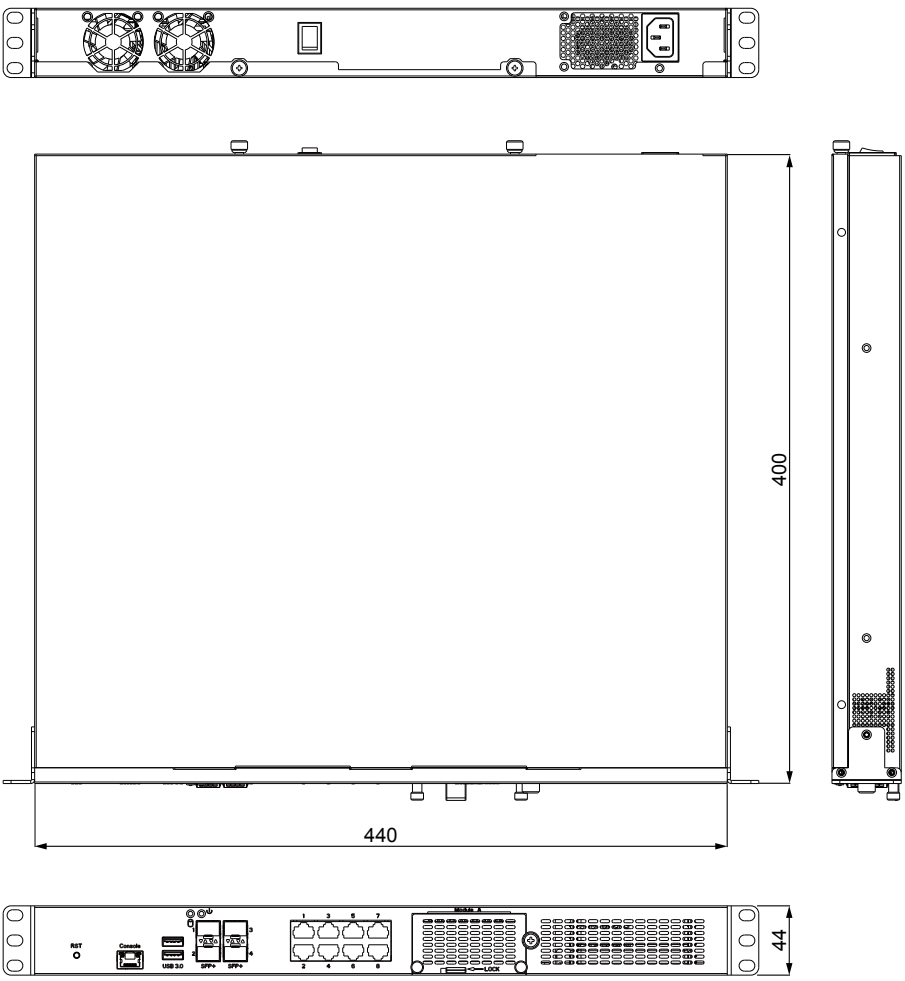
Check if the following items are included in the package.

	Item	Q'ty
☐	ANR-DNV3N3-8C system	1
☐	Console Cable (RJ-45 to Serial)	1
☐	Rackmount Bracket	2
☐	CD with Driver and Manual	1
☐	Power Cord	1
☐	Screw Pack	1

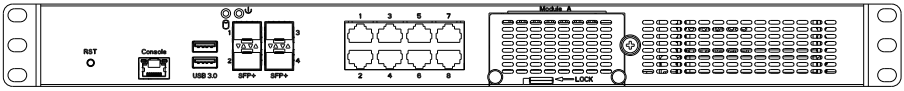
1.3. System Dissection

1.3.1. Dimensions

(Unit: mm)

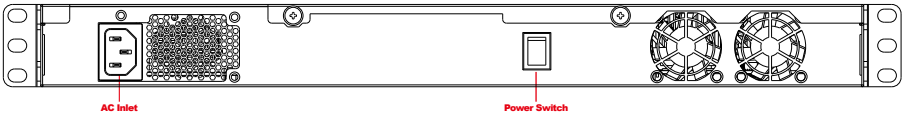


1.3.2. Front I/O Panel



- **RST**
  Reset Button
- **Console**
  Console Port (RJ45)
- **HDD**
  HDD Activity Indicator (Yellow)
- **PWR**
  Power Indicator (Green)
- **USB 3.0**
  USB 3.0 Port
- **SFP+ 1 ~ 4**
  SFP+ LAN Port
- **LAN 1~8**
  LAN 1~8 Port

