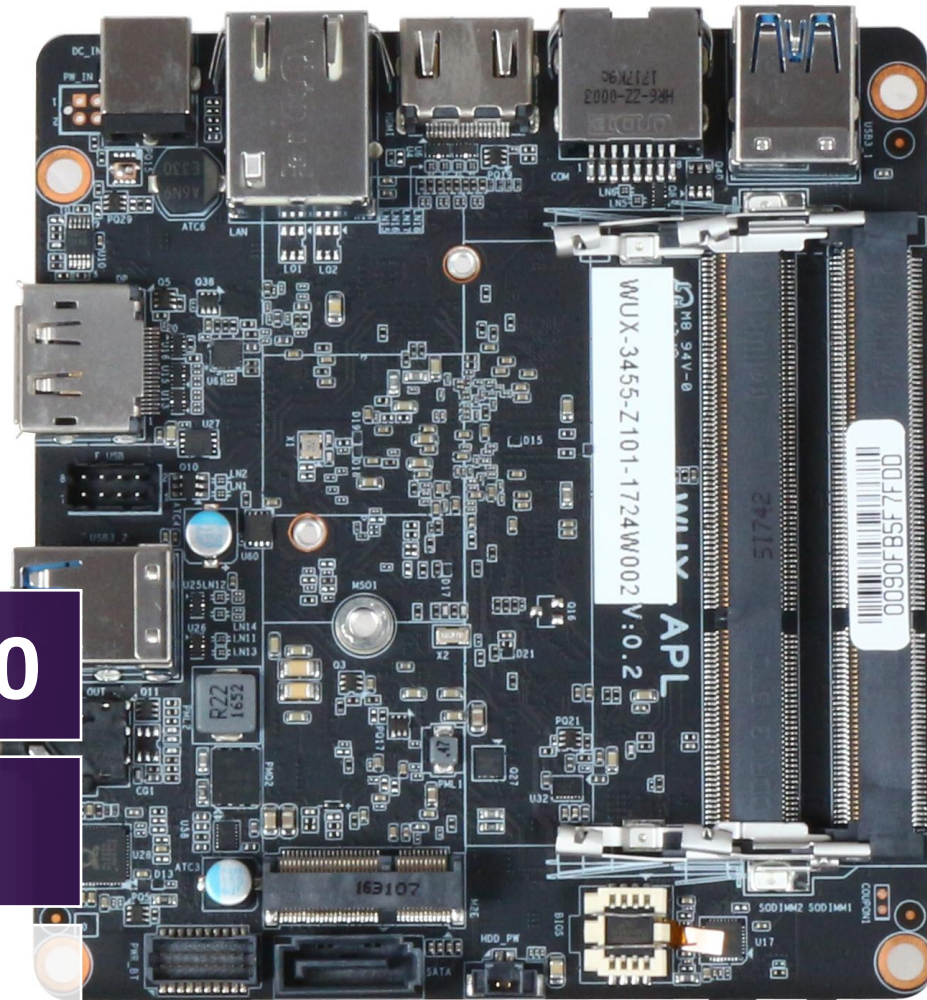


WUX-3455/3350/4200



WUX-3455/3350/4200

NUC form factor board

Version 1.5

Revision History

R1.0	Preliminary
R1.1	Update information
R1.2	Update information & modify typo
R1.3	Update HDD PW information
R1.4	Update F_USB information
R1.5	Update COM port information

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Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the WUX-3455/3350/4200. This document should be referred to when designing Intel® NUC form factor board application. The other reference documents that should be used include the following:

- ✧ Intel Apollo Lake Design Guide
- ✧ Intel Apollo Lake I Specification

Please contact PORTWELL Sales Representative for above documents.

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1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and a member of the Intel® Embedded and Communications Alliance (Intel ECA), today announces the release of the WUX-3455/3350/4200/3350/4200 utilizing the Intel® NUC form factor based on the Intel® Atom™ Pentium and Celeron Processor, includes integrated, enhanced graphics and memory controllers on 14nm process technology, delivering significant power reduction, performance improvements and smaller platform footprint over the previous Intel® Atom™ Pentium and Celeron Processor. The WUX series can provide the low power consumption for low profile fan-less applications such as Medical, Panel PC, POS, Print Imaging, ATM, Kiosk, Digital Security and Digital Signage.

2 Specifications

CPU	Intel® Atom® Apollo Lake SOC, Pentium and Celeron Processor support Dual/Quad Core (up to 10W) With 2MB Cache
GPU	- Intel® Gen 9 Graphics supports DirectX 12, OpenGL 4.2 / OpenCL 2.0 - Video decode HW accelerator - support for H.264, H.265, MPEG2, VC-1/WMV9, JPEG, VP8 and VP9
BIOS	AMI uEFI BIOS 64MB
System Memory	Dual Channel DDR3L 1866/1600 Non-ECC SO-DIMM up to 8GB
Storage	- 1x SATA III port - 1x Micro-SD 3.0 socket - Support Onboard eMMC 5.0 (default 32G / 64G by customize)
Watchdog Timer	Programmable by SIO
H/W statue monitor	- Temperature (CPU & System) - Voltage (CPU Vcore, 12V, 5V, 3.3V, 1.35V)
Expansion Interface	1x M.2 socket (E+A key) support WiFi, BT, 3G & 4G
Serial Port	1x RS-232 connector
USB	- 4x USB 3.0 ports support by stacked connector (Front + Left) - 2x USB 2.0 ports on board with pitch 2.0 header
Audio	- High Definition Audio integrated in Intel SoC - Realtek ALC255 HDA codec

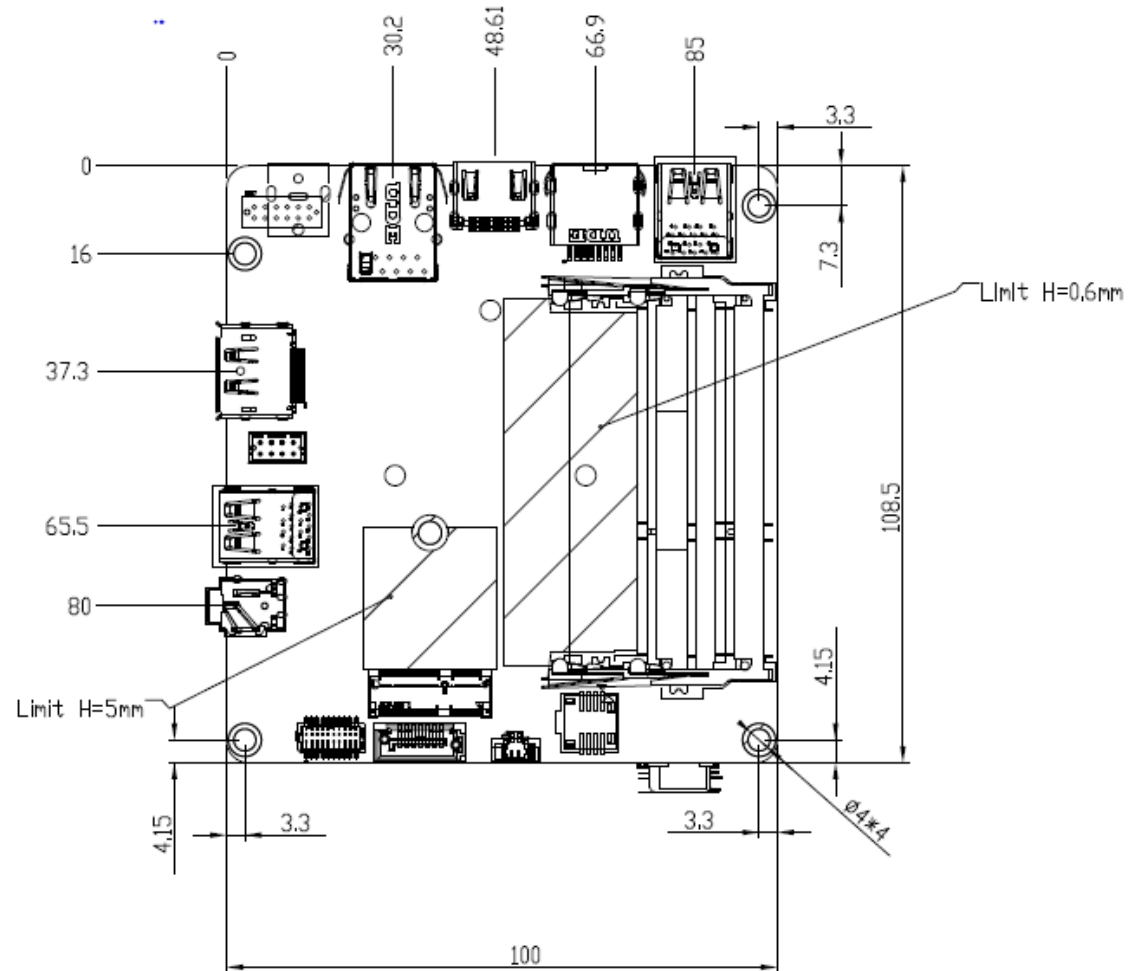
	- Audio jack with MIC In orLine-out
Ethernet	- Realtek RTL8111H
Display Interface	- 1x HDMI (1.4b) port on board connector, up to 3840x2160@30 MHz - 1x DP(1.2) port on rear I/O, up to 4096x2160@60Mhz