1.3.3. Rear I/O Panel



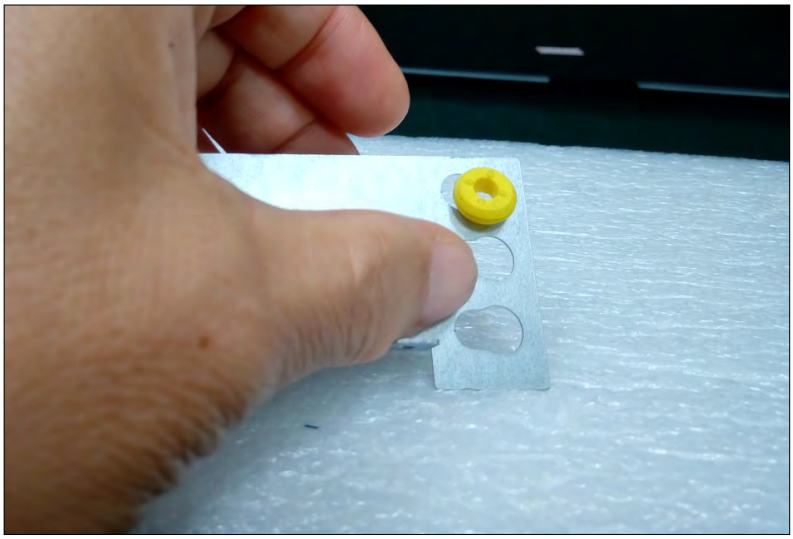
- **AC Inlet**
  1U Redundant ATX PSU
- **Power Switch**
  Power on/off switch

2. Components Assembly

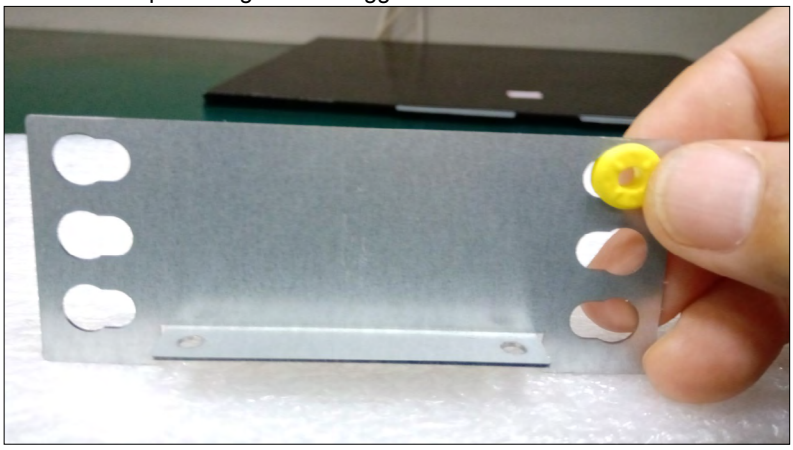
Please follow the instruction to install the inner modules.

2.1. HDD Installation

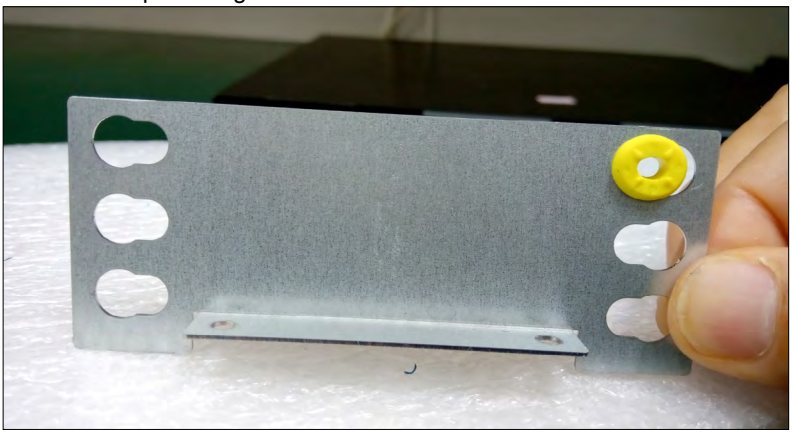
Step 1: As shown below, insert the snap bushing into the upper ridge of the bigger hole..



Step 2: Insert the snap bushing into the bigger hole.

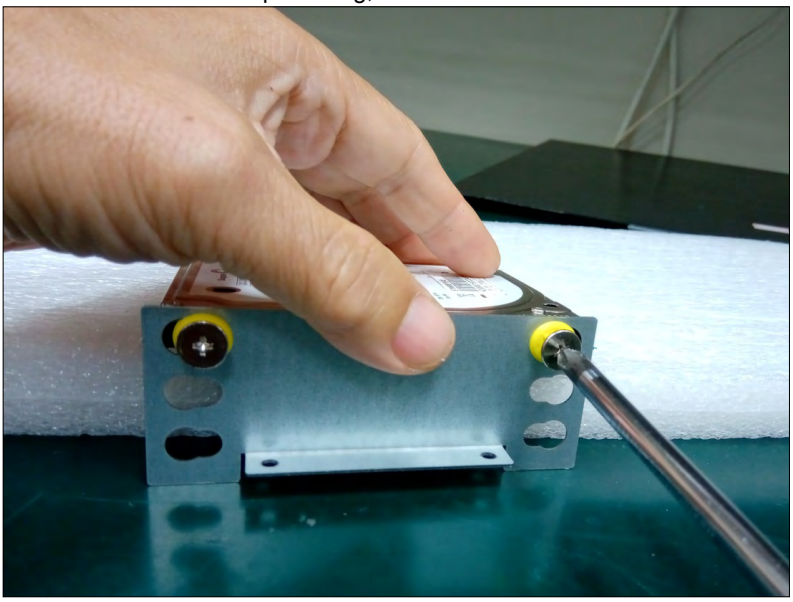


Step 3: Push the snap bushing into the smaller hole.



Insert all four snap bushings.

Step 4: Insert screw into the snap bushing, and fasten to HDD.



Step 5: Fasten the HDD with all 4 screws.

Step 6: Connect HDD with the SATA signal and power cable..

Step 7: Place the HDD bracket inside the chassis and fasten with 4 screws.

2.2. NIM Module Insertion

The products shown in this procedule 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. 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

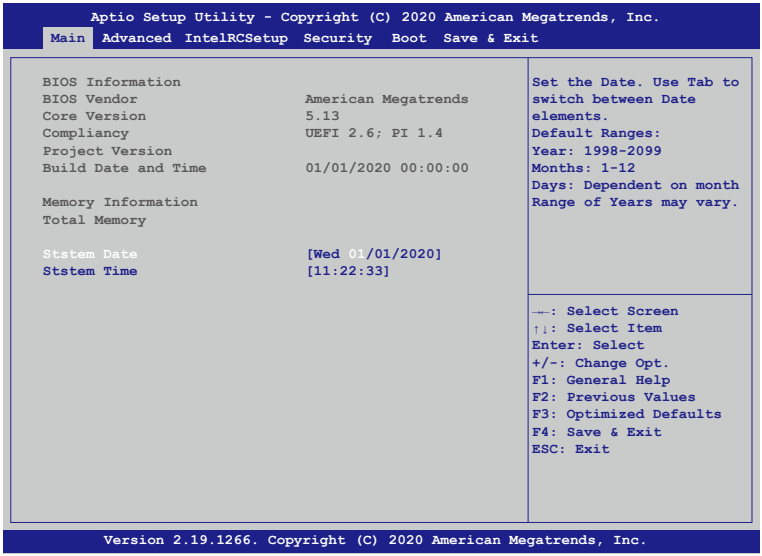
This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get the system up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- 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

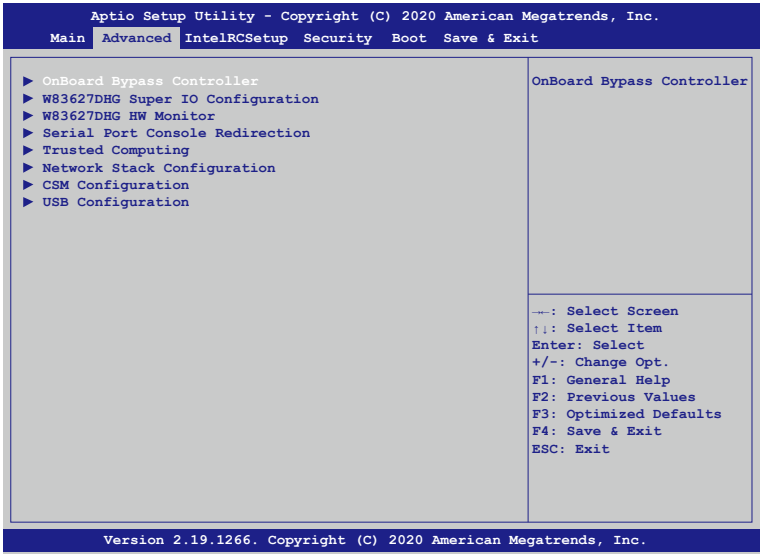
The BIOS setup main menu includes some options. Use the [Up/Down] arrow key to highlight the option, and then press the <**Enter**> key to select the item and configure the functions.



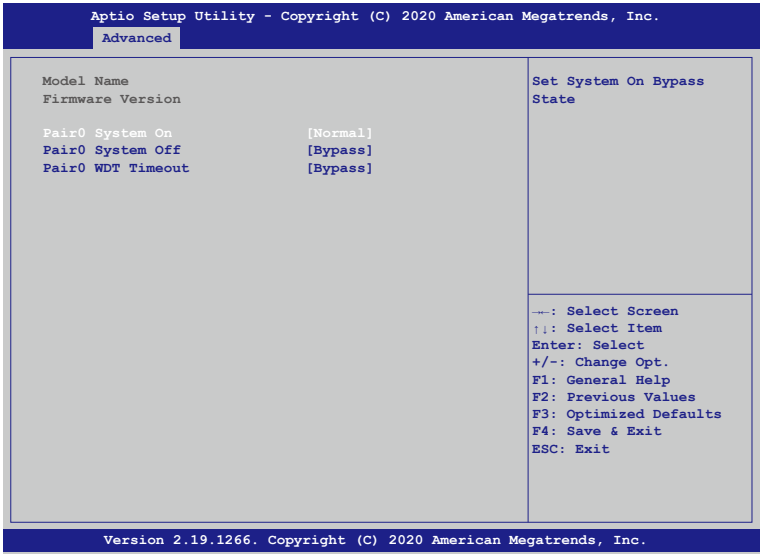
Note: *Listed at the bottom of the menu are the control keys. If you need any help with the item fields, you can press <**F1**> key, and it will display the relevant information.*