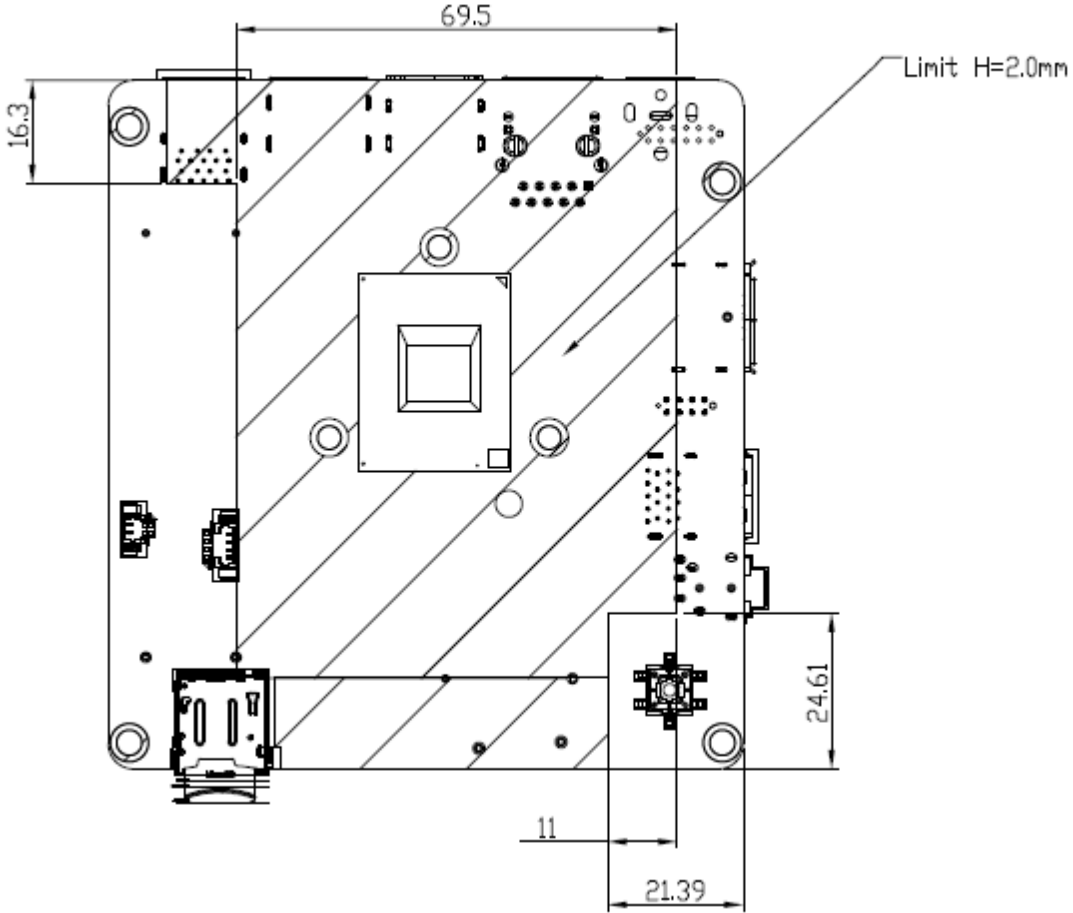
2.1 Supported Operating Systems

The WUX-3455/3350/4200/3350/4200 supports the following operating systems.

- ✧ Windows 10* (64 bit)
- ✧ Wind River* 8.0 Linux Distribution(64 bit)
- ✧ Yocto* Tool-based Embedded Linux Distribution (64 bit)
- ✧ Android* 6.0(64bit)
- ✧ VxWorks*7.0 (RTOS) (64 bit)

2.2 Mechanical Dimensions





2.3 Power Consumption

3 Test Configuration	
CPU Type	Intel Pentium® CPU N4200 @ 1.10GHz
SBC BIOS	Portwell, Inc. BIOS Version: 70908T00
Memory	DDR3L-1866 non-ECC up to 8GB
LAN Card	RJ-45: Support 10/100/1000Mbps by RTL8111H Ethernet Controller (SoC PCIe port 0)
LAN Driver	REALTEK Driver Version: 1002.0715.2015
LAN Card	N/A
LAN Driver	N/A
Audio Card	Support ALC255
Audio Driver	REALTEK Driver Version: 6.0.1.7571
Chip Driver	Intel Driver includes WiX Toolset 3.7
USB3.0 Driver	Intel Driver includes WiX Toolset 3.7
EC Version	N/A
Power Supply	Support standard ATX or AT power up mode
Power Supply	N/A

Power consumption(12V)			
ATX:			
Item	Power ON	Full Loading 10Min	Full Loading 30Min
CPU +12V	1.1A	1.5A	1.5A
Device+12V	0.3A	0.4A	0.4A
CPU+ Device +12V	2.06A	2.66A	2.46A
USB3.0 Loading Test	4.99 V/ 996 mA		

2.4 Environmental Specifications

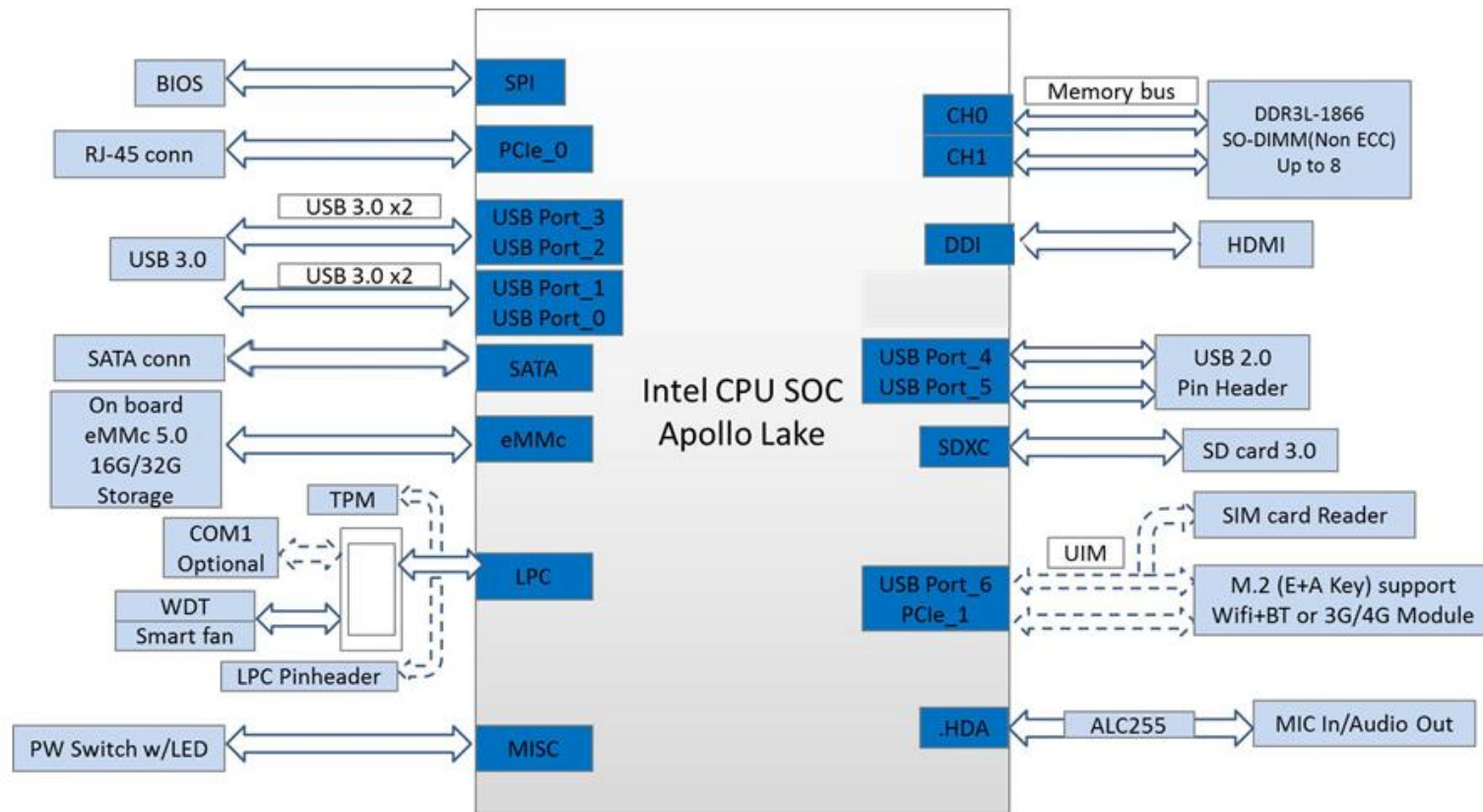
Storage Temperature : -40~85°C

Operation Temperature : 0~60°C

Storage Humidity : 5~90%

Operation Humidity: 10~90%

3 Block Diagram



4 Hardware Configuration

4.1 Connector Function

We have made a list of connector function. The following figure shows where the connectors are and what they are called in board file.