- **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

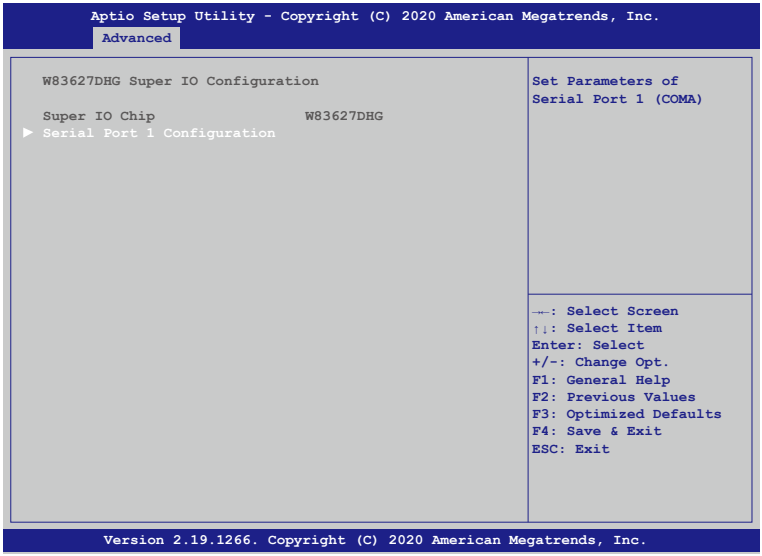


- **Pair0 System On**
  Each Pair Lan[a] and Lan[b] Bypass State Setting, System On /System off /WDT timeout State.

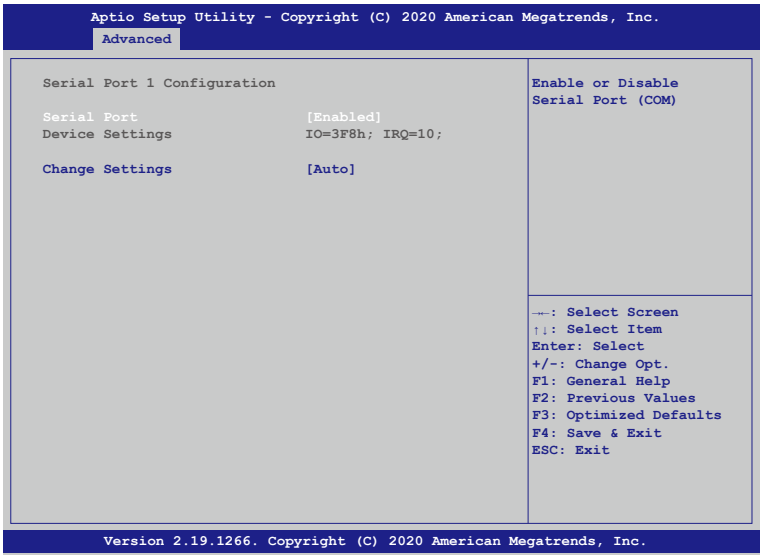
[Normal] Lan[a] and Lan[b] work on normal mode.

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

3.2.2. Advanced Setup: W83627DHG Super IO Configuration

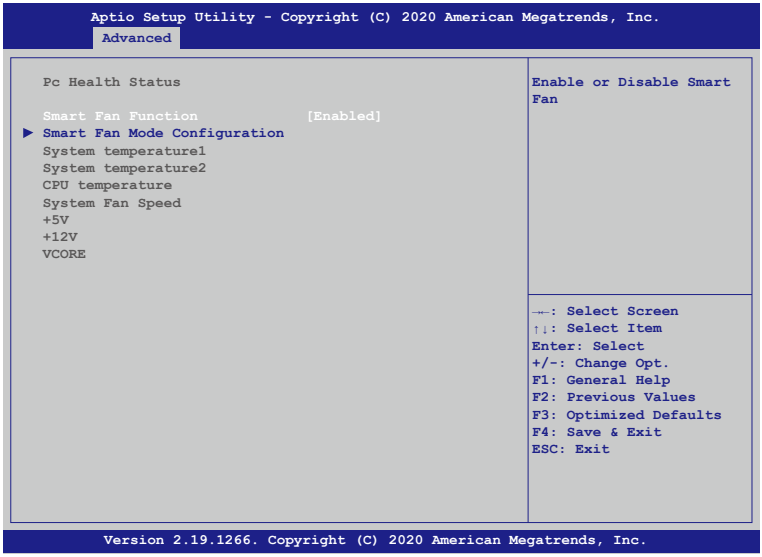


- **Serial Port 1 Configuration**
  Set Parameters of Serial Port 1 (COMA).