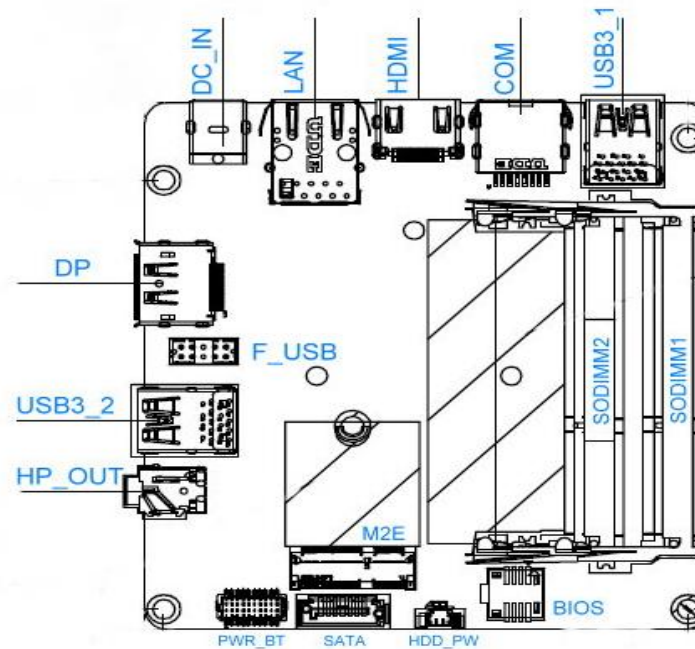


Figure1. WUX-3455/3350/4200 Top View

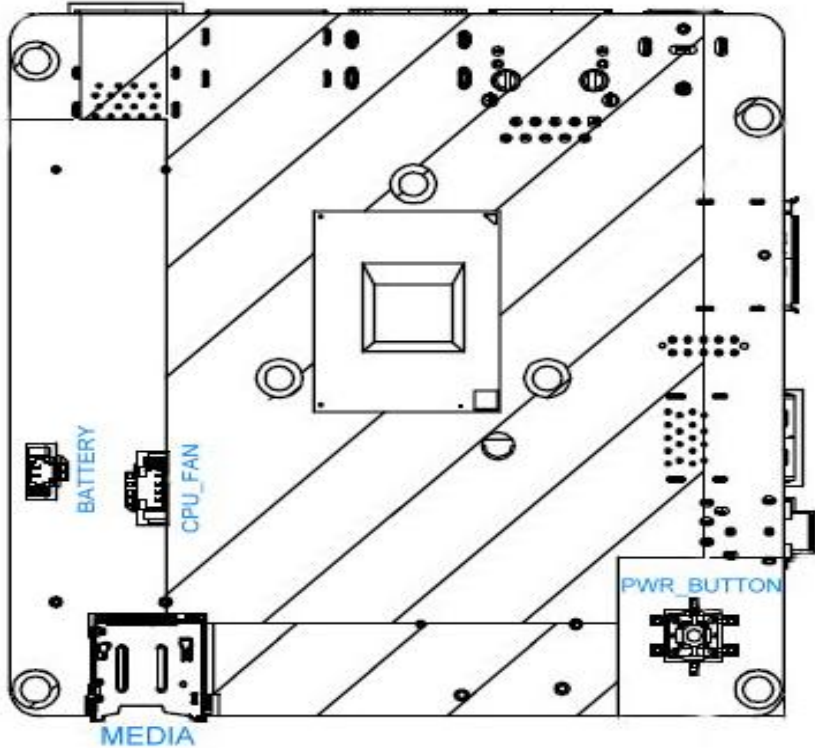


Figure2. WUX-3455/3350/4200 Bottom View

4.2 Jumper Settings

For users to customize WUX-3455/3350/4200's features. In the following sections, Users can refer to Figure 1& 2 for the Jumper allocations.

Jumper Table

The jumper settings are schematically depicted in this manual as follows:

Connector Function List:

Connector	Function	Remark
DC_IN	DC_IN	VIN=12/19V
LAN	LAN	GIGALAN
HDMI	HDMI	
COM	COM	RS232
USB3_1	USB 3.0 *2	
DP	DP	
F_USB	F_USB	
USB3_2	USB 3.0 *2	
HP_OUT	Global Headset + MIC-IN	
PWR_BT	PWRBTN/RSTBTN/LEDs	
SATA	SATA3	
M2E	WLAN SLOT	

HDD_PW	DEVSLP	
BIOS	BIOS SPI SOCKET	
SODIMM1	DDR3L SO-DIMM SOCKET	
SODIMM2	DDR3L SO-DIMM SOCKET	
BATTERY	CR2032/40mm/1.25	
MEDIA	Micro SD	
CPU_FAN	CPU_FAN	
PWR_BUTTON	SIO NCT5510Y PWR	

HP_OUT:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	SLEEVE_CON	2	HPOL_CON
	3	HPOR_CON	4	RING2_CON
	5	GND	6	GND
	7	HPOUT-JD_C		

PWR_BT:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	CLK_25M_80H	2	GND
	3	LFRAME#	4	LAD0
	5	PMU_PLTRST_N	6	LAD1
	7	LAD3	8	LAD2
	9	+V3.3S	10	SERIRQ_3V3
	11	-PANSHW	12	GND
	13	MPD_+	14	MPD-
	15	WDT#	16	SATA_LED_P
	17	GND	18	GND
	19	+V5S	20	+V5A

F_USB:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	2	5V	1	5V
	4	D2-	3	D1-
	6	D2+	5	D1+
	8	GND	7	GND

SATA:

PCB Footprint	Pin No	Signal Description
	1	GND
	2	TX+
	3	TX-
	4	GND
	5	RX-
	6	RX+
	7	GND
	8	TAB2
	9	TAB1

HDD_PW:

PCB Footprint	Pin No	Signal Description	Pin No	Signal Description
	1	GND	2	+V5S
	3	GND	4	GND

BIOS:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	CS#	2	SO
	3	WP#	4	VSS
	5	SI	6	SCK
	7	HOLD#	8	VDD

BATTERY:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	BAT	2	GND
	3	GND	4	GND

Micro SD:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	DAT2	2	DAT3
	3	CMD	4	VDD
	5	CLK	6	VSS
	7	DAT0	8	DAT1
	9	GND	10	CD
	11	GND	12	GND
	13	GND	14	GND

MEDIA:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	CMD	2	FAN_VCC
	3	TACH_PWRFAN1	4	PWM_PWMFAN1
	5	CMD	6	CMD

PWR_BUTTON:

PCB Footprint	PIN No.	Signal Description	PIN No.	Signal Description
	1	PW+	2	PW+
	3	PW-	4	PW-
	L1	MSG/PD+	L2	MSG/PD-

COM port(RS232):

PCB Footprint	PIN No.	Signal Description
	1	DSR
	2	RTS
	3	GND
	4	TXD
	5	RXD
	6	DCD
	7	CTS
	8	DTR

5 System Resources

5.1 Intel® Apollo Lake SoC

Intel® Celeron® Processor J3455(2M Cache, up to 2.30 GHz)

Intel® Celeron® Processor N3350(2M Cache, up to 2.40 GHz)

Intel® Celeron® Processor N4200(2M Cache, up to 2.50 GHz)

5.2 Main Memory

WUX-3455/3350/4200 provides 1 x 204-pin SO-DIMM sockets which supports DDR3L non-ECC memory. The maximum memory can be up to 8GB. Memory clock and related settings can be detected by BIOS via SPD interface.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

5.3 Installing the Single Board Computer

To install your WUX-3455/3350/4200 into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position

Step 2 : Install and configure memory module on right position

WUX-3455/3350/4200

Step 3 : Place WUX-3455/3350/4200 into the dedicated position in the system

Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that motherboard is properly inserted and fixed by mechanism.

Note:

Please refer to section 6.3.1 to 6.3.4 to install INF/Graphic/LAN

5.3.1 Chipset Component Driver

The WUX-3455/3350/4200 build with Intel® Pentium® Processor J/N Series including J3455 / N3350 / N4200 sku. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 10, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WUX-3455/3350/4200 CD-title

5.3.2 Intel® HD Graphics 50X

WUX-3455/3350/4200 has integrated Intel® HD Graphics 50X(J3455 / N3350_ Intel® HD Graphics 500, N4200_ Intel® HD Graphics 505) Processor Graphics indicates graphics processing circuitry integrated into the processor, providing the graphics, compute, media, and display capabilities. Intel® HD Graphics, Iris™ Graphics, Iris Plus Graphics, and Iris Pro Graphics deliver enhanced media conversion, fast frame rates, and 4K Ultra HD (UHD) video WUX-3455/3350/4200 supports DP, HDMI display output. This combination makes WUX-3455/3350/4200 an excellent performance hardware.

Drivers Support

Please find the Graphic driver in the WUX-3455/3350/4200 CD-title. The driver supports Windows 10.

5.3.3 Realtek RTL 8111H Gigabit Ethernet Controller

- RTL8111H Gigabit Ethernet controller and RJ45 connector on rear I/O

Drivers Support

Please find RTL8111H LAN driver in Ethernet directory of WUX-3455/3350/4200 CD/DVD-title. The driver supports Windows 10.

6 BIOS Setup Items

6.1 Introduction

The following section describes the BIOS setup program. The BIOS setup program can be used to view and change the BIOS settings for the module. Only experienced users should change the default BIOS settings.

6.2 BIOS Setup

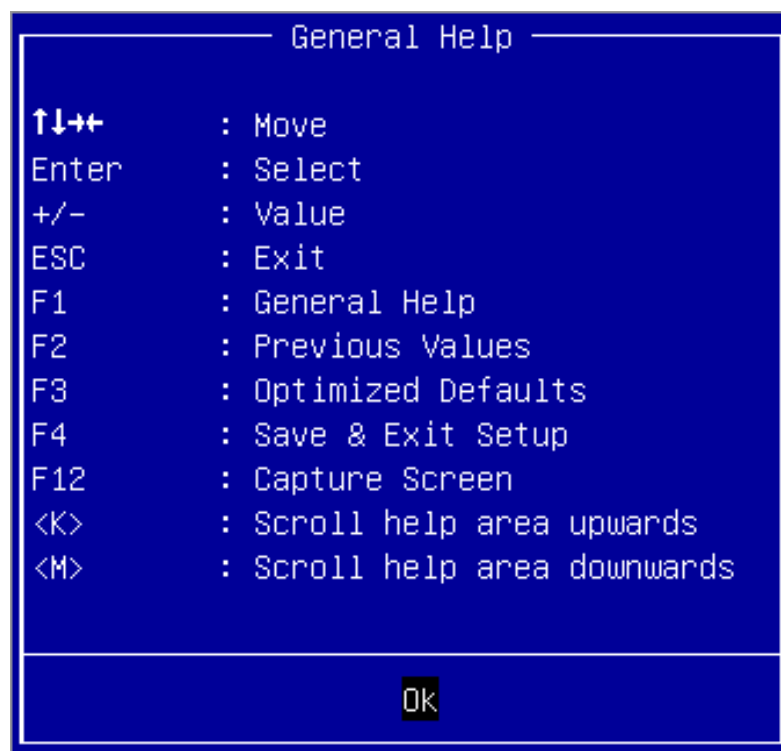
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

Press<Delete> or <ESC> to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help Screen.



6.2.1 Main

Use this menu for basic system configurations, such as time, date etc.

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit

Project Name                MIOT-PB200-G1
BIOS Version & Build Date    70908T00 (09/08/2017 13:55:01)
Access Level                 Administrator

Processor information
Brand String                 Intel(R) Celeron(R) CPU J3455 @ 1.50GHz

Platform firmware Information
BXT SOC                      B1
TXE FW                       3.0.10.1129
GOP                           10.0.1035
CPU Flavor                    BXT Notebook/Desktop (1)

Memory Information
Total Memory                 4096 MB
Memory Slot0                 4096 MB (DDR3L)
Memory Slot1                 Not Present
Memory Speed                 1600 MHz

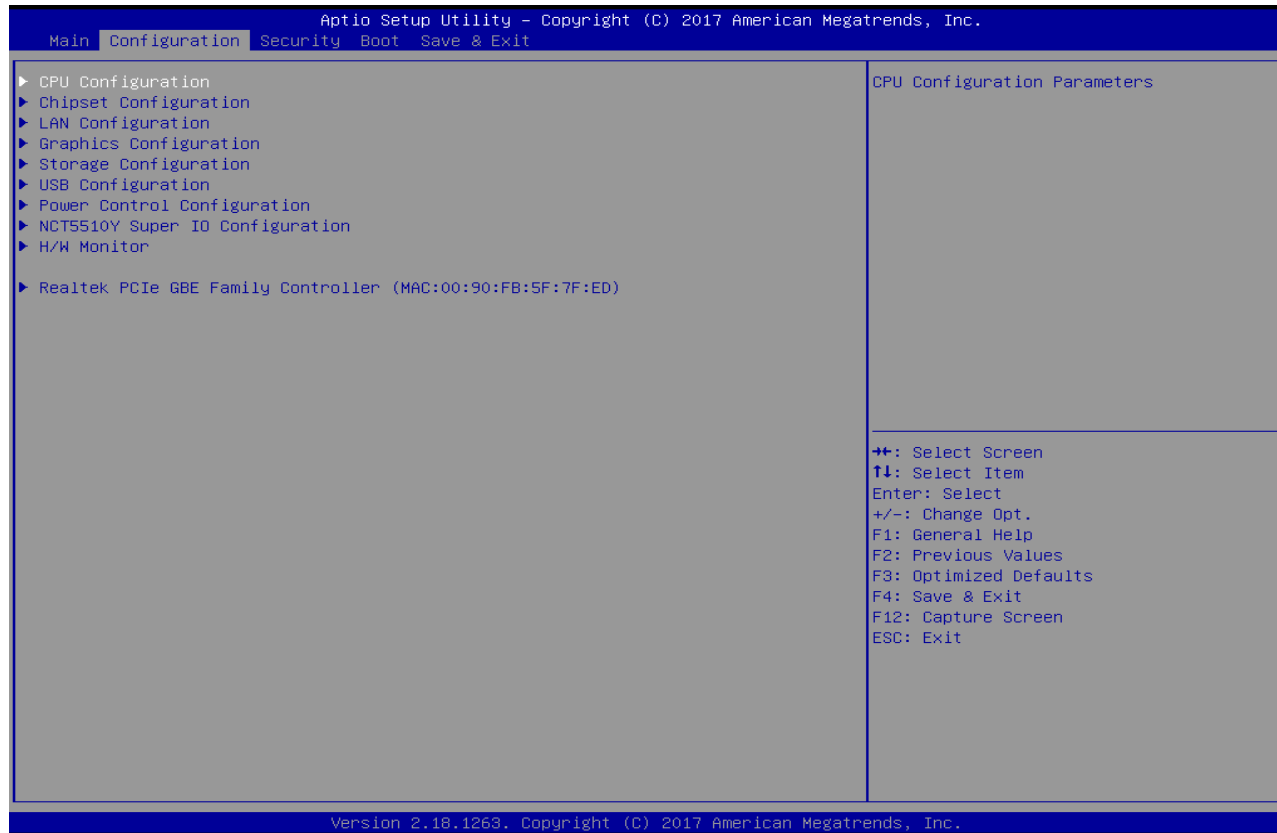
System Date                  [Thu 02/15/2018]
System Time                  [17:37:40]

Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

Feature	Description	Options
System Date	The date format is <Day>, <Month> <Date> <Year>. Use [+] or [-] to configure system Date.	
System Time	The time format is <Hour> <Minute> <Second>. Use [+] or [-] to configure system Time.	

6.2.2 Configuration

Use this menu to set up the items of special enhanced features



CPU Configuration

CPU Configuration Parameters

The screenshot shows the Aptio Setup Utility interface for CPU configuration. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and the menu bar shows "Configuration". The main area is divided into two columns. The left column lists various CPU parameters and their current settings, while the right column provides a description for the Intel Virtualization Technology setting and a list of navigation keys.

Parameter	Value
CPU Configuration	
CPU Signature	506C9
Microcode Patch	20
Max CPU Speed	1500 MHz
Min CPU Speed	800 MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
64-bit	Supported
L1 Data Cache	24 kB x 4
L1 Code Cache	32 kB x 4
L2 Cache	1024 kB x 2
L3 Cache	Not Present
Intel Virtualization Technology	[Enabled]
VT-d	[Enabled]
CPU Power Management Configuration	
EIST	[Enabled]

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

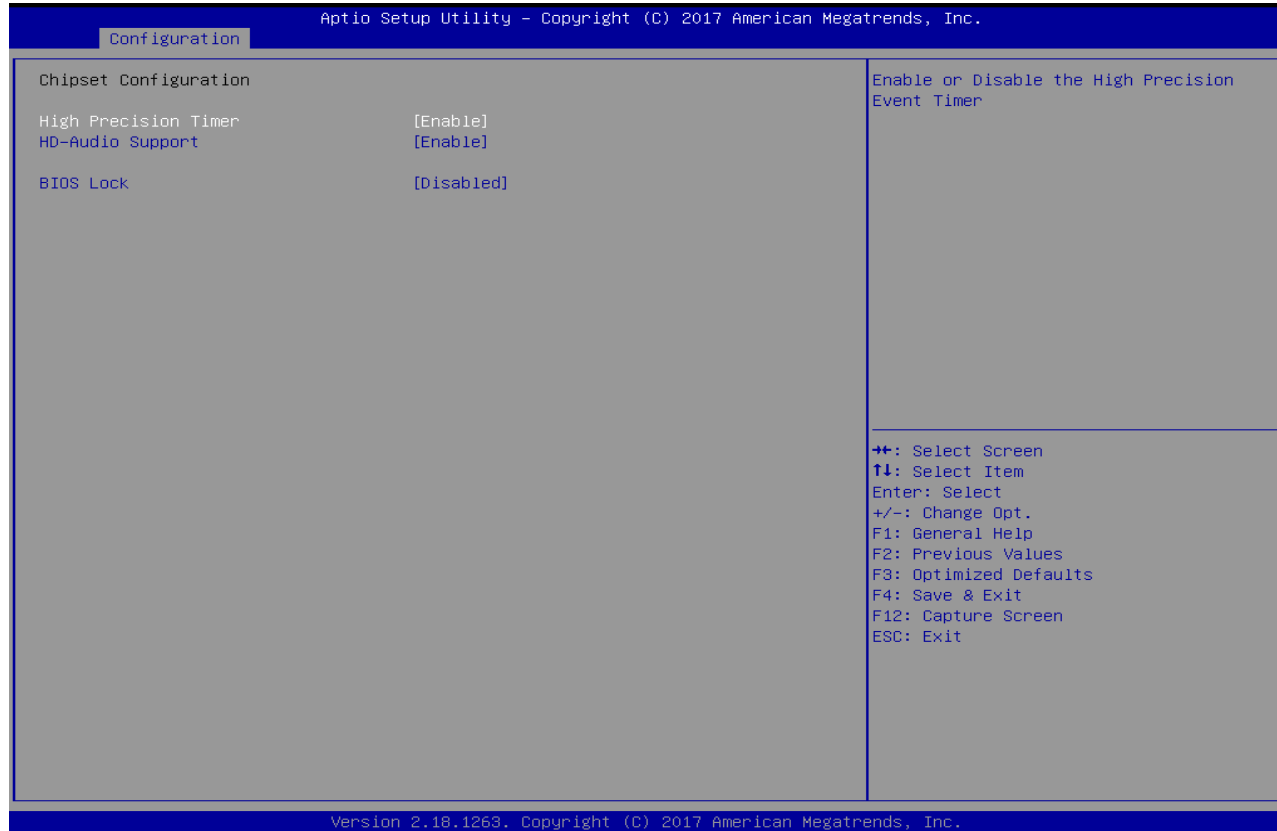
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F12: Capture Screen
ESC: Exit

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Feature	Description	Options
Intel Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.	★ Enabled, Disabled
VT-d	Enable/Disable CPU VT-d.	★ Enabled, Disabled
EIST	Enable/Disable Intel SpeedStep.	★ Enabled, Disabled