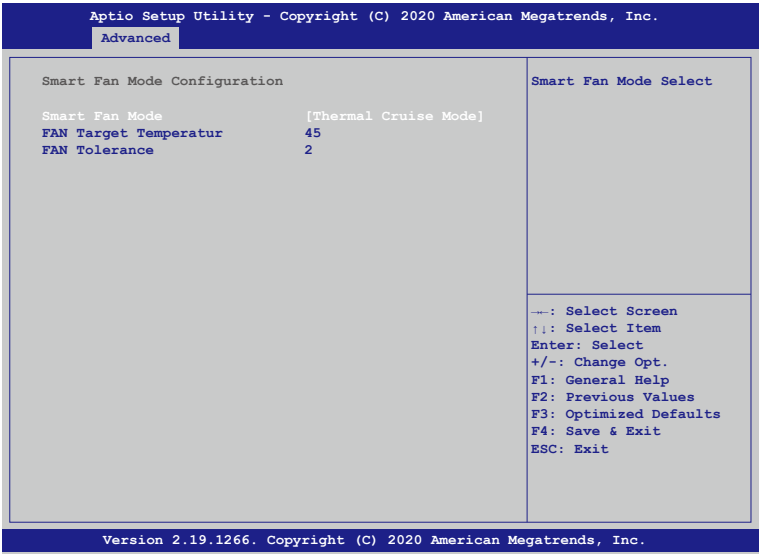


- **Serial Port**
  Select Enabled to enable the onboard serial port.
- **Change Settings**
  This option specifies the base I/O port address and the interrupt Request address of Serial Port.
  Select [Auto] to let the BIOS automatically assign the base I/O and IRQ address.

3.2.3. Advanced Setup: W83627DHG HW Monitor



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



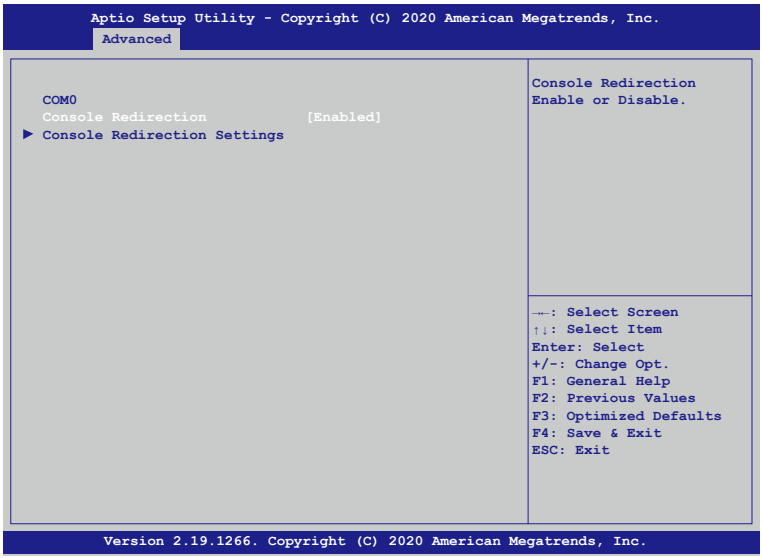
- **Smart Fan Mode**
  [Thermal Cruise Mode] : You can adjust FAN Target Temperatur and FAN Tolerance manually. If CPU temp is lower than target temp-tolerance, the fan will run at low fan speed. If CPU temp ishigherer than target temp+tolerance, the fan will run at full fan speed.

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

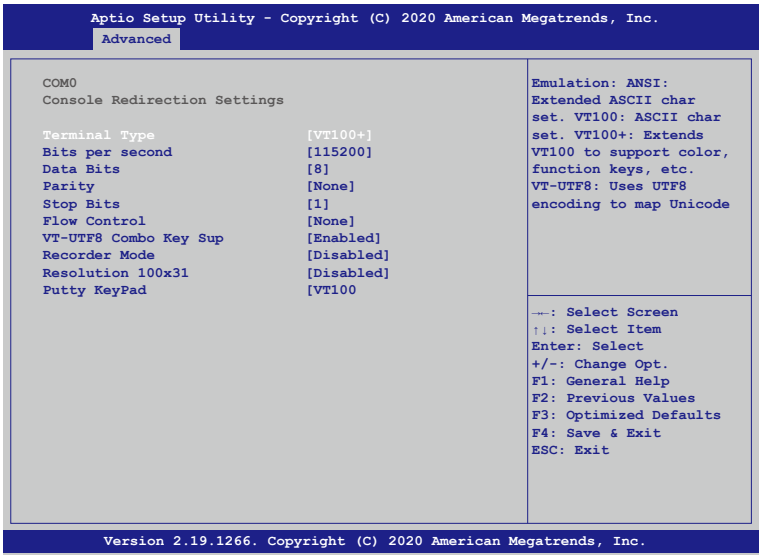
- **FAN Target Temperature**
  Input a target temperature between 0 ~ 127°C.

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

3.2.4. Advanced Setup: Serial Port Console Redirection

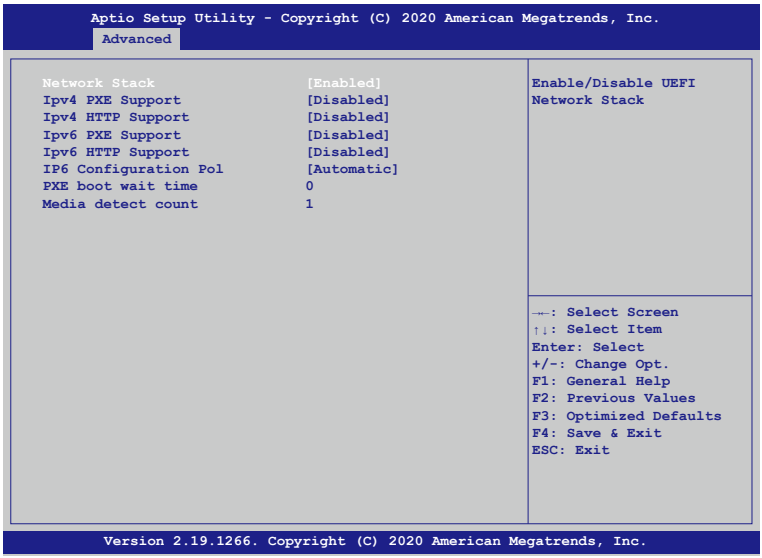


- **Console Redirection**
  Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.