Chipset Configuration

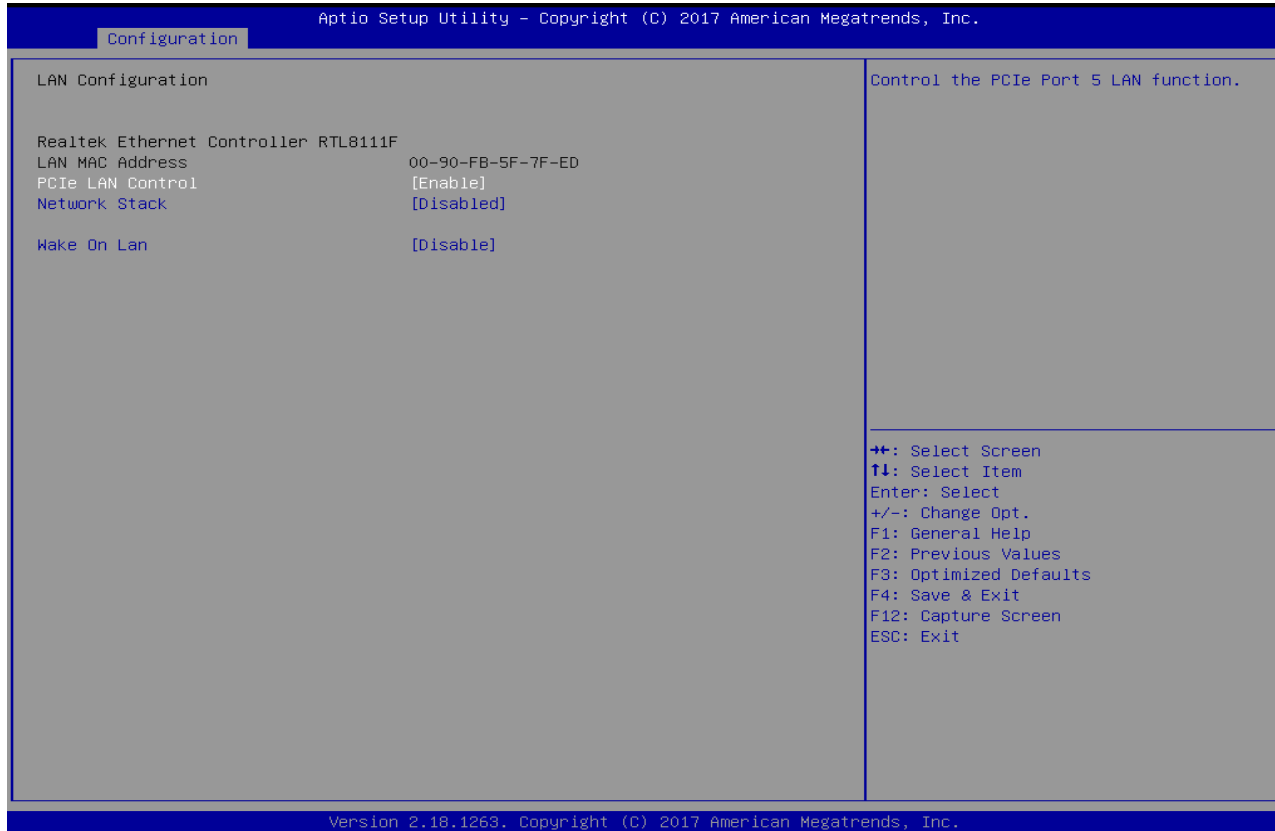
Configuration Chipset feature



Feature	Description	Options
High Precision Timer	Enable or Disable the High Precision Event Timer.	★ Enable, Disable
HD-Audio Support	Enable or Disable HD-Audio Support.	★ Enable, Disable
BIOS Lock	Enable or Disable BIOS Lock	★ Disabled, Enabled

LAN Configuration

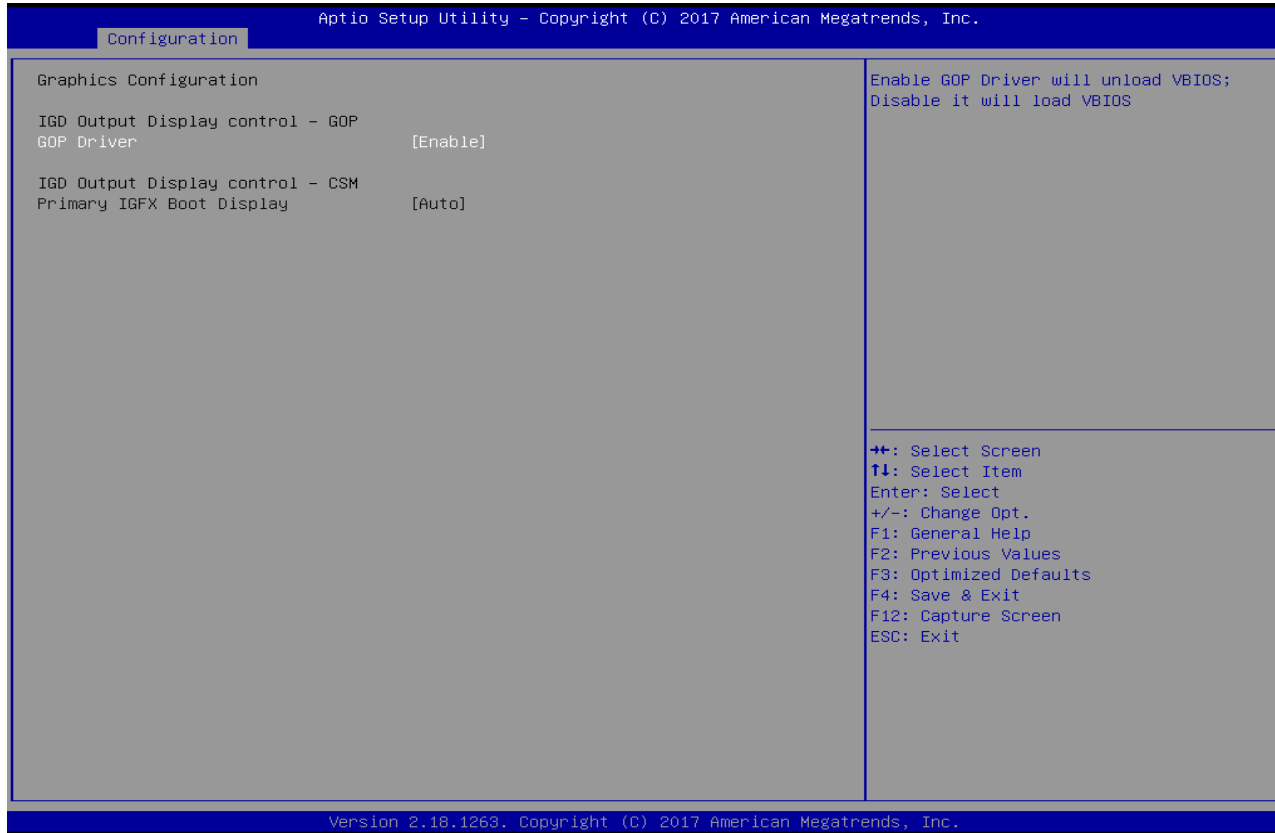
Configuration on Board LAN device.



Feature	Description	Options
PCIe LAN Control	Control the PCIe Port 5 LAN function.	★Enable, Disable
Network Stack	Enable or disable UEFI Network Stack.	★Disabled, Enabled
Network Stack[Enable]		
IPv4 PXE Support		★Disabled, Enabled
IPv6 PXE Support		★Disabled, Enabled
Wake on LAN	Enable or disable the Wake on LAN.	★Disable Enable

Graphics Configuration

Configuration Graphics Settings



Feature	Description	Options
GOP Driver	Enable GOP Driver will unload VBIOS; Disable it will load VBIOS.	★Enable, Disable

Storage Configuration

Storage Device Options Settings

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Configuration	
Storage Configuration	
SATA Controller	[Enable]
SATA Port 0	[Not Installed]
Port 0	[Enabled]
SATA Port 0 Hot Plug Capability	[Disabled]
SCC SD Card Support (D27:F0)	[Enable]
SCC eMMC Support (D28:F0)	[Enable]

Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).

++: Select Screen
 T↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 F12: Capture Screen
 ESC: Exit

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Feature	Description	Options
SATA Controller	Enable or disable the chipset SATA Controller. The Chipset SATAs controller supports the 2 back internal SATA ports (up to 6Gb/s supported per port)	★Enable, Disable
SATA Port 0		
Port 0	Enable or Disable SATA Port.	★Enabled, Disabled
SATA Port 0 Hot Plug Capability	If enable, SATA port will be reported as hot Plug capable.	★Disabled, Enabled
SCC SD Card Support (D27:F0)	Enable/Disable SCC SD Card Support	★Enable, Disable
SCC eMMC Support (D28:F0)	Enable/Disable SCC eMMC Support	★Enable, Disable

USB Configuration

USB Configuration Parameters.

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.

Configuration

USB Configuration	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.
USB Controllers: 1 XHCI	
USB Devices: 1 Drive, 1 Keyboard, 1 Mouse, 1 Hub	
SoC USB Configuration	
USB Port Disable Override [Disable]	
Common USB Configuration	
Legacy USB Support [Enabled]	
USB Mass Storage Driver Support [Enabled]	
USB hardware delays and time-outs:	
USB transfer time-out [20 sec]	
Device reset time-out [20 sec]	
Device power-up delay [Auto]	
Mass Storage Devices:	
Mass Storage Device [Auto]	

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F12: Capture Screen
ESC: Exit

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Feature	Description	Options
SoC USB Configuration		
USB Port Disable Override	Selectively Enables/Disable. The corresponding USB port from reporting a Device Connection to the controller.	★Disable, Enable
USB Port Disable Override [Enabled]		
USB Port #0	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port #1	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#2	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#3	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#4	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#5	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#6	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB Port#7	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled

USB 3 Port #0	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB 3 Port #1	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB 3 Port #2	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB 3 Port #3	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB 3 Port #4	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
USB 3 Port #5	Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.	★Enabled, Disabled
Common USB Configuration		
Legacy USB Support	Enables Legacy USB Support. Auto option disable legacy Support if no USB devices are connected. Disable option will keep USB device available only for EFI applications.	★Enabled, Disabled, Auto
USB Mass Storage Driver Support	Enable/Disable USB Mass Storage Driver Support.	★Enable, Disabled
USB Hardware delays and time-outs:		
USB transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers.	★20 sec, 1 sec, 5 sec, 10 sec,
Device reset time-out	USB mass storage device Start Unit command time-out.	★20 sec, 10 sec, 30sec,

		40 sec
Device Power-up delay	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.	★Auto, Manual