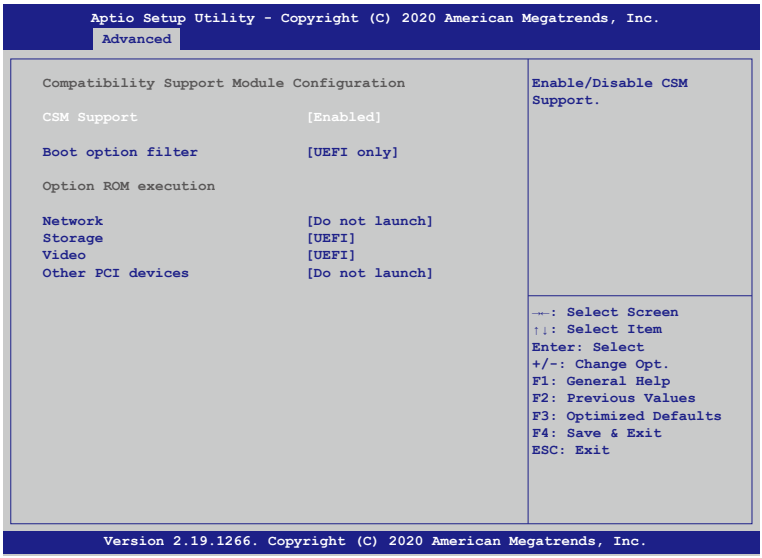
- **Terminal Type**
  Use this item to select the preferred terminal emulation type for out-of-band management.
- **Bits per second**
  Use this item to select the serial port transmission speed. The speed used in the hostcomputer and the client computer must be the same. Long or noisy lines may require 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.

3.2.5. Advanced Setup: Network Stack Configuration



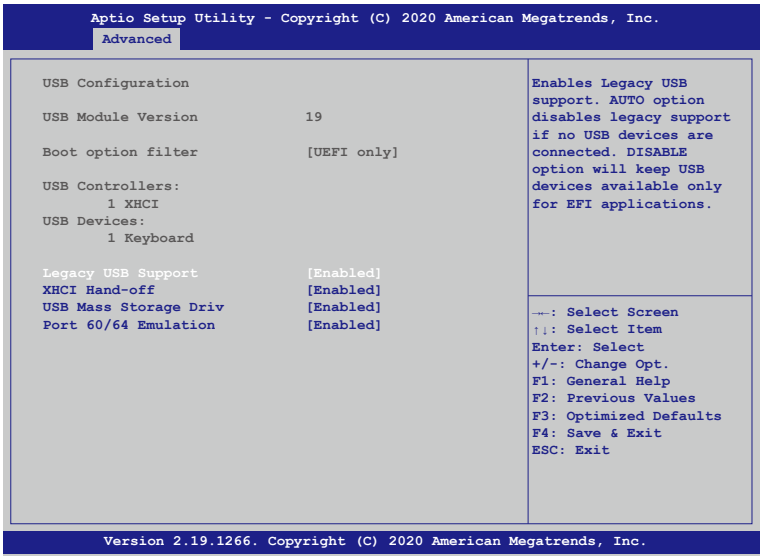
- **Ipv4 PXE Support**
  Enable or disable the Ipv4 PXE support.
- **Ipv4 HTTP Support**
  Enable or disable the Ipv4 HTTP support.
- **Ipv6 PXE Support**
  Enable or disable the Ipv6 PXE support.
- **Ipv6 HTTP Support**
  Enable or disable the Ipv6 HTTP support.
- **PXE boot wait time**
  Click ESC 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



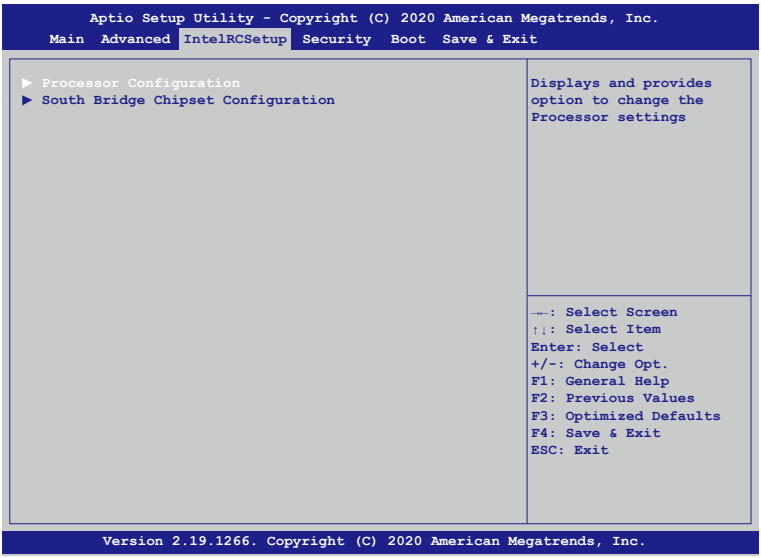
- **CSM Support**
  Use this feature to set the compatibility Option ROM. The options are Enabled, and Disabled. Disabled is the default option.
- **Boot option filter**
  Use this item to control the Legacy/UEFI memory sequence. Options are: [UEFI and Legacy], [Legacy only], [UEFI only].
- **Network**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