Power Control Configuration

System Power Control Configuration Parameters

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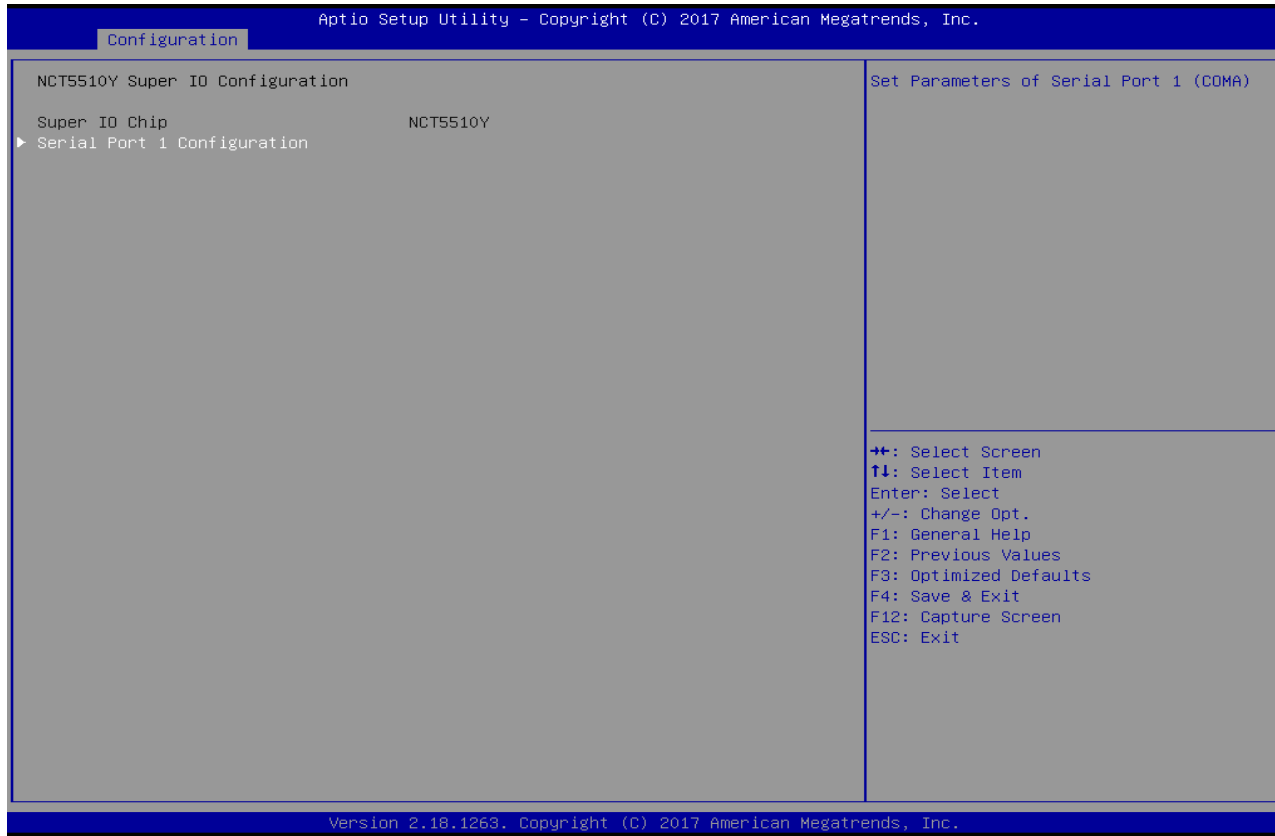
Configuration	
Power Control Configuration	
Enable Hibernation	[Enabled]
ACPI Sleep State	[S3 (Suspend to RAM)]
SIO Restore AC Power Loss	[Power On]
Erp Mode	[Disabled]
RTC Wakeup	[Disabled]
System Time	[17:54:24]
Wake up day	0
Wake up Time(HH:mm:ss)	[00:00:00]
Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may be not effective with some OS.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen ESC: Exit	

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Feature	Description	Options
Enable Hibernation	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.	★Enabled, Disabled
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.	★Suspend Disabled, S3 (Suspend to RAM), Suspend Disabled
SIO Restore AC Power Loss	Use SIO to specify what state to go to when power is re-applied after a power failure (G3 state). Power On: System will boot directly as soon as power applied. Power Off: state until power button is pressed.	★Power On, Power Off, Last State
Erp Mode	Enable/Disable Erp function in S4/S5.	★Disabled, Enabled
RTC Wake up	Enable or disable System wake on alarm event. [Enabled], system will wake up the Hour: Min: Sec specified. [Disabled] Turn off RTC Wakeup.	★Disabled, Enabled
RTC Wake up [Enabled]		
Wake up day	Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up	★0, 0-31
Wake up Time(HH: mm: ss)	Use [Enter], [TAB] to select field, HH: 0-23, mm: 0-59, ss: 0-59	HH: 0-23, mm: 0-59, ss: 0-59

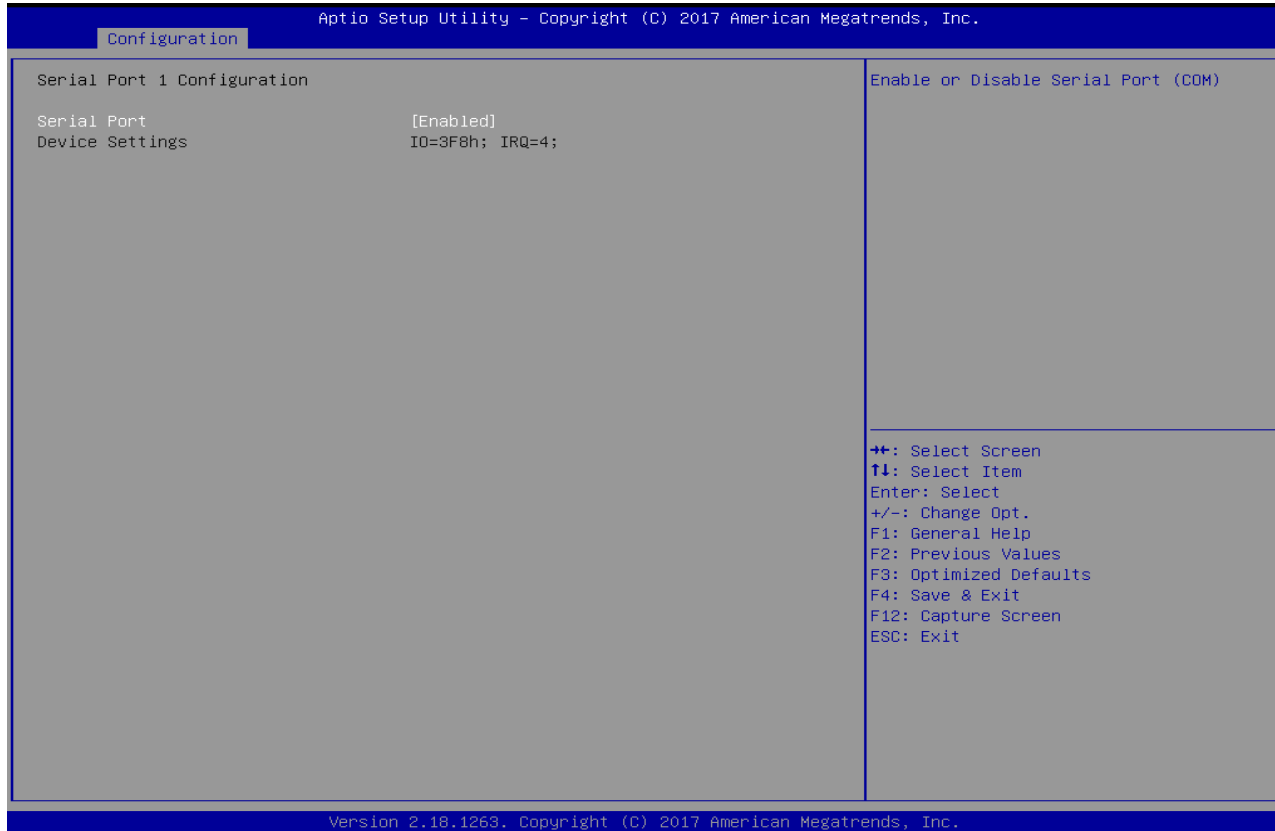
HCT5510Y Super IO Configuration

System Super IO Chip Parameters.



Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA)



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled, Disabled

H/W Monitor Configuration

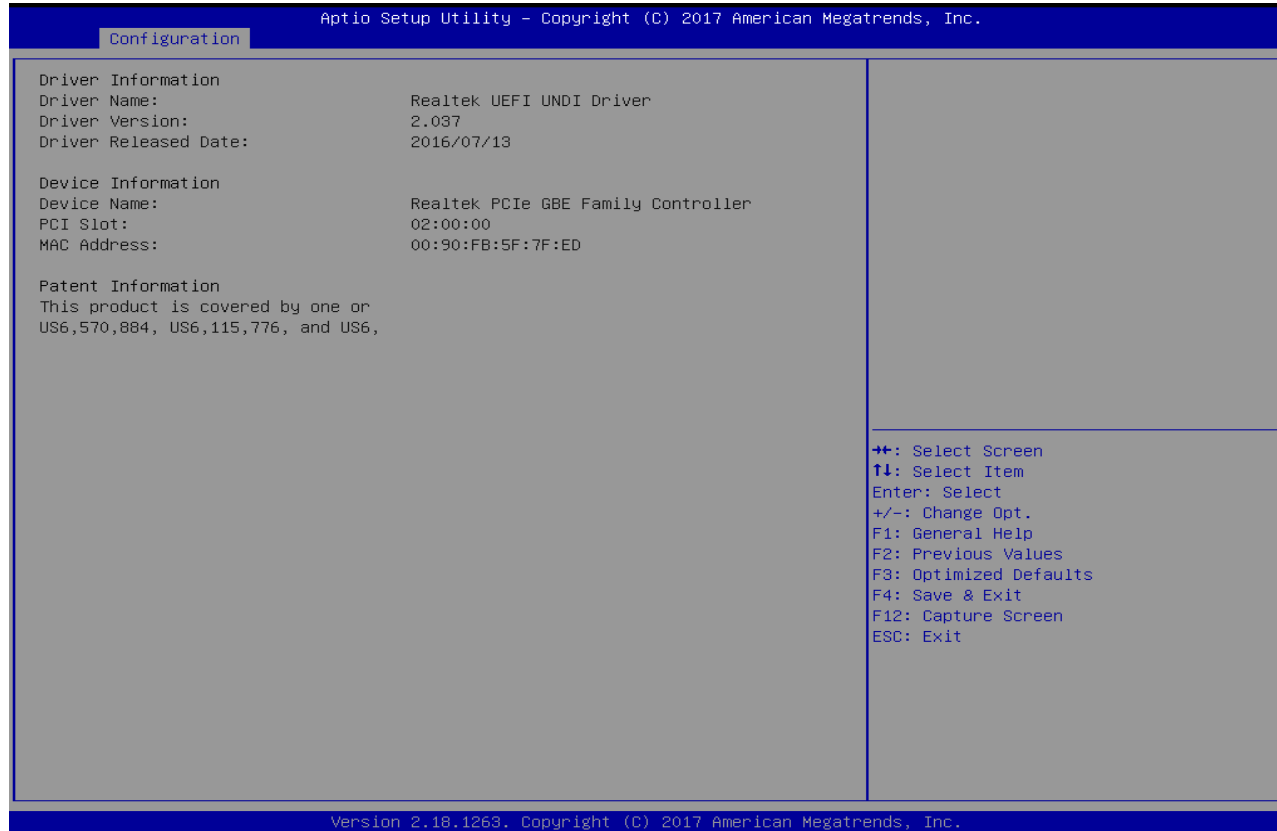
Monitor hardware status

The screenshot displays the 'Configuration' screen of the Aptio Setup Utility. The title bar reads 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.'. The main content area is divided into two columns. The left column shows hardware status: 'CPU SMART FAN Control' is set to '[SMART FAN]'. Below this, a list of sensors is shown: CPU Temperature (+51 °C), System Temperature (+36 °C), Fan Speed (N/A), VCC3V (+3.328 V), VSB3V (+3.328 V), and VBAT (+2.912 V). The right column is titled 'CPU FAN control by SMART table or Full Speed'. At the bottom of the right column, a list of navigation keys is provided: ++ for Select Screen, ↑↓ for Select Item, Enter for Select, +/- for Change Opt., F1 for General Help, F2 for Previous Values, F3 for Optimized Defaults, F4 for Save & Exit, F12 for Capture Screen, and ESC for Exit. The footer of the screen reads 'Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.'.