3.2.7. Advanced Setup: USB Configuration



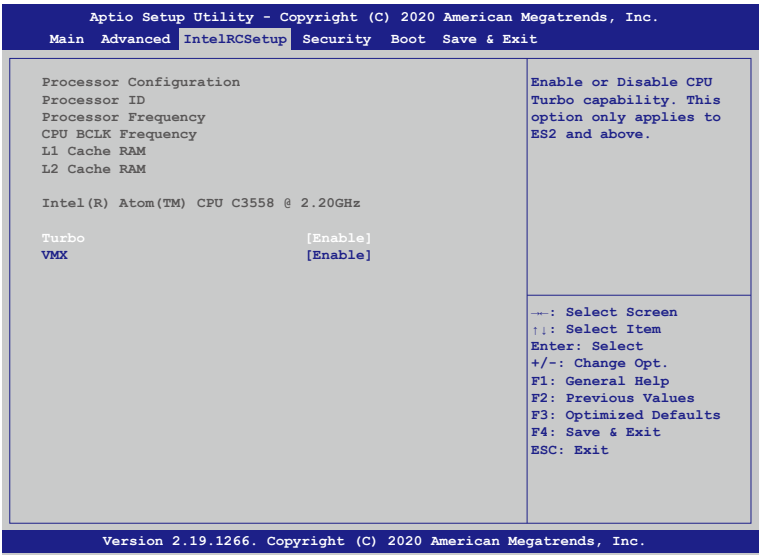
- **Legacy USB Support**
  Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only.
- **XHCI Hand-off**
  This is a work-around solution for operating 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

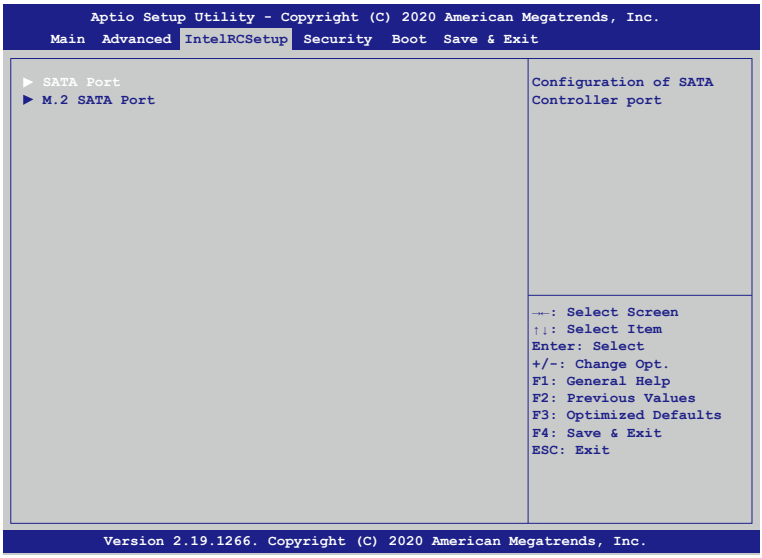


- **Turbo**
  This feature allows processor cores to run faster than marked frequency in specific conditions.
- **VMX**
  Enable or Disable Intel Virtual Machine Extensions (VMX) for IA-32 processors that support Intel® Vanderpool Technology.

3.3.2. IntelRCSetup: South Bridge Chipset Configuration

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

3.3.3. IntelRCSetup: SATA Port

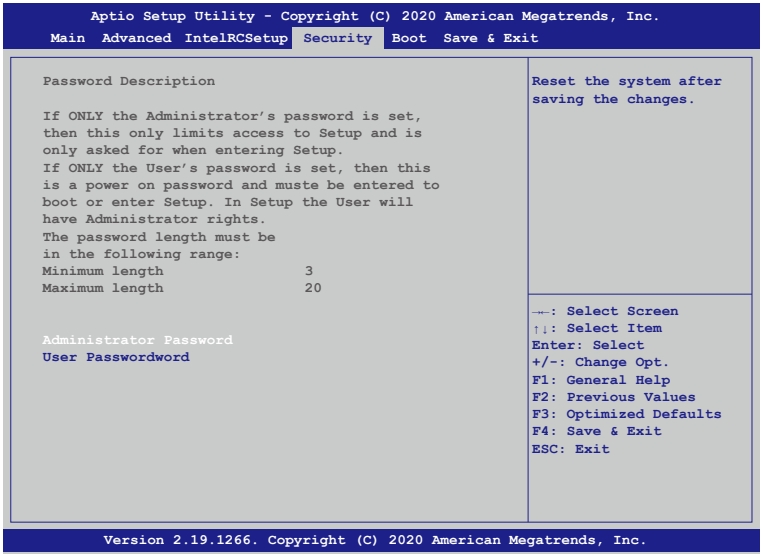


- **SATA Port**
  Configuration of SATA Controller port.