Feature	Description	Options
CPU SMART FAN CONTROL	CPU FAN control by SMART table or FULL speed.	★SMART FAN, FULL Speed

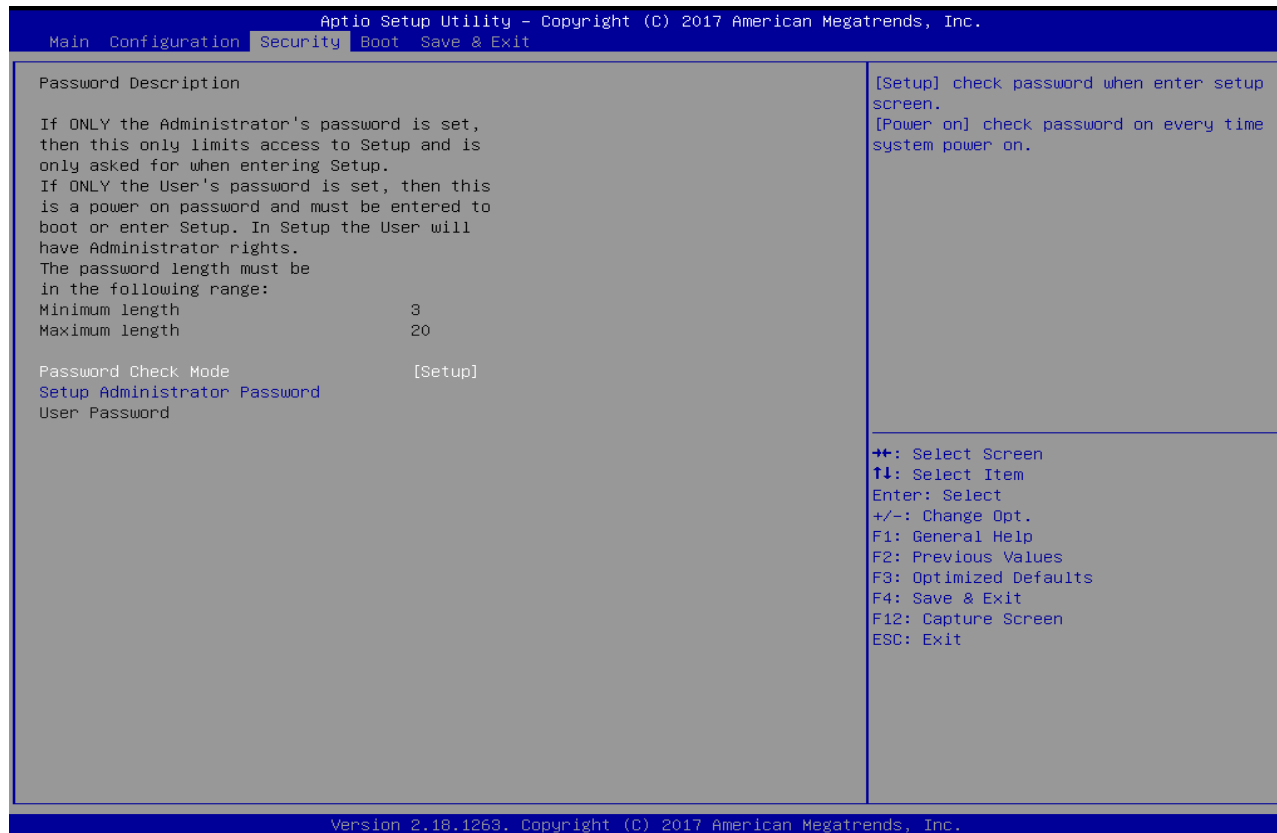
Realtek PCIe GBE Family Controller

Get driver information and configure Realtek ethernet controller parameter



6.2.3 Security

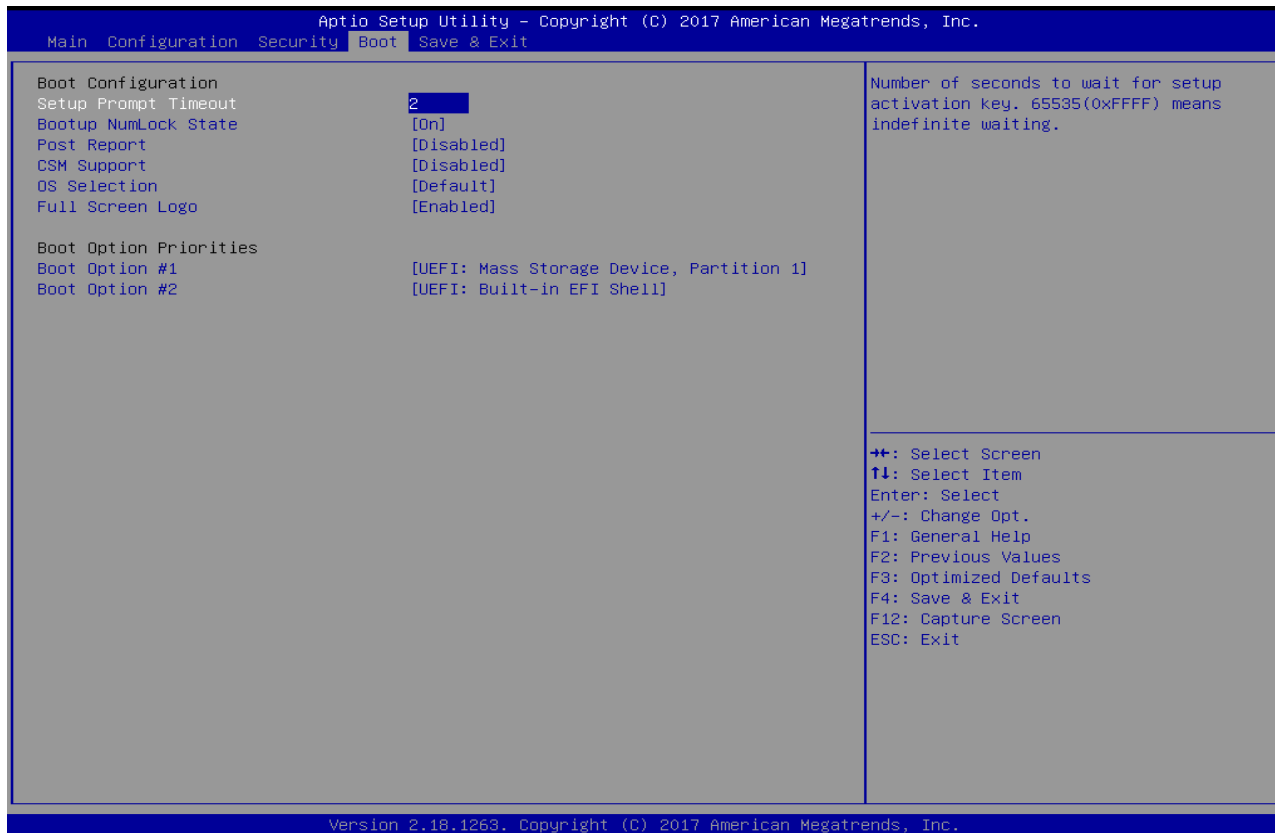
This section lets you set security passwords to control access to the system at boot time and/or when entering the BIOS setup program.



Feature	Description	Options
Password Check Mode	[Setup] check password when enter setup screen. [Power on] check password on every time system power on.	★ Setup, Power on
Setup Administrator Password	Set Setup Administrator Password	★ No default setting

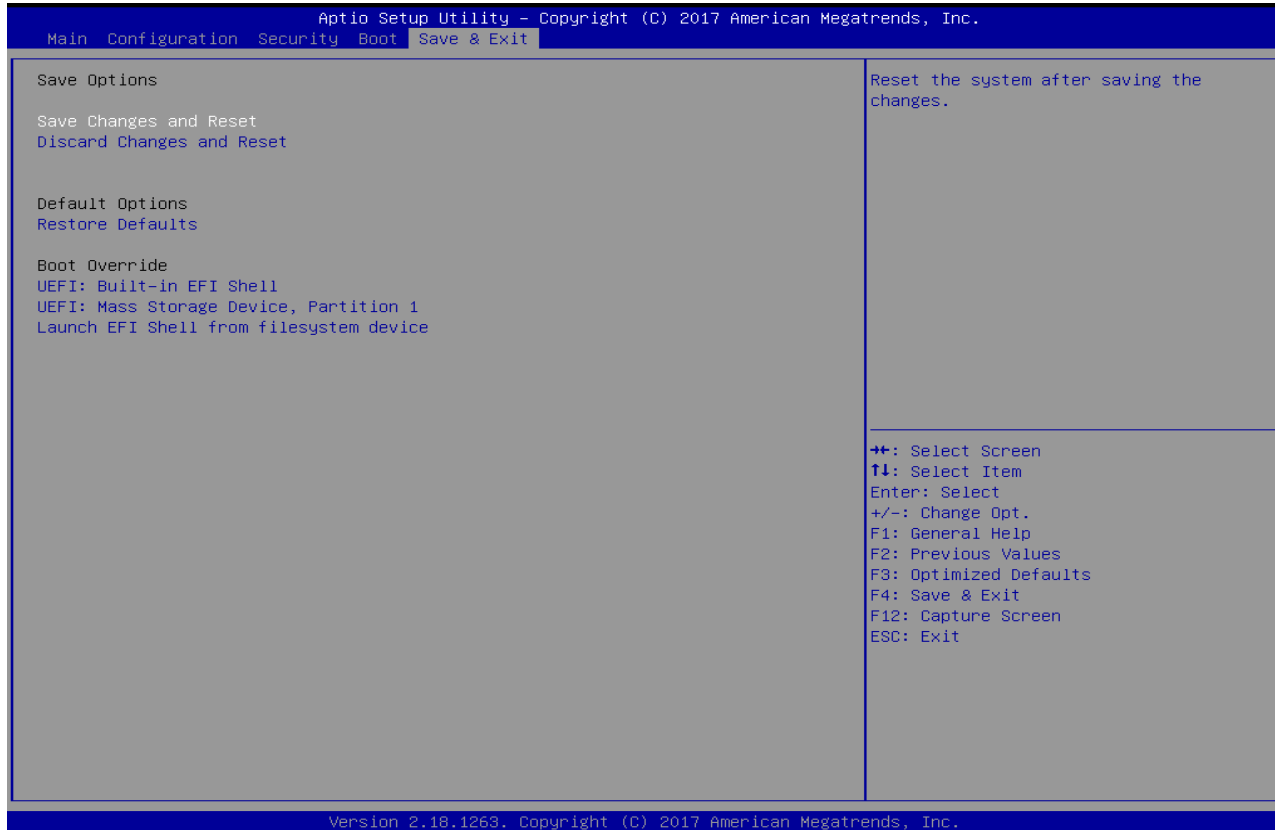
6.2.4 Boot

Use this menu to specify the priority of boot devices.



Feature	Description	Options
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xffff) means indefinite waiting.	★2, 1-65535
Bootup NumLock State	Select the keyboard NumLock state	★On, Off
Post Report	Post Report Support Enabled/Disabled	★Disabled, Enabled
CSM Support	Enable/Disable CSM Support	★Disabled, Enabled
CSM Support [Enabled]		
Network	Controls the execution of UEFI and Legacy PXE OpROM	★UEFI, Legacy, Do not launch
Launch Storage OPROM	Controls the execution of UEFI and Legacy Storage OpROM	★UEFI, Legacy, Do not launch
video	Controls the execution of UEFI and Legacy Video OpROM	★UEFI, Legacy, Do not launch
OS Selection	[Default] To Win8/8.1/10; [Other] Android / Linux; [Legacy System] Win7 / DOS; This item setting will effect LPSS & XHCI Hand-off item setting.	★Default, Others, Legacy System, MSDOS
Full screen Logo	Enables or disables Quiet Boot option and Full screen Logo.	★Enabled, Disabled
BOOT Option Priorities		
Boot Option #1	Sets the system boot order	★UEFI: Built-in EFI Shell, Disabled

6.2.5 Save & Exit



Feature	Description	Options
Save Changes and Reset	Reset the system after saving the changes.	
Discard Changes and Reset	Reset system setup without saving any changes.	
Restore Defaults	Restore/Load Default values for all the setup options.	
UEFI: Built-in EFI Shell (Boot option filter: UEFI only)	Reset the system after saving the changes.	
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.	

7 Troubleshooting

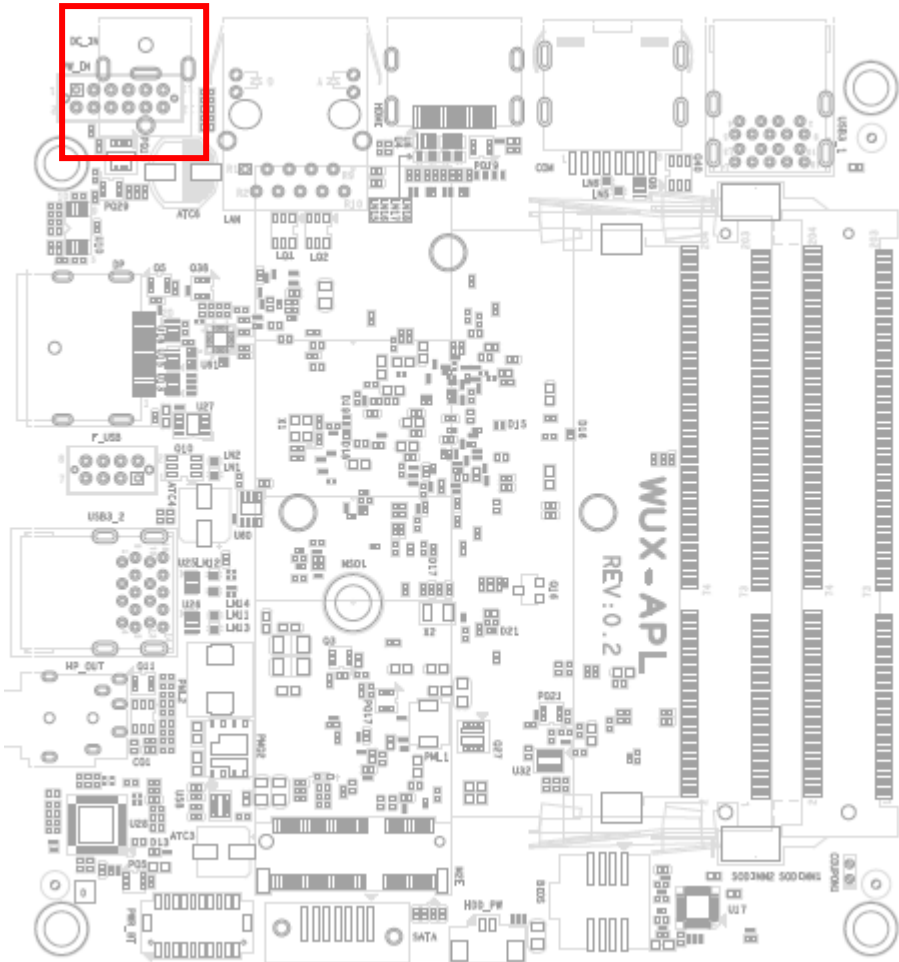
This chapter provides a few useful tips to quickly get WUX-3455/3350/4200 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

7.1 Hardware Quick Installation

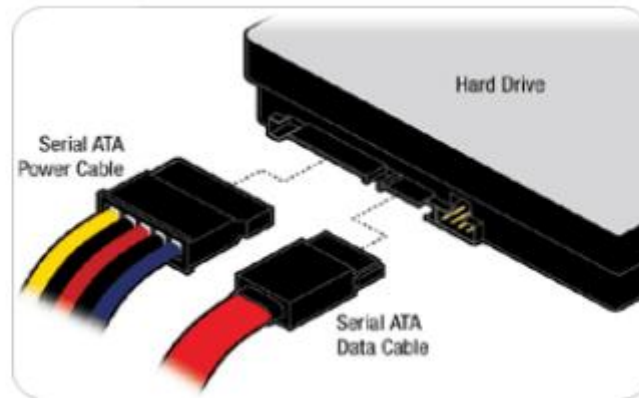
DC Jack Power

There is one method to connect the power of WUX-3455/3350/4200 which is 12V DC Jack (DC-IN).

WUX-3455/3350/4200



Serial ATA



System BIOS main Menu => Configuration => Storage Configuration

7.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on DC power. 204-pin DDR3L 1333/1600/1866 MH/z SO-DIMM Memory, keyboard, mouse, DP/HDMI connector, device power cables, DC power Jack are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with WUX-3455/3350/4200, it is recommended, when going with the boot-up sequence, to hit “Del” key And enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to “**Restore Defaults**”, press “**Enter**” and select “**Yes**” to load default optimal BIOS setup. This will force your BIOS setting back to the initial factory configurations. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting at any time when system appears to be unstable in boot up sequence.

7.3 FAQ

Information & Support

Question: I forgot my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the RTC battery on the WUX-3455/3350/4200 to remove it and wait 10 seconds to clean your password then insert it back to connector and switch on your power supply.

Question: How to update the BIOS file of WUX-3455/3350/4200?

Answer: 1. Please visit web site of **Portwell download center** as below hyperlink

http://www.portwell.com.tw/support/download_center.php

Registering an account in advance is a must. **(The E-Mail box should be an existing Company email address that you check regularly.)**

<http://www.portwell.com.tw/member/newmember.php>

2. Type in your User name and password and log in the download center.

3. Select **“Search download”** and type the keyword **“WUX-3455/3350/4200”**.

4. Find the **“BIOS”** page and download the ROM file and flash utility.

5. Unzip file to bootable USB flash drive which can boot to dos mode. Then execute the **“update.efi”**. It will start to update BIOS.

NOTE: Once you use “update.efi” to update BIOS, it must be get into the SHELL MODE to update BIOS

6. When you see the **“FPT Operation Passed”** message, which means the BIOS update processes finished. Please cut the AC power off and **wait for 10 seconds** before powering on.

http://www.portwell.com.tw/support/download_center.php

If you have other additional technical information or request which is not covered in this manual, please fill in the technical request form as below hyperlink.

http://www.portwell.com.tw/support/problem_report.php

We will do our best to provide a suggestion or solution for you.Thanks

8 Portwell Software Service

Portwell Evaluation Tool (PET)

The Portwell Evaluation Tool (PET) is an API which Portwell's customers can access the GPIO, I2C, SMBus, etc under Windows and Linux OS. For more information please contact Portwell.

Portwell EC Auto Test Tool (PECAT)

The Portwell EC Auto Test Tool (PECAT) is a brand new utility which innovated by Portwell. PECAT now is available for Portwell's premiere customers, who are able to [Test Embedded Controller Function](#) in UEFI Mode. Please contact Portwell for more information.

9 Industry Specifications

The list below provides links to industry specifications that apply to PORTWELL modules.

Low Pin Count Interface Specification, Revision 1.0 (LPC) <http://www.intel.com/design/chipsets/industry/lpc.htm>

Universal Serial Bus (USB) Specification, Revision 2.0 <http://www.usb.org/home>

PCI Specification, Revision 2.3 <https://www.pcisig.com/specifications>

Serial ATA Specification, Revision 3.0 <http://www.serialata.org/>

PCI Express Base Specification, Revision 2.0 <https://www.pcisig.com/specifications>