3.3.4. IntelRCSetup: M.2 SATA Port

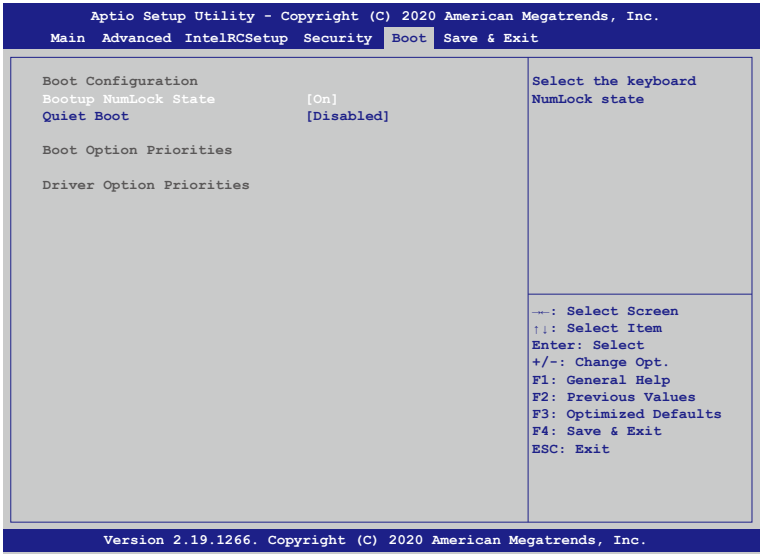
- **Enable/disable port**
  Enables/Disables SATA Controller port if supported by current cpu SKU.

3.4. Security Setup



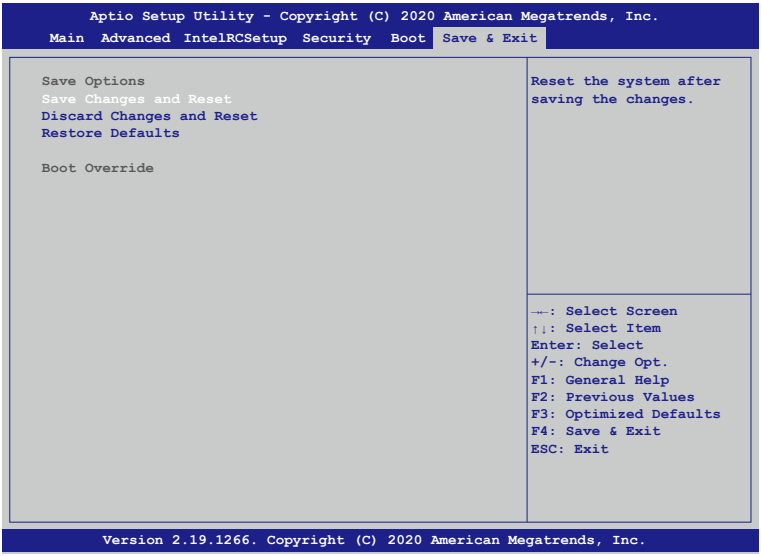
- **Setup Administrator Password**
  Press Enter to create a new, or change an existing Administrator password.
- **User Password**
  Press Enter to create a new, or change an existing User password.

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 Server).

4.1.2. GPIO

The ANR-DNV3N3-8C provides GPIO interface. Users can use the GPIO APIs to control GPO Pin.

4.1.3. Watchdog

The ANR-DNV3N3-8C 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

Two pairs of LAN ports on ANR-DNV3N3-8C 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.

4.2. File Descriptions

4.2.1. GPIO/Watchdog/LAN Bypass Subsystem

1. TestUtility.exe

The GPIO, Watchdog, and Lan Bypass. 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: bybpass, 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: bybpass, 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: bybpass, 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: bybpass, 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: bybpass, -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: bybpass, 1: normal, -1: fail.

4.3.4. Notes

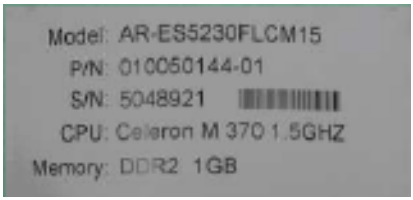
Syntax:	int libw83627_init(void)
Description:	use the watchdog, gpio function before, must be call this function first.
Parameters:	None.
Return Value:	0: Successful, -1: Fail

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)

Technical Support Form

We deeply appreciate your purchase of Acrosser products. Please find the "**tech_form.doc**" file in our utility CD. If you have any questions or problems about Acrosser products, please fill in the following information. We will answer your questions in the shortest time possible.

Describe Your Info and Acrosser System Info

- Your Company Name: _____
- 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:

Send the above information to one of the following Acrosser contacts:

- Acrosser Local Sales Representative
- Acrosser Authorized Sales Channels
- Acrosser Inquiry --- http://www.acrosser.com/inquiry.html
- Acrosser FAX Number --- 886-2-29992887

